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Guide for Authors

General Instructions for authors:

- Tanta Scientific Nursing Journal (TSNJ) welcomes original scientific nursing contributions from all nursing researchers all over the world.
- Previously published articles or articles under publication elsewhere are not accepted for publication in TSNJ.
- Scientific research ethical approval must be attached with the research article.
- A copy of plagiarism report including the percentage must be provided with the article.
- Articles must have a structured abstract not more than 250 words and keywords.
- The article must include: Background, Aim, Subjects & Method, Results (including illustrated tables and figures), Discussion, and Conclusion & Recommendations.
- Issues/ year: Quartile publication. Four issues per year (February - May - September & November) supplemental issues can be added to the original issues as needed accordingly.

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Follow the process of submission in the journal website from submit a manuscript – submit a new manuscript.

General Rules:

Original research articles,

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- Font: 14, times new Romans.
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- Initially accepted papers are sent to independent expert reviewers to assess the scientific quality of the paper.
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- The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final.
- The published article must contain title page (with author details) including the title, authors' names,affiliations,e-mail address and contact details of the corresponding author.
- Proofreading is submitted to authors for final revision and send back to editors for final publication.

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- The journal follows the APA reference writing style (Manual of Style 7thEdition).
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EXAMPLE

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- Author's Last Name, Initial(s)., & Author's Last Name, Initial(s). (Year of publication). Title of chapter (Edition ed.) *Title of book* (pp. xx-xxi). Publisher. https://doi.org/DOI

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- Singh, A. A., Hwahng, S. J., Chang, S. C., & White, B. (2017). Affirmative counseling with trans/gender-variant people of color. In A. Singh & L. M. Dickey (Eds.), *Affirmative counseling and psychological practice with transgender and gender nonconforming clients*(pp. 41–68). American Psychological https://doi.org/10.1037/14957-003

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Editor in Chief, Prof. Sahar Mahmoud Elkhedr,
Faculty of Nursing, Tanta University, Tanta.
E-mail: sahar.abdelgawad@nursing.tanta.edu.eg
Tel: 01142306018

Instructors' Competencies and its Relation to Nursing Students' Academic Satisfaction

Warda Rashad Dawood[1,2], Maha Eid Shokier[3], Asmaa Hosny Belal[4]

[1] Master Student at Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

[2]Clinical Instructor at Technical Institute of Nursing, Tanta University, Egypt.

[3]Assistant Professor of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

[4]Lecture of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

Corresponding author: Warda Rashad Dawood

Email:Flowerland401@gmail.com

Abstract

Background: Clinical nurse instructors' competencies refer to both theoretical and clinical nursing knowledge, skills and attitudes toward nursing practice. The clinical nurse instructor plays a key role in students' clinical placement and acts as a role model when demonstrating professional knowledge and teaching skills. The clinical nurse instructor also functions as a source of emotional support for nursing students, which helps developing their personal resilience and academic satisfaction. **Aim:** This study aimed to assess clinical instructors' competencies and its relation to nursing students' academic satisfaction. **Research design**: A descriptive design was utilized for this study to achieve the aim of study. **Subjects:** The study was be conducted at the Faculty of Nursing, Tanta University, which is affiliated to the Ministry of High Education and Scientific Research .the study subjects was conducted A stratified proportional randomized sampling of undergraduate nursing students who are enrolled in different years of Bachelor of Sciences in Nursing during the academic year 2023-2024 at Faculty of Nursing .total sample (n=1079). **Tools:** 1) Clinical Nurse Instructors' Competencies Questionnaire and 2) Nursing Students 'Academic Satisfaction Questionnaire. **Results**: The vast majority (91.8%) of the studied students rated their clinical nurse instructors' competencies as satisfactory, while only 8.2**%** rated them as unsatisfactory .**Conclusion**: based on the result of the present study There was a positive statistically significant correlation between overall clinical nurse instructor competencies and overall nursing students' academic satisfaction.**It was recommended to** strengthen key competencies of clinical nurse instructors .Foster positive clinical learning environment use regular student evaluations to assess and improve instructor effectiveness**.**

***Key wards*:** Academic satisfaction, Instructors' competencies, Nursing students.

Introduction

Education is the systematic process of gaining knowledge, skills, values, beliefs, and habits through teaching, training, study, or experiential learning. It is a structured approach designed to enhance an individual's intellectual, social, emotional, and physical development. This process occurs in formal environments like schools, colleges, and universities, as well as informal contexts such as self-directed learning, life experiences, and social interactions **(Bognár, et al., 2024).**

Nursing education is essential for equipping nursing students to deliver high-quality care across various healthcare settings. It integrates theoretical instruction with practical training to ensure that students acquire the necessary skills to meet patients' complex needs. Programs typically cover subjects such as anatomy, pharmacology, ethics, and patient care, complemented by clinical experiences that allow nursing students to apply their knowledge in real-world situations **(Bhatarasakoon & Chiaranai, 2024)**.

Beyond technical expertise, nursing education focuses on cultivating critical thinking, communication, and leadership skills, enabling nurses to advocate for patients and collaborate effectively within healthcare teams. Continuous professional development and specialization opportunities are also emphasized, ensuring nurses remain updated with advancements in the field and adapt to the changing demands of healthcare **(Bhatarasakoon & Chiaranai, 2024)**.

Clinical nurse instructors are pivotal in connecting classroom education with practical patient care. They guide nursing students during clinical rotations, providing hands-on experience in diverse healthcare settings. These instructors supervise students, evaluate their clinical skills, offer feedback, and encourage critical thinking and decision-making. They also serve as role models, exemplifying professional standards, ethical practices, and compassionate care **(Sajjad, Rehman, Ahmad, Perveen & Najab, 2024).**

In addition to supervision, clinical nurse instructors mentor students, helping them build confidence and competence while adhering to safety protocols and evidence-based practices. By fostering a positive and growth-oriented learning environment, they prepare the next generation of nurses to navigate the

dynamic healthcare landscape **(Zhou, Yang, Pan & Lv, 2024).**

Clinical nurse instructors must possess a wide range of competencies to effectively educate and mentor nursing students. These include a thorough understanding of nursing theory, clinical practice, and evidence-based care, enabling them to teach both foundational and advanced concepts. Strong communication skills are essential for explaining complex ideas and engaging students in active learning. Clinical expertise is also critical, as instructors must demonstrate best practices, model critical thinking, and guide students through real-world scenarios **(Alkhelaiwi et al., 2024)**.

Additionally, nurse instructors need the ability to assess student progress, provide constructive feedback, and identify areas for improvement, creating a supportive learning atmosphere. They must stay updated on advancements in nursing education, technology, and healthcare practices to ensure they are preparing students for the evolving demands of the profession. Finally, they should foster inclusive and culturally competent learning environments, recognizing the diversity of students and patients and promoting equity in nursing practice **(Simelane & Pillay, 2024)**.

The competencies of clinical nurse instructors are organized into six categories: professional competence, interpersonal relationships, personality traits, teaching ability, student evaluation, and availability to students. These categories form the framework for effective teaching **(Elsaid, Shaban, Ghadery & Elmelegy, 2018).**

Professional competence refers to the instructor's expertise in the subject matter, including the ability to perform relevant skills and behaviors. Interpersonal relationships involve building connections based on empathy, trust, and respect. Personality traits encompass the emotional and attitudinal characteristics that define an instructor's demeanor. Teaching ability involves the skills needed to effectively transfer knowledge, skills, and attitudes to students (**Darling-Hammond, Hyler & Gardner, 2017).**

Student evaluation competence includes providing feedback and grading students fairly and constructively. Availability to students involves collaborating with them, explaining the rationale behind tasks, and involving them in decision-making and problem-solving processes **(Law, 2025)**.

Academic satisfaction among nursing students is a crucial factor in their educational experience, influencing their engagement and success. This satisfaction is shaped by the quality of teaching, availability of resources, and support from faculty. Students who perceive their instructors as knowledgeable, approachable, and supportive are more likely to have a positive academic experience **(Kavuran et al., 2025)**.

In addition to well-organized clinical placements, effective learning materials, and hands-on practice opportunities also enhances nursing students' confidence and skill mastery. A supportive and inclusive learning environment, where students feel valued, further contributes to their satisfaction. Clear communication, realistic expectations, and timely feedback are essential for fostering motivation and a sense of student achievement. Accordingly, high levels of academic satisfaction can lead to better retention, improved performance, and greater readiness for the challenges of nursing **(Zhou et al., 2024)**.

Academic satisfaction encompasses several dimensions, including clinical nurse instructors' teaching quality, assessment methods, generic skills development, learning experiences, and nursing students overall training satisfaction. Clinical nurse instructors' teaching quality involves the organized sharing of knowledge and experience within a discipline. Assessment includes graded tests, assignments, or projects that evaluate student learning. Generic skills and learning experiences focus on critical thinking, collaboration, communication, and problem-solving. Overall satisfaction reflects participants' feedback on the training process **(Ferreira, 2022)**.

Recently, academic satisfaction among nursing students has gained significant attention, driven by increasing competition among educational institutions globally. Research on this topic is motivated by the understanding that higher student satisfaction can enhance an institution's competitive standing **(Kanwar & Sanjeeva, 2022)**.

Significance of study

Clinical nurse instructors are considered the most important factor in achieving clinical outcomes and assisting the nursing students to a quire the needed knowledge, skills and attitudes necessary for professional nursing practice **Wanas, Hamoda, Zahran, & Obied, 2021).** Clinical nurse instructors' competencies play a key

role in nursing education for enabling the nursing students to integrate the theoretical knowledge with practice in the clinical learning environment **(Beiranvand, Kermanshahi & Memarian, 2021).** Also, they need to be competent, friendly, helpful and efficient in performing their duties as motivators, guiders, and facilitators for achieving nursing students' academic satisfaction **(Bay et al., 2023).** So, we conduct this study to assess instructors' competencies and its relation to nursing students' academic satisfaction.

The aim of the study was to:

Assess instructors' competencies and its relation to nursing students' academic satisfaction.

Research questions:

1- What are the levels of clinical nurse instructors' competencies?

2-What are the levels of nursing students' academic satisfaction?

3-What is the correlation between clinical nurse instructors' competencies and nursing students ' academic satisfaction?

Operational definition

Clinical nurse Instructor:

A clinical Instructor includes demonstrator and assistant lecturer employed by the college or university to teach and evaluate students during the clinical practices at a hospital, community or clinic. They are directly responsible for developing students' abilities in clinical reasoning, decision making, critical thinking, and developing successful an interpersonal relationship during clinical education **(Yanhua, 2011)**.

Subjects and Method

Study design:

A descriptive correlational study design was been used in this study

Setting:

The study was been conducted at the Faculty of Nursing, Tanta University, which is affiliated to the Ministry of High Education and Scientific Research.

Subjects

A stratified proportional randomized sampling of undergraduate nursing students who are enrolled in different years of Bachelor of Sciences in Nursing during the academic year 2023-2024 at Faculty of Nursing. The technique for selecting the sample from the previous mentioned setting will be proportional to the number of nursing students in each year. The sample size and power analysis were calculated using Epi-Info. Software statistical package the criteria used for sample size calculation were as follows: Z=Confidence level at 95% (1.96)

and d=error proportion (0.05). The sample size will be as follow:

Academic year	Number of students	Sample
First	540	230
Second	1200	290
Third	1050	280
Fourth	970	279
Total	**3760**	**1079**

Tools of data collection:

The data of the study was been collected using two tools as follows;

Tool I: **Clinical Nurse Instructors' Competencies Questionnaire**:

Was adapted from**(Elsaid, Shaban, Ghadery & Elmelegy, 2018),** and was used by the researcher to assess clinical nurse instructors' competencies as perceived by nursing students, consisted of two parts:

Part 1: **personal data of nursing student** such as (age, sex, marital status, residency, academic year, etc).

Part 2: Clinical Nurse Instructors' Competencies Questionnaire

Consisted of 6 dimensions as follows:

-**Professional competence** included: Clinical competence 11 items (1-11), support competence5 items (12-16), and knowledge competence3 items (17-19)

-**Interpersonal competence** included7 items (20-26)

-**Personal competence** includes Appearance 4 items (27-30), instructor's movement and body language 4items (31-34), voice characteristic4 items (35-38), and personality 8 items (39-46).

-**Teaching practice competence** included Provide effective learning 12 items (47-58) environment, plan and organize work during the clinical training 9 items (59-67), teaching technique 11 items (68-78), and provide feedback4items (79-82).

-Evaluation competence includes 7 items (83-89)

-Availability to student's competence included 5 items (90-94)

Scoring system:

was measured on a three-points Likert scale ranging from; Always Done (3), Rarely Done (2), Not Done (1). The scores were categorized based on cut- off points as follows;

-Satisfactory competence ≥75% from the total sample

-Unsatisfactory competence <75% from the total sample.

Tool II: **Nursing Students 'Academic Satisfaction Questionnaire**

This tool was adapted from **(Fieger, 2012)** and used by the investigator

to assess the nursing students' academic satisfaction about the clinical nurse instructors' competencies.

1-Teaching: included 6 items (1-6).

2-Assessment: included 5 items (7-11).

3-Generic skills and learning experiences: included 8 items (12-19).

4-Overall satisfaction with the training: included 3 items (20-22).

Scoring system:

Students' responses were been measured on a five-points Likert scale ranging from; Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5). The total score were categorized according to cut-off points at varying levels as the following:

- Academic satisfaction ≥75% from the total score.

-Academic unsatisfaction < 75%from the total score

Method

An official permission was obtained from the Dean and authoritative personnel of Faculty of Nursing

Ethical considerations: -

-An ethical approval was taken from the Scientific Ethical Committee before conducting the study with a code number 392-2-2024

-The researcher introduced herself to participants, a full explanation of the aim and method of study was done to obtain their acceptance and cooperation as well as their informed consent.

-The right to obtain or terminate participation at any time was respected.

-The nature of the study wasn't caused any harm or pain for the entire subject.

-Assuring the nursing students about the privacy and confidentiality of collected data

-Tool I and tool II were translated into Arabic format for better understanding and was presented to a jury of five experts in the area of specialty to check their content validity. the experts were five assistant professors of nursing administration, faculty of nursing, Tanta university**.**

-The expert's responses were represented in four points rating from (4-1),4=strongly relevant, 3=relevant, 2=little relevant, and1=not relevant. Necessary modification was made including, clarification, omission, of certain items and adding others and simplifying work related words.

-The face validity value of Clinical Nurse Instructor Competencies questionnaire 96.8, Nursing

Students' Academic Satisfaction 97.1.

-A pilot study was carried out on 10% of the nursing students (n=108).A pilot study was carried out after the experts opinion and before starting the actual data collection. The pilot study was done to test the clarity, sequence of items, applicability, and relevance of the questions to determine the needed time to complete the questionnaire. The estimated time needed to the questionnaire items from nursing students was 10-15minutes for each sheet. Apilot study sample was not excluded from the main study's sample during actual collection of data. Because no major modifications were made.

-Reliability of tools was tested using Cronbach's alpha test, reliability of nursing students' perception of regarding clinical nurse instructor's competencies was=0,986 and reliability of nursing students' academic satisfaction was= 0,987.

-Clinical nurse instructors' competencies questionnaire and nursing student's academic satisfaction questionnaire were used to collect data from identified subject.

Data collection phase:

The data were collected from nursing students by the investigator, the investigator met nursing students and distributed the questionnaire on nursing students in small group at their study setting. The data was collected over a period of six months from March to August 2024

Statistical analysis of the data

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0**. (**Armonk, NY: IBM Corp**)** Qualitative data were described using number and percent. The **Kolmogorov-Smirno**v test was used to verify the normality of distribution Quantitative data were described using range (minimum and maximum), mean, standard deviation. Significance of the obtained results was judged at the 5% level.

The used tests were

1 - Chi-square test

For categorical variables, to compare between different groups

2 - Student t-test

For normally distributed quantitative variables, to compare between two studied groups

3 - F-test (ANOVA)

For normally distributed quantitative variables, to compare between more than two groups,

4 - Pearson coefficient

To correlate between two normally distributed quantitative variables.

Limitation of this study

The sample was supposed to be 1083 students, but I worked with 1079 because some students withdraw their file from the faculty of nursing and the others failed in the academic year.

Results

Table (1): Represents the distribution of nursing students' personal data, the table shows the age of students ranged from under 20 to 21 years, with a mean age of 19.94 ± 1.16 years. Approximately half (44.9%) aged under 20 and the other half (44.8%) aged between 20–21. Approximately Two-thirds (68.9%) of nursing students were female. About Three-quarters of nursing students (76.8%) were unmarried. Regarding place of residence, Two-thirds (68.0%) of students lived in rural areas, while about one-third (32.0%) resided in urban areas.

Figure (1): Shows overall levels of clinical nurse instructors' competencies as perceived by nursing students. This figure shows that the vast majority (91.8%) of the nursing students showed satisfactory clinical nurse instructors' competencies, while only **8.2%** of them showed **unsatisfactory clinical nurse instructors' competencies**.

Table (2): Represent levels of clinical nurse instructors' competencies' dimensions as perceived by nursing students . The table shows that the majority (92.3%,91,7%,90.8%, and 90.4%) of nursing students perceived satisfactory clinical nurse instructors' competencies regarding interpersonal competence, personal competence, evaluation competence, and professional competence, respectively. On the other side, (10.9%, and 10.8%) of them perceived unsatisfactory clinical nurse instructors 'competencies including teaching practice competence and availability to students' competence, respectively.

Figure (2): Illustrates the overall levels of nursing students' academic satisfaction. This figure shows that nearly three-quarters (74.5%) of the nursing students showed academic satisfaction, while slightly more than one-quarter (25.5%) of them showed academic unsatisfaction.

Table (3): Represents the levels of nursing students' academic satisfaction dimensions. The table shows that high percent (83.8%) of the nursing students showed overall satisfaction with the training of

clinical nurse instructors. Also, around three quarter (78.5% and 77.1%) of them showed satisfaction regarding clinical nurse instructors' teaching and generic skills and learning experiences, respectively. On the other side, less than quarter (23.9%,22.3%,21.5%) of them were un satisfied with clinical nurse instructors' assessment, generic skills and learning experiences and teaching, respectively.

Figure (3): Illustrates the correlation between overall clinical nurse instructors' competencies and nursing students' academic satisfaction.

This figure shows a statistically significant positive correlation between overall clinical nurse instructors' competencies and nursing Students' academic satisfaction ($r = 0.135$, $p < 0.001$).

Table (1): Distribution of nursing students' personal data (n =1079)

Nursing students		
Personal data of nursing student	**No.**	**%**
Age (years)		
<20	484	44.9
20–21	483	44.8
22	112	10.4
Min. – Max.	18.0 –22.0	
Mean ± SD.	19.94 ± 1.16	
Sex		
Male	336	31.1
Female	743	68.9
Marital status		
Married	250	23.2
Not married	829	76.8
Residence		
Rural	734	68.0
Urban	345	32.0
Academic year		
First	230	21.3
Second	290	26.9
Third	280	25.9
Fourth	279	25.9

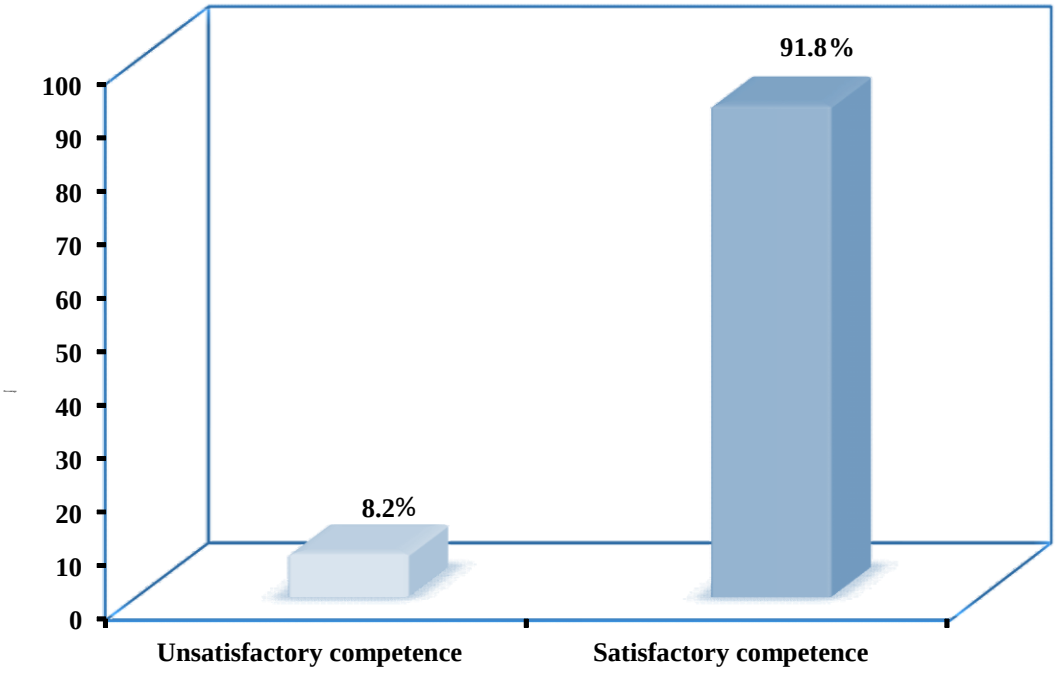

Figure (1): Overall levels of clinical nurse instructors' competencies as perceived by nursing students.

Table (2): levels of clinical nurse instructors' competencies' dimensions as perceived by nursing students (n =1079).

Clinical Nurse Instructors' Competencies dimensions	Unsatisfactory competence		Satisfactory competence	
	No.	%	No.	%
Professional competence	104	9.6	975	90.4
Interpersonal competence	83	7.7	996	92.3
Personal competences	90	8.3	989	91.7
Teaching practice competence	118	10.9	961	89.1
Evaluation competence	99	9.2	980	90.8
availability to students competence	116	10.8	963	89.2
Overall	**88**	**8.2**	**991**	**91.8**

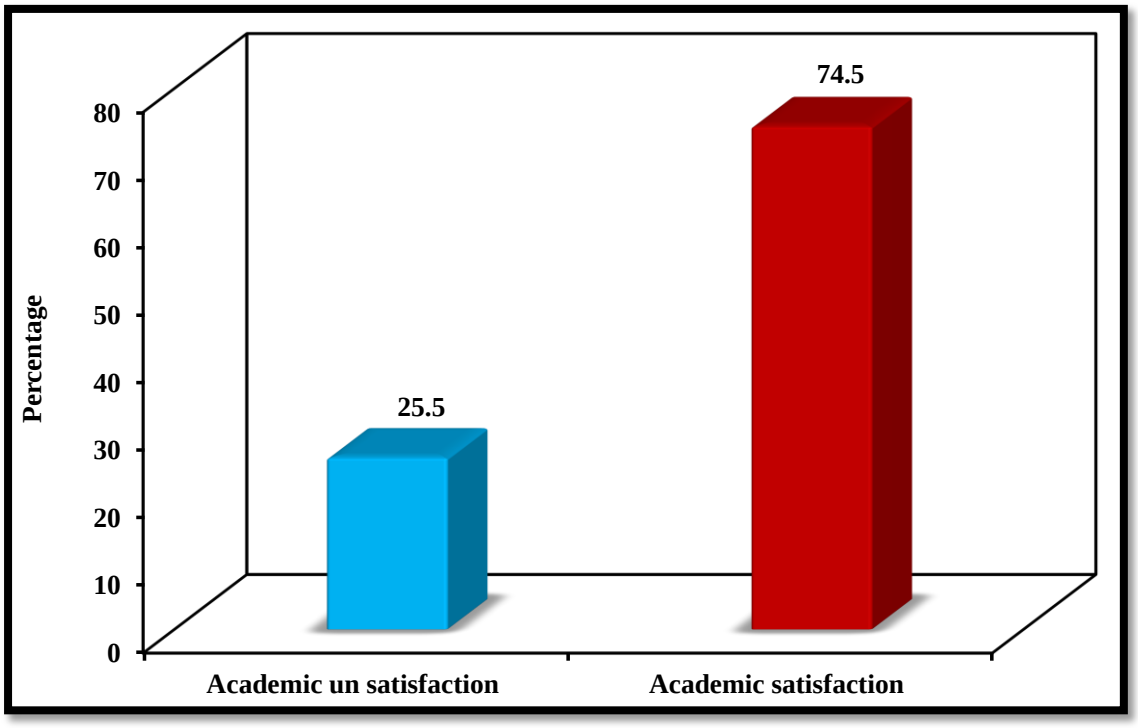

Figure (2): Over all levels of nursing students' academic satisfaction (n =1079)

Table (3): Levels of nursing students' academic satisfaction dimensions about clinical nurse instructors (n =1079)

Nursing Students' Academic Satisfaction dimensions	Academic un satisfaction		Academic satisfaction	
	No.	%	No.	%
Teaching	232	21.5	847	78.5
Assessment	258	23.9	821	76.1
Generic skills and learning experiences	241	22.3	838	77.7
Overall satisfaction with the training	175	16.2	904	83.8
Overall	**275**	**25.5**	**804**	**74.5**

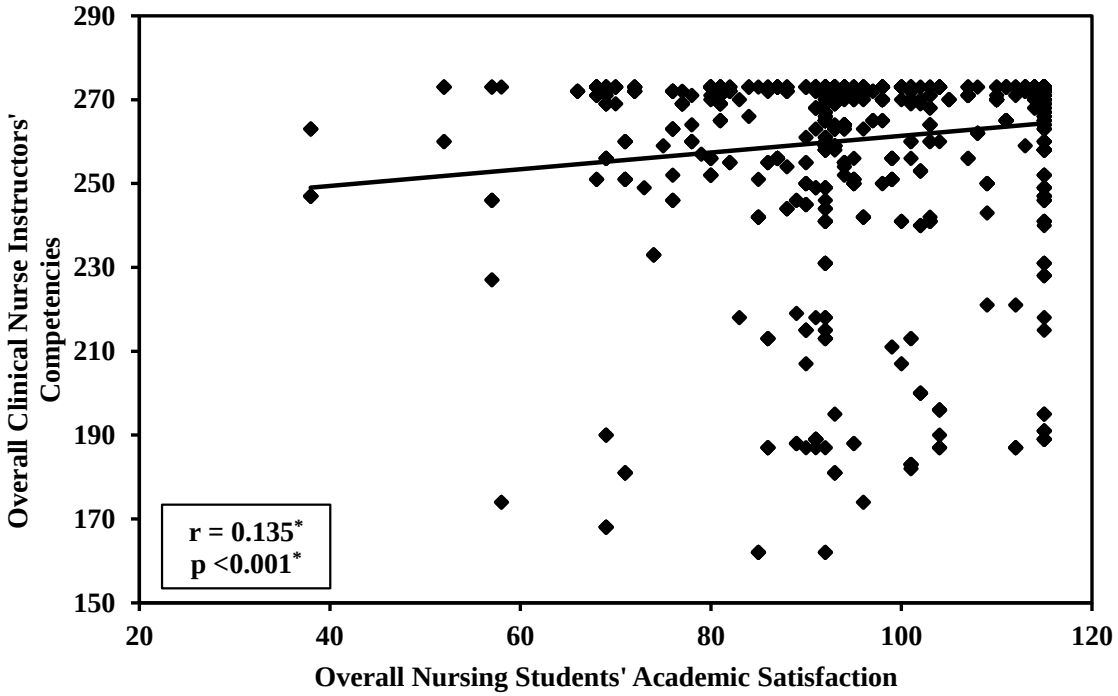

Figure (3): Correlation between Overall Clinical Nurse Instructors' Competencies and Nursing Students' Academic Satisfaction (n =1079).

Discussion

Clinical nurse instructors' competencies perception among nursing students

The present study revealed that the vast majority of the nursing students showed satisfactory clinical nurse instructors' competencies. This can be rationalized by clinical nurse instructors demonstrate strong clinical, teaching, interpersonal, and evaluative skills. And so on, students are more likely to perceive them as competent and effective, which positively impacts their clinical learning and satisfaction.

These results are supported with **El-Sayed & Mohamed, (2024**) who reported that most nursing students perceived their clinical instructors as highly competent, particularly in communication, guidance, and professional behavior .Also, **Alotaibi & Alghamdi, (2023)** who found that students were generally satisfied with their instructors' clinical and teaching competencies, which fostered motivation, confidence, and professional development. On converse, **Rahman& Yusof, (2024**) who found that a subset of students reported unsatisfactory instructor competence, particularly in evaluation and interpersonal communication skills

Nursing students' academic satisfaction perception among nursing students

The present study revealed that nearly three-quarters of the nursing students showed academic satisfaction This can be rationalized by the quality of the learning environment, teaching effectiveness, and students' psychological well-being. When nursing students experience supportive instructors, fair evaluation, and relevant clinical experiences, their academic satisfaction increases.

These results are supported with **Al-Harbi et al. (2024)** who found that students' satisfaction was strongly correlated with effective instructor communication, constructive feedback, and supportive learning environments. Also, **Gonzalez et al. (2024**) who confirmed that academic satisfaction is positively linked to students' engagement and motivation in both theoretical and clinical courses. However, **Nguyen & Lee (2024**) who found that students who face heavy workload, unclear expectations, or poor feedback often report low academic satisfaction despite good academic performance.

Correlation between clinical nurse instructors' competencies and nursing students' academic satisfaction

The present study revealed that a statistically significant positive correlation between overall clinical nurse instructors' competencies and nursing students' academic satisfaction. This can be rationalized by clinical instructors' competencies including teaching, communication, evaluation, and interpersonal skills are vital predictors of students' satisfaction and learning outcomes. When instructors demonstrate strong professional and pedagogical competence, they foster effective learning environments, build trust, and increase students' confidence in their academic progress.

These results are supported with **Musa et al. (2025)** who emphasized that competent instructors enhance student confidence, motivation, and satisfaction through effective supervision and constructive feedback. Also, **Al-Hamdan et al. (2024)** who found a strong positive association between instructors' teaching competence and students' overall satisfaction in clinical education.

Conclusion

Based on the findings of the present study:

A higher competencies of clinical nurse instructors helps to increase nursing students' academic satisfaction. There was a positive statistically significant correlation between overall clinical nurse instructor competencies and overall nursing students' academic satisfaction.

The vast majority (91.8%) of the studied students rated their clinical nurse instructors' competencies as **satisfactory**, while only **8.2%** rated them as **unsatisfactory**. This indicates a high overall competency level among clinical nurse instructors as perceived by students. More than three-quarters (74.5%) of the studied students reported academic satisfaction, while slightly more than one-quarter (25.5%) expressed academic dissatisfaction.

Recommendation

Based on the findings of the study results, the following was recommended:

For clinical instructors

Strengthen Key Competencies of Clinical Nurse Instructors:

-Clinical Expertise: Strong, up-to-date clinical knowledge and skills to model evidence-based practices.

Teaching Skills: Ability to explain concepts clearly, give constructive feedback, and adapt teaching to student needs.

-Evaluation Skills: Competent and fair in assessing student performance, both formatively and summatively.

For nursing educational organization

-Foster Positive Clinical Learning Environments-

-Provide consistent support and reduce student anxiety by maintaining a respectful, non-threatening environment.

Encourage autonomy while ensuring safety and supervision-

Maintain clear expectations and consistent feedback practices-

For students

-Promote Student-Instructor Relationship Quality

-Students report higher satisfaction when instructors are approachable, respectful, and available for discussion.

-Regular check-ins and open communication channels foster trust and learning satisfaction.

For further research

- Encourage anonymous feedback to improve teaching and interaction quality-

-.Link Instructor Competencies to Student Outcomes-

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Effect of Implementing Oral Care Guidelines on Post Endotracheal Tube Extubation Clinical Outcomes for Critically Ill Patients

Shimaa Elsoudy Ibrahem Elrefae [1], Gehan A .Younis [2], Mohammad Sayed Abdel Rahman Hantira [3], Nadia Mostafa Eleter [4]

[1]Assistant lecturer of Critical Care and Emergency Nursing, Faculty of Nursing , Kafr El-sheikh University, Egypt.

[2]Professor of Critical Care and Emergency, Faculty of Nursing, Tanta University,Egypt.

[3]Professor of Chest diseases, Faculty of Medicine, Tanta University, Egypt.

[4]Lecturer of Critical Care Nursing, Faculty of Nursing, Tanta University, Egypt.

Corresponding author: Shimaa Elsoudy Ibrahem Elrefae

Email: shimaaelsouidy@gmail.com

Abstract

Background: Oral care guidelines are practices of preserving the tissues and structures of the mouth in a healthy state. It helps to stimulate the flow of saliva, which prevents the mouth from becoming inflamed or sored and maintains the patient's mouth clean, moist, and free of infection. **Aim**: Evaluate the effect of implementing oral care guidelines on post endotracheal tube extubation clinical outcomes for critically ill patients. **Design:** Quasi-experimental research design was utilized. **Setting:** This study was conducted at Chest Intensive Care Units of Tanta University Hospital, Egypt. **Subjects**: A purposive sample of 100 adult post endotracheal tube extubated patients was selected and divided into two equal groups; 50 patients in each. **Tools of the study**: two tools were used: **Tool 1**: Oral health status assessment tool consists of three parts as following: **(a)** Socio-demographic data sheet, **(b)** Clinical data sheet, **(c)** Critically ill patient's oral health status assessment sheet, **Tool 2:** Oral Intake Readiness Assessment Tool; composed of 3 parts: **(a)** Functional Oral Intake Scale (FOIS), **(b)** Thirst Intensity Visual Analogue Scale, **(c):** Gugging Swallowing Screening Scale (GUSS). **Results:** The study group showed significantly better outcomes compared with control group with 40% achieving improved oral health status, while only 20% showed improvement in control, and readiness for oral intake was (30% vs. 20%), at $p < 0.001$ that approves the statistical significant differences. The study group's swallowing function was significantly improved, demonstrated by a higher mean GUSS score (8.24 vs. 6.90, $p < 0.001$). **Conclusion:** The implementation of structured oral care guidelines post extubation significantly improves oral health, oral intake, thirst, and dysphagia. **Recommendations**: Monitoring of oral health status, thirst intensity as well as dysphagia level post extubation should be integrated into routine care.

Keywords: Clinical Outcomes, Oral Care Guidelines, post Enotracheal tube extubation

Introduction:

The intensive care unit (ICU) is a highly specialized setting in which the critically ill patient is treated. Critical illness presents a potentially reversible, acute, life endangering illness which requires close monitoring and supervision, due to serious organ dysfunction (**Shen, Dai, Zhu, & Lang, 2022**).

Prompt recognition and treatment of these pathological states help to improve patient's prognosis and diminish mortality rates. Critically ill patients require endotracheal intubation for mechanical ventilation. Endotracheal intubation can be lifesaving in several conditions. However, this intervention is associated with the risk of significant yet potentially preventable complications; the most popular of them is oral complication **(Kaier et al., 2019).**

A variety of factors can affect post endotracheal tube extubation oral health status such as malnutrition, fluid loss through fever, diarrhea, or reduced fluid intake. The oral mucosa can also become dry as a side effect of taking medications such as beta-blockers, bronchodilators, diuretics, and anti-hypertension **(Abd-alraheem, Mohamed, & Gendy, 2020)**.

Following extubation, critically ill patients remain at risk for developing a range of complications linked to poor oral hygiene. Hospital-acquired infections are the most frequent adverse events in patients transferred out of the ICU; Oral colonization may lead to the development of pneumonia through the aspiration of oral cavity contents including bacterial pathogens (**Choi et al., 2022)**.

The oral health of intubated patients in the ICU and post-extubation may deteriorate due to these situations, which may raise the risk of oral infections Additionally, the endotracheal tube may cause debris accumulation and provides a perfect environment for microbial growth causing the mouth to be open continuously and leading to xerostomia, drying of the mucous membrane, accumulation of dental plaque, and reduction of the distribution of salivary immune factor (**Haghighat et al., 2022)**.

The endotracheal tube can limit oral inspection and access to oral care and cause hypersalivation by inducing a hyperactive gag reflex**.** Oropharyngeal dysphagia (difficulty swallowing) after liberation from an endotracheal tube is referred to as post-extubation dysphagia **(Bertschi et al., 2025).**

Post endotracheal tube oral complications can be prevented by practicing oral care intervention as a vital procedure for critically ill

patients in ICU. Oral care reduces the risk of VAP. The agents which are used in oral care have broad-spectrum activity against Gram-positive and Gram-negative organisms, facultative anaerobes, aerobes, and yeast **(Siao et al., 2023)**.

Oral care intervention is practices of preserving the tissues and structures of the mouth in a healthy state. It helps to stimulate the flow of saliva, which prevents the mouth from becoming inflamed and sore and maintains the patient's mouth clean, moist, and free of infection.

The aim of oral care intervention is to keep the mucosa and the lips clean, soft, moist, and intact. Lack of adequate oral care and widespread tooth brushing is a serious problem because it is considered more effective than sponge swabs at removing the dental plaque **(Abdalla, et al., 2019)**.

Critical care nurses play an important role in investigating and early detecting suspected complications throughout the intubation process such as post-extubation dysphagia. Also, for unconscious patients, nurses have a crucial role in maintaining oral health status and delivering excellent oral care **(Ram, John, & Thomas, 2020).**

Swallowing exercises increase the strength and mobility of the muscles of the larynx (voice box) over time. This increases the ability to swallow practices and it involves exercises of the jaw, lips, tongue, soft palate, pharynx, larynx, and/or respiratory muscles to enhance their function. Some of these interventions could also incorporate sensory stimulation. For decades, researchers have studied the theoretical scope of swallowing rehabilitation with respect to oropharyngeal exercises, oral hygiene and moisturization, and such compensatory strategies as changes in posture and food viscosity **(Anggraeni, Hayati, & Nur'aeni, 2020)**.

Critical care nurses play a critical role in managing critically ill patients with swallowing difficulties to help re-establish safe oral intake to a normal level as soon as possible, minimize complications, and improve the quality of life for patients with post-extubation dysphagia. Additionally, they can manage patients' mealtimes, instruct patients on safe feeding techniques, and disseminate information on swallowing & and oral care intervention, treatment plans, and record patient progress which is helpful in improving and preventing further injury in patients who are vulnerable after extubation

(Haghighat, Mahjobipoor, & Gavarti, 2022).

Oral care guidelines for critically ill patients following extubation play a vital role in maintaining airway patency, preventing infection, and supporting recovery. Post-extubation patients are vulnerable to oral mucosal damage, dryness, bacterial colonization, and aspiration due to prolonged intubation and impaired swallowing reflexes. Current evidence-based guidelines emphasize systematic oral assessment, gentle toothbrushing or swabbing, use of antiseptic or moisturizing agents, and proper patient positioning during oral care to minimize aspiration risk **(Halm, M& Armola, 2009)**

Significant of the study:

Post extubation dysphagia is any form of swallowing dysfunction that arises subsequent to extubation following endotracheal intubation. The occurrence rate of PED within the ICU setting demonstrates considerable variation among different countries. The incidence varied among countries, including 13.3–61.8% in the United States, 25.3–43.5% in France, and 23.2–56% in China ,and the incidence ranging from 7 to 80% Significantly, PED standing out as a prominent complication encountered in this particular context**(Yu et al.,2024).**

In Egypt, recent clinical research indicates that post-extubation dysphagia is a relatively common complication among critically ill patients following mechanical ventilation. A descriptive study conducted in the ICUs of a university hospital in Beni-Suef reported that 20 % of adult patients developed dysphagia after endotracheal extubation, which was associated with increased risks of malnutrition and pneumonia. This highlights that one in five patients may experience swallowing dysfunction post-extubation if not carefully monitored and managed **(Abdelsalam et al., 2024).**

Oral care is an aspect of most importance for critically ill patients, because it improves health and preventing any related serious harms as pneumonia **(Saravanan, B. D., & Govindaraj, 2025)**

The oral care products selection for the extubated patient is determined by the patient's ability to manage secretions, independence level, and the health care providers' clinical judgment **(Abd-alraheem, Mohamed, & Gendy, 2020)**.

In Tanta main university hospital there is no standardized protocol for oral care intubated and extubated patients which can affect the level of oral health.

So, the aim of the current study was to evaluate the effect of implementing oral care guidelines on post endotracheal tube extubation clinical outcomes for critically ill patients.

Research hypothesis:

The study group patients who are exposed to oral care guidelines are expected to have improvements in oral health status, oral intake, reduced thirst intensity and dysphagia post extubation than the control group patients who are not expose.

Subjects and Method:

Design: quasi- experimental research design was utilized in this study. **Setting:** The study was conducted at the Chest Intensive Care Unit at Tanta University Hospitals, which is affiliated with the Ministry of Higher Education and Scientific Research**.** It involves three rooms, with a total capacity of 15 beds. **Subjects:** purposive sample of 100 adult patients from the previously mentioned setting was selected based on the inclusion and exclusion criteria. The sample size was estimated using Epi Info 7 Statistical Program, using the following parameters:

- Total patients' admission is about 200 patients per year of 2023.
- Expected frequency = 50%
- Accepted error = 5%
- Confidence coefficient = 95%

The subjects were divided into two equal groups (50 patients each) as follows:

Control group: consisted of 50 adult critically ill patients who received routine oral care implemented by critical care nursing staff.

Study group: consisted of 50 adult critically ill patients who received oral care guidelines implemented by the researcher.

Tools of data collection

Two tools were utilized to collect the required data related to the aim of the study as the following:

Tool I: Oral Health Status Assessment Tool

Part (a): Socio-demographic data sheet (age, gender, educational level).

Part (b): Clinical data sheet including current diagnosis, length of intubation (days), body mass index (BMI), and past medical history.

Part (c): Critically Ill Patient's Oral Health Status Assessment sheet

This part was developed by the Korean Institute in 2012 and was adopted by **Sebaee and Elhadary, (2017)** and used by the researcher to measure changes in oral condition and it consists of four items: lips, tongue, mucosa, and saliva, as follows:

Lips scores: Smooth, pink, and moist = 1, Dry or cracked = 2, Ulcerated = score3.

Tongue scores: Pink and papillae present = 1, Loss of papillae = 2, Blistered or cracked = 3.

Mucosa scores:

Pink and moist = 1, Red or white coated = 2, Ulcerated with or without bleeding = 3.

Saliva scores:

Watery = 1, Thick = 2, absent = 3.

Scoring system:

Each item is scored from 1 to 3, and the total score is 12. Healthy oral status (4), Moderate oral health problem (5–8), severe oral health problem (> 8).

Tool II: Oral Intake Readiness Assessment Tool

This tool consisted of three parts as the following:

Part (a): Functional Oral Intake Scale (FOIS)

This part was adopted from **Crary et al., (2005)** and used by the researcher to evaluate the level of liquid and solid food oral intake. It includes seven items: nothing by mouth (NPO), nasogastric tube dependency with minimal attempts of food or liquid, tube dependency with consistent oral intake of food or liquid, total oral diet of a single consistency, total oral diet with multiple consistencies requiring special preparation or compensations, total oral diet with multiple consistencies without special preparation but with specific food limitations, and total oral diet with no restrictions.

Scoring system:

-Levels from 1 to 3 indicate tube dependence.

-Levels from 4 to 7 indicate total oral intake.

Part (b): Thirst Intensity Visual Analogue Scale:

This part was adopted from **Yang et al., (2010)**. It is a visual analogue scale (VAS) used to assess the severity, strength, or amount of thirst. Patients will be requested to rate their thirst intensity on a 10-cm VAS.

Total scoring system:

-Score 0 indicates no thirst at all.

-Score 10 indicates the worst possible thirst

-Score 1-3 indicates mild thirst

-Score 4-6 indicates moderate thirst

Part(c): Gugging Swallowing Screening Scale (GUSS)

The Gugging Swallowing Screen (GUSS) was developed in 2006 at the Landesklinikum Donauregion Gugging in cooperation with the Department for Clinical Neurosciences and Preventive Medicine of the Danube University Krems, Austria **(Trapl et al ., 2007).**The GUSS consists of two parts. The first part is the indirect swallowing test, which consists of six items (Richmond Agitation

Sedation Scale, Presence of stridor, coughing and/or throat clearing is effectively possible, swallowing saliva, presence of drooling, and change of voice after swallowing saliva. One point is scored for each item. If the maximum score of six points is not reached, the screening test must be stopped; full completion of the first part is a prerequisite for the second part.

The second part is the direct swallowing test, which consists of four sequential subtests. It starts with a diet level of the International Dysphagia Diet Standardization Initiative (IDDSI) (moderately thick), followed by IDDSI (thin), IDDSI (solid), and finally a mixed solid–liquid consistency.

Scoring system:

-Score 0–6 indicates severe dysphagia with a high risk of aspiration.

-Score 7 indicate moderate dysphagia with moderate risk of aspiration.

-Score 8-9 indicates mild dysphagia with a low risk of aspiration.

-Score 10 indicates minimal/no dysphagia with minimal or no risk of aspiration.

Methods

Administrative process:

Official letters was obtained from the Faculty of Nursing, Tanta University to the Director of the Chest Intensive Care Unit at Tanta University Hospitals; Permission to conduct the study was obtained from the directors of the selected setting.

Ethical and legal considerations:

-Scientific Research Ethical committee Approval of the Faculty of Nursing Tanta University was obtained with the code number 332-11-2023.

-Informed consent was obtained from the patients after explanation of the aim of the study.

-Confidentiality and anonymity was maintained through the use of code numbers instead of names.

-Patient's right to withdraw from the study at any time was maintained.

Tools development:

Tool I part a and b, tool II part c, and tool III of this study were developed by the researchers after reviewing the relevant literature (**Zhao et al., 2023; Yuyen et al., 2025)** and used to collect the data.

Validity of the tools:

All tools of the study were tested for content validity, clarity, and applicability by nine experts in the field of Critical Care and Emergency Nursing and Chest Physicians.

Reliability of the tools:

The reliability of the developed tools was tested using Cronbach's alpha. Tool I (Part c) = 0.939. Tool II (Part a) was high, ranging from 0.86 to 0.91 (Crary et al., 2005).

Tool II (Part b) = 0.81. Tool II (Part c) = 0.92.

Pilot study:

It was conducted on 10% of immediately post–endotracheal tube extubated patients to test the feasibility, clarity, and applicability of the tools and to identify any obstacles that may be encountered during data collection. Those patients were excluded from the study subjects.

Data collection:

-Data were collected from the end of May 2024 to the end of May 2025.

-Patients who are immediately extubated and fulfil the inclusion criteria were assessed and divided into two equal groups (50 patients in each). The researcher began with the control group first to prevent data contamination.

The present study was conducted through four phases as follows:

A- Assessment phase:

During this phase, the researcher assessed patients in both the control and study groups who were immediately extubated and fulfil the inclusion criteria to collect baseline socio-demographic, clinical data

B- Planning phase:

The planning phase included preparing the content of the assessment sheets to document the level of liquid and solid oral intake for post-extubated patients, thirst severity and intensity, dysphagia severity, and aspiration risk.

Expected outcomes of the study:

Goals and outcomes criteria were taken into consideration (improvements in oral health status, oral intake, reduced thirst intensity and dysphagia post extubation)

C -Implementation phase:

-Control group: received routine oral care implemented by critical care nursing staff such as daily swabbing of the mouth with saline cotton sponge only as part of routine hygienic care.

-Study group: received oral care guidelines implemented by the researcher in addition to the routine oral care implemented by critical care nursing staff.

-Oral care guidelines were implemented for five days starting immediately post–endotracheal tube extubation two times: at the morning and afternoon shifts ensured that oral care was delivered using aseptic techniques.

-Each session lasting approximately 30-40 minutes depending on each patient tolerance.

-The researcher evaluated each patient after the 2nd session daily to monitor their response to oral care guidelines and detect post extubation clinical outcomes.

-Oral care guidelines include:

Although no formal international guideline exists for post-extubation

oral care, evidence-based recommendations and expert consensus are widely adopted in clinical practice **(Carnaby-Mann & Crary, 2008; Skoretz et al., 2010; ASHA, 2023)."**

-Assessment of oral cavity immediately postextubation
-Proper patients positioning
-Hand hygiene and infection control measures
-Toothbrushing
-Tongue cleaner
-Mouth rinse
-Lip care
-Safe swallowing exercises

Results:-

Table (1): Percentage distribution of socio-demographic characteristics of both studied groups. It was observed that near one third (32%) of control group aged from (50< 60) years, while more than one third (34%) of study group aged from (40< 50) years, with mean ages of 43.52 ± 9.75 and 41.74 ± 8.70 years of the control group and the study group, respectively. Additionally, 72.0% and 70.0% of the control group and the study group were males, respectively. Regarding educational level, nearly more than one-third (34% and 36%) of the control group and the study group were highly educated, respectively. No statistical significant differences were found between the two studied group regarding sociodemographic characteristics with $p > 0.05$.

Table (2): Percentage distribution of clinical data among the studied groups. Regarding BMI, no statistically significant differences were found between the two groups ($p > 0.05$), as slightly more than half of patients in both groups had a BMI ranging from 18.5 to less than 25kg/m².

Table (3): Distribution of both groups regarding their oral health status throughout days of guidelines implementation: the percentage of patients with smooth, moist lips increased from 10% to 54% in the study group, whereas the control group showed an increase from 8% to 24%. Also, There was statistically significant improvement ($p = 0.000$) in oral mucosa (pink and moist) and saliva consistency (watery, not thick or absent) in the study group.

Table (4): Comparison between studied groups regarding oral health levels throughout days of oral care guidelines implementation. This table illustrates that the mean oral health scores improved in the study group from 10.36 ± 1.69 on the 1st day to 5.82 ± 1.89 on the 5th day, $p = 0.000$), while the control group exhibited less improvement ($F = 40.53$, $p = 0.000$). There was a statistically significant differences

between the 3rd and 5th days (p = 0.001 and p = 0.000, respectively).

Table (5): Distribution of studied groups regarding the functional oral intake scale (FOIS) throughout days of guidelines implementation. This table represents that about 30% of the study group achieving total oral diet without restrictions by the fifth day, compared with only 20% in the control group (p < 0.001). Also, this table shows that there was a statistical significant differences among both control group and study group regarding all items of FOIS where p= 0.000

Table (6) presents the distribution of Gugging swallowing screening scale (GUSS) among the studied groups throughout days of guidelines implementation. This table showed a significant reduction in indicators of impaired swallowing such as coughing, drooling, and voice change after swallowing saliva (p < 0.01), a significant improvement in the study group (61.9%) had successfully swallowed solid food, and (47.6%) passed the mixed solid liquid consistency test. In contrast, only (35.5%) and (19.4%) in the control group were able to pass these respective stages with a statistically significant difference (p = 0.001 and p = 0.000, respectively).

Table (7) Correlation between oral health levels and both of thirst intensity visual analogue score and Gugging swallowing screening (GUSS) levels among the studied groups. There was Positive correlation between the control group and the study group regarding thirst intensity scale and oral health level. On the other hand, negative correlation was observed in relation to GUSS level and oral health level among both control and study group.

Table (8): Presents the relation between socio-demographic characteristics and oral health levels among the studied groups.

In this table there were no significant relations between age, gender, educational level and body mass index with oral health level. On the other hand, there were significant relations between diagnosis and length of intubation with oral health level in both group where P<0.05.

Table (1): Socio-demographic characteristics of both studied groups

Characteristics	The studied patients (n=100)				χ^2 P
	Control group (n=50)		Study group (n=50)		
	N	%	N	%	
Age (in years)					
(20-<30)	5	10.0	6	12.0	0.824
(30-<40)	14	28.0	15	30.0	0.844
(40-<50)	15	30.0	17	34.0	
(50-60)	16	32.0	12	24.0	
Range	**(23-59)**		**(25-58)**		t=0.927
Mean ± SD	**43.52±9.748**		**41.74±8.708**		P=0.338
Gender					
Male	36	72.0	35	70.0	FE
Female	14	28.0	15	30.0	1.00
Educational level					
Illiterate	11	22.0	11	22.0	
Read & write	10	20.0	8	16.0	0.291
Secondary education	12	24.0	13	26.0	0.962
Highly educated	17	34.0	18	36.0	

Table 2: clinical data among both studied groups

Characteristics	The studied patients (n=100)				χ^2 P
	Control group (n=50)		Study group (n=50)		
	N	%	N	%	
Diagnosis					
Pneumonia	17	34.0	13	26.0	
ARDS	10	20.0	15	30.0	4.295
Asthma	14	28.0	8	16.0	0.231
Acute respiratory failure	9	18.0	14	28.0	
Weight (in Kg)					
Range	(50-100)		(58-100)		0.228
Mean ± SD	74.36±10.404		75.36±10.521		0.634
Height (in meter)					
Range	(1.58-1.90)		(1.60-1.86)		0.219
Mean ± SD	1.73±0.076		1.73±0.060		0.641
Body mass index (kg/m^2)					
(18.5-<25)	27	54.0	28	56.0	
(25-<30)	19	38.0	15	30.0	1.319
≥30	4	8.0	7	14.0	0.517
Range	**(18.82-33.87)**		**(20.76-35.16)**		t=0.561
Mean ± SD	**24.79±3.401**		**25.31±3.541**		P=0.456

Table (3) the studied group's distribution regarding their oral health status throughout days of guidelines implementation

Items	The studied critically ill patients (n=100)													
	Control group (n=50)						χ^2 P	Study group (n=50)						χ^2 P
	1st day		3rd day		5th day			1st day		3rd day		5th day		
	N	%	N	%	N	%		N	%	N	%	N	%	
Lips														
Smooth, pink and moist	4	8.0	7	14.0	12	24.0		5	10.0	13	26.0	27	54.0	
Dry or cracked	11	22.0	15	30.0	33	66.0	**60.807**	18	36.0	23	46.0	22	44.0	**75.181**
Ulcerated	35	7٠.0	28	56.0	5	10.0	**0.000***	27	54.0	14	28.0	1	2.0	**0.000***
Tongue														
Pink and papillae present	4	8.0	4	8.0	15	30.0		5	10.0	8	16.0	27	54.0	
Loss of papillae	15	30.0	28	56.0	31	62.0	**56.888**	20	40.0	36	72.0	22	44.0	**69.827**
Blistered or cracked	31	62.0	18	36.0	4	8.0	**0.000***	25	50.0	6	12.0	1	2.0	**0.000***
Mucosa														
Pink and moist	4	8.0	7	14.0	15	30.0		5	10.0	15	30.0	33	66.0	
Red or white coated	13	26.0	22	44.0	28	56.0	**48.975**	19	38.0	27	54.0	16	32.0	**87.849**
Ulcerated with/without bleeding	33	66.0	21	42.0	7	14.0	**0.000***	26	52.0	8	16.0	1	2.0	**0.000***
Saliva														
Watery	4	8.0	11	22.0	14	28.0		5	10.0	15	30.0	28	56.0	
Thick	13	26.0	14	28.0	29	58.0	**51.421**	21	42.0	23	46.0	19	38.0	**64.446**
Absent	33	74.0	25	50.0	7	14.0	**0.000***	24	48.0	12	24.0	3	6.0	**0.000***

* Significant at level P<0.05.

Table (4): Comparison between studied groups regarding oral health level throughout days of guidelines implementation

Oral health Levels	The studied critically ill patients (n=100)													
	Control group (n=50)						χ^2 P	Study group (n=50)						χ^2 P
	1st day		3rd day		5th day			1st day		3rd day		5th day		
	N	%	N	%	N	%		N	%	N	%	N	%	
Healthy oral status	1	2.0	0	0.0	10	20.0		2	0.0	0	0.0	20	40.0	
Moderate oral health problem	9	18.0	14	28.0	23	46.0	**39.853**	10	20.0	30	60.0	26	52.0	**86.057**
Severe oral health problem	40	80.0	36	72.0	17	34.0	**0.000***	38	76.0	20	40.0	4	8.0	**0.000***
Range	**(8-12)**		**(5-12)**		**(4-12)**		**F=40.536**	**(7-12)**		**(5-11)**		**(4-10)**		**F=73.644**
Mean ± SD	**10.96±1.590**		**9.26±2.248**		**7.34±2.134**		**P=0.000***	**10.36±1.699**		**7.78±2.023**		**5.82±1.892**		**P=0.000***
Control Vs Study														
t														
P	1.823		**3.460**		**3.768**									
	0.071		**0.001***		**0.000***									

* Significant at level P<0.05.

Table (5): Comparison between study &control groups regarding the functional oral intake scale (FOIS) throughout days of guidelines implementation 1

Oral intake readiness assessment	Control group (n=50)						χ^2 P	Study group (n=50)						χ^2 P
	1st day		3rd day		5th day			1st day		3rd day		5th day		
	N	%	N	%	N	%		N	%	N	%	N	%	
Functional Oral Intake Scale (FOIS)														
Nothing by oral	14	28.0	1	2.0	0	0.0		6	12.0	0	0.0	0	0.0	
Tube dependency with minimal attempts	19	38.0	10	20.0	0	0.0		12	24.0	4	8.0	0	0.0	**70.169 0.000***
Tube dependency with consistent oral intake	0	0.0	12	24.0	11	22.0		4	8.0	5	10.0	5	10.0	
Total oral diet of a single consistency	10	20.0	10	20.0	13	26.0		15	30.0	7	14.0	6	12.0	
Total oral intake of multiple consistencies requiring special preparation	4	8.0	5	10.0	9	18.0	**91.186 0.000***	7	14.0	14	28.0	6	12.0	
Total oral diet with multiple consistencies without special preparation but with specific food limitations	3	6.0	9	18.0	7	14.0		6	12.0	17	34.0	18	36.0	
Total oral diet with no restrictions	0	0.0	3	6.0	10	20.0		0	0.0	3	6.0	15	30.0	

* Significant at level P<0.05.

Table (6): Distribution of Gugging swallowing screening scale (GUSS) among the studied groups throughout days of guidelines implementation

Gugging Swallowing Screening Scale (GUSS)	The studied critically ill patients (n=100)												
	Control group (n=50)						χ^2 P	Study group (n=50)						χ^2 P
	1st day		3rd day		5th day			1st day		3rd day		5th day		
	N	%	N	%	N	%		N	%	N	%	N	%	
Indirect swallowing test														
RASS (0-2)														
No	2	4.0	1	2.0	1	2.0	0.485	0	0.0	0	0.0	0	0.0	
Yes	48	96.0	49	98.0	49	98.0	0.785	50	100.0	50	100.0	50	100.0	-
Stridor present														
Yes	7	14.0	0	0.0	1	2.0	**12.164**	1	2.0	0	0.0	0	0.0	2.211
No	43	86.0	50	100.0	49	98.0	**0.002***	49	98.0	50	100.0	50	100.0	0.331
Coughing and /or throat clearing effectively	17	34.0	3	6.0	0	0.0	**31.002**	5	10.0	2	4.0	0	0.0	**7.272**
No	33	66.0	47	94.0	50	100.0	**0.000***	45	90.0	48	96.0	50	100.0	**0.026***
Yes														
Swallowing saliva successfully	22	44.0	13	26.0	0	0.0	**37.083**	11	22.0	6	12.0	1	2.0	**10.890**
No	28	56.0	37	74.0	50	100.0	**0.000***	39	78.0	44	88.0	49	98.0	**0.004***
Yes														
Drooling (saliva)														
Yes	31	62.0	20	40.0	9	18.0	**21.057**	19	38.0	15	30.0	6	12.0	**9.789**
No	19	38.0	30	60.0	41	82.0	**0.000***	31	62.0	35	70.0	44	88.0	**0.007***
Voice change after swallowing saliva	18	36.0	11	22.0	9	18.0	4.618	14	28.0	6	12.0	2	4.0	**12.283**
Yes	32	64.0	39	78.0	41	82.0	0.099	36	72.0	44	88.0	48	96.0	**0.002***
No														
Direct swallowing test	(n=8)		(n=16)		(n=31)			(n=23)		(n=29)		(n=42)		
Moderately thick														
Fail	0	0.0	0	0.0	0	0.0	-	1	4.3	0	0.0	0	0.0	2.849
Pass	8	100.0	16	100.0	31	100.0		22	95.7	29	100.0	42	100.0	0.241
Thin (liquid)														
Fail	5	62.5	5	31.3	14	45.2	2.209	9	39.1	5	17.2	9	21.4	3.510
Pass	3	37.5	11	68.7	17	54.8	0.331	14	60.9	24	82.8	33	78.6	0.173
Solids														
Fail	8	100.0	11	68.7	20	64.5	**6.127**	19	82.6	11	37.9	16	38.1	**14.699**
Pass	0	0.0	5	31.3	11	35.5	**0.047***	4	17.4	18	62.1	26	61.9	**0.001***
Mixed solid -Liquids consistency	8	100.0	14	87.5	25	80.6	3.103	21	91.3	23	79.3	22	52.4	**13.213**
Fail	0	0.0	2	12.5	6	19.4	0.212	2	8.7	6	20.7	20	47.6	**0.000***
Pass														

* Significant at level P<0.05.

Table (7) Correlation between oral health levels and both of thirst intensity visual analogue score and Gugging swallowing screening (GUSS) levels among the studied groups

Variables		The studied critically ill patients (n=100) Oral health levels					
		Control group (n=50)			Study group (n=50)		
		1st day	3rd day	5th day	1st day	3rd day	5th day
Thirst intensity visual analogue score	r	0.755	0.866	0.853	0.721	0.813	0.810
	P	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****
GUSS level	r	-0.725	-0.776	-0.852	-0.453	-0.705	-0.761
	P	**0.000****	**0.000****	**0.000****	**0.001****	**0.000****	**0.000****

* Significant at level P<0.05.

Table (8) Relation between socio-Demographic characteristics and oral health levels

Characteristics	The studied critically ill patients (n=100) Oral health levels Mean ± SD					
	Control group (n=50)			Study group (n=50)		
	1st day	3rd day	5th day	1st day	3rd day	5th day
Age (in years)						
(20-<30)	10.88±1.586	8.94±1.948	8.40±2.510	10.17±2.229	7.83±2.563	5.83±1.697
(30-<40)	10.64±1.692	8.86±2.445	6.71±2.164	10.20±1.699	7.73±2.017	5.67±1.952
(40-<50)	11.20±1.656	9.73±2.520	7.87±2.134	10.29±1.572	7.71±1.896	5.88±1.933
(50-60)	11.40±1.342	10.00±1.871	7.06±1.948	10.75±1.765	7.92±2.193	6.00±2.449
F , P	0.427 , 0.735	0.648 , 0.588	1.223 , 0.312	0.277 , 0.842	0.028 , 0.994	0.054 , 0.983
Gender	11.50±1.092	10.00±1.617	7.64±1.336	10.53±1.598	7.87±2.134	5.83±1.902
Male	10.75±1.713	8.97±2.408	7.22±2.380	10.29±1.759	7.74±2.005	5.80±1.935
Female						
t , P	2.302 , 0.136	2.157 , 0.148	0.387 , 0.537	0.219 , 0.642	0.039 , 0.845	0.002 , 0.962
Educational level						
Illiterate	10.82±1.834	8.91±2.212	7.27±1.954	10.73±1.679	7.73±2.054	5.73±1.737
Read & write	10.90±1.792	9.90±2.424	8.40±2.633	10.00±1.773	8.00±2.070	6.25±2.053
Secondary education	11.25±1.288	9.58±2.109	7.17±1.899	9.69±1.888	7.23±2.242	5.31±1.974
Highly educated	10.88±1.616	8.88±2.342	6.88±2.058	10.78±1.478	8.11±1.906	6.06±1.924
F , P	0.171 , 0.915	0.587 , 0.627	1.121 , 0.350	1.351 , 0.270	0.498 , 0.685	0.542 , 0.656
Diagnosis						
Pneumonia	10.06±1.784	8.00±2.598	6.06±2.221	10.38±1.850	8.08±2.216	5.85±1.725
ARDS	11.50±1.269	9.80±1.398	8.10±1.595	10.60±1.404	7.73±1.668	5.93±1.870
Asthma	11.00±1.569	9.57±2.377	7.57±2.344	10.00±2.000	7.50±2.268	5.50±1.852
Acute respiratory failure	12.00±0.000	10.56±0.527	8.56±0.527	10.29±1.816	7.71±2.234	5.86±2.248
F , P	**4.167 , 0.011***	**3.533 , 0.022***	**4.170 , 0.011***	0.218 , 0.883	0.144 , 0.933	0.091 , 0.964
Length of intubation (in days)						
(2-<5)	8.60±0.894	5.80±0.837	4.00±0.000	10.00±1.732	7.29±2.059	5.29±1.604
(5-10)	11.30±1.302	9.60±1.789	7.70±1.949	10.32±1.722	7.79±2.025	5.82±1.945
(>10)	11.16±1.546	9.68±2.212	7.72±1.926	10.60±1.724	8.00±2.104	6.07±1.981
F , P	**7.894 , 0.001***	**8.642 , 0.001***	**9.033 , 0.000***	0.305 , 0.739	0.289 , 0.750	0.397 , 0.675
Body mass index (kg/m^2)						
(18.5-<25)	10.25±2.062	7.75±2.630	6.00±2.309	10.43±1.397	7.43±2.299	5.33±1.877.
(25-<30)	10.58±1.710	8.89±2.580	6.79±2.123	10.13±1.846	7.33±1.839	5.71±2.059
≥30	11.33±1.387	9.74±1.852	7.93±1.999	10.46±1.732	8.11±2.061	6.11±1.873
F , P	1.739 , 0.187	1.831 , 0.172	2.597 , 0.085	0.185 , 0.831	0.831 , 0.442	0.824 , 0.445

* Significant at level P<0.05.

Discussion

Part (I): Socio-demographic characteristics and clinical data for both studied groups

The current result revealed that there was no statistically difference between both groups in relation to their bio-socidemographic characteristics and this indicated that the studied groups are homogenous in their characteristics.

Regarding age, the present study found that less than one third of the control group were in the age group between (50<60) years, while more than one third of the study group were in the age group between (40< 50) years. This may be attributed to the increased incidence of chronic diseases and ICU admission with advanced age.

These findings were in the same line with **Elbana, Amin, and Elsayed, (2023)**, who studied "Effect of Implementing Selected Nursing Interventions on Experiencing Post-Extubation Stridor in Ventilated Patients" and reported that the age of both groups had a mean ± SD of 41.12 ± 7.24 and 40.14 ± 6.31.

While this finding was contradicted by **Saravanan and Govindaraj, (2025)** who studied "Impact of Swallowing and Oral Care Interventions on Dysphagia, Dysphonia, and Oral Intake in Post Endotracheal Extubation Patients" and found that less than one third of the control group and more than one third of the study group were in the age group above 66 years. This finding was also inconsistent with **Darbanian, Nobahar, and Ghorbani, (2024)** who studied "Effect of propolis mouthwash on the incidence of ventilator-associated pneumonia in intensive care unit patients:

In relation to gender, the present study found that less than three quarters of the participants were males. This may be due to behavioural patterns and occupational hazards that contribute to more severe disease progression in males.

This finding was supported by **Hill et al., (2020)** who concluded that males predominate in ICU admissions because they are at higher risk of developing several chronic diseases. Aso, this result was in accordance with **Algendy and Bahgat, (2021)** who reported that more than half of participants were males in both the control and study groups. Similarly, **Saravanan and Govindaraj, (2025)** found that less than two thirds of the control group and more than two thirds of the study group were males.

Also, these results were in the same line with **Swathi, Thenmozhi, and Kala Barathi, (2023)** who reported that less than two thirds in the experimental and control groups were male.

On the opposite side, the current study result was contradicted with **Chacko et al., (2023)** who studied "Effectiveness of swallowing and oral care interventions on oral intake and salivary flow of patients following endotracheal extubation at a tertiary care center: A randomized controlled trial" and reported male preponderance (majority) in the intervention group and female preponderance in the control group.

Additionally, these results were disagreed with **Darbanian, Nobahar, and Ghorbani, (2024)** who reported that more than half of patients were female in both groups. Moreover, **Anggraeni, Hayati, and Nur'aeni, (2020)** reported that the majority of respondents were women.

Regarding educational level, the present study showed that nearly more than one third of the participants in both groups were highly educated.

Likewise, **Chacko et al., (2023)** found that less than two thirds of participants in both groups had elementary education.

Concerning diagnosis, it was noticed that more than one third of the control group were diagnosed with pneumonia, while more than one quarter of the study group were diagnosed with ARDS. This similarity of respiratory dominant diagnoses supports the comparability of baseline disease burden between groups on the other hand; variations in diagnostic patterns likely reflect differences in ICU specialization, admission criteria, and regional disease epidemiology. This result was agreed with **Rashed, Salama, and Zayed, (2023)** who reported that less than one third of the control group was diagnosed with pneumonia.

Meanwhile, these findings were inconsistent with **Wu et al., (2019)** who found that less than half of subjects in both groups were diagnosed with respiratory failure. Moreover, **Mokadem and Sayed, (2020)** reported that more than one third of participants were diagnosed with respiratory failure.

Regarding body mass index, the current study showed no significant differences between studied groups, as most patients had a BMI between 18.5–<25 kg/m². This result was supported by **Algendy and Bahgat, (2021)** who similarly reported no significant differences between

groups. Additionally, **Elbana, Amin, and Elsayed, (2023)** reported no statistically significant difference regarding BMI. Furthermore, this finding aligned with **Siao et al., (2023)** who reported mean ± SD BMI values of 24.2 and 22.5 in the study and control groups, respectively.

Part 2: Oral health status

The current study demonstrated statistically significant improvements in oral mucosa appearance (pink and moist) and saliva consistency (watery rather than thick or absent).This can be rationalized by the implementation of structured oral care guidelines. Regular oral hygiene and moisturizing measures preserved mucosal integrity, reduced microbial load, and stimulated salivary secretion. These findings were consistent with **Wu et al., (2019)** who found that oral care guidelines intervention maintained oral moisture and cleanliness and increased salivary flow. Moreover, **Choi et al., (2022)** reported improved oral health status among ventilated trauma patients receiving professional oral hygiene care.

Additionally, **Mokadem and Sayed, (2020)** reported statistically significant improvement in lips, tongue, saliva, mucous membranes, gingiva, and teeth/dentures post-intervention. Furthermore, **Mohammed Abd El-Moaty, Mohammed Diab, and Mohammed Weheda, (2024)** demonstrated significant improvement in oral health condition post-intervention among critically ill stroke patients. Meanwhile, **Darbanian, Nobahar, and Ghorbani, (2024)** reported no significant differences between groups regarding oral health status across observation days.

As regard oral health level, the findings showed significant improvement in overall oral health levels among patients in the study group across all observation points. While most participants in both groups initially had moderate to severe oral health problems. By 5^{th} day, more than three quarters of the study group achieved healthy oral status compared to only one third of the control group.

These improvements support the assumption that systematic oral care can rapidly reverse mucosal deterioration associated with intubation.

This result was in the same line with **Mokadem and Sayed, (2020)** who reported statistically significant improvement in oral assessment guide scores post intervention. This result also agreed with **Rashed, Salama, and Zayed, (2023)**, who found that

nearly all subjects in the study group had slight or no oral problems after several days of intervention.

Part (3) functional oral intake scale (FOIS)

The current study demonstrated that the Functional Oral Intake Scale (FOIS) showed significant improvement of total oral diet without restrictions at fifth day from intervention in the study group compared to the control group.

The improvement in FOIS can be directly explained by the enhanced oral condition, as moist and intact mucosa, together with normal saliva production, are prerequisites for safe, comfortable, and effective oral intake. This could be due to swallowing and oral-care intervention increasing patients' odds of resuming total oral intake and improving salivary flow following extubation after prolonged intubation **(Wuetal.,2019).**

This result was agreed with **Siao et al., (2023)** who reported higher resumption of oral feeding in the SOC group. Also, **Turra et al., (2021)** reported progression in FOIS scores in the study group compared with controls. Furthermore, **Chacko et al., (2023)** reported earlier achievement of total oral intake in the intervention group, and **Mokadem and Sayed, (2020)** reported statistically improved functional oral intake through SOC interventions. This result was also in the agreement with **Saravanan and Govindaraj, (2025).** Additionally, **Wu et al., (2019)** reported that the intervention group resumed oral intake faster than controls.

Part (4) Thirst intensity

Patients in the study group reported no thirst which increased from first day to fifth day, while severe thirst declined to zero. Severe thirst is profoundly distressing for ICU patients and is often compounded by (NPO) status and mechanical ventilation; therefore, the observed thirst reduction highlights the effectiveness of sustained oral moisturizing interventions and underscores the importance of the specific protocol employed.

This result was agreed with **Seada, A. Younis, and Eid, (2020)** who reported significant post procedure differences between groups. This finding was also supported by **Mohamed Tantaewy, Sayed Ismail, and Fathallah Mostafa, (2024)** who reported significant reduction in thirst severity in the intervention group after implementation. In the same line, **Lin et al., (2022)** reported significant reduction in thirst intensity with a spray based oropharyngeal moisturizing program.

Part (5): Gugging Swallowing Screening Scale (GUSS):

The study findings showed significant reduction in impaired swallowing indicators in the study group, with improved ability to swallow saliva without drooling and improved progression to solid and mixed consistencies. So, the magnitude and consistency of swallowing recovery in the intervention group strongly supports the role of structured oral care in facilitating neuromuscular and sensory recovery after extubation, thereby reducing dysphagia related risks

These findings were in agreement with **Algendy and Bahgat, (2021)** who reported dramatic improvement in swallowing assessment scores post intervention. Moreover, **Mokadem and Sayed, (2020)** reported statistically significant improvement in voice and swallowing post intervention.

Concerning dysphagia level, the current study found that by fifth day, more than half of the study group achieved minimal or no dysphagia. This improvement is attributed to the implementation of structured oral care guidelines that enhanced swallowing function and reduced post-extubation dysphagia compared to the control group.

This result was in agreement with **Saravanan and Govindaraj, (2025)** and **Mokadem and Sayed, (2020)** who reported a significant higher mean GUSS score in the study group. Meanwhile, **El Gharib, Berretin-Felix, Rossoni, and Seiji Yamada, (2019)** reported no reduction in dysphagia post intervention among stroke patients, which may be explained by diagnosis specific mechanisms and the need for longer or more intensive swallowing rehabilitation.

Part (6) Correlation between oral health levels and both of thirst intensity visual analogue score and Gugging swallowing screening (GUSS) levels

Positive correlation was observed among both control and study group regarding thirst intensity scale and oral health level. On the other hand, negative correlation was observed in relation to GUSS level and oral health level among both control and study group.

This result can be explained by the impact of oral hygiene on salivary flow and mucosal integrity and severity of thirst.This result was agreed with **Seada, A. Younis, and Eid, (2020)** who reported strong correlation between visual analogue thirst scores and oral assessment

scores. This result was also aligned with **Rashed, Salama, and Zayed, (2023)** who found positive correlation between dysphagia severity and oral status assessment.

Conclusion Based on the present study, it can be concluded that the implementation of oral care guidelines for critically ill patients after endotracheal tube extubation had significant positive impact on post extubation clinical outcomes.

Recommendation

-Monitoring of oral health status and thirst intensity as well as, dysphagia level post extubation should be integrated into routine care.

-Involvement of standardized oral care guidelines into ICU protocol.

-Conduct regular in-service training programs for nurses to adherence to oral care practices.

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Relation between Fear of Falling and Balance Factors among Rural Elderly

Samira El Sayed El Mezayen[1], Nourhan Abdelrhman Hamama[2], Ikbal Fathallah El Shafie[3] Hend Reda Ali Elkest[4]

[1,4]Assistant Professor of Community Health Nursing, Faculty of Nursing, Tanta University, Egypt.

[2] Demonstrator of Community Health Nursing, Faculty of Nursing, Tanta University, Egypt.

[3] Professor of Community Health Nursing, Faculty of Nursing, Tanta University, Egypt.

Corresponding author: Nourhan Abdelrhman Hamama

Email: nourhan_pg160977@nursing.tanta.edu.eg

Abstract

Background: Fear of falling is a prevalent concern of older people and has unfavorable consequences on their physical and functional well-being, degree of independence, ability to perform activities of daily living, balance and falls. Balance performance is considered as an indicator of functional status in elderly. **Aim of the study:** to assess relation between fear of falling and balance factors among rural elderly. **Study design**: Correlational descriptive cross sectional study design was used in this study. **Study setting:** The study was conducted at Mit Al-Nour village, Zefta center, EL- Gharbia governorate. **Study subjects:** A purposive sample of 170 communities dwelling rural elderly, aged from 60 years old and above, living in the previous setting, physically independent and had a score of 24 points or more on mini-mental state examination were included. **Tools**: Four tools were used to collect the required data: Tool (I): Bio-Sociodemographic characteristics and Mini-Mental State Examination (MMSE). Tool (II): Instrumental Activities of Daily Living Scale (IADL). Tool (III): The Falls Efficacy Scale International (FES-I). Tool (IV): The Berge Balance Scale (The BBS). **Results:** there were a highly statistically significant relationship between the total score of fall risk according to Berge balance scale of the elderly and their total score on fear of falling, where fall risk increased with the increase of fear of falling. (X^2 = 285.888, P = < 0.001). Also, there were significant correlations between total instrumental activity of daily living, total fall risk (Berge balance scale) and total fear of falling. (R = -0.238, P = < 0.002) and (R = -0.156, P = < 0.042), where decreased independence among elderly was correlated to increase fall risk and decreased balance and increased fear of falling. **Conclusion**: Fear of falling was common in the elderly. There were a highly statically significant relationship between total score of fear of falling and total score of fall risk according to (BBS) and instrumental activities of daily living among the studied elderly. **Recommendation:** To reduce the frequency of falls and fear of falling, nurses have to provide educational programs for elderly and their families in rural communities.

Key words: Fear of falling, Balance factor, Elderly.

Introduction:

The elderly population represents one of the fastest-growing demographic groups worldwide, reflecting the impact of improved healthcare, rising life expectancy, and declining fertility rates. Aging is a natural process characterized by gradual changes in physical, psychological, and social functioning. While many older adults maintain independence and active lifestyles, others face challenges such as chronic diseases, reduced mobility, sensory impairments, and increased vulnerability to accidents and social isolation. **(Sun & Li, 2023).**

According to United Nations projections, the global population aged 65 and above will rise from 10% in 2022 to 16% in 2050. By then, the number of individuals over 65 will be nearly double that of children under age 5, while those aged 80 will more than triple. **(United Nations, 2023; WHO, 2024).**The number of persons aged over 60 in Egypt is expected to be more than double between 2020 - 2050 from 8.4 million (8% of the total population) to 22 million (14% of the total population).(**United Nations Population Fund, 2024).**

Balance is the ability to maintain postural equilibrium while performing functional more specifically. Balance involves interactions of sensory information between the vestibular, somatosensory and visual systems and the corresponding neuromuscular and musculoskeletal responses which maintain the body's center of gravity over the base of support. Maintaining balance is accomplished by rotation about the ankle joint and/or flexing and extending the hip, or taking a step when the external force is too great to be maintained by minimal adjustment when a person is unable to maintain balance, a fall occurs. **)Gashi, Zieschang & Kosschate, 2024).**

Balance disorders can be caused by a variety of conditions, including age-related changes and underlying medical conditions such as metabolic and cardiovascular diseases, musculoskeletal conditions, neurological conditions, hearing and vision problems, fear of falling, surgery, and some drugs. These causes may contribute to gait and balance disorders for a variety of reasons, such as causing vertigo, lightness, diminished strength, limited range of motion, poor posture, decreased sensory perception, deformity, and decreased awareness to adapt to and traverse through possibly hazardous surroundings**. (Wieland, 2021).**

Falls in elderly people are an epidemic issue worldwide. The World

Health Organization **(WHO) 2023**, reported that more than half-million falls with fatality occur yearly. Among persons of 65 years age or older. Globally, an estimated 684 000 fatal falls occur each year, making it the second leading cause of unintentional injury death, after road traffic injuries. Over 80% of fall-related fatalities occur in low- and middle-income countries, with regions of the Western Pacific and South East Asia accounting for 60% of these deaths. **(Monteiro, Forte, Carvalho, Barbosa , Morais , 2022 ; WHO , 2023).**

Repeated or history of falling is associated with psychological problem called fear of falling (FoF). It is defined as a lasting concern about falling that can lead an individual to avoid activities that he/she remains capable of performing. It is a serious and common problem among aging adults. Aging adults rate from FoF in highest among other common fears**. (Khan et al., 2023).** Fear of falling (FOF) has emerged as an important public health problem leading to greater disability among elders and is believed to be a result of the psychological trauma of a fall, also called 'post-fall syndrome'. Fear of falling is a lack of self-confidence that one is able to avoid falls while doing everyday activities. Fear of falling can make people stay away from specific activities in their daily life, regardless if they are physically able**. (De Roza et al., 2022).**

The most reported causes of fear of falling among elders were advanced age, being females, low educational level, living alone, decreased mobility, impaired balance, decreased Activity of Daily Livings (ADLs) and/ or Instrumental Activity Daily Livings (IADLs) functioning, and increased physical dysfunction. Elderly with fear of falling walk slower and take shorter steps, and have gait imbalance and using assistive devices for mobility as cane or walker. Several studies reported that fear of falling had moderate to high positive associations with previous falls. Conversely, fear of fall is a common problem noticed in elderly individuals who have never experienced a fall. **(Gambaro et al., 2022;**

Feehan,Tripodi,&Apostolopoulos, 2022).

Gerontological nurse have direct contact with older adults throughout health and illness. To influence the risk for falls and fear of falling and balance problem in older adults, multifactorial interventions that increase balance and strength,

decrease falls-related medication use, decrease rates of frailty, as well as fear of falling, and depression and other modifiable risk factors will be necessary. A goal of proper nursing care should be to maintain or improve the Health Related Quality of Life (HRQoL) of older adults as they age. To accomplish this goal, there must be a full understanding of the modifiable risk factors that affect HRQoL health related quality of life in older adults. **(Dahlke, Kalogirou, & Swoboda, 2021).**

Significance of the study:

Fear of falling has negative consequences for older adults' physical and functional well-being, degree of independence, ability to perform (ADLs) and restriction of physical activity. A sedentary lifestyle leads to reduced mobility and balance and, consequently, higher risk of falls and heightened fear that they might occur. **(Su et al., 2021)**

Aim of the Study:

The study aimed to assess the relation between fear of falling and balance factors among rural elderly.

Research questions:

1.What is the level of fear of falling among rural elderly?

2.What is the relation between fear of falling and balance factors among rural elderly?

Subjects and method:

Subjects

Study Design: A Correlational descriptive cross sectional study design was used in this study.

Study settings: The study was conducted at Mit Al-Nour village, Zefta center, AL- Gharbia governorate. The total population of the village amounted to 6000.The number of families with an elderly member aged 60 years or more is 300.

Study subjects: The study included a purposive sample of 170 communities dwelling rural elderly people, aged from 60 years old and above, live in previous setting, physically independent and having a score of 24 points or more on the mini-mental state examination.

Tools of data collection: four tools to gather the data needed for this study.

Tool I: Bio-Sociodemographic characteristics and Mini-Mental State Examination (MMSE): It consisted of two parts as follows:

Part (1): Bio-Sociodemographic characteristics of the elderly people: This part was developed by the researcher after reviewing the related and recent literatures. It included data about age, sex, marital status, education, and monthly income, the number of people in the house, Occupation, medical history,

current medications, previous exposure to loss of balance, history of falling, its causes, and complications**.**

Part (2): The Mini-Mental State Examination (MMSE): It was developed by **(Folstein, Folstein, &McHugh, 1975)** to assess Mini-Mental State Examination (MMSE). And adapted by **(Arevalo-Rodriguez et al., 2021**), and was adopted by the researcher to assess cognitive function of elderly. This scale composed of 11-questions that tests five cognitive functions: orientation, it includes 2 questions of (10 points), registration (immediate memory) short-term memory (but not long-term memory), include 1 question of (3 points), attention and calculation include 1 question of (5 points, recall include 1 question of (3 points), and language include 6 questions of (9 points).

This tool was applied before the study in order to select study participants.

The scoring system: The maximum score was 30 points. A score of 24 point or more was indicative of well cognitive status. Elderly with lower score than 24 points were not included in the study.

Tool II: Instrumental Activities of Daily Living Scale (IADL): It was developed by **(Lawton et al., 1969)**, and adapted by (**Janc et al., 2023**). It was adopted by the researcher. It assessed eight complex independent living skills concerning the ability to using the telephone, using public transportation, shopping for groceries, preparing meals, performing household chores (e.g., cleaning), doing laundry, handling medications, and handling finances. Women were scored on all the 8 areas of function but, for men the areas of food preparation, housekeeping and laundering were excluded.

Scoring system: The answer to each question of the IADL has been categorized into three categories as from 0 to 2 with 0 point indicating dependence, 1 point indicating moderate independence, and 2 points indicating full independence. The total score ranged from (0-16) for women and from (0-10) for men.

The total score was classified as:

-Complete independence: ≥ 75% of the total score.

-Moderate independence: 50 - < 75 % of the total score.

-Dependence: <50 % of the total score

-Tool III: The Falls Efficacy Scale International (FES-I): It was used to assess fear of falling. The scale was developed by the Prevention of Falls Network Europe group (ProFaNE) **(Dewan, 2014)** and adapted by **(Birhanie, 2021)**, and was adopted by the researcher. **Scoring system:** The

Falls Efficacy Scale International (FES-I) included 16 items, with scoring based on a 4-point Likert scale with 1 as not concerned at all and 4 as very concerned. The item scores are summed up to obtain a total, with higher the score, higher being the concern for falling.

Total score ranges from 16 to 64 points; it was classified as follow:-

-No fear: 16points.

-Little fear: 17–32 points.

-Moderate fear: 33–48 points.

-Intense fear score: 49–64.

Tools IV: The Berge Balance Scale (The BBS): It was used to assess balance and risk for falls through direct observation of the participant's performance was developed by **(Berge, 1989)**, which was adopted by **(Lima, 2018),** and used by the researcher.It contained 14 static and dynamic activities related to everyday living. The BBS tasks progress in challenges: from sitting to standing, standing unsupported, sitting unsupported, standing to sitting, transfers, standing with eyes closed, standing with feet together, reaching forward without stretched arm, retrieving an object from floor, turning to look behind, turning 360, placing alternate foot on stool, standing with one foot in front, and standing on one foot.

Scoring system: The response for each statement was a 5-point ordinal scale with (0) indicating an inability to complete the task and (4) as independent with completing the task. These scores were summed up and the total score ranged (0-56).

The total score was classified as:

-Low fall risk for the score: 41-56.

-Medium fall risk for the score: 21-40.

-High fall risk for the score: 0 –20.

Method

Obtaining approval: An official permission was obtained from the Dean of the Faculty of Nursing and directed to the responsible authorities (managers of the health unit and village Myor) to obtain their approval and cooperation to carry out the study

Ethical considerations

-Approval of the Faculty of Nursing Scientific Research of Ethical Committees was obtained to conduct the study, code of ethics :(292-9-2023).

-An informed consent was obtained from all study subjects after providing appropriate explanation about the purpose of the study.

-Each participant was informed that he/she has the right to withdraw from the study any time they want.

-Nature of the study would not cause any harm and/ or pain for the entire sample.

-Confidentiality and privacy were put into consideration regarding the collected data.

-Every elderly was informed about the purpose and benefits of the study at the beginning of the interview, and ensured about the privacy and confidentiality of all information collected.

Developing the study tools:

-The study tool I (part one) was developed by the researcher based on review of the related literature and tool I (part two) and tool II, III and IV was adopted and translated into Arabic language.

-The study tools were tested for its face and content validity by a jury of five professor expertise in the field of Community Health Nursing before conducting the study. Modifications were done according to opinions of jury committee

Pilot study: The researcher conducted a pilot study on 10 %(17 elderly) of the sample for testing its clarity, applicability and to identify obstacles that may be encountered with the researcher during data collection and to determine the length time needed to collect the data from each elderly . This sample was excluded from the study.

Actual study: The data were collected by the researcher over a period of 6 months starting from the first of December to the end of May, 2024.

-The researcher met with the rural elderly every day per week in their homes at the previous mentioned setting.

-Data collection was done through home visit.

-The questionnaire was filled by the researcher according to the answer of rural elderly. The average number of rural elderly interviewed every day /one elderly. The average time spent for collecting data from each elderly ranged from (1h-1:30h).

Statistical analysis of the data: SPSS software version 20.0 (Armonk, NY: IBM Corp, released 2011).Categorical data were summarized as numbers and percentages. For continuous data, normality was assessed using the **Kolmogorov-Smirnov test**. Quantitative data were described using range (minimum and maximum), mean and standard deviation.

The used tests were: Chi-square test for categorical variables, to compare between different groups**. Pearson coefficient** in order to correlate between two normally distributed quantitative variables

Results

Table (1): Distribution of the studied elderly according to their socio-demographic characteristics. It shows that, the age of the studied elderly ranged from 60-85 years, with mean71.91 ± 6.50 years. Less than two thirds (60.6 %) of them were females and more than half (58.8%) of them were widow and more than one third (37.6%) of them were married. More than one third (39.4%) of them were able to read and write and less than one third (31.2%) of them had Secondary education respectively. Less than half (41.8%) of them had not enough monthly income. More than one third (38.8%) of them were living with 3 or more persons in their homes. While less than two thirds (60.6 %) of them were housewife and only slightly 21.2% of them working.

Table (2): Distribution of the studied elderly according to their medical history: The table reveals that more than half (59.4%) of the studied elderly suffered from hypertension and (52.4%) had diabetes respectively. Less than half (45.9%) of them suffered from osteoarthritis. More than two thirds (68.2%) of them used eye glasses. While more than half (55.3%) of them were using stick to move. Less than half (47.1%) of them were admitted to hospital previously. The main cause for admission was orthopedic surgery (77.5%) and appendectomy (21.25%).

Table (3): Distribution of the studied elderly according to their history of falling, causes and complication: The table shows that more than two thirds (68.8%) of the study elderly had previous exposure to loss of balance. Nearly one third (33.5%) of them had no previous history of falling, while more than one quarter (28.8%) and 18.2% had once and twice history of falling respectively. The majority (80.5%) of them answered that the cause of falling was loss of balance and less than half (40.7%) reported dizziness and more than one quarter (27.4%) reported tripping in carpet. More than two thirds (66.5%) of the study elderly reported exposure to injury as a result of falling and more than three quarters (77%) of them took from 2-3 months for injury recovery. Related to complication of falling almost three quarters (74.3%) of them had some psychological problems (such as fear of falling) and more than one half (55.8%) of them had fractures and less than one third (30.9%) and (27.4%) reported bruises, ligament tears and decrease of movement and daily activities respectively.

Figure (1): Levels of male and female elderly independence regarding instrumental activity of daily living among elderly: The figure illustrates that about two thirds (66%) of female were moderate independent while less than half (46.3%) of the studied male were moderate independent. More than half (53.7%) of the studied male were full independent while more than one third (34%) of female were full independent.

Figure (2): Levels of fear of falling among elderly according to their total score on Falls Efficacy Scale-International (FES-I): The figure illustrates that more than one half (54.7%) of the studied elderly had intense fear of falling while less than one third (29.4%) of them had little fear of falling and only15.9% had moderate fear of falling with Mean± SD (43.48 ± 13.580).

Figure (3): Levels of total score of risk falling of the studied elderly according to Berge balances scale: This figure illustrates that more than one half (50.6%) of the studied elderly had high fall risk and less than one third (30.6%) of them had low fall risk while 18.8% of them had medium fall risk.

Table (4): Relationship between total score of fear of falling, of the studied elderly and their score on instrumental activities of daily living and fall risk (Balance factor): The table reveals that, there were a highly statistically significant relationship between the total score of fall risk according to Berge balance scale of the elderly and their levels of total score on fear of falling, ($X2 = 285.888$ and $P = < 0.001$) where fall risk increases with increase fear of falling. There were a highly statistically significant relationship between elderly levels of independence on Instrumental activities of daily living and their levels of total score on fear of falling. ($X2 = 77.824$ and $P = < 0.001$)

Table (5): Correlation between age, total score of instrumental activities of daily living, total score of fear of falling and total score of fall risk (Berge balance scale of the studied elderly: The table reveals that, there were a significant negative correlations between total instrumental activity of daily living, total fall risk (Berge balance scale) and age. While there were significant positive correlations between total fear of falling and age. Also, there were a significant negative correlations between total fear of falling and total instrumental activity of daily living. Also, there were a

significant negative correlations total fall risk (Berge balance scale) and total instrumental activity of daily living. Also, there a significant negative correlation between total fall risk (Berge balance scale) and total fear of falling.

Table (1): Distribution of the studied elderly according to their socio-demographic characteristics

Socio-demographic characteristics	The studied elderly (n=170)	
	No.	%
Age (years)		
60 –	57	33.5
70 –	88	51.8
80-85	25	14.7
Min – Max.	60.0 – 85.0	
Mean ± SD.	71.91 ± 6.50	
Sex		
Male	67	39.4
Female	103	60.6
Marital status		
Married	64	37.6
Widow	100	58.8
Divorce and single	6	3.6
Education		
Read and write	67	39.4
Basic education	50	29.4
Secondary and University and education	53	31.2
Income		
Enough and save	43	25.3
Enough	56	32.9
Not enough	71	41.8
Family number		
Alone	52	30.6
From 1-2	52	30.6
3or more	66	38.8
Occupation		
Working	36	21.2
(male)Not working	31	18.2
Housewife	103	60.6

SD: Standard deviation

Table (2): Distribution of the studied elderly according to their medical history

The studied elderly medical history	The studied elderly (n=170)	
	No	%
Type of chronic diseases #		
No chronic diseases	60	35.5
Hypertension	101	59.4
Diabetes mellitus	89	52.4
Osteoarthritis	78	45.9
Osteoporosis	44	25.9
Cardiovascular disease & Liver diseases	16	9.4
Kidney diseases	7	4.1
Other diseases (chest diseases)	8	4.7
Use of eye glasses		
No	54	31.8
Yes	116	68.2
Use a stick to move around		
No	94	55.3
Yes	76	44.7
Previous hospital admission		
No	90	52.9
Yes	80	47.1
If yes, causes of hospital admission#	n=80	
Orthopedic surgery		
Appendectomy	62	77.5
Stone removal of kidney	17	21.25
Cholecystectomy	8	10.0
Remove uterus	3	3.75
Remove breast	3	3.75
	1	1.25

 # More than one answer was allowed

Table (3): Distribution of the studied elderly according to their history of falling, its causes and complication

History of falling	The studied elderly (n=170)	
	No	%
Previous exposed to loss of balance		
No	53	31.2
Yes	117	68.8
Previous history of falling		
No	57	33.5
Felt once	49	28.8
Felt twice	31	18.2
Felt 3 times &more	33	19.4
If the answer is yes, the causes of elderly falling	(n=113)	
Loss of balance	91	80.5
Dizziness	46	40.7
Tripping on carpets	31	27.4
Vision problems	30	26.5
Slipping in the floor	26	23
Crossing the threshold of the door	26	23
Using stairs	25	22.1
Poor lighting	9	7.9
Hypotension	7	6.2
Occurrence of injury as a result of falling	(n=113)	
No	57	33.5
Yes	113	66.**5**
Duration of recovery from injury	(n=113)	
Less than a month	26	23
From 2-3 months	87	77
Complications and effect of falling in the elderly #	(n=113)	
Some psychological problems (such as fear of falling	84	74.3
Fractures	63	55.8
Bruises	35	30.9
Ligament tears.	31	27.4
Decrease of movement and daily activities	31	27.4
Injuries	26	23
Head injury (blood collection inside the head).	4	3.5

 # More than one choice

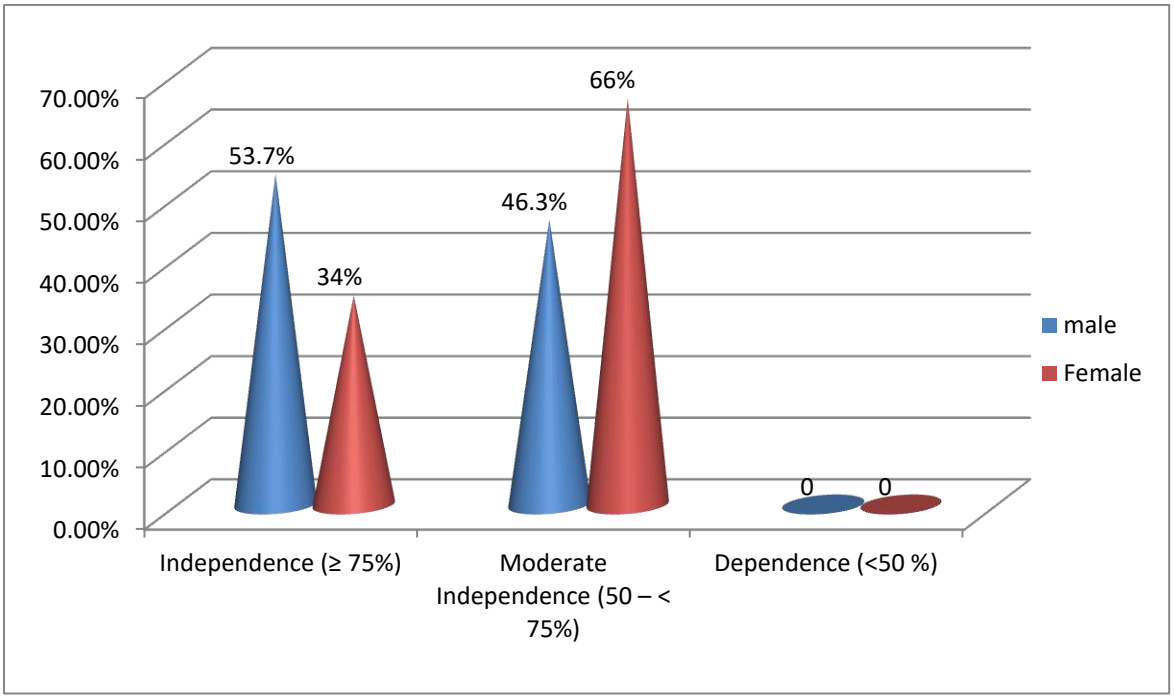

Figure (1): Levels of male and female elderly independence in instrumental activity of daily living among elderly

Figure (2): Levels of fear of falling among elderly according to their total score on Falls Efficacy Scale-International (FES-I)

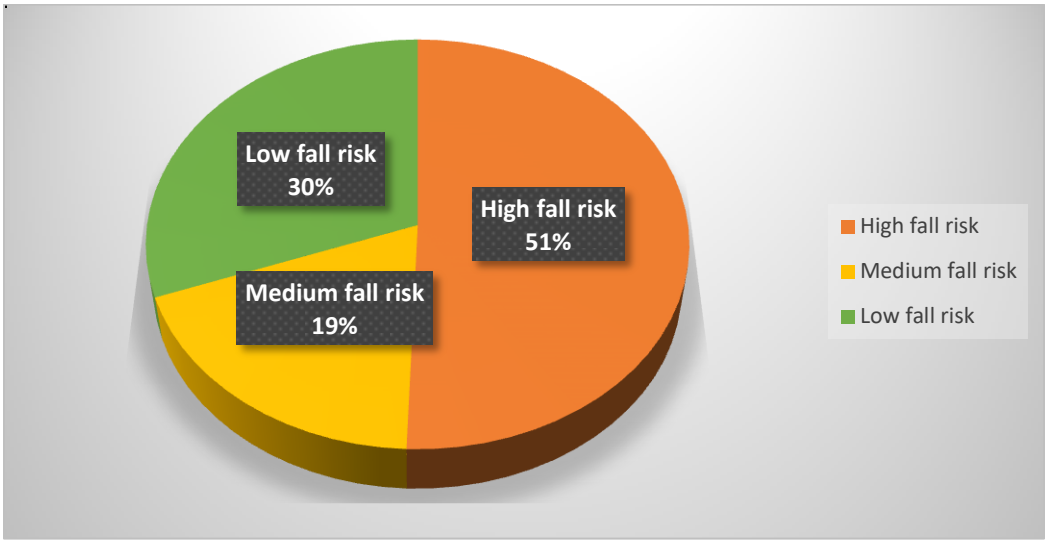

Figure (3): Levels of total score of risk falling of the studied elderly according to Berge balances scale

Table (4): Relationship between total score of fear of falling, of the studied elderly and their score on instrumental activities of daily living and fall risk (Balance factor)

Variables	Levels of total score of fear of falling of the studied elderly (n=170)						χ^2	p
	Little fear of falling (n=50)		Moderate fear of falling (n=27)		Intense fear of falling (n=93)			
	No	%	No	%	No	%		
Instrumental activities of daily living								
Moderate independence	8	16.0	9	33.3	82	88.2	77.824*	<0.001*
Full independence	42	84.0	18	66.7	11	11.8		
Fall risk according to Berge balance scale								
High fall risk	0	0.0	0	0.0	86	92.4		
Medium fall risk	0	0.0	26	96.3	6	6.5	285.888*	<0.001*
Low fall risk	50	100.0	1	3.7	1	1.1		

χ^2: Chi square test

p: p value for comparison between the studied categories

*: Statistically significant at $p \leq 0.05$

Table (5): Correlation between age, total score of instrumental activities of daily living, total score of fear of falling and total score of fall risk (Berge balance scale of the studied elderly

Variables	Total instrumental activity of daily living		Total fear of falling		Total fall risk (Berge balance scale)	
	r	p	r	p	r	p
Age of the elderly	-0.262*	0.003*	0.690*	<0.001*	-0.681*	<0.001*
Total score of instrumental activities of daily living	–	–	-0.156*	0.042*	-0.238*	0.002*
Total fear of falling score			–	–	-0.908	<0.001*

Discussion:

Falls and fall-induced injuries are leading causes of morbidity and mortality among older people. Falls can cause moderate to severe events, such as bone fractures, head trauma, or even increased risk of early death. Among elderly people, falls are the leading cause of death due to injury. In addition to physical injuries, psychological effects from falling can also be observed. One of the common effects is fear of falling (FOF), which may lead to activity avoidance behaviors, isolation, decreased social interactions, depression and deterioration of function and mobility and decrease of balance. **(Zhou, 2022).** So, the present study aimed to assess the relationship between the fear of falling and balance factor among rural elderly**.**

In relation to history of falling, the current study revealed that more than two thirds of the study elderly had previous exposure to loss of balance. **(Table 3).** This result agreed with the result of a study done at Egypt performed by **Abdelkhalik , 2023**, named " Assessment of elderly awareness regarding balance disorders and falls prevention ",who found that 66.2% of the elderly has loss of balance.

Less than half of the current study reported dizziness. This finding also matched with the result of a study done at China performed by **Li, Smith, Whitney, Seemungal, & Ellmers, 2024**, who studied "Association between dizziness and future falls and fall-related injuries in older adults: A systematic review and meta-analysis"**,** who found that 63% of the elderly had dizziness lead to falling.

More than two thirds of the study elderly reported exposure to injury as a result of falling. This result also agreed with the result of a study done at Oceania studied "Global prevalence of falls in the older adults: Comprehensive systematic review and meta-analysis", which found that more than half 50% of the elderly suffered from injuries required hospitalization for treatment. **(Salari, Darvishi, Ahmadipanah, Shohaimi, & Mohammadi, 2022)**.

From the point of view of the researcher; the high percentage of previous falling among elderly may be due to that about half of them their age were between 70 to less than 80 years. This advanced age is associated with problems that influence their ability to balance, such as dementia, lower education levels and mobility limitations as they reflect both biological and social determinants of health. Dementia compromises cognitive function and hazard awareness, lower education may limit access to health knowledge

and preventive strategies, mobility restrictions reduce physical resilience. Together, these factors create a multifaceted vulnerability that increases the likelihood of recurrent falls. Furthermore, rural environment may be unsafe flooring or inadequate lighting, uneven terrain, and bad road conditions all raise the risk of falls.

A study conducted by **Lee, Chen, Lee, Lee, & Chen, 2021**, the study found that history of falls, dementia, lower education levels, mobility limitations, and aging were risk factors for falls among the community-dwelling elderly at Southern Taiwan, also found that 71.9 % of the elderly had previous history of falling. This result is also supported by the study of **Izadi-Avanji, Safa, Abedzadeh-Kalahroudi, & Shaterian, 2024**, who evaluated "Fear of falling and its related factors in older adults following a fall in Kashan, Iran (2023–2024)" , they reported that 68.5% of the elderly had previous history of falling. From the point of view of the researcher, all the elderly of the current study **(Table 2)** with the increasing age have diseases such as hypertension, diabetes and osteoarthritis and taking medication for that may be a factor leading to falling. This result disagreed with the result of a study done at Orlando, Florida performed by **Thiamwong, Xie, Conner, Renziehausen, Ojo, & Stout, 2023**, who explored "Body composition, fear of falling and balance performance in community-dwelling older adults" , who revealed that most of the studied elderly (71%) had no history of falling.

According to instrumental activities of daily living, the current study found that more than half of the studied male were independent compared with about one third of the females **(Figure 1).** This result is in the same line with **Yıldız, Aydın, & Aydın, 2023**, who conducted "Nationwide study of basic and instrumental activities of daily living in individuals aged over 65 years living at home at Turkey ", who reported that 53.1% of men were independent in IADL, compared with 28% for women**.**

According to the total score of the studied elderly on Falls Efficacy Scale-International (FES-I), the current study found that more than half of them had intense FOF **(figure 2).** This result agreed with the result of a study done at China Performed by **Liu et al., 2025**, about "The relationships among positive coping style, psychological resilience, and fear of falling in older adults at China ". It found that 53% of the elderly had fear of falling. From the point of view of the researcher; these variable

results may be due to the different study settings and measurement methods for assessing FOF.

This result disagreed with the result of a study done at India performed by **Melendo-Azuela , González-Vaca , Cirera ., 2022**, entitled " Fear of falling in older adults treated at a geriatric day hospital: results from a cross-sectional study", which found that more than one third of older adults treated at a geriatric day hospital in Barcelona showed a low prevalence of FOF(38.8%). This is attributed by; the different result between the current study and Barcelona's study may be due to the sitting of the study was a day hospital which was an advantage for Barcelona's study participants, as those hospitals are designed for the elderly population with special adjustments to reduce falls such as bed heights, non-slippery grounds, adequate lighting, and auxiliary staff making them more confident with low FOF. In addition, having them in the facility for some time gives the physicians the possibility to detect the fear of falling and perform interventions on the identified determinants to reduce this fear. Another reason may be that the prevalence of fear of falling is lower in studies using the Activities-Specific Balance Confidence scale (in Barcelona's study) than in these using the FES-1 scale (in the present study) as reported in the systematic review. **(Melendo-Azuela , González-Vaca , Cirera ., 2022)**

The current study found that more than half of the elderly people had high fall risk **(Figure 3)**. This was in harmony with the result of a study done at the University of Haifa about "Remote versus face-to-face fall risk assessment in home dwelling older adults: A reliability study", who illustrated that nearly one half (52.3%) of the participants had high fall risk. **(Toledano-Shubi, Hel-Or, & Sarig Bahat, 2025)**. From the point of view of the researcher; elderly people had lack of awareness about adaptive coping for fall risk, as difficulty with transition from sitting to standing require a combination of strength balance and coordination and need enough force to stand up or maintain balance during the transfer.

The present study found that there were a statistically significant association between the total score of fall risk according to Berge balance scale of the elderly and their total score on fear of falling (**Table 4).** This result agreed with the result of a study done at Brazil by **Dantas., et al ., 2025**, about "Risk and fear of falling in older adults: A cross-sectional study based on sociodemographic and health conditions". This study found that

there was a high relationship between fear of falling and balance level and there was a high risk of falling of older individuals having high fear of falling. Besides that, elder people who did not have fear of falling showed a low degree of falling risk. From the point of view of the researcher, older adults who are afraid of falling may move less and refrain from physical activity, as well as shuffling or avoiding specific steps are examples of reluctant or inflexible motions brought on by fear.

The current study found that there were a statistically significant association between total instrumental activities of daily living and fear of falling, where fully independent elderly had little fear of falling and those with moderate independence had intense fear of falling (**Table 5).** This was in accordance with the results of **Türkmen Keskin, Sönmez Sari, Canbulat, & Öztürk, 2025**, who found that there were a statistically significant association between total instrumental activities of daily living and fear of falling. From the point of view of the researcher; FOF is a predictor of IADL limitations in the elderly and may result in decreased physical function along with restricting activities and decreased social activity. It could be recommended that as FOF is a potentially reversible factor, strategies for early detection and personalized intervention are essential to prevent limitations and negative consequences.

There were significant negative correlation between instrumental activity of daily living, fall risk and age (**Table 5).** This finding was consistent with **Alhwoaimel, Alshehri, Alhowimel, Alenazi, & Alqahtani, 2024**, who investigated "Functional mobility and balance confidence measures associated with disability among community-dwelling older adults in Saudi Arabia ".They found that there were statistically negative correlation between instrumental activity of daily living, fall risk and age. This could be due to aging decreases physical activity and also affects balance and coordination, making it more difficult to adjust to uneven surfaces or maintain stability when walking. This is because the sensory and motor systems responsible for balance rely on regular physical activity to maintain their function.

Conclusion

Based on the findings of the present study, it can be concluded that fear of falling was prevalent among elderly living in the community. There were a highly statically significant relationship between total score of

fear of falling of the elderly and their total score of fall risk according to (BBS) and instrumental activities of daily living among the studied sample. Also, there were a highly statistically significant relationship between elderly dependence level and their total score on fear of falling. Furthermore, elderly total score on instrumental activity of daily living and their fall risk correlated significantly with fear of falling.

Recommendations

In light of the present study's findings, the following recommendations are suggested:

-Community health nurses need to design assessment programs for elderly for routine screening of ADLs, senses, balance, gait, and fear of falling in elderly patients during health visits to rural health unit.

-Nurses should develop individualized fall prevention plans that include balance training, strength exercises, and education on risk factors to prevent fall risks.

-Rural services need to enhance training and education to elderly and their caregivers about fall risks, safe mobility practices, and the importance of physical activity.

-Promote multidisciplinary approaches by community health nurses in collaboration with physical therapists, occupational therapists, and social workers to deliver comprehensive care for elderly people.

-Nurses have to provide health education campaign through Telehealth to reach rural elderly populations for counseling, follow-up, and therapy sessions.

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Association between Organizational Silence and Job Involvement among Intensive Care Nurses

Nagwa Mohamed Radwan [1], Karima Ahmed El Saied [2], Amal Hamdy Abou Ramadan[3]

[1] Demonstrator of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.
[2] Professor Nursing Administration, Faculty of Nursing, Tanta University, Egypt.
[3]Assistant Professor of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

Corresponding author: Nagwa Mohamed Radwan
Email: nagwa.mohamed@nursing.edu.eg

Abstract

Background: Organizational silence refers to deliberate and conscious withholding of important information within an organization. On the other hand, job involvement is an essential part of nurses' professional fulfilment and dedication to organization. This is a significant determinant in nurses' satisfaction with their work and organizational commitment. **Aim:** Assess association between organizational silence and job involvement among intensive care nurses. **Design:** A descriptive correlation design was used. **Setting:** The study was conducted in the intensive care unit at Tanta University Hospital which included Main University Hospital and Emergency Hospital. **The subjects:** All available(n=563) intensive care nurses **Tools:** Two tools were used to collect the data, organizational silence and intensive care nurses Job involvement questionnaire **Results:** The most common cause of organizational silence is lack of communication opportunities. About 75.8% of intensive care nurses had a low level of perception about types of organizational silence and 37.3% of them had a high level of perception about job involvement. **Conclusion:** There was a highly statistically significant negative correlation between ICU nurse's perception of organizational silence and their perception of job involvement. **Recommendation:** Hospital management establish a culture that encourages nurses to talk about their issues and difficulties

***Keywords*:** Intensive care nurses, Job involvement, Organizational silence

Introduction

Intensive care unit (ICU) is an organized system for caring of severely ill patients that offers specialized and extensive nursing and medical treatment to maintain life during a life-threatening organ system deficiency. They are managed by a highly qualified medical professionals and nurses who specialize in taking care of patients with critical illnesses. The ICU nurses play an integral part in determining the standards of health services in hospitals. In intensive care setting environmental and communication processes within them become increasingly complex, which can lead to organizational silence **(Morton &Thurman, 2024).**

Organizational silence refers the practice of critical care nurses keeping their thoughts and concerns about organizational issues to themselves rather than consciously sharing them with management (**Rietze, Purkis, Stajduhar& Cloutier, 2026).** When nurses, for a variety of reasons, do not consciously and purposefully voice their opinions about a topic within the healthcare organization organizational silence occurs. As a result, there may be communication and interprocess disturbances, which could lead to issues that are not promptly resolved and slow down operations **(Islam, Rizvi, Farooq& Ahmed 2025).**

A number of causes can contribute to organizational silence, including support of the top management for silence, lack of communication opportunities, support of supervisor for silence, official authority and fear of negative reactions (**Bopp, Kinney & Rodriguez, 2025).** Firstly, the top management's support for remaining silent when the organization's management fails to thank critical care nurses for their valuable work suggestions and opinions. Secondly, there is a lack of communication opportunities when the organization's management ignores to inform the nurses of significant difficulties and issues **(Atta et al., 2024).**

Thirdly, support of supervisor for silence the supervisor's encouragement of silence is a sign that they find disagreements about the issues with working longer hours to be ineffective. Fourthly, official authority, this happen when direct manager's uses the threat of punishment to control subordinates' behavior. Lastly, fear of negative reactions critical care nurses chooses to remain mute to prevent confrontations or arguments with supervisors due to a fear of unfavorable reactions **(Wiederhold, 2025).**

Acquiescent, defensive, and prosocial silence is examples of organizational silence types. The term "acquiescent silence" means that critical care nurses typically refrain from participating in operational procedures inside healthcare organizations as a condition of being obedient. The term "defensive silence" describes nurses who choose to maintain calm by taking proactive steps to utilize the available options for their own defense (**Bari, 2025).** Prosocial silence refers to withholding work-related thoughts, knowledge, or ideas with the intention of benefiting other individuals or the organization-based on selflessness or friendly reasons. Silence within the organization is viewed as a risky barrier to both organizational change and work involvement **(Lee, Seo, & Squires, 2025).**

Job involvement is the degree to which nurses working in critical care actively participate in and identify with their work. They believe that a person's self-worth is influenced by how well they perform at work. According to this definition, nurses who are extremely engaged in their work will view it "as a significant component of their self-concept." Job involvement involves how nurses view their job as an association with the work setting, the job itself, and how their personal and professional lives are mixed. Job involvement indicates nurse's degree of job satisfaction, personal health, and a healthy work-life balance **(Wei, Wang, Han & Xiong, 2025).**

Job involvement has four dimensions including, work as a primary life interest, active participation in the job, performance as central to self-esteem, and performance compatible with self- concept **(Klein, 2024).** Firstly of all, work is a primary interest of nurses, which means that ICU nurses' job are highly valuable and the most important aspect of their life. Secondly, active participation in the job a nurse who actively participates in the workplace is one who actively participates in decision-making inside the healthcare organization. Thirdly, performance as central to self-esteem means those nurses achieves greater satisfaction in their life and have sense of self-worth that is highly reliant on accomplishments. Lastly, performance compatible with self-concept, critical care nurses are more driven to do their jobs since job performance is correlated with a positive self-concept **Tasker, (2025).**

Significance of study

The ability to address changes in a complex health care organization represents a constant challenge

meeting the growing demand for healthcare services. The intensive care nurses are important asset of health care organization. They need to express their emotions, experiences, thoughts, perceptions, and attitudes about the work and organization. But in Organizational silence, theirs withholding ideas and concerns which negatively impact intensive care nurse well-being, leading to burnout, decreased morale, and increased turnover **(Khosarivi, Khalili &Mohammadi , 2023).** Conversely, job involvement is characterized by active participation in job and considering performance important to self-worth. Despite the existence of previous studies that deal with organizational silence and job involvement separately their little studies that combined these two variables **(Rizvi, & Sikand, 2023).** So, it's important to investigate association between organizational silence and job involvement among intensive care unit.

Aim of the study

Assess association between organizational silence and job involvement among intensive care nurses.

Research questions

1- What are the most common cause and type of organizational silence as perceived by intensive care nurses?
2- What are the levels of organizational silence and job involvement as perceived by intensive care nurses?
3- What is the relation between organizational silence and job involvement among intensive care nurses?

Subjects and method

Study design

Descriptive correlational research design was utilized to accomplish the aim of the present study.

Setting

The study was conducted at Tanta University Hospitals (Main and Emergency), which is affiliated to Ministry of High Education and Scientific Research. The Main Hospital departments (Neurological Intensive Care Unit, Cardiac Intensive Care Unit, Oncology Intensive Care Unit) ,as well as The Emergency Hospital (Emergency Anesthesia Intensive Care Unit, Internal medical Intensive Care Unit, Emergency Medical Intensive Care Unit).

Subjects

The study's subjects consisted of all (n = 563) intensive care nurses who worked in the previously mentioned settings at time of data collection.

Tools:

Two tools were used to achieve the aim of this study including:

Tool I: Organizational Silence Questionnaire: This tool was

developed by the researcher guided by **Cheong, 2020; Sakr, Ibrahim & Ageiz, 2023.** It was used to assess organizational silence as perceived by intensive care nurses. It included the following three parts:

Part one: such as age, sex, marital status, level of educational, Years of experience, Hospital name, and units.

Part two: Causes of organizational silence, it consisted of 24 items. It categorized into five subscales: support of the top management for silence (5 items), lack of communication opportunities (6 items), support of supervisor for silence (4 items), official authority (4 items) and subordinating fear of negative reaction (5 items).

Scoring system

Responses of intensive care nurses were measured on a five-points Likert Scale ranging from (1-5) where:1 = strongly disagree, 2 = disagree, 3 =natural, 4 =agree and 5= strongly agree. The ranking of causes was detected by the most common reasons influencing on using organizational silence in work environment.

Part three: types of organizational silence. It consisted of 14 items categorized into three subscales: Acquiescent silence (5 items), defensive silence (5 items) and prosocial silence (4 items).

Scoring system:

Responses of intensive care nurses were measured on a five- points Likert Scale ranging from (1-5) where:1 = strongly disagree, 2 = disagree, 3 = neutral, 4 =agree and 5= strongly agree. The total scores were categorized according to statistical cut-off point (60%) and summing scores of all categories. The total scores were categorized according to statistical cut-off point and summing scores of all categories.

As the following:

-High-level of organizational silence >75%

-Moderate level of organizational silence 60%-75%

-Low level of organizational silence < 60%

Tool II: Intensive Care Nurses Job Involvement Questionnaire

This tool was developed by the researcher, guided by **Bader, Hassan, & Abdel Ghaffar, (2020) and Seleem, Abo Gad, El-Sayed, & Sorour, (2024).** It was used to assess intensive care unit nurses' perception regarding job involvement, it consisted of 26 items divided into four dimensions: work as central life interest (6 items), active participation in the job (10 items), performance as central to self-esteem (6 items) and

performance compatible with self-concept (4 items).

Scoring system:

Responses of intensive care nurses were measured on a five- points Likert Scale ranging from (1-5) where:1 = strongly disagree, 2 = disagree, 3 = neutral, 4 =agree and 5= strongly agree. They were concluded into 3 points where strongly agree + agree = agree and strongly disagree + disagree = disagree. The total scores were calculated and summing scores of all categories. The total Scores represent a varying level as the following:

-High-level of job involvement >75%

-Moderate level of job involvement 60%-75%

-Low level of job involvement< 60%

Method

-An official permission was obtained from the Dean of Faculty of Nursing and the authoritative personnel of all intensive care units at Tanta Main University and Emergency Hospitals.

Ethical considerations:

-Approval of the Scientific Research Ethical Committee at Faculty of Nursing was obtained with a code number (583-1-2025).

-The researcher was introduced herself to the participants, a full explanation of the aim and methods of the study was done to obtain their acceptance and cooperation as well as their informed consent.

-The right to abstain and terminate participation at any time was respected.

-The nature of the study didn't cause any harm for the entire sample.

-Assuring the hospital nurses about privacy and confidentiality of collected data and explain that used for the study purpose only.

Tools developing:

-Tools of data collection was developed and translated into Arabic.

-The tools were revised with supervisors and offered to five experts in the area of speciality to examine the content validity and clarity of the questionnaire. The experts were four professors and one assistant professors of Nursing Administration at Faculty of Nursing Tanta University.

-The jury of expert's responses were reported in four points Rating Scale ranging from (1-4) where: 1=strongly irrelevant 2= irrelevant 3 = relevant 4 =strongly relevant. Essential modification was done including illustration avoiding certain items and adding others. The content validity of part 2 (tool 1), was **98.9%**; part 3 (tool 1), was **96%** and Tool (2), **98.6%**

-The study tool was tested for its reliability using Cronbach Alpha Coefficient test. Reliability of tool (1) part 2: =**0. 941**; part 3 (tool 1), =**0. 894;** Tool (2): = 0.748.

-A pilot study was carried out on a sample (10%) of total number of nursing staff (57) to test the tool for clarity and applicability. They weren't excluded from the total study subjects because no modification has done.

-Data collection phase: The data was collected from ICU nurses. The investigator meets the respondent in small group consisted of one to four nurses during their work shifts to distribute the questionnaires.

- The time needed to complete each questionnaire items from nurses was between 20-30 minutes for questionnaire 1and 10-20 questionnaire

-The subject recorded the answer in presence of researcher to ascertain all questions were answered.

-The data were collected over period of 3 months starting from15/4/2025 until 15/7/2025.

Results

Table (1) Shows distribution of intensive care nurses according to their personal characteristics and work- related data. As noticed in the table more than half (53.3%) of ICU nurses aged between (25-30) years old with Mean ± SD (30.51 ± 5.60). The majority (83.5 %) of ICU nurses were female and high percent (78.5%) were married. Regarding level of education, 59.9% had Bachelor Degree in Nursing and only 9.4% had Post graduate studies. Regarding years of experience, 63.2% of ICU nurses had <10 years with Mean ± SD (9.39 ± 5.85). About 58.1% of them working in Tanta University Main Hospital and 41.9% in Emergency Hospital. Nurses were distributed in six intensive care units as (19.4%) in Neurology ICU, (19.0%) in Cardiology ICU, (17.6%) in Internal medical, (16.9%) in Oncology ICU, (15.5%) in Emergency Aesthesia and (11.7%) in Traumatology ICU.

Table (2): Shows mean percent scores of causes of organizational silence as perceived by intensive care nurses. This table displays that the most common cause of organizational silence is lack of communication with mean percent (47.81 ± 6.52) followed by support of supervisor with Mean percent ± SD(47.68 ± 8.68) , support of the top management with Mean percent score ± SD (45.92 ± 7.64), official authority Mean percent score ± SD(39.07 ± 25.05) and fewest cause subordinate's fear of negative with Mean percent ± SD (36.83 ± 23.02).

Table (3): Levels of types of organizational silence as perceived

by intensive care nurses. It was observed that 84.0% of intensive care nurses had a low level of acquiescent silence and 75.1 %, 73.2% of them had a low level of pro-social and defensive silence. While, about 16.7%،16.3% of nurses had high level in defensive and pro-social silence. Also، 9.6%for acquiescent silence, respectively.

Table (4) and Figure (1): Illustrate levels of Job involvement as perceived by intensive care nurses. It was observed that more than thirty 37.3%, 36.2% ICU nurses had a high and low level of job involvement.

Figure (2): Demonstrates total levels of types of organizational silence as perceived by intensive care nurses. It was observed that about 75.8%of intensive care nurses had a low level of overall types of organizational silence.

Figure (3): Shows that there was a statistically significant negative correlation between causes of organizational silence and job involvement

Figure (4): Illustrates that there was a statistically significant negative correlation between types of organizational silence and job involvement.

Table (1): Distribution of the studied intensive care nurses according to Personal characteristics and work- related data (n = 563)

Personal characteristics and work -related data	No.	%
Age (years)		
≤25	76	13.5
25-30	300	53.3
>30	187	33.2
Min. – Max.	23.0 – 54.0	
Mean ± SD.	30.51 ± 5.60	
Sex		
Male	93	16.5
Female	470	83.5
Marital status		
Married	442	78.5
Single	121	21.5
Level of education		
Secondary Nursing Diploma	94	16.7
Associate Degree in Nursing	79	14.0
Bachelor Degree in Nursing	337	59.9
Post graduate	53	9.4
Years of experience		
<10	356	63.2
10-15	140	24.9
>15	67	11.9
Min. – Max.	1.0 – 35.0	
Mean ± SD.	9.39 ± 5.85	
Hospital name		
Tanta University Main Hospital	327	58.1
Emergency Hospital	236	41.9
Units	109	19.4
Neurology ICU	107	19.0
Cardiology ICU	95	16.9
Oncology ICU	87	15.5
Emergency anesthesia	99	17.6
Internal medical	66	11.7
Traumatology ICU		

SD: **Standard deviation**

Table (2): Mean percent scores of causes of organizational silence as perceived by intensive care nurses (n = 563)

Causes	Score Range	Total Score		Average Score (1 – 5)	Percent Score	Rank
		Min. – Max.	Mean ± SD	Mean ± SD	Mean ± SD	
Support of the top management	**(5 – 25)**	11.0 – 19.0	14.18 ± 1.53	2.84 ± 0.31	45.92 ± 7.64	**3**
Lack of communication	**(6 – 30)**	12.0 – 22.0	17.47 ± 1.56	2.91 ± 0.26	47.81 ± 6.52	**1**
Support of supervisor	**(4 – 20)**	8.0 – 17.0	11.63 ± 1.39	2.91 ± 0.35	47.68 ± 8.68	**2**
Official authority	**(4 – 20)**	5.0 – 20.0	10.25 ± 4.01	2.56 ± 1.0	39.07 ± 25.05	**4**
Subordinate's fear of negative	**(5 – 25)**	6.0 – 23.0	12.37 ± 4.60	2.47 ± 0.92	36.83 ± 23.02	**5**
Total Score (24 – 120) Min. – Max. Mean ± SD.			50.0 – 90.0 65.90 ± 9.62			
Percent Score (Mean ± SD.)			43.65 ± 10.02			
Average Score (1 – 5) (Mean ± SD.)			2.75 ± 0.40			

Table (3): Levels of types of organizational silence as perceived by intensive care nurses (n = 563)

Types	Levels of Types of organizational silence					
	High (>75%)		Moderate (60-75%)		Low (<60%)	
	No.	%	No.	%	No.	%
Acquiescent silence	54	9.6	36	6.4	473	84.0
Defensive silence	94	16.7	57	10.1	412	73.2
Pro-social silence	92	16.3	48	8.5	423	75.1

Table (4): Total levels of job involvement as perceived by intensive care nurses (n = 563)

Job involvement	No.	%
High (>75%)	210	37.3
Moderate (60% – 75%)	149	26.5
Low (<60%)	204	36.2
Total Score (26 – 130) Min. – Max. Mean ± SD.	38.0 – 127.0 94.35 ± 25.38	
Percent Score (Mean ± SD.)	65.72 ± 24.41	
Average Score (1 – 5) (Mean ± SD.)	3.63 ± 0.98	

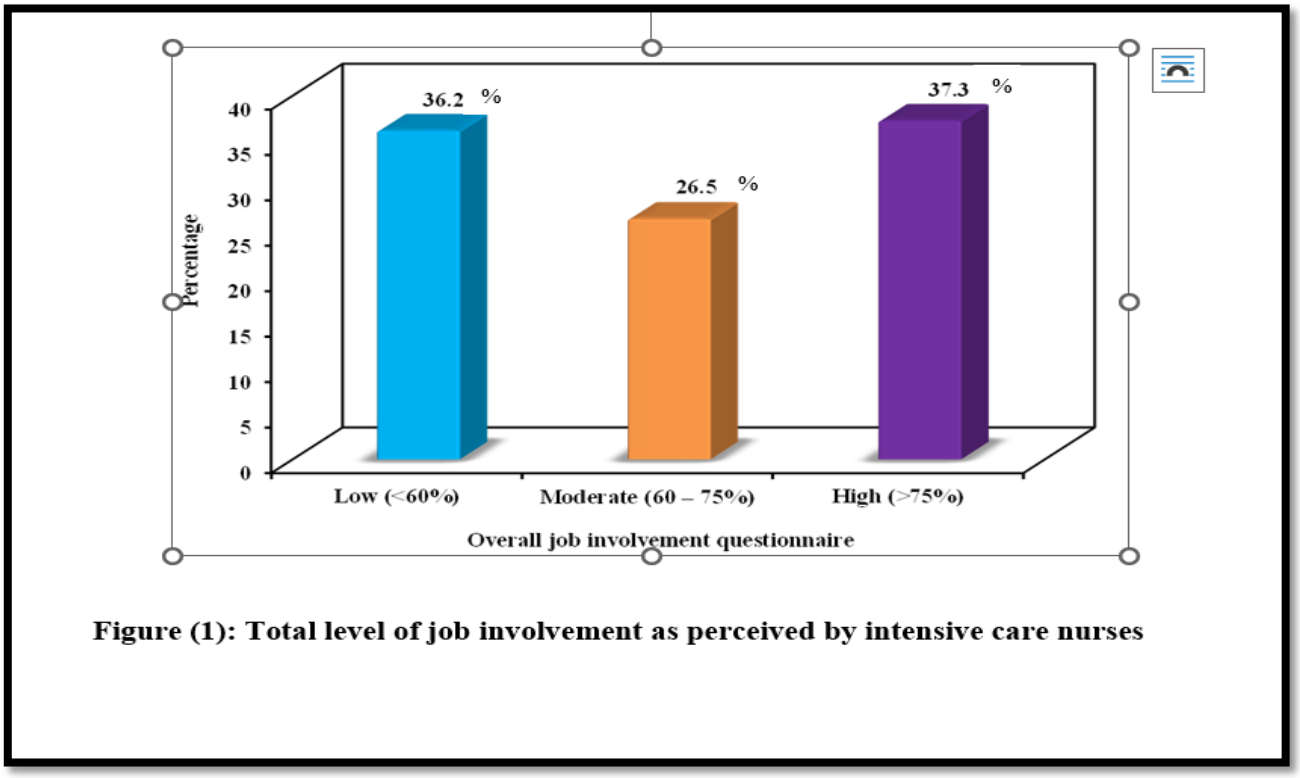

Figure (1): Total level of job involvement as perceived by intensive care nurses

Figure (1): Total level of job involvement as perceived by intensive care nurses

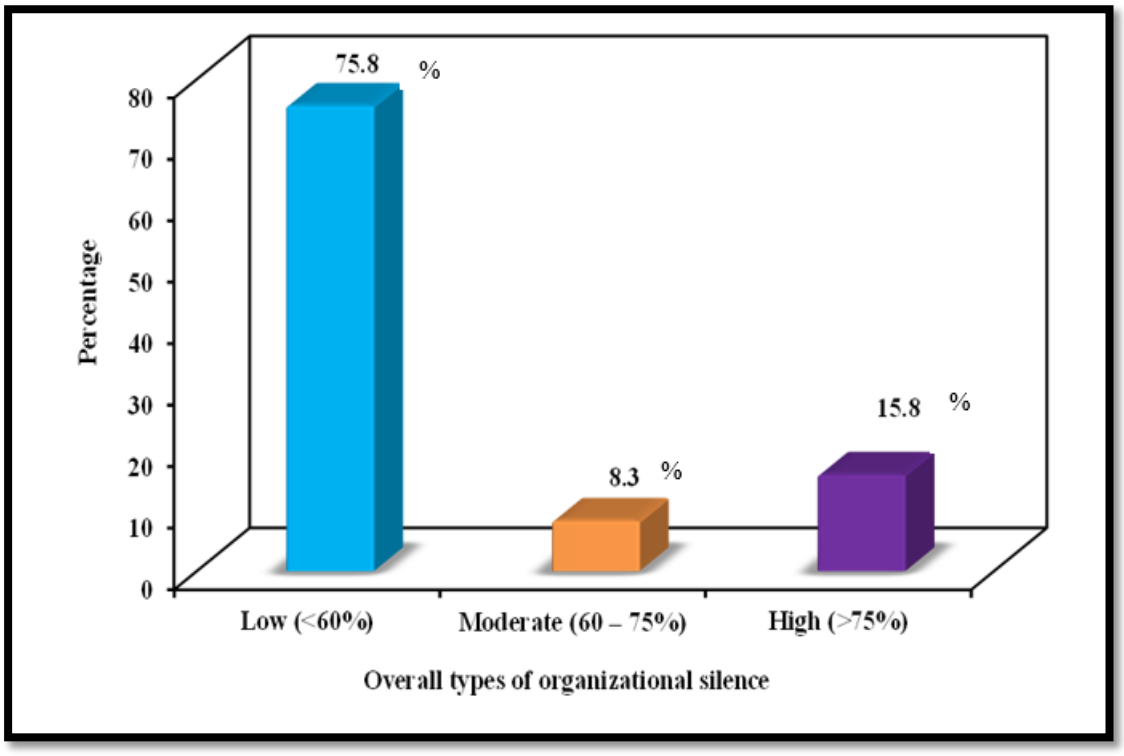

Figure (2): Total levels of types of organizational silence as perceived by intensive care nurses

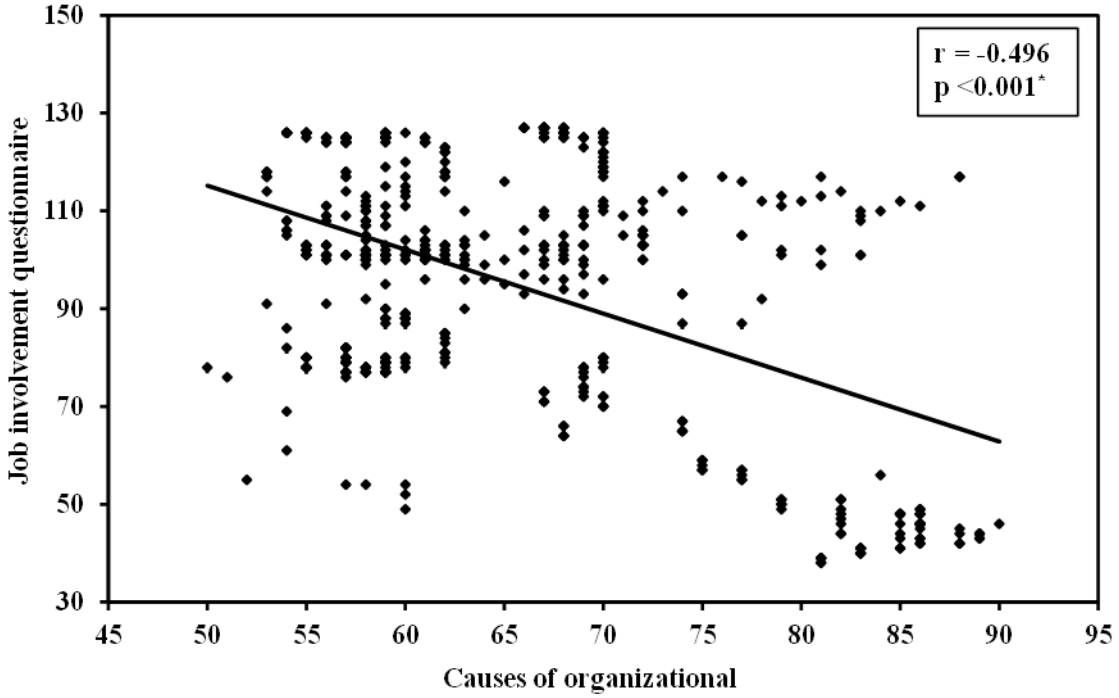

Figure (3): Correlation between causes of organizational silence and job involvement

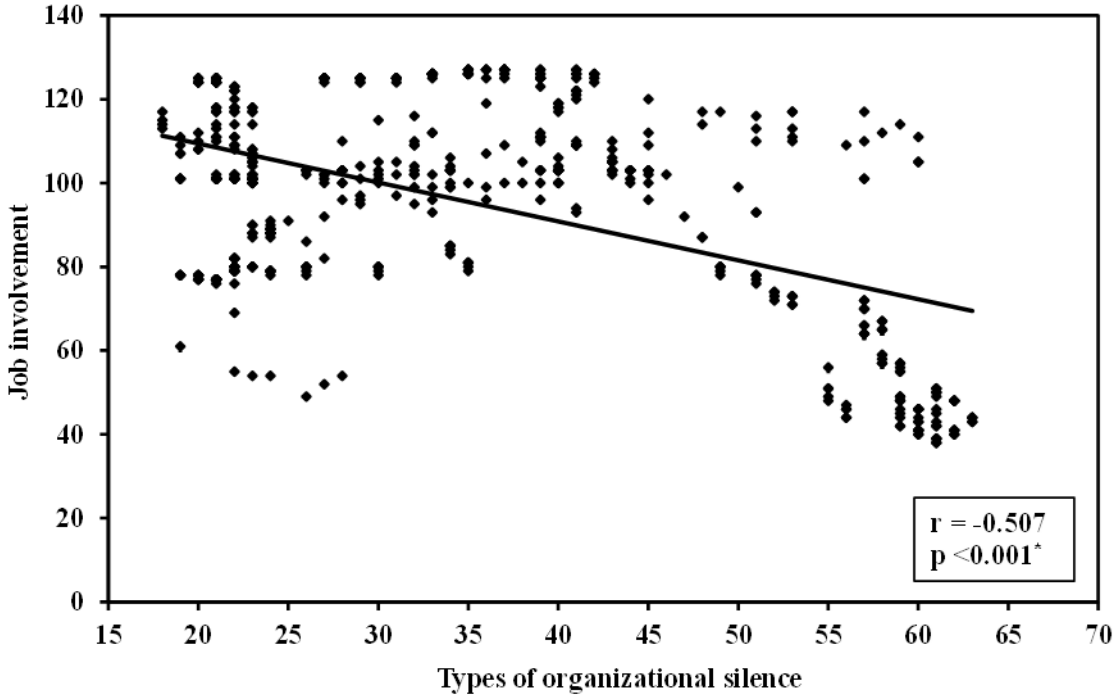

Figure (4): Correlation between types of organizational silence and job involvement

Discussion

Organisational silence is intentional hide of important information and thoughts regarding the organisation. It is a serious issue that impairs effective communication, reduces nurses' job involvement, and negatively affects the performance of the organisation as a whole **(Zou et al., 2025).** Job involvement is the degree to which ICU nurses can relate to, take part in, and value the work as a means of valuing oneself **(Klein, 2024).**

Concerning organizational silence, the current study revealed that the most common cause of an organizational silence is lack of a communication opportunity with the highest mean score. This result may be due to above third of nurses agree that management does not provide time to listen to nurses' opinions and suggestions and does not meet with nurses to discuss work-related issues. While more than thirty neutrally agree that management does not give constructive feedback to nurses, does not provide all information nurses need and lack of sufficient channel of communication between staff. The finding is continent with the study of **Mahmoud, Shazly & Fathy. (2024) ,** who found that the most common cause of an organizational silence is lack of communication among nursing staff in health care organization.

Conversely, finding of the study conducted by **Abdelmawla, Eid, Allam & Elshrief, (2025)**, reported that lack of communication opportunities is the fourth cause of organizational silence among nurses.

The present study revealed that the majority of ICU nurses had low level of organizational silence types. This finding may be due to according to nurses' opinions the supervisor and top management support are the second and third reasons of organizational silence. This allows nurses to feel that their opinions are respected and that they can offer suggestions for development without worrying about unfavourable criticism. In the same line study done by **Shehata, Abo Gad, Shukair & Mostaf, (2025),** reported that the majority of a studied nurses had low level of organizational silence.

Conversely, study done by **Lv et al., (2024),** reported that nurses with multiple pressure in their working organization reported moderate level of organizational silence.

Regarding Job involvement among ICU nurses: The present study finding revealed that more than one third of ICU nurses had a

high and low level of job involvement. This result may be attributed to ICU environment is highly demanding and emotionally stressful make some nurses to experience burnout and reduced involvement. The study in congruent is study done by **Nantsupawat et al., (2024)**, revealed that over one quarter of studied nurses had low level of involvement.

Dissimilarly, a study done by **Rohaninasab, Pasyar & Rambod, (2025)**، revealed that most of staff nurses had moderate level of job involvement. Also study done by **Seleem, Abo Gad, Ahmed El-Sayed & Sorour, (2024),** found that more than two third of studied nurses had moderate level of job .

Correlation between study variables

The present study finding revealed that there was statically significant negative correlation between types of organizational silence and job involvement. This result may be due to the presence of a relatively supportive work environment when nurses feel psychologically safe and perceive that their opinions are valued, they are more likely to express concerns, share ideas, and participate actively in decision-making processes and the Lower levels of organisational silence are associated with higher job involvement. The current study is congruent with the finding of **Opoku et al., (2023)** observed that there was a statically significant negative correlation between studied nurses organizational silence and their level of work engagement.

The present study finding revealed that there was statically significance negative correlation between types of organizational silence and job involvement. This finding may happen when nurses, stay silent due to fear of loss of some job privilege, being considered trouble maker or a desire to avoid trouble, they begin to feel disconnected from their roles. They become less motivated, less emotionally invested in their work, and less involved in decision-making as a result of this loss of voice. The current study is congruent with the finding of **Yağar et al., (2023)** observed that there was a statically significant negative correlation between studied nurses organizational silence and their level of work engagement.

Conclusion

Based on the findings of the present study it was concluded the most common cause of organisational silence among intensive care nurses was lack of communication opportunities. Also, most of the

intensive care nurses had low level of perception regarding types of organizational science. Furthermore, more than thirty of ICU nurses had a high and low level of perception regarding to job involvement. Additionally, there was statically significant negative correlation between ICU nurse's perception of organizational silence causes, types and job involvement.

Recommendations: Based on the results of the present study, the following recommendation are suggested**:**

Hospitals administrators

-Revise the healthcare organization's policies to increase flexibility.

-Provide training courses for managers and nurses regarding the causes and consequences of organisational silence.

-Establishes a culture that encourages nurses to talk about their issues and difficulties.

Nurse Manager

-Implement a collaborative leadership practices that demonstrate a willingness to listen nurses' opinions.

-Ensure that nurses are involved in the decision-making process.

-Match nurse's skill with appropriate responsibilities to increase their involvement.

Nursing staff

-Participate in ongoing training sessions to raise their understanding of organisational silence and when to voice up.

-Establish a positive rapport with their manager based on mutual respect and trust.

-Keep high self-esteem and satisfaction with their work, as this encourages them to speak up and adopt constructive behaviours that prevent organisational silence.

Further nursing research

-Study the relation between organizational silence and organizational loyalty.

-Examine the gap between organizational silence and job involvement with multiple cultures in different health care setting.

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Effect of Self Care Program on Quality of Life of Children with Psoriasis

Nagafa Hafez Farag [1], Sabah Mohamed Sharshor [2], Abeer Sobhy Fawzy [3], Sahar Wasfy Mahmoud Melika[4]

[1] Assistant Professor of Pediatric Nursing, Faculty of Nursing, Tanta University, Egypt.
[2] Professor of Pediatric Nursing, Faculty of Nursing, Tanta University, Egypt.
[3] Demonstrator of Pediatric Nursing, Faculty of Nursing, Kafrelsheikh University, Egypt.
[4] Lecturer of Pediatric Nursing, Faculty of Nursing, Kafrelsheikh University, Egypt.

Corresponding author: Sahar Wasfy Mahmoud Melika
Email:Saharmelika2020@gmail.com

Abstract

Background: Psoriasis is a chronic autoimmune inflammatory disorder. Education of child is an integral part in management of chronic disease. **The aim of study was to** evaluate the effect of self-care program on quality of life of children with psoriasis. **Subjects and method:** A quasi- experimental research design was used in the present study. A convenience sampling of fifty children with psoriasis. The study was carried out at an out-patient clinic of dermatology hospital of Kafr El-Sheikh Governorate that affiliated to the Ministry of Health and Population. **Three tools include:** Children's knowledge about psoriasis, Quality of Life Questionnaire, and children's reported practice. **The results** indicated that all children showed low knowledge level before the self-care program, while immediately after the program near to two third of them represented high knowledge level. Also, all children had unsatisfactory reported practice before the self-care program, while the majority of them demonstrated satisfactory reported practice immediately after the program. Furthermore, the most of children showed high quality of life after one month of the program. **The study was concluded** that there was substantial increase in knowledge, self-care reported practice and quality of life of children with psoriasis after implementation of self-care educational program .**The study recommended** that continuous educational program to increase children and their families' awareness about psoriasis and reinforce self-care practice.

***Keywords*:** Children, Psoriasis, Quality of Life, Self-care Program.

Introduction

Autoimmune diseases occur when the immune system attacks healthy cells and tissues, leading to organ dysfunction and chronic inflammation. These conditions can affect various systems **(Sarkar et al., 2021).** Common pediatric autoimmune disorders include juvenile idiopathic arthritis, systemic lupus erythematosus, and type I diabetes. Among these, psoriasis in children stands out as a chronic skin condition that can substantially impact a child's physical comfort and emotional well-being **(Greb et al., 2022).**

A recurrent immune-mediated skin condition characterized by autoimmunity and auto-inflammation, psoriasis lasts for years and flares up periodically. Plaques of squamous skin with broad margins, which are delineated and red in children with psoriasis. Psoriasis affects between 14.8 and 31% of the population by the time a person reaches the age of 15. Although psoriasis cannot be cured, it is possible to manage its symptoms with support of medication **(Das & Adhicari, 2018)**.

As a disorder of abnormal immune modulation, possibly influenced by heredity, the cause of psoriasis remains a mystery. When the immune system is overactive, skin cells multiply faster than the body can remove them. Plaques will thus form on the skin. It is unable to spread from one individual to another. Psoriasis symptoms can fade or even go entirely, only to flare up again out of nowhere. The worsening of symptoms is known as a flare-up **(Suganya et al., 2019)**.

The most common kind of psoriasis in children is plaque psoriasis, although there are other major forms as well. Plaques and scales that resemble silver appear on the lower back, scalp, elbows, and knees. Crack and bleed can be uncomfortable and itchy. The second kind, guttate psoriasis, manifests as after or after a streptococcal infection of the throat or other sickness. Tiny red patches appear on the limbs, trunk, and arms as a result **(Bronckers & Paller, 2018**). Furthermore, spots can appear on the scalp, face, and ears. The third type is inverse psoriasis, this can lead to smooth, raw-looking skin patches that feel sore. The skin patches appear in the upper eyelids, armpits, groin, and genitals **(Dogra&Bishnoi,2021).**

Psoriasis is associated with manifestations mainly present in the skin. Skin lesions are generalized or localized, symmetrical, sharply demarcated, plaques, and red papules. These can itch or feel sore and usually covered with silver or silver scales. It's common on the scalp, face, armpit, and groin. Moreover, dry, cracked skin that may bleed at times, thick, pitted nails, and arthritis **(Rendon & Schäkel, 2019)**. The previous complains of disease has a profound impact on children' quality of life. The

disease extends beyond physical manifestations to social and psychological impairment. The children with psoriasis experience detrimental effects on physical, psychological, lifestyle modifications, interpersonal relationships, and issues related to the care of the disease. **(Zisman et al., 2019)**.

Diagnosis of psoriasis is based on taking complete health history with examining the scalp, skin, and nails. Additionally, take a skin biopsy to confirm diagnosis **(Mahe E. 2019)**. Management can include: Many children with psoriasis get relief from their symptoms through light therapy, often known as phototherapy. It lessens skin irritation and decreases cell turnover in the skin. Sunlight can exacerbate illness, but it can also aid treatment in certain youngsters. Lotions, ointments, and creams formulated with salicylic acid or coal tar serve as corticosteroids, moisturizers, and vitamin D **(Ogawa & Okada, 2020)**.

Self- care has emerged as a critical aspect of care for children with psoriasis. It is including recognition of potential flare-ups can support empowerment and cope with this stigmatizing condition. The core of self- care management is that children actively participate in maintaining and promoting their own health and care. Children' participation in a disease management intervention will reduce the effect of illness on overall quality of life and stress, moreover enhance medication adherence, establish mental balance, ensure adequate sleep and maintain a healthy diet **(Wang et al., 2020).**

Significance of the study

Psoriasis has a major impact on the family's standard of living. Lymphoma, psoriatic arthritis, Crohn's disease, heart disease, and depression are all diseases that are linked to it. About 30% of kids who have psoriasis also have psoriatic arthritis **(George et al., 2022)**. Maladaptive coping mechanisms, issues with body image, low self-esteem, and a lack of confidence are common among children, as are emotions of shame, embarrassment, and stigma related to their looks **(Mendonca & Malle, 2020)**. This study set out to assess how a self-care program affected the quality of life for children who suffer from psoriasis.

Aim of the study was to evaluate the effect of self-care program on quality of life of children with psoriasis.

Research Hypothesis:

Quality of life for children with psoriasis is expected to be improved after self-care program implementation.

Subjects & Method

Research design: A quasi-experimental research design was used in this study.

Setting: The study was applied at: Out-patient clinic of dermatology hospital of Kafr El-Sheikh

Governorate which is affiliated to the Ministry of Health and Population.

Subjects: A convenience sampling of 50 children who were attending the previously mention setting.

Data collection tools:

The data were collected using three tools, which include:

Tool I: Children's knowledge about psoriasis:

It was created by the researcher after reviewing most recent literatures **(Pourchot et al., 2019)** to collect data. **It was composed of two parts**:

Part (1): Socio-demographic characteristics of the studied children such as; age, gender, birth order, family number, and residence.

Part (2): Children's knowledge about psoriasis: it was included; meaning, causes, predisposing factors, clinical manifestations, complications, management, and nursing intervention for children with psoriasis.

Children's knowledge was scored as following:

-Correct and complete answer was scored (2)

-Correct and incomplete answer was scored (1)

-Don't know or incorrect answer was scored (0)

The total score of knowledge was calculated as following:

-< 60% was considered poor knowledge.

-60- <75% was considered fair knowledge.

-75-100 % was considered good knowledge.

Tool II: Children's reported practice for dealing with psoriasis: to assess children's practices. It was focused on psoriasis self-care strategies, which included: Skin & nail care, Personal, hygiene care, Sleeping habit, Diet regulation, Physical exercise.

Scoring system for children's reported practice was calculated as following:

-Done correctly and complete was scored (1)

-Done incorrectly or not done was scored (0)

The total score for children's reported practice was calculated as following:

- < 75% was classified as unsatisfactory.
- 75-100 % was classified as satisfactory.

Tool III: Quality of Life Questionnaire (The Euro Quality of Life Five Dimensions) (EQ-5D); It consisted of a five items questionnaire. Mobility, self-care, regular activities, pain and discomfort, anxiety, and depression were the five aspects of quality of life that the items reflected. One indicates no problem, two indicates a minor one, three indicates a moderate one, four indicates a serious one, and five indicates an extreme one along each dimension. An overall score was determined by calculating the mean of the five items scores.

Scoring system for assessing quality of life of children (EQ-SD scores) was classified as following:

- The best health was scored (1)
- Good health was scored (2)
- Bad health was scored (3-4)
- The worst health was scored (5)

The total score for children's quality of life was calculated as following:

- 5 - 10 was considered high quality of life.
- 11-25 was considered low quality of life.

Method

The research was implemented through the following steps:

Administrative process:

Following explanation of the study goal, the administration of the mentioned setting formally provided agreement for the research to be carried out.

Ethical considerations: -

-Ethical approval was obtained from Scientific Ethical Committee in the Faculty of Nursing, Tanta University before starting the study. Code No. 430-4-2024.

-The study ensured the protection of children's confidentiality and privacy. After informing the children and parents of the purpose of research and ability to withdraw from it at any stage of research.

-The nature of the study ensured that children would not experience any harm.

Tools Development:

The researcher used three tools that included: Children' knowledge about psoriasis **(**Tool I) , Children' reported practice for dealing with psoriasis using observational checklist(Tool II) and Quality of Life Questionnaire (The Euro Quality of Life Five Dimensions) (EQ-5D) (Tool III).

Content validity: The study instruments were given to five experts in the field to assess content validity, comprehensibility, applicability and ease of administration. Recommendations were carried out based on their revision.

A pilot study: For clarity, visibility and applicability, it was implemented on a sample of five children, who were excluded from the study.

Reliability: By internal consistency. The Cronbach's alpha coefficient value was (0.827) for Children knowledge about psoriasis (Tool I), (0.764) for children' reported practice for dealing with psoriasis using observational (Tool II) and (0.821) for Quality of Life Questionnaire (Tool III).

Statistical data analysis

The data statistical analysis was applied using IBM SPSS software version 20.0. Shapiro-Wilk test was assessed the normality. When comparing groups, the Chi-square test was utilized, with Fisher's Exact test applied. Quantitative variables with regularly distributed distributions were tested using the Student's t-test, while ANOVA with repeated measures for

comparisons across more than two periods, with the Post Hoc Bonferroni adjustment for pairwise comparisons. In cases of abnormally distributed quantitative variables, the Friedman test was employed for comparisons across more than two stages, with Dunn's test used for pairwise comparisons. Additionally, Cochran's test was utilized as a non-parametric test for binary response variables.

Study Phases

Assessment Phase: It was implemented by the researcher to gather data, assess the child who met the inclusion criteria. In addition, assess children's knowledge related to health needs with psoriasis (Tool I). The researcher was used the Quality of Life Questionnaire to assess children's quality of life (Tool II). Also assess children's reported practice before, immediately and after one month from implementation of the self-care program (Tool III).

Planning Phase:

-Setting objectives of the self-care program.

-Preparation of the content which was covered the reasons behind the application of the session.

Implementation Phase:

The researcher was conducted an initial meeting with each child who met the inclusion criteria for 10 minutes, in this first child contact, the researcher introduced herself to the child individually, explained the nature and aim of the study and took written approval from the children. An initial assessment was approached individually for children using tool 1(children's knowledge and their socio demographic characteristics), tool 2(Quality of Life Questionnaire), and tool 3(children' reported practice for dealing with psoriasis). This session takes between 30 to 45 minutes.

The researcher started self-care program for children using five sessions individually. Each session included theoretical and practical parts, each lasted between 30 to 45 minutes including 10 minutes' break.

The self-care program sessions included: -

The first session: -

-It was covered psoriasis meaning, causes, types, and how to perform self-care practices regarding skin care.

The second session: -

-It was focused on triggers, signs and symptoms, how to prevent exacerbation of psoriasis, and how to perform self-care practices regarding personal hygiene.

The third session: -

-It was included lab investigations and diagnostic procedure needed as follow up for the disease and diet regimen must be followed along disease process.

The fourth session: -

-It was about different methods of treatment used to overcome disease and how to perform physical exercise suitable to children' condition.

The fifth session: -

-It was concentrated on complications of psoriasis; and how to deal with it.

Evaluation Phase:

Tools I, II, and III were used to evaluate the self-care program's effect on the children's knowledge and reported practices. Assessments were carried out both immediately following the program and one month later, with the outcomes being compared to measurements taken before the program began (pre-test). The six months from September 2024 to April 2025 were used for data collection.

Results

Figures (1, 2): **Represent the socio-demographic characteristics of studied children**. It was observed that, more than two third (68%) of studied children their age was between 10-15 years old. As regard their gender, It was evident that over half (58%) of studied children were female.

Table (1): **Demonstrates the medical history of the studied children**. It was evident that, two third (64%) of children had family history of psoriasis. Regarding history of skin infection, it was obvious that the majority (96 %) of them have never been exposed to skin infection. On the contrary, the most (86%) of them were exposed to skin cracks or bleeding.

Table (2): **Reveals the level of children's knowledge related to psoriasis before, immediately after and after one month of program application**. It was found that, before the self-care program all children (100٪) had knowledge of low level, while immediately after program implementation, sixty-two percent (62 ٪)of them had high level of knowledge. Also, after one month of the program about 62% of children had moderate levels of knowledge, with highly substantial difference before, immediately after and one month from implementation of self-care program, (p=0.001). Moreover, the mean of total score of knowledge of children were 4.32, 13.90, and 12.02 before, immediate after, and one month after implementation of self-care program respectively.

Table (3): Clarifies children's reported practice total scores of before, immediately after and one month after implementation of self-care program. There were highly substantial differences in children's reported practice regarding skin care, nail care, personal hygiene, sleeping, diet regulation, and physical exercise with p=0.001. On the other hand, it was apparent that, all children (100%) had unsatisfactory practice before the self-care program implementation. While convert to 98% of them had satisfactory practice immediately after the program, then slightly descent to 90 % of children had satisfactory practice after one month of self-care program implementation.

Table (4): **Clarifies that, the level of quality of life of children before, immediately after and after one month of self-care program**. It was evident that, near to two third (64%) of children before the program had low quality of life. While immediately after program implementation descent to 56%, then became 14% after one month of the program. The most of children (86%) had high quality of life after one month of the program. Furthermore, there was highly substantial difference between before and 1 month, also between immediately and 1 month after self-care program while p=0.001.

Table (5): **Presents the correlation between total scores of children's knowledge, reported practice,** and quality of life before, immediate, and one month after implementation of self-care program. It was evident that, there were positive correlations between children's knowledge and quality of life, also between children's knowledge and practice, moreover between quality of life and practice immediately and one month after implementation of self-care program.

Table (6): Presents the correlation between total scores of children's knowledge, reported practice, quality of life, and their age before, immediate after, and one month after implementation of self-care program. It was observed that, there was a positive correlation between children's age and their knowledge immediately after the program. In addition, a positive correlation was detected between children's age and their quality of life after one month of the program. In addition, there was a positive correlation between children's age and their reported practice immediately and after one month of self-care program.

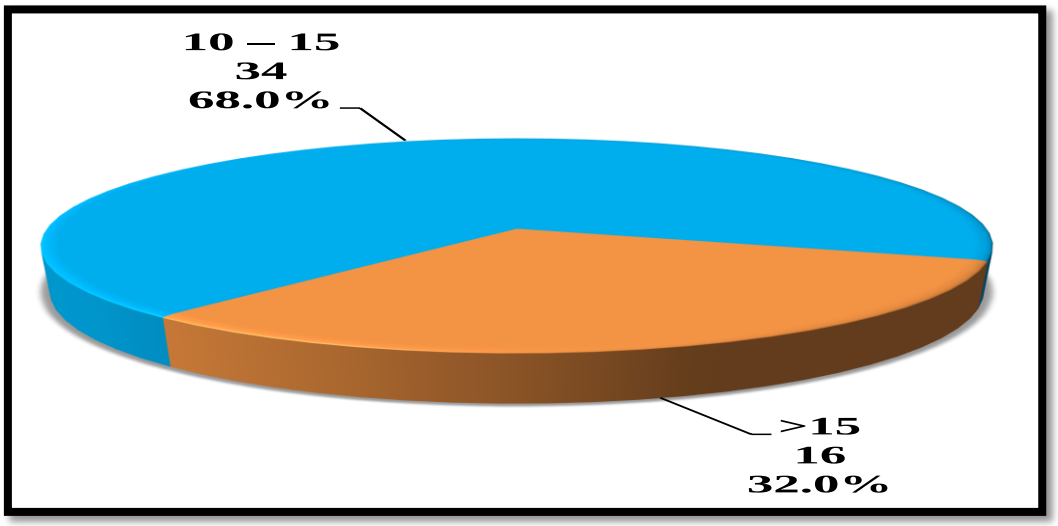

Figure (1): Percentage distribution of the studied children according to their age (in years)

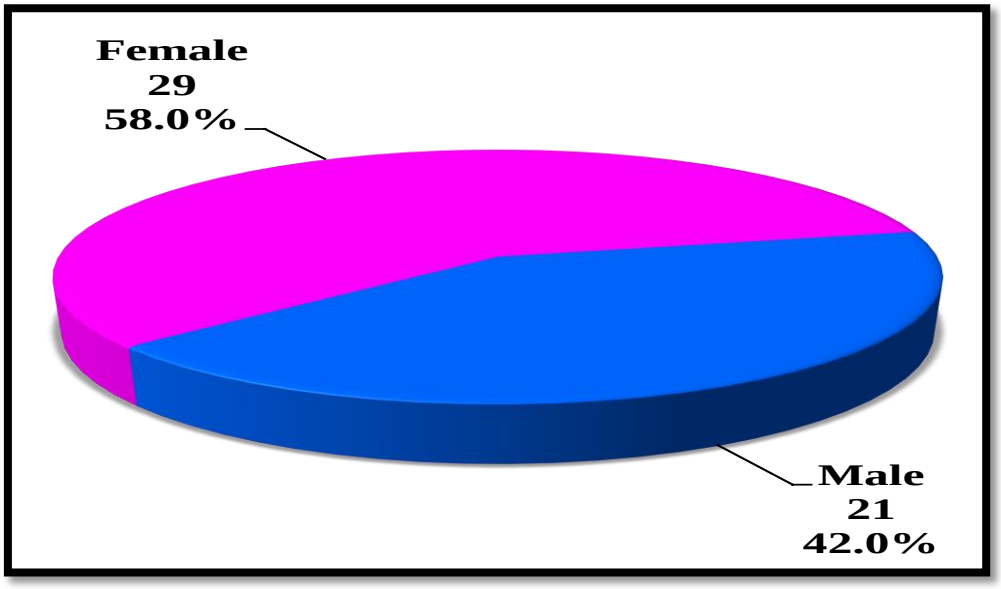

Figure (2): Gender of the studied children

Table (1): Percentage distribution of studied children regarding their medical history

Medical history	The studied children (n=50)	
	No.	%
Family history of psoriasis		
Yes	32	64.0
No	18	36.0
Child ever had skin infections		
Yes	3	6.0
No	47	96.0
Child ever had skin cracks and bleeding		
Yes	43	86.0
No	7	14.0

Table (2):): Percentage distribution of total knowledge score of children related to psoriasis

Level of knowledge	The studied children n= 50						Fr	P
	Before		Immediately		1 month			
	No.	%	No.	%	No.	%		
Low (<60%)	50	**100.0**	7	14.0	9	18.0	71.423*	<0.001*
Moderate (60 %-< 75%)	0	0.0	12	24.0	31	**62.0**		
High (≥75%)	0	0.0	31	**62.0**	10	20.0		
Total score (0–18)							F= 234.394* p= <0.001*	
Range	0.0 – 9.0		6.0 – 18.0		7.0 – 18.0			
Mean ± SD	4.32± 2.33		13.90 ± 3.03		12.02 ± 1.99			

Fr: **Friedman test**

Table (3): Percentage distribution of total scores of children's reported practice

Children's reported practice	The studied children n = 50						Q	P
	Before		Immediately		1 month			
	No.	%	No.	%	No.	%		
1 – Skin care								
Unsatisfactory (<75%)	50	100.0	1	2.0	3	6.0	94.163*	<0.001*
Satisfactory (75-100%)	0	0.0	49	98.0	47	94.0		
2 – Nail care								
Unsatisfactory (<75%)	44	88.0	7	14.0	7	14.0	58.255*	<0.001*
Satisfactory (75-100%)	6	12.0	43	86.0	43	86.0		
3-Personal hygiene								
Unsatisfactory (<75%)	50	100.0	3	6.0	4	8.0	88.286*	<0.001*
Satisfactory (75-100%)	0	0.0	47	94.0	46	92.0		
4-Sleeping								
Unsatisfactory (<75%)	41	82.0	0	0.0	6	12.0	66.864*	<0.001*
Satisfactory (75-100%)	9	18.0	50	100.0	44	88.0		
5-Diet regulation								
Unsatisfactory (<75%)	50	100.0	6	12.0	10	20.0	77.217*	<0.001*
Satisfactory (75-100%)	0	0.0	44	88.0	40	80.0		
6-Physical exercise								
Unsatisfactory (<75%)	44	88.0	7	14.0	10	20.0	55.087*	<0.001*
Satisfactory (75-100%)	6	12.0	43	86.0	40	80.0		
Total score of children's reported practice								
Unsatisfactory (<75%)	50	100.0	1	2.0	5	10.0	88.840*	<0.001*
Satisfactory (75-100%)	0	0.0	49	98.0	45	90.0		

Q: **Cochran's test**.

Table (4): Percentage distribution of children's according to quality of their life

Quality of Life	The studied children n = 50						Q	p
	Before		Immediately		1 month			
	No.	%	No.	%	No.	%		
Level of Quality of Life								
High quality (5 – 10)	18	36.0	22	44.0	43	86.0	27.744*	<0.001*
Low quality (11 – 25)	32	64.0	28	56.0	7	14.0		

Q: **Cochran's test**

Table (5): Correlation of total scores for children's knowledge, self-reported practices, and quality of life

Variables	Before		Immediately		1 month	
	r	p	r	P	r	p
Knowledge vs. Quality of Life	0.112	0.439	0.512*	<0.001*	0.423*	0.002*
Knowledge vs. Practice	0.010	0.946	0.474*	0.001*	0.592*	<0.001*
Quality of Life vs. Practice	0.261	0.067	0.298*	0.036*	0.318*	0.024*

r: Pearson coefficient

Table (6): Correlation of total scores of children's knowledge, reported practices, quality of life, and their age

		Knowledge			Quality of Life			Reported Practice		
		Before	Immediately	1 month	Before	Immediately	1 month	Before	Immediately	1 month
Age	r	0.244	0. 830*	0.020	0.266	0.088	0.688*	0.101	0.298*	0.524*
	p	0.087	<0.001*	0.888	0.062	0.543	0.001*	0.487	0.035*	0.001*

r: Pearson coefficient

Discussion

Chronic inflammatory skin illness known as psoriasis is caused by the immune system that presents unique epidemiology, clinical patterns, psychosocial challenges, and management consideration distinct from adult-onset disease **(Sarkar et al., 2021)**. Psoriasis in children characterized by well demarcated erythematous plaques with varying degree of scaling and follows a relapsing- remitting course **(Relhan et al., 2024).**

Adverse coping mechanisms, issues with perceptions of one's own body, low self-esteem, and negative emotions of shame, humiliation, and stigma are common among children. Self- care has emerged as a critical aspect of care for children with psoriasis. It is including recognition of potential flare-ups can support empowerment and cope with this stigmatizing condition. The core of self- care management is that children actively participate in maintaining and promoting their own health and care **(Wang et al., 2020)**. Hence, the present study aimed to evaluate the effect of self-care program on quality of life of children with psoriasis.

According to socio-demographic characteristics of the studied children in the present study revealed that near to two third of studied children their age between ten to fifteen years old with Mean ± SD of their age was 13.94 ± 2.53. This could be explained by the fact that the disease commonly manifests or become more clinically evident during early adolescence, this stage is associated hormonal and immunological changes that may contribute to disease onset or exacerbation. This finding was agreed with the study by **Demirbaş et al., (2021)**, which included pediatric patients with psoriasis, reported that the children's' ages ranged from 7 to 18 years, with a mean age of approximately 13.7 years.

As regards their gender, the current study demonstrated that girls made up over 50% of the sample. It was paired with **Ramond et al., (2025)**, an American study that looked at a big group of kids and teens who had psoriasis found that 50% of the kids were girls, suggesting a predominance in this pediatric cohort. This might be attributed to sex related differences in immune system activity, as females generally exhibit stronger immune and inflammatory responses, which may increase susceptibility to autoimmune condition such as

psoriasis. Contrary to what had been found in the investigation by **Sendrea et al., (2024),** which conducted at a tertiary care referral center, examined children with pediatric psoriasis and found increased males' predominance in the cohort.

In terms of the children's medical histories, the present study found that over two-thirds of them had family history of psoriasis; this might be due to the fact that psoriasis is immune-mediated disease, which is strongly influenced by genetics and long-term health factors **(Suganya et al., 2020)**. This finding aligned with **AlHamdi et al., (2023)** who found that a closer view on clinical presentations and reported a remarkably high prevalence of positive family history. In addition, more than two third of the children had at least first or second degree relative with psoriasis. Inconsistent with **Boubnane, (2023),** who reported that the minority of the children's family history of illness was negative.

Moreover, that was investigated in this research demonstrated showed the vast majority of children possessed never been exposed to skin infection, in accordance with **liu et al., (2024)** in their comprehensive review reported that while infections remain a recognized trigger for psoriasis onset and flares, noninfectious environmental factors such as skin trauma, lifestyle, and medications contribute heavily to disease recurrence. Their analysis suggested that in many children, especially those with a genetic predisposition, recurrence of psoriasis may be driven more by these nonmicrobial factors than by overt infections. This could be related the fact that not all psoriasis flares in children are associated with documented skin infections.

In contrast, **Schneeweiss et al., (2023),** reported that pediatric patients receiving systemic or biologic therapies for psoriasis exhibited an increased incidence of skin infections, highlighting the susceptibility of psoriatic skin to bacterial, viral, and fungal colonization post diagnosis. Similarly, research by **Chang et al., (2021),** indicated that psoriasis increases risk of skin infection because its overactive immune response damages the skin's protective barrier, creating cracks where bacteria and fungi can enter, while the rapid skin cell turnover leaves vulnerable, immature cells exposed. Another study by **Relhan et al. (2024)** emphasized that while

infections are not typically a primary trigger in pediatric psoriasis, they may complicate disease management and exacerbates cutaneous inflammation once psoriasis has manifested.

The majority of the children surveyed in this study were exposed to skin cracks and bleeding. From the researcher point of view, psoriasis causes skin cracks and bleeding through a combination of extreme dryness, rapid cell buildup, and physical trauma to fragile skin layers (**Page et al., 2020**). Additionally, the current result was supported by **Kimet al., (2021**), who described that pediatric psoriatic skin often presented with thinner , softer plaques compared with adults , a characteristic that may predispose to easier skin breakdown under mechanical stress and scratching.

As regards the total knowledge regarding the children, the present research showed that before the self-care program all children were showed a low level of knowledge while immediately after implementation of the program near to two third of them showed a solid foundation of knowledge that persists even after the first month of program about two third of children showed moderate level of knowledge. One possible explanation for this finding is that educational programs play a significant influence in enhancing students' overall knowledge. This highlights the significance of these programs and the ongoing need to refresh students' knowledge. This conclusion was consistent with **Mohammed et al., (2023),** who demonstrated that a program of instruction improved self-care habits in psoriasis patients' children. Additionally, it was shown that before the program began, none of the children evaluated had a good level of knowledge. by the first month of the program, approximately 75% of the children had satisfactory knowledge, and this number dropped to 2/3 by the third month.

Concerning total level of children's reported practice, this research illustrated that all children had an inadequate level of practice prior to implementing the self-care program, while most of the children had satisfactory practice immediately after the program, then slightly descent after one month of self-care program implementation. This might be attributed to that the education program provided clear guidance and enabling children to translate knowledge into effective self-care behaviors. The previous finding was

reinforced by **El Awady, et al., (2024),** whose study reported that practice at pre and post electronic health education about psoriasis less than half of children had adequate self-care reported practice at pre-electronic health program, which improved to most of them had adequate self-care reported practice at post with highly substantial improvement in post than pre-electronic health education program.

The quality of life of children in the present research revealed that near to two third of children before the program had low quality of life. While immediately after program implementation descent to half, then to the minority after one month of the program. So, the most of children had high quality of life after one month of the program. This finding was congruent with a quasi-experimental study by **Ibrahim, et al., (2024), who** reported that, compared with pre-intervention measures, participants showed notable improvements in quality of life along with reductions in both disability and perceived stigma one month after the intervention. This could be related to the role of self-care program in improving knowledge and the practice of the studied children which lead to improve their quality of life.

Present research shown that children's knowledge and quality of life were positively correlated; similarly, children's knowledge and practice were positively correlated; finally, quality of life and practice were immediately and one month after self-care program deployment positively correlated with one another. this finding aligned with **El Awady, et al., (2024)**, who showed that after the educational intervention the total knowledge level increased markedly from 10.9% to 86.4% having good knowledge, and self-care reported practices improved substantially from 47% adequate practices before to 92% afterward. Importantly, the authors report a highly substantial correlation between total level of knowledge and self-care practices total level following the program.

Similarly, to the study by **Mohammed et al., (2023)**, who evaluated the impact of a curriculum on psoriasis patients' self-care habits and functional capacity and found that the educational program substantially improved children’s knowledge, self-care practices and functional status. Moreover, the study reported positive correlations between knowledge and self-care

practices, knowledge, functional status, and self-care practices and functional status, indicating that higher knowledge levels were associated with better self-care behaviors and improved quality of life.

On the opposite, the study conducted by **Bernier, et al., (2022)**, evaluated the effects of a standardized education program on children with moderate to severe psoriasis. They found that participants in the intervention group showed a substantial increase in knowledge; the program did not result in a substantial improvement in health-related quality of life or disease severity. These findings suggested that while educational interventions enhance children knowledge and self-management capacity, knowledge gains alone may not be sufficient to improve quality of life or clinical outcomes in all psoriasis children.

The current study demonstrated that there was a positive correlation between children's age and their knowledge immediately after the self-care program. This finding may be explained in the light of the fact that, the progressive development of cognitive abilities as children grows, including improved memory, and comprehension skills, which enable them to retain health-related information effectively. This was in harmony with **Elsakka and Khalil (2021)**, who observed that older children demonstrated higher levels of knowledge after participating in an educational intervention compared to younger children.

Moreover, there was a positive correlation between children's age and their reported practice immediately and after one month of self-care program. This might be attributed to the greater cognitive maturity and understanding that older children possess, which enables them to translate knowledge into correct actions more effectively. This in the same line with **Elsakka and Khalil (2021)**, who reported that older children were observed to engage in more appropriate and consistent health practices compared to younger children following the intervention.

Conclusion

The current study's findings suggest that children's knowledge, self-care reported practice, and quality of life were significantly enhanced following the implementation of the self-care program compared to before the program. Psoriasis knowledge, practice, and quality of life in children were positively correlated.

Recommendations

The following recommendations based on the findings of the present study were suggested:

-Integrate interdisciplinary care approach in the targeted regular self-care educational program for children with psoriasis.

-Continuous educational program to increase children and their families' awareness about psoriasis and reinforce self-care practice.

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Effect of Emotion Regulation Interventions on Emotion Dysregulation and Psychological Well-being in Individuals with Bipolar Disorder

Eman Asran Mohamed Mohamed[1], Asmaa Eid Abd Alsayed Hassan[2], Omnia Mohamed Abd Elmonem[3]

[1]lecturer of Psychiatric and Mental Health Nursing, Faculty of Nursing, Damanhour University, Egypt.

[2,3]lecturer of Psychiatric and Mental Health Nursing, Faculty of Nursing, Cairo University, Egypt.

Corresponding author: Eman Asran Mohamed

Email:emanasran20002@gmail.com

Abstract:

Background: Emotional dysregulation is considered a core symptom in individuals with bipolar disorder and has a significant negative impact on their psychological well-being. Therefore, implementing emotion regulation interventions is essential for individuals with bipolar disorder; as such interventions can effectively reduce emotional dysregulation and enhance psychological well-being. **Aim:** To evaluate the effect of emotion regulation interventions on emotion dysregulation and psychological well-being in individuals with bipolar disorder. **Design**: Quasi-experimental pre and posttest research design was utilized to achieve the study aim. **Sample:** A convenient sample of 50 patients with bipolar I disorder were recruited for the study. **Setting:** A study was conducted in the inpatient psychiatric medicine wards at El-Mamoura Hospital. **Tools**: Three tools were used for data collection: **(1):** Socio-demographic and Medical data sheet, (**II):** Ryff's Psychological Well-Being Scale (PWB), and **(III):** Difficulties in Emotion Regulation Scale (DERS). **Results:** The study results displayed high statistically significant differences between pre, and posttest regarding the total score of DERS and Ryff's psychological well-being scale scores, as well as it's all subscales scores. **Conclusion:** The results demonstrated that interventions targeting emotion regulation processes significant reductions in emotional dysregulation and contributed to measurable improvements in psychological well-being in individuals with bipolar disorder. **Recommendation:** Psychiatric nurses are well-positioned to lead the implementation of a dual-modality emotion regulation training model (individual and group-based) for individuals with bipolar disorder. Such an approach necessitates institutional support through specialized staff training and the advancement of nurse-led longitudinal research to establish evidence for long-term therapeutic efficacy.

Key wards: Emotional dysregulation, Psychological well-being, Emotion regulation

Introduction

Bipolar disorder (BD) is a chronic and recurrent mood disorder characterized by significant fluctuations in mood, including episodes of depression, mania, and hypomania. Individuals diagnosed with bipolar disorder frequently exhibit heightened emotional reactivity, affective instability, impulsivity, interpersonal difficulties. These clinical features contribute to significant functional impairment and are associated with an increased vulnerability to self-harm and suicide **(WHO, 2025).** Difficulties in emotion regulation are considered a central feature of the disorder. Emotion dysregulation is conceptualized as the result of heightened emotional vulnerability combined with ineffective or maladaptive strategies for regulating emotional responses **(Jannini, et al. 2025).** Emotional vulnerability is described as high negative affect at baseline, sensitivity to emotional stimuli, and intense emotional response to stressors, usually with a slow return to affective baseline. (**Johnson, Tharp, Peckham & McMaster, 2016; Eisner, et al. 2017, Paulus, 2021).**

Emotional dysregulation may also be conceptualized as a failure in one or more dimensions of emotion regulation, including impairments in emotional awareness and comprehension, limited acceptance of emotional experiences, impaired impulse control, challenges in goal-directed behavior during negative emotional states, and inflexible or ineffective use of emotion regulation strategies to meet goals and demands **(Thompson, 2019).** Empirical evidence indicates that individuals with bipolar disorder experience significantly greater difficulties in emotion regulation compared with healthy controls, even during periods of remission **(De Prisco et al., 2023).** Emotional dysregulation during the euthymic phase has been linked to an increased frequency of relapse and is associated with greater symptom severity during manic, depressive, and mixed episodes. Persistent difficulties in emotion regulation may contribute to psychological distress by prolonging both excessively negative and elevated mood states and by exacerbating the overall course of the disorder **(Afshari, Omidi, Ahmad, 2020; De Prisco et al., 2023).**

As well, emotion dysregulation is associated with sleep disturbances, anxiety, depression, suicide and could worsen the clinical course of bipolar disorder as well as affect psychosocial

functioning, psychological well-being and quality of life and therefore requires specific treatment strategies **(Palagini et al., 2019)**. An essential aim of bipolar disorder treatment involves achieving mood stability and minimizing extreme mood fluctuations. The mechanisms involved in emotion regulation it is considered a core therapeutic target in the treatment and long-term management of bipolar disorder.

On the other hand, Psychological Well-Being (PWB) often comprise an individual's self-acceptance, positive relationships with others, autonomy, and mastery over their environment and having purposes life and personal growth **(Leite A et al, 2019).** PWB means being satisfied with life and understanding positive emotions. This is frequently associated to individuals' the capacity to regulate, monitor, assess, and adjust emotional responses in ways that promote adaptive functioning and the attainment of personal goals. This findings indicate that improvements in psychological well-being are connected to individuals' ability to regulate their emotions effectively **(Moreira-Choez et al ,2024).**

Emotion regulation (ER) is the ability of an individual to monitor, evaluate, or modify emotional reactions through the implementation of a range of strategies. It encompasses both conscious and unconscious efforts to regulate the intensity and duration of both positive and negative emotions in order to achieve a specific goal **(Dodd, Lockwood, Mansell & Palmier-Claus, 2019).** ER interventions are particularly relevant for individuals with bipolar disorder; as they directly target emotional dysregulation, reduce vulnerability to intense negative affect, and decrease maladaptive coping behaviors associated with extreme emotional states. Additionally, ER interventions promote positive emotional experiences, improve life satisfaction, positive affect, resilience, and adaptive functioning and enhance self-confidence and self-efficacy, reduce individuals' struggles with negative emotions. These therapeutic effects may support mood stability and contribute to improved quality of life and psychological well-being **(Tamir & Gutentag, 2017).**

Significance of the study

Bipolar disorder (BD) is a chronic, severe psychiatric illness impacting approximately 2.4% of people worldwide **(Oliva et al., 2025).** Manifesting significant fluctuations in energy, mood, and cognition **(Vieta et al., 2018; Fico et al., 2022; Oliva et**

al., 2024). Recent research has highlighted specific disruptions in affective cognition that are linked to abnormal activity in the affected people brain regions like the amygdala and prefrontal cortex, which are responsible for regulating emotions **(Lie Kjærstad et al., 2023).** Subsequently, suicide is proven to be higher in BD patients reaching up to twenty times compared to the general public, that is closely linked to fluctuations in mood and inability to regulate emotions **(Palagini et al., 2019a; Miola et al., 2022).**

Alongside, studies show that ED is a prominent feature in patients have BD **(Kefeli, Turow, Yildirim, Boysan, 2018)** that produce difficulty in communication with others during periods of depression and a tendency to avoid social contact, leading to disrupted functioning and psychological well-being (**Johnson et al., 2024),** during periods of mania and hypomania may appear in form of restlessness and inappropriate interference in the affairs of others **(Zandifar, Masoumian, Rahnejat, F arahani, Ebrahimi, 2025).** Despite the main treatment for bipolar disorder is medication, literature refers that medication alone is not an effective, and more research is recommended in the field of psychotherapy, therapeutic outcomes can be improved by combining both approaches **(Milic, Zrnic, Vucurovic, Grego, Djurdjevic & Sapic, 2025).** The high rate of relapse and reported experienced residual mood symptoms by many BD patients suggests that there is a gap in current BD treatment **(Bojic & Becerra, 2017).**

Therefore, **Oliva et al. (2025)** declared various ER strategies that enable individuals having BD to initiate, strengthen, or diminish emotional responses in order to achieve specific goals and adjust to their environment (**Thompson, 2019).** These strategies are generally classified as adaptive, such as cognitive reframing and acceptance, or maladaptive, such as suppression and rumination **(Dodd et al., 2019).** Research indicates that, when compared to healthy individuals, persons with BD tend to use more maladaptive techniques while underutilizing adaptive ones **(De Prisco et al., 2023)**. Thus, there remains a knowledge gap in the issue of psychosocial interventions employed for management of BD disruptive symptoms like emotion dysregulation that subsequently affects their psychological well-being, this research study is willing to

address this gap by evaluating the effectiveness of emotion regulation interventions on the identified variables under the study.

Aim of the Study

To evaluate the effect of emotion regulation interventions on emotion dysregulation and psychological well-being in individuals with bipolar disorder.

Research hypothesis:-

1-Participants receiving the emotion regulation interventions will demonstrate a statistically significant reduction in emotion dysregulation scores at post-test compared to pre-test levels.

2- Participants receiving the emotion regulation interventions will exhibit a statistically significantly improvement in psychological well-being at post-test compared to pre-test levels.

Subject and Methods

Research design

To accomplish the study aim, a quasi-experimental design incorporating pre- and post-test assessments was implemented.

Setting

The study was conducted in the inpatient psychiatric medicine wards at El-Mamoura Hospital, which is affiliated to the Ministry of Health and Population. The hospital can accommodate up to 948 patients, and encompass twenty-four wards, ten of them are reserved especially for patients suffering from psychosis; five of which are for male patients and five for female patients.

Sample

A convenience sample of 50 patients diagnosed with bipolar I disorder was recruited for the study.

Inclusion criteria: Participants were diagnosed with bipolar I disorder according to DSM-V**,** both genders, aged from 18 to 60 years, insighted patients who had not received any type of psychotherapy at least six months before beginning of the study.

Exclusion criteria: Participants were excluded from the study based on the following criteria (1) history of suicidal ideation with a plan or intent to harm self/ others-; (2) history of seizure disorder, brain injury, or known neurological disease (multiple sclerosis, degenerative disease) or mental retardation. (3) active substance dependence, including alcohol within the last 12 months; or (5) current major depressive, manic, or mixed episode to exclude acute patients with acute symptoms.

Tools: Three tools were employed to obtain the data necessary to conduct the study. : (I): Socio-demographic and clinical data,(II): Ryff's

Psychological Well-Being Scale (PWB), and (III): Difficulties in Emotion Regulation Scale (DERS)

Tool (I): Socio-demographic and clinical data The researcher developed the tool, which includes patient's age, sex, educational level, marital status, occupation, duration of illness, place of residence**,** and previous admissions, presence of chronic illness**.**

Tool (II): Ryff's Psychological Well-Being Scale (PWB)—The PWB (Ryff & Keyes, 1995) is an 42-item self-report questionnaire designed to examine six domains. **Autonomy** consists of 7 items (1,7,13,19,25, 31, 37) to determine participants' confidence in voicing their opinions in front of others, even when they differ from the majority**,** **environmental mastery** involves of 7 items (2,8,14,20,26,32,38) **to** evaluate respondents' competence for successfully handling various responsibilities of their everyday lives, personal growth composed of 7 items (3,9,15,21,27,33,39) to measure importance of participants' to have new experiences that alter their perspective on the world and self-, **positive relations with others** includes 7 items (4,10,16,22,28,34,40) to assess the abilities of participants' to develop and maintain relationship with their family and friends , and purpose in life contains of 7 items (5,11,17,23,29,35,41) like; I have a sense of direction and purpose in life-, and **self-acceptance** 7 items (6,12,18,24,30,36,42) for example; In general, I feel confident and positive about myself. Items are scored on a 6-point Likert scale from 1 (strongly disagree) to 6 (strongly agree) and negative phrased items are 3, 5, 10, 13,14,15,16,17,18,19, 23, 26, 27, 30,31,32,34, 36, 39, 41. Higher scores are indicative of greater well-being. Cronbach's alpha reliability of the tool was 0.95. The internal validity of the scale was verified by Pearson's correlation coefficient, it was positive and statistically significant at (0.01) (Khory, 2018).

Tool (III): Difficulties in Emotion Regulation Scale (DERS)

The DERS was developed by Gratz & Roemer (2004), the tool is a 36-item self-report measure that assesses six domains for difficulties with emotion regulation, including lack of awareness of emotional responses, lack of clarity of emotional responses, non-acceptance of emotional responses, limited access to emotion regulation strategies perceived as effective, difficulties controlling

impulses when experiencing negative emotions, and difficulty engaging in goal-directed behaviors when experiencing negative emotions. Items are rated on a 5-point Likert scale from 1 (almost never) to 5 (almost always), reverse-scored items are numbered 1, 2, 6, 7, 8, 10, 17, 20, 22, 24 and 34. Higher scores indicate greater difficulties with emotion regulation. The tool has been found to demonstrate adequate construct and predictive validity **(Gratz & Roemer, 2004; Gratz & Tull, 2010; Bjureberg, et. al., 2016).** Cronbach's alpha reliability of the tool was 0.93.

Pilot study

Ten patients participated in the pilot study to evaluate the questionnaire's applicability and clarity and to identify any problems that might influence data collection. Consequently, the study tools were clear, understood, and easily applicable and remain unmodified, so the pilot sample was included in the total sample.

Field work:

The study's data collection process lasted approximately six months, started in May 2024 till the end of October 2024. It involved the following stages**;**

Assessment phase:

Once official approvals were obtained, the assessment process started. This stage involved assessing psychological well-being and emotional dysregulation of people with bipolar disorders. During this phase, each patient was interviewed to obtain the required information. After giving the patients an explanation of each question so they could grasp its meaning, the researcher completed the tools. The questionnaire took twenty-five minutes to be completed. The evaluation that lasts for a month the researcher visited the hospital three times a day between 10 a.m. and 2 p.m. for the pretest. Consequently the researcher used role play and posters to assist construct the program content and exercises based on the assessment results.

Planning phase:

To become acquainted with research variables to develop study tools and construct the program, a survey of past and current Arabic and English-related literature encompassing many aspects of the research field was carried out using easily accessible textbooks, papers, periodicals, journals, and the internet. The program's approach, length, number of sessions, instructional methods, and supplementary materials were

designed. Moreover, the appropriateness of the program's resources and the setting were evaluated. Various instructional techniques, such as group discussions, posters, and role-playing were included. There were six sessions in total, and each one took 45 minutes to conduct.

Implementation phase:

The researcher divided the patients into five subgroups, with ten individuals in each to encourage interaction. The same program sessions were given to each patient subgroup until all five subgroups finished. At the beginning of each session, the researcher greeted the participants, explained the purpose and subject matter of the program, and then assumed a role with one of them. At the end of each session, the researcher provided a brief summary of the topics covered, asked patients if they had any questions, and explained the following to them: the time of the session and gave them assignments.

The program sessions:

Six sessions were employed to discuss, carry out the designed interventions.

The first session: The researcher connected with the patients and gave an introduction, a brief description concerning awareness by the personal emotions, explaining its different types, how to identify and communicate them. Activity (1) was given to patients, about how to categorize feelings into four groups: angry (resentful), sad (frustrated/depressed), happy (relaxed/joyful), or fearful (panicked/tense), and trying to accept rather than avoiding these feelings.

The second session: Focused on helping patients to recognize the difference between attitude, emotions, and thoughts. And to realize the mind and body relationship, recognizing that physical health is influenced by psychological wellness, supported by examples from life situations. Also discussed the positive and negative effects of emotions on the person's way of thinking, attitude, and relationships. And its impact on health; either to be negative, and causes stress related side effects, or positive that improves psychological and physical health and problem-solving ability. The researcher participated activity (2), asked patients to identify situations where they lose control or nerves and reflects on decisions made without thinking.

The third session: Reflected on the previous session, emphasized on clarifying the definition of emotional

regulation concept. Discussed two main strategies for ER. (a) General strategies: as caring for physical health (hygiene, nutrition, sleep), Or engaging in pleasant activities for at least 5 minutes daily to increase self-confidence. (b) Situation-specific strategies: that divided in to situation selection: choosing to be around people you love. Situation modification: changing the channel if a program is annoying and cognitive reappraisal: reconsidering a situation to give it a calmer interpretation.

The fourth session: The researcher discussed anger management strategies: like identify your feeling and the behavior (e.g., shouting vs. speaking softly), avoiding the person you are angry with instead of attacking them, practicing deep breathing (slow inhale and exhale), progressive muscle relaxation, changing posture (stand if sitting, or sit if standing), and practicing spiritual relaxation activities.

The fifth session: Extra strategies for ER were discussed as (a) modifying self-perception: by understanding feelings and changing negative self-views. (b) Social connection: when angry, do not withdraw; instead, connect with friends socially or by phone. (c) Positive self-talk: remind yourself that you deserve respect, avoid discussing problems during "difficult times," such as immediately after returning from work. (d) Positive focus: focus on the positive aspects of life events. Practice daily positive activities like visiting relatives, engaging in hobbies, walking, or listening to music.

The sixth session: The researcher conducted quick revision to the aim, content outlines of the conducted sessions then encouraged patients to share the positive gains they benefit from the applied interventions and reviewed what was learnt during previous sessions as homework assignments and activity work. Finally, rewarding patients about their participation.

Evaluation phase:

(Post-test), an assessment was carried out to evaluate the effectiveness of emotion regulation interventions on minimizing emotional dysregulation and enhancing psychological well-being in individuals with bipolar disorder. Also, to ascertain whether the intervention goals had been met and the same tools (tool II and III) were employed.

Statistical analysis of data

Data were fed to the computer and analyzed using IBM SPSS software package version 26.0. Paired t test was used to analyze the significance

between pre and post program. Marginal Homogeneity Test Used to analyze the significance for ordinal data between pre and post program. Pearson coefficient was used to correlate between normally distributed quantitative variables. Partial Eta Squire was assed to determine effect size of the program. Significance of the obtained results was judged at the 5 level.

Ethical considerations:

The ethical committee of Damanhur University faculty of nursing reviewed and approved the study's procedures (code: ٨٦-b /٢٠٢٣) and the Human Rights Protection Committee of the General Secretariat of Mental Health, Ministry of Health and Population in Cairo. Each patient in the study provided written informed consent following an explanation of the intervention program's goals. Anonymity and confidentiality was guaranteed in analyzing the patient data, special emphasis was placed on the patient's freedom to withdraw from study participation or to leave at any moment.

Results

Table (1): Shows that the mean age of bipolar patients was 33.24±8.71 and all of the studied sample were males. Concerning the educational level 62% of them can read and write**,** and 40% of the patients were widowed. Regarding the duration of illness, 78% of them were diagnosed with bipolar disorder for more than three years. About occupation the majority of patients were not working and 92% were living in urban areas and half of them (50%) were previously hospitalized two times.

Table (2): Displays highly statistically significant differences between pre, and post-test regarding the total score of DERS as well as its all subscales with P- value (< 0.001*) with Mean ±SD (112.4±12.4) at pre-test, which was decreased to (93.4±17.9) at the post-test. In addition this table illustrates, at the pre-test, there were (70%) of the studied patients exhibited high level of difficulties in emotion regulation, followed by (26%) of them in the moderate level , and only (12%) in the low level, these results showed decrease in the post-test high & moderate levels' percentage to be (4.0%, 8.0% respectively) that reflected an elevation in the low level score's percentage to be (88%).

Table (3): Demonstrates highly statistically significant difference between the total Ryff's psychological well-being scale scores in the pre and post-tests with P value (= < .0001), but regarding its

subscales the P value was ranged between (≤0.5 and ≤ .0001) except the "positive relationship" subscale didn't show any significant difference. Moreover, this table illustrated an improvement in the post-test compared to the pre-test results; the percentage of patients with low level psychological well-being decreased to 16% compared to 60% in the pre-test. In addition, the percentage of high level increased to 44% compared to 10% in the pre-test.

Table (4): Displays that there was a statically significant negative correlation between total PWB and total DERS of studied sample (r= -0.325 , P = 0.021)

Table (1): Frequency distribution of bipolar patients according to their Socio-demographic and clinical data (n= 50)

Socio-demographic data sheet	No	%
Age		
20›30years	21	42.0%
30›40years	17	34.0%
40-60years	12	24.0%
Mean ± SD	33.24±8.71	
Gender		
Male	50	100.0%
Female	0	0.0%
Diagnosis		
Bipolar 1	35	70.0%
Bipolar2	15	30.0%
Educational level		
Can read and write	31	62.0%
Intermediate education	13	26.0%
Highly education	6	12.0%
Marital status		
Single	9	18.0%
Married	9	18.0%
Widowed	20	40.0%
Divorced	12	24.0%
Duration of illness		
3›10years	39	78.0%
10›15years	11	22.0%
More than 15 years	0	0.0%
Occupation		
Working	8	16.0%
Not working	42	84.0%
Place of residence		
Rural	4	8.0%
Urban	46	92.0%
Previous admission		
once	10	20.0%
Two times	25	50.0%
Three times and more	15	30.0%

Table (2): Mean score of difficulties in emotion regulation and its subscales (n= 50)

Difficulties in Emotion Regulation Scale (DERS)	Pre		Post		t	p	η^2
	Mean ±SD		Mean ±SD				
Non acceptance of emotional response							
Total score	22.5±3.6		19.2±5.7		6.468*	<0.001*	0.461
Mean percent score	68.6±14.9		54.9±23.9				
Difficulty engaging in Goal-directed behavior							
Total score	16.7±2.3		13.9±3.5		5.740*	<0.001*	0.402
Mean percent score	58.3±11.5		44.7±17.3				
Impulse control difficulties							
Total score	21.7±2.8		17.3±4.2		9.021*	<0.001*	0.624
Mean percent score	65.5±11.8		47.1±17.4				
Lack of emotional awareness							
Total score	14.8±4.3		12.3±3.5		3.679*	0.001*	0.216
Mean percent score	80.9±30.7		62.6±25.0				
Limited access to emotion regulation strategies							
Total score	23.6±6.5		19.7±4.7		4.228*	<0.001*	0.267
Mean percent score	48.8±20.2		36.7±14.6				
Lack of emotional clarity							
Total score	13.1±3.8		11.0±3.1		3.069*	0.003*	0.161
Mean percent score	40.5±19.0		29.9±15.3				
Overall DERS							
Total score	112.4±12.4		93.4±17.9		14.025*	<0.001*	
Mean percent score	60.4±8.5		46.0±13.5				
Level of Overall DERS	**No.**	**%**	**No.**	**%**	**MH**	**p**	
Low (<33.3%)	5	12.0%	44	88.0%	3.742*	<0.001*	
Moderate (33.3% - <66.67)	10	26.0%	4	8.0%			
High (≥66.7%)	35	70.0%	2	4.0%			

t: Paired t test for comparing between pre and post program

MH: Marginal Homogeneity Test for comparing between pre and post program

η^2= Partial Eta Squire

* Statistically significant p-value at ≤0.05

Table (3): Ryff's Psychological Well-Being Scales (PWB), 42 Item version (n= 50)

Ryff's Psychological Well-Being Scales (PWB), 42 Item version	Pre		Post		t	p	η^2
	Mean ±SD		Mean ±SD				
Autonomy							
Total score	22.4±2.9		27.2±3.3		7.600*	<0.001*	0.541
Mean percent score	44.1±8.3		57.8±9.3				
Environmental mastery							
Total score	21.2±4.9		25.4±5.6		5.051*	<0.001*	0.342
Mean percent score	40.6±14.0		52.6±15.9				
Personal Growth							
Total score	17.0±4.0		19.4±4.2		3.152*	0.003*	0.169
Mean percent score	28.5±11.4		35.4±11.9				
Positive Relations							
Total score	25.0±4.5		25.9±4.0		0.957	0.343	0.018
Mean percent score	51.6±12.4		53.9±11.4				
Purpose in life							
Total score	22.0±5.2		23.8±4.1		2.009*	0.059*	0.076
Mean percent score	42.9±15.0		48.1±11.6				
Self-acceptance							
Total score	21.5±2.9		24.2±4.1		3.708*	0.001*	0.219
Mean percent score	41.4±8.2		49.1±11.6				
Overall PWB							
Total score	129.1±11.9		145.9±13.5		7.347*	<0.001*	0.524
Mean percent score	41.5±5.7		49.5±6.4				
Level of Overall PWB	**No.**	**%**	**No.**	**%**	**MH**	**p**	
Low (<33.3%)	30	60.0%	8	16.0%			
Moderate (33.3% - <66.67)	15	30.0%	20	40.0%	3.317*	0.001*	
High (≥66.7%)	5	10.0%	22	44.0%			

t: Paired t test for comparing between pre and post program

η^2= Partial Eta Squire

* Statistically significant p-value at ≤0.05

Small effect <0.5

Medium effect 0.5- <0.8

Large effect >0.8

Table (4): Correlation between the study variables (n = 50)

Ryff's Psychological Well-Being Scales (PWB), 42 Item version		Difficulties in Emotion Regulation Scale (DERS)						
		Nonaccept	Goals	Impulse	Awareness	Strategies	Clarity	Overall Ders
Autonomy	r	-0.117	-0.391*	-0.203	0.193	-0.072	-0.091	-0.157
	p	0.418	0.005*	0.157	0.179	0.619	0.527	0.276
Environmental mastery	r	-0.069	-0.323*	-0.287*	-0.108	-0.433*	-0.370*	-0.349*
	p	0.632	0.022*	0.043*	0.455	0.002*	0.008*	0.013*
Personal Growth	r	0.264	-0.190	0.176	-0.019	-0.184	-0.015	0.035
	p	0.064	0.186	0.221	0.899	0.200	0.916	0.812
Positive Relations	r	-0.090	-0.227	-0.170	0.324*	-0.138	-0.232	-0.125
	p	0.535	0.112	0.237	0.022*	0.341	0.104	0.389
Purpose in life	r	-0.312*	-0.254	-0.315*	0.239	-0.185	-0.289*	-0.274
	p	0.027*	0.075	0.026*	0.095	0.198	0.042*	0.055
Self-acceptance	r	0.051	-0.239	-0.310*	0.231	-0.350*	0.169	-0.119
	p	0.726	0.095	0.029*	0.106	0.013*	0.241	0.409
Overall PWB	r	-0.080	-0.501*	-0.351*	0.233	-0.453*	-0.283*	-0.325*
	p	0.579	<0.001*	0.013*	0.104	0.001*	0.046*	0.021*

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Discussion

The application of emotion regulation interventions may lead to significant improvements in the emotion dysregulation symptoms for the patients having bipolar disorder. By providing them with tools to manage their emotions, promote greater emotional stability, develop healthier relationships, and achieve more fulfilling life. As patients gain more control over their emotional states, they will experience less psychological distress and become better equipped to navigate the challenges of living with bipolar disorder.

The program content taught to patients related to emotional regulation promotes a healthier emotional life by encouraging a balanced approach to emotional experiences. As a result, patients are less likely to feel overwhelmed by extreme emotions, leading to improved overall mental health. When patients feel more in control of their emotions, they tend to report greater satisfaction with their lives, as they can engage in everyday activities and relationships without being constantly affected by mood swings. Programs concerned with emotional regulation help individuals learn how to express emotions in a healthy, balanced way, leading to a more authentic and fulfilling emotional life.

Concerning the levels of difficulties in emotion regulation among patients with bipolar disorder, the current study showed that the majority of patients with bipolar disorder had a high level of difficulty in emotion regulation while only a few patients reported a low difficulty level. This might be due to, the frequent mood changes and major acute or minor affective episodes that patients with bipolar disorder may experience.

The findings of the study were congruent with **Ayık et al (2023)** who found that emotional dysregulation total and subscale scores (except for emotional dysregulation awareness) were found to be significantly higher in patients with bipolar disorder compared to healthy controls individuals. Also, **De Siqueira Rotenberg, et al (2020)** determined that patients with bipolar disorder suffer from extreme affect instability and intensity both during and between episodes, and that the majority of them struggle greatly to control their emotions. Also, **Dodd,et al (2019)** reveled that bipolar disorder patients who were currently manic demonstrated higher scores in difficulties in emotion regulation as impulsivity and risk behaviors than those who were currently depressed. Moreover **Miola, et al (2022**) found that participants diagnosed with bipolar disorder scored significantly higher on the total DERS and each of

its subdomains compared to controls individuals. Furthermore, systematic reviews reveal that individuals with bipolar disorder experience higher levels of emotion dysregulation compared to those in non-clinical populations. This heightened dysregulation plays a significant role in exacerbating mood instability and emotional distress throughout various episodes of the disorder (**Bayes et al., 2016).**

The findings demonstrated that the total difficulties in emotion regulation score decreased at post tests with a highly statistically significant difference. This can be explained by the beneficial impact of interventions application on reducing emotional dysregulation of the studied sample through teaching individuals skills like how to express their emotions, and ability to regulate, control, and manage their various motions and feelings. The findings of the study also were consistent with **De Siqueira Rotenberg, et al (2020)** which revealed that**,** emotional regulation training and interventions that enhance person's capability for self-control is crucial for individuals with bipolar disorders, depending on their episode state, that may be harmful to the patient. In the same context, **Afshari (2020)** found that emotional regulation program was successful in controlling emotional state among patients with bipolar disorder.

Regarding the levels of psychological well-being in patients with bipolar disorder, the current study's findings demonstrated that more than half of the sample had low levels in their assessment phase. In addition the results of the current study demonstrated a negative statistically significant correlation between total scores of difficulties in emotional regulation scale (DERS) and psychological well-being scale' scores among patient**s** with bipolar disorder. This might be due to emotional dysregulation is recognized to be an essential psychological symptoms in bipolar disorder, resulting in maladaptive coping strategies for emotional distress that could affect an individual well-being. Nevertheless, the dimension of positive relations of the scale didn't show a significant change that might be returned to that it was a contributing factor in the most patient's illness as they reported.

In addition **De Prisco et al (2023)** confirmed that people with bipolar disorder show high levels of emotion dysregulation that can interrupt daily routines and influence general well-being. Also the current research finding is congruent with **Kraiss, et al (2020)** who found a moderate negative relationship between overall

deficits in emotion regulation and well-being among patients with mental illness and concluded that when attempting to promote well-being among those with mental illness, it is crucial to enhance emotional control.

The present findings showed a significant increase in the total psychological well-being score at post-test. This finding displays that the emotional regulation strategies may improve psychological well-being among patients diagnosed with bipolar. This finding may be clarified in light of evidence that the acquisition of adaptive emotion regulation abilities among individuals with bipolar disorder enhances psychological resilience and promotes greater affective stability and supporting improved psychological well-being. These findings emphasize the crucial role of emotion regulation in enhancing well-being and in buffering individuals with bipolar disorder against emotional dysregulation.

Furthermore, the literatures indicated that effective emotion regulation is associated with greater life satisfaction, enhanced positive emotions, and improved mental health. Conversely, challenges in managing emotions often lead to heightened psychological distress and an increased risk of developing mental health disorders. Studies on bipolar disorder indicate that individuals with this condition often resort to maladaptive coping mechanisms, such as rumination and expressive suppression, which correlate with more intense emotional symptoms and diminished functional outcomes (**Oliva et al., 2024; Zandifar et al., 2025).**

The intervention resulted support a previous study of bipolar patients that found a strong positive correlation between psychological well-being and emotion management strategies, concluded that when attempting to promote well-being and rehabilitation, professional treatment may find it beneficial to address emotion management techniques and emotional functioning in general. Since improving well-being is a significant goal for those who also suffer from mental illnesses, it may be beneficial to concentrate on emotion management techniques rather than just psychopathology **(Lincoln et al, 2022).**

Conclusion

These findings support the study hypothesis, it can be concluded emotion regulation interventions had a significant positive effect on enhancing psychological well-being and reducing emotion dysregulation in individuals with bipolar disorder.

Nursing implications & Recommendations:

Psychiatric nurses, and other medical personnel should receive specific training regarding concepts as emotional regulation and related psych educational programs, especially when it deals with bipolar disease. Also, hospitals should provide patients with both individual and group training in emotional management; enable patients from practicing skills and sharing experiences in a supportive setting during group sessions, while more individualized instruction can be obtained during individual sessions. Moreover, psychiatric nurses are devised to conduct longitudinal research to evaluate the long-term effects of emotional regulation training programs on bipolar patients' emotional dysregulation and psychological health.

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Relation between Nursing Students' Self-Regulation Behavior and Academic Perfectionism

Afaf Rady Elnemr[1], Samar Hosney Ghodery[2], Zohor Zakaria Elsaied[3]

[1]Demonstrator of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.
[2]Professor of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.
[2]Assistant Professor of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

Corrsponding author: Afaf Rady Elnemr
E-Mail: pg_182572@nursing.tanta.edu.eg

Abstract

Background: The learning process is not confined to only traditional methods of acquiring knowledge, but now days self-regulated nursing students able to be independent of their own learning and guiding them to academic perfectionism. **Aim of the study:** To assess the relation between self-regulation behavior and academic perfectionism among nursing students. **Research design:** A descriptive-correlational design was applied. **Setting:** The study was conducted at the Faculty of Nursing, Tanta University. **Subjects:** The total sample was 1110 nursing students in each academic year of 2025-2026. **Tools:** Two tools were used: nursing students' Self-Regulation Behavior Structured questionnaire and nursing students' Academic Perfectionism Structured questionnaire. **Results:** More than two third (75.5%) of nursing students had a high level of self-regulation behavior. Two third (65.6%) of the nursing students had a high level of academic perfectionism. **Conclusion:** There was a highly positive significant correlation between nursing students' self-regulation behavior and their academic perfectionism. **Recommendations:** The Faculty of Nursing should integrate self-regulation activities development into the nursing curriculum by incorporating modules or topics focused on knowledge and skills to develop self-regulation behavior. Added to that, nursing students should encourage in understanding academic perfectionism by accepting failure as a chance toward success.

Keywords: Academic perfectionism, Self-regulation behavior, Nursing students.

Introduction

Education is that component of human life which is very essential for human being for his existence. It is a process by which the behavior and thought style of the students is developed in a positive attitude and desired change is brought about by learning, which makes the human intellectual qualities of the person excellent and make them intelligent citizens **(Baek & Nordin ,2024)**. Self-regulation behavior is the method by which students focus their thoughts, motivation, and actions, on achieving their academic objectives (**Yurtseven & Saraç, 2024)**. Self-regulation behavior reinforces self-regulated learning through maintaining a cycle of continuous improvement and growth that enable students to become more autonomous, motivated, and effective learners leading to greater academic and personal success **(Martínez-Vicente et al., 2022).** Nursing students need to learn how to regulate themselves to manage conflicts, communicate effectively, and enhance academic performance, productivity, and professional success **(Duckworth& Gross, 2020).**

Self-regulation behavior consists of seven components: receiving relevant academic information, evaluating the information and comparing it to academic standards, triggering change, searching for options, formulating a plan, implementing the plan, assessing the plan's effectiveness **(Hasanuddin, 2020).** Receiving relevant academic information refer to the ability of nursing students to collect accurate academic information from lectures, clinical situations and feedback from their educators to keep them up to date **(Arcoverde, Boruchovitch, Acee, & Góes, 2020).** Evaluating the information and comparing it to academic standards is crucial for nursing students to ensure accurateness of information and achieve educational goals **(Schunk, 2023).** Triggering change means all reactions that called trends toward change recognizing nursing students when need to change to adapt with academic standards to achieve success **(Harris, 2023).** Searching for options need improving critical thinking skills and creativity for nursing students in achieving excellence (**Boor, I., & Cornelisse, 2021).** Formulating a plan means designing effective plan for studying, reviewing lessons that help nursing students to track their academic achievement **(Vaculíková et al., 2022).** Implementing the plan reflects nursing students' ability to implement effective plan by sitting reliable objectives, managing their time, prioritizing tasks to focus on achieving goals **(Chen & Bonner, 2020).** Assessing the plan's effectiveness is monitoring nursing students' performance and gathering

feedback from colleagues (**De la Fuente et al., 2020).**

Academic perfectionism refers to the tendency of students to strive for flawlessness in their academic work, often driven by high personal standards or external pressures **(Liu & Berzenski ,2022).** Nursing students need to be strived for excellence in their academic and clinical pursuits to learn how to be focus on patient safety and reducing errors in their future **(Huang et al., 2023).** Academic perfectionism involves self-oriented perfectionism (SOP), other-oriented perfectionism (OOP), and socially prescribed perfectionism (SPP). Self-oriented perfectionism (SOP) is nursing student's ability to set high standards, evaluate own performance against these standards, and work to achieve perfection in order to meet to these expectations (**Fang & Liu ,2022).** Other-oriented perfectionism (OOP) that means nursing students expect perfectionism from others around them, they are overly critical of others' work **(Yang, Yang, Choi & Bum , 2023).** Socially prescribed perfectionism (SPP) is the conviction that important colleagues to nursing students hold unreasonably high expectations for them **(Atwa, Aboueisha, Abdelmohsen & Abdelnasser ,2024).**

Significance of the study:

The mission of faculty of nursing Tanta University is committed to provide nursing education which meets the quality standards to provide high qualified nursing students for labor, so self-regulation and academic perfectionism is important to achieve this mission.

Therefore Self-regulation becomes a critical factor for nursing students who are to take advantage of the benefits of learning environments. **(Dogu. 2022).** Thus, this study will be directed at studying self-regulation behavior and academic perfectionism among nursing students.

Aim of the study

Assess the relation between nursing students' self-regulation behavior and academic perfectionism.

Research Questions

1-What are the levels of nursing students' self-regulation behaviors?

2-What are the levels of nursing students' academic perfectionism?

3-What is the relation between nursing students' self-regulation behaviors and academic perfectionism?

Research design:

A descriptive-correlational research design was used in the present study.

Study setting:

This study was conducted at Tanta University Faculty of Nursing includes seven departments Medical-Surgical Nursing, Critical Care and Emergency Nursing, Maternal and Newborn Health Nursing, Pediatric Nursing, Community Health Nursing,

Psychiatric and Mental Health Nursing, and Nursing Administration.

Subjects:

The study subjects were selected by proportionate stratified random sampling. In this study, each academic year was designated as a distinct stratum, and the selection of the sample was executed in accordance with the relative number of nursing students enrolled in each academic year of 2024-2025. To guarantee an adequate and representative size, the entire study sample was determined using the Epi. Info. Software statistical program. Where N= population size (3984), Z= confidence level at 95% (1.96), and d= margin of error proportion (0,05). The total sample was 1110 out of 3984 nursing students from different academic years enrolled during data collection time.

Tools of data collection:

To achieve the aim of study, the following two tools were used.

Tool I: Nursing Students' Self-Regulation Behavior Structured Questionnaire

This tool was developed by the researcher guided by relevant literatures review **(Aguila-Gomez, 2019; Kanfer, 2016; Pichardo et al., 2014)** to assess nursing students' self-regulation behavior level. It consists of two parts

Part (1): Nursing students' personal data: It included age, gender, academic year, residence and previous academic achievement**.**

Part (2) Nursing Students' Self-Regulation Behavior Questionnaire

It included 51 items divided into seven dimensions as follow:

-Receiving relevant information: included 7 items

-Evaluating the information and comparing it to norms: included 8 items**.**

-Triggering change: It included 7 items.

-Searching for options: It included 8 items.

-Formulating a plan: It included 9 items.

-Implementing the plan: It included 6 items.

-Assessing the plan's effectiveness: It included 6 items.

Scoring system:

Nursing students' responses were measured on a five-point Likert Scale ranging from(5) strongly agree to (1) strongly disagree. The total scores were calculated by cut-off points as follows: - High level of self-regulation behavior >75%

-Moderate level of self-regulation behavior 60% - 75%

- Low level of self-regulation behavior <60%

Tool Π: Academic Perfectionism Structured Questionnaire

This tool was developed by the researcher guided by relevant literatures review **(Hewitt & Flett,**

1990 ; Frost & Mikail,2004) to measure the academic perfectionism level of nursing students. It included 37 items divided into three dimensions as follows:

-Nursing students' self-oriented perfectionism: It included 12 items.

-Nursing students' other-oriented perfectionism: It included 12 items.

-Nursing students' socially prescribed perfectionism: It included 13 items.

Scoring system:

Nursing students' responses were measured on a five-point Likert Scale ranging from(5) strongly agree to (1) strongly disagree. The total scores were calculated by cut-off points as follows: - High academic perfectionism level >75%

- Moderate academic perfectionism level 60% - 75%

- Low academic perfectionism level <60%

Method

-Official permission was obtained from the Dean of the Faculty of Nursing and all heads of the academic departments.

-Ethical considerations:

-Approval was obtained from the Scientific Research Ethical Committee at the faculty of nursing with the code number (584)-1-2025.

- The nature of the study was not causing harm to the entire sample.

- Informed consent was obtained from nursing students after explanation of study's aim.

- Confidentiality and anonymity were kept regarding data collection and participants had the right to withdraw.

- The study tools (I, II) were translated from English to Arabic and presented to a jury of five experts in the area of specialty to assess their content validity and clarity. The experts were four professors and one assistant professors of nursing administration from the Faculty of Nursing at Tanta University.

-The experts' responses were represented on a four-point rating scale ranging from (4) strongly relevant to (1) not relevant. Necessary modifications were made including clarification, omission of certain items and adding others, and simplifying work-related words.

-**The face validity** value of tool (I): Nursing Students' Self-Regulation Behavior Questionnaire was 95.6 %, tool (II) Nursing Students' Academic Perfectionism Questionnaire: was 97.4%.

-**A pilot study** was carried out on a sample (10%) of nursing students (n= 111), and they were not included in the main study sample during the actual collection of data before beginning the actual data collection, A pilot study was done after the advice of the five experts. The purpose of the pilot study was to test the questions'

clarity, relevance, applicability, and item sequence. Also to determine the time needed to finish the questionnaire.

5. The estimated time required to finish the questionnaire items from nursing students was 20 to 30 minutes.

6. The reliability value of tool (I) was 0.911 and for tool (II) was 0.869**.**

-Data collection phase: The researcher collected data from nursing students to distribute the questionnaire and meet with nursing students in several locations during teaching hours. The participants recorded their answers in the researcher's presence to ascertain that all questions were answered. The data was collected from the beginning of March 2025 until June 2025.

Statistical analysis:

IBM SPSS software version 20.0 (Armonk, NY: IBM Corp, released 2011).Categorical data were summarized as numbers and percentages. For continuous data, normality was assessed using the **Kolmogorov-Smirnov test**. Quantitative data were described using range (minimum and maximum), mean and standard deviation.

The used tests were

1 - Chi-square test

For categorical variables, to compare between different groups

2 - Monte Carlo correction

Correction for chi-square when more than 20% of the cells have expected count less than 5

3 - F-test (ANOVA)

For normally distributed quantitative variables, to compare between more than two groups

4 - Pearson coefficient

To correlate between two normally distributed quantitative variables

Results

Table (1): Shows the frequency and distribution of nursing students' personal data. As noticed in this table, around two thirds (64.0%) of nursing students were in the age group that ranged from 20 to 22 years with a mean score of 20.67±1.47, and more than two-thirds (63.5%) of them were females. Regarding the academic year, the highest percent (25.8%) of nursing students enrolled in the third academic year then fourth academic year 25.3% and the second academic year 25.0% the last is first academic year 24.0% and more than two third (67.3%) of them were from countryside. Furthermore, nearly half (46.0%) of them had an excellent grade and 44.3% had very good grade as the previous academic achievement.

Figure (1): Portrays the total levels of nursing students' self-regulation behavior. It is clear that high present (75.5%) of nursing students had a high level of self-regulation behavior, while less than third (24.3%) of them

had a moderate level of self-regulation behavior .On the other hand, a minority (0.2%) of nursing students had a low level of self-regulation behavior.

Table (2): Illustrates nursing students' levels of self-regulation behavior dimensions. It is observed that more than half (60.4%, 59.8%, 57.2%, 56.9%, 54.8%, 53.4% and 52.7%) of nursing students had high levels in dimensions of triggering change ,receiving relevant information, searching for options, evaluating information and comparing it to norms, formulating a plan, assessing the plan effectiveness and implanting the plan , respectively.

Figure (2): Demonstrates distribution of the nursing students according to total their levels of academic perfectionism. It reveals that the two third (65.6%) of the nursing students had a high level of academic perfectionism,While, 34.4% of them had a moderate level of academic perfectionism.

Table (3): Illustrates frequency distribution of the nursing students according to their levels of academic perfectionism. It shows that the two third (63.1%) of the nursing students had a high level of self-oriented perfectionism dimension, 55.9% of the nursing students had a high level of socially prescribed perfectionism dimension and more than half (42.6%) of the nursing students had a high level of other-oriented perfectionism dimension.

Table (4): **Displays the relations between nursing students' total score of self-regulation behavior and their personal data.** There were statistically significant relations between nursing students' total score of self-regulation behavior and only their age, academic year.

Table (5): **Exhibits relations between nursing students' total scores of academic perfectionism and their personal data.** The table shows statistically significant relations between nursing students' total scores of academic perfectionism and their age, gender and academic year.

Figure (3): **Displays correlations between nursing students' self-regulation behavior and their academic perfectionism.** As observed from this figure, there was a highly positive and strongly statistically significant correlation between nursing students' self-regulation behavior and their academic perfectionism ($r=0.720$) at $p<0.001$.

Table (1): Distribution of nursing students' according to personal data(n = 1110)

Nursing students' Personal data	No.	%
Age (years)		
<20	271	24.4
20 – 22	710	64.0
≥23	129	11.6
Min. – Max.	18.0 – 24.0	
Mean ± SD.	20.67 ± 1.47	
Gender		
Male	405	36.5
Female	705	63.5
Academic year		
First year	266	24.0
Second year	277	25.0
Third year	286	25.8
Fourth year	281	25.3
Residence		
Urban	363	32.7
Countryside	747	67.3
Previous academic achievement		
Excellent	511	46.0
Very good	492	44.3
Good	103	9.3
Satisfactory	4	0.4

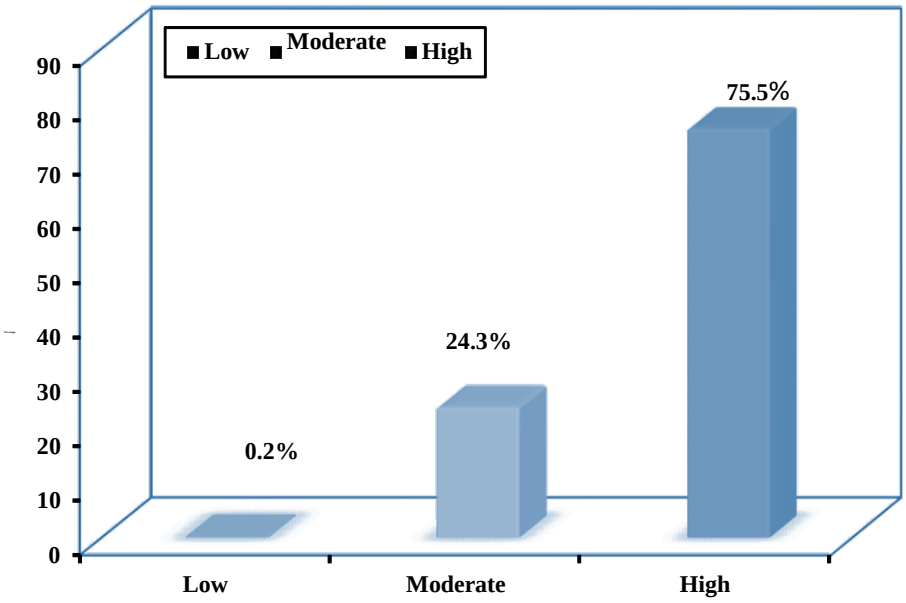

Figure (1): Total levels of nursing students' self-regulation behavior (n = 1110)

Table (2): Distribution of nursing students' according to levels of self-regulation behavior dimensions (n = 1110)

Self-regulation behavior dimensions	Levels of Tool I - Self-Regulation					
	High (>75%)		Moderate (60 - 75%)		Low (<60%)	
	No.	%	No.	%	No.	%
Receiving relevant information	664	59.8	440	39.6	6	0.5
Evaluating the information and comparing it to norms	632	56.9	467	42.1	11	1.0
Triggering change	670	60.4	437	39.4	3	0.3
Searching for options	635	57.2	470	42.3	5	0.5
Formulating a plan	608	54.8	495	44.6	7	0.6
Implementing the plan	585	52.7	522	47.0	3	0.3
Assessing the plan effectiveness	593	53.4	512	46.1	5	0.5

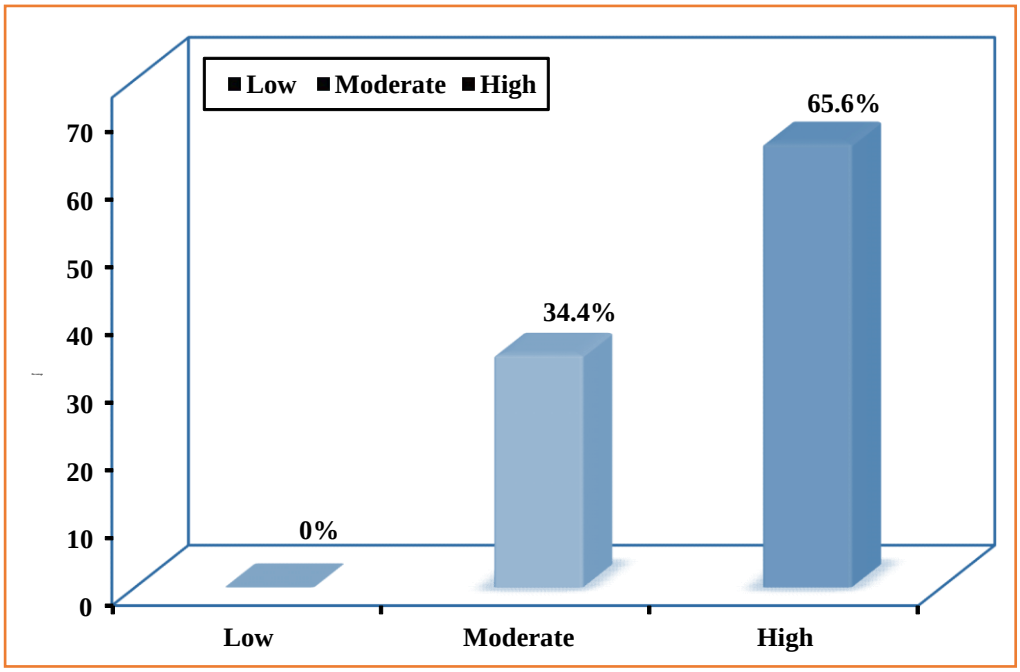

Figure (2): Total level of nursing students' academic perfectionism levels (n = 1110).

Table (3): Distribution of nursing students' according to levels of academic perfectionism (n = 1110)

Nursing students' Academic Perfectionism Dimensions	Levels of Tool II – Practice					
	High (>75%)		Moderate (60 - 75%)		Low (<60%)	
	No.	%	No.	%	No.	%
Self-oriented Perfectionism	700	63.1	407	36.7	3	0.3
Other-oriented Perfectionism	473	42.6	608	54.8	29	2.6
Socially prescribed Perfectionism	621	55.9	488	44.0	1	0.1
Overall	**728**	**65.6**	**382**	**34.4**	**0**	**0.0**

Table (4): Relation between total score of nursing students' self-regulation behavior with personal data

Personal data	N	Total score of Self-Regulation	Test of Sig.	P
		Mean ± SD.		
Age (years)				
<20	**271**	219.3 ± 16.57	F= 5.434*	0.004*
20 – 22	**710**	216.95 ± 15.22		
≥23	**129**	213.95 ± 13.87		
Gender				
Male	**405**	218.3 ± 16.85	t= 1.837	0.067
Female	**705**	216.5 ± 14.59		
Academic year				
First year	**266**	219.3 ± 16.81	F= 7.711*	<0.001*
Second year	**277**	219.5 ± 15.87		
Third year	**286**	215.5 ± 14.04		
Fourth year	**281**	214.6 ± 14.57		
Residence				
Urban	**363**	216.7 ± 15.36	t= 0.721	0.471
Countryside	**747**	217.4 ± 15.53		
Previous academic achievement				
Excellent	**511**	217.4 ± 16.27	F= 1.692	0.167
Very good	**492**	217.7 ± 15.06		
Good	**103**	213.9 ± 12.98		
Satisfactory	**4**	217.0 ± 16.27		

SD: **Standard deviation** **t: Student t-test** **F**: **F for One way ANOVA test**

p: p value for comparing between the studied categories

Table (5): Relation between total score of academic perfectionism with personal data

Personal data	N	Total score of Self-Regulation	Test of Sig.	p
		Mean ± SD.		
Age (years)				
<20	**271**	158.2 ± 12.59	F= 15.348*	<0.001*
20 – 22	**710**	154.7 ± 11.14		
≥23	**129**	152.0 ± 10.24		
Gender				
Male	**405**	156.4 ± 12.20	t= 2.611*	0.009*
Female	**705**	154.5 ± 11.12		
Academic year				
First year	**266**	158.3 ± 12.66	F= 14.738*	<0.001*
Second year	**277**	156.0 ± 11.62		
Third year	**286**	154.8 ± 9.83		
Fourth year	**281**	152.0 ± 11.22		
Residence				
Urban	**363**	155.6 ± 11.33	t= 0.715	0.475
Countryside	**747**	155.0 ± 11.67		
Previous academic achievement				
Excellent	**511**	155.4 ± 11.88	F= 0.766	0.513
Very good	**492**	155.4 ± 11.30		
Good	**103**	153.6 ± 11.25		
Satisfactory	**4**	153.2 ± 9.84		

SD: **Standard deviation** **t: Student t-test**

F: **F for One way ANOVA test**

p: p value for comparing between the studied categories

*: Statistically significant at $p \leq 0.05$

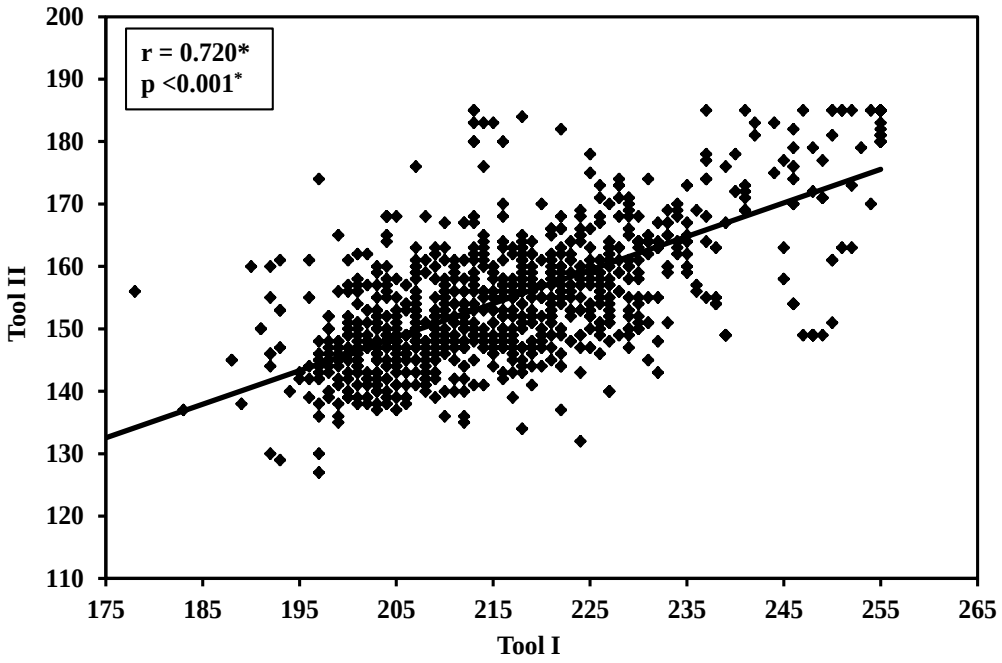

Figure (3): Correlation between nursing students' self-regulation behavior and academic perfectionism

Discussion

Students' everyday lives are greatly impacted by self-regulation because it is the foundation of all actions, the means of increasing the chance of success and decreasing the likelihood of failure, and the ability to use logic constructively, which enables students to make better choices in their social and personal lives and interact with others effectively and intelligently. **(AL-Youssef, 2020).**

Self-regulated students are goal-oriented and strive to achieve goals as best they can by using time management techniques and meaningful practice, the establishment of realistic goals, and the regulation of emotional states to assist them in academic engagement and achieve perfectionism. (**Nabavi, 2025).**

Nursing students' self-regulation behavior levels

Based on the current study findings, about two thirds of nursing students had a high level of self-regulation behavior. This result may be explained by nursing students often having high levels of self-regulation due to a think of achieving academic success, their ability to regulate themselves in the learning process is an important activity in learning process and they put more effort into their studies. SRB encourages nursing students to have confidence in their capacity to inspire and manage their education.

Along with the present study findings, many studies by **Dıgın & Iscan Atasen (2021), and Hwang & Oh (2021), Syefrinando, Daryanto & Salma (2020)** demonstrated that nursing students had a high level of self-regulation. Thus, they possess the ability to motivate themselves, manage their learning process, enhance their self-directed learning, and effectively solve problems. The self-regulated ability can enhance their capacity to apply nursing skills in real-life clinical situations and enable them to overcome future challenges and complexities that may arise in their professional careers.

On the contrary, **Vania Salsabila, Widianti & Hara Permana (2024)** found that moderate level of nursing students had low self-regulation behavior. Low self-regulation indicated that students have not actively controlled their thoughts, emotions, and conduct during the learning process to meet their academic objectives. As well as the findings are incompatible with **Abdelhafez, Abed Aly & Mohamed, (2020)** who found that the most of nursing students had low level of SRL. This may be as a result of the workload due to the nature of

study and the use of problem-based learning strategy without support and guidance which may increase cognitive load and make it more difficult to regulate their learning efficiently.

Nursing students' academic perfectionism level

The present study results proven that the two third of the nursing students had a high level of academic perfectionism. From the researcher point of view this result may be due to that the nursing students at faculty of nursing Tanta university desire for excellence, remains an active in study, focus on growth seeking for the attainment of a goal with the aim of learning and achieve self-improvement, and self-actualization.

The current study finding supported with **Ahmed Hussein (2022)** reported that half of participants had high perfectionism. This might be due to participants are unable to assign tasks to others and receive criticism from others, which could result in a significant setback and the inability to contextualize the criticism. Additionally **Fernández-Garca et al., (2022)** discovered a favorable association across perfectionist tendencies and doing well in academic sitting. On the other scene, the result was inconsistent with a study of **Abd-Elpaseer & Said (2021)** showed that less than two-thirds of the students had moderate perfectionism.

Correlation between nursing students' self-regulation behavior and academic perfectionism

The present study result revealed that there was a highly positive and strongly statistically significant positive correlation between nursing students' self-regulation behavior and their academic perfectionism. From the researcher point of view this result may be due to self-regulation play a significant role in how perfectionism affects students and self-regulated students can manage their perfectionistic aspirations to maintain positive consequences of perfectionism.

In the same line, **Ardestani, Barjesteh & Dehqan (2025)** suggested that perfectionism and self-regulation are positively correlated indicating that those who are perfectionistic are also more likely to have good self-regulation skills. As well as, **Nabavi, (2025)** revealed a strong link between academic self-regulation and perfectionism. Also, **Rasoli, Ahmadian, Jadidi & Akbari, (2022)** demonstrated how students' academic engagement is enhanced by self-regulation techniques, achievement goals, and perfectionism.

Conclusion

According to the findings of the present study it was concluded that around two thirds of nursing students at faculty of nursing Tanta University had a high level of self-regulation behavior. Furthermore two third of the nursing students has a high level of academic perfectionism. There was a highly positive and strongly statistically significant correlation between nursing students' self-regulation behavior and their academic perfectionism.

Recommendations

For the Faculty of Nursing

-Enhance self-regulation skills by offering workshops and training sessions aimed at improving nursing students' self-regulation behavior.

-Integrate self-regulation development into the nursing curriculum by incorporating modules or topics focused on knowledge and skills to develop self-regulation behavior.

-Train faculty members to promote and address self-regulation barrier in the classroom as creating positive reinforcement in comfortable academic environment.

For the faculty members

-Conduct training workshops for all nursing educators about how to enhance self-regulation skills.

-Conduct educational workshops for all nursing educators about the assessment of students' academic perfectionism and self-regulation behavior among nursing students.

For undergraduate nursing students

-Enhance students' self-regulation strategies in their academic studies as how to manage their behavior to gain academic goals.

-Attend an orientation and training session to foster their self-regulation behavior in managing academic perfectionism.

-Seeking self-learning opportunities about different adaptive and maladaptive perfectionism to understand how to maintain positive effects of academic perfectionism.

For further research

-Carry out the study in different academic settings to examine variables that influencing students' academic performance.

-Conduct a longitudinal study to understand how self-regulation behavior and academic perfectionism manifest in different healthcare-related educational programs.

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Association between Suicidal behavior and Self-Compassion among Patients with Major Depressive Disorder

Noura Ahmed Maklad[1], Souzan Abd El–Menem Abd El-Ghafar[2], Angham Elsayed Tawfek[3], Mervat Hosney Shalaby[4]

[1]Assistant Lecturer of psychiatric and Mental Health Nursing, Faculty of Nursing, Tanta University, Egypt.
[2]Assistant Professor of psychiatric and Mental Health Nursing, Faculty of Nursing, Tanta University, Egypt.
[3] Lecturer of psychiatric and Mental Health Nursing, Faculty of Nursing, Tanta University, Egypt**.**
[4]Professor of psychiatric and Mental Health Nursing, Faculty of Nursing, Tanta University, Egypt.

Corresponding author: Noura Ahmed Maklad
Email: Noura.Meklad @nursing.tanta.edu.eg

Abstract

Background: Suicide remains a major public health concern for patients diagnosed with Major Depressive Disorders (MDD). The higher suicide rates and sever MDD are linked to self –compassion. Low levels of self-compassion are associated with higher levels of depression, shame, self-criticism, and suicidal thoughts Therefore, it's important for psychiatric nurses emphasize on self-compassion training includes self-compassion-focused interventions **Aim:** Examine the relationship between suicidal behavior and self-compassion among patients with major depressive disorders. **Design**: Descriptive research design was utilized to accomplish the aim of present study. **Settings:** The study was conducted at inpatients psychiatric ward of Tanta University hospital, Psychiatry and Neuro Surgery center of Tanta University. **Subjects:** A convenient sample of 60 patients with Major depressive disorder was selected from the previously mentioned settings. **Tools:** Depression Scale **(Andresen E, Malmgren J, et al 1994)**, Self-Compassion Scale **(Dr. Kristin Neff (2003)** and Suicide Ideation Scale **(Beck & Kovacs 1979)**. **Results*:*** There was the majority of studied patients with MDD had sever level of depression and suicide, while the minority of them had mild level of depression and suicide. On the other hand, about half of the studied patients had low level of self- compassion while only 10.0% of them had high level of self-compassion **Conclusion** The findings of the present study highlight the significant enhancing self-compassion to reduce self-criticism, improve suicide behavior and fostered greater emotional stability, resilience, self-kindness and hope among patients with Major Depressive Disorders (MDD). **Recommendations:** Emphasize self-compassion training includes self-compassion-focused interventions (e.g., mindfulness, self-kindness exercises) to reduce self-criticism and improve suicide behavior with MDD.

Keywords: Suicidal behavior, Self-compassion, Major Depressive Disorder

Introduction

Major depressive disorder (MDD) is a prevalent psychiatric condition and has been identified as the third leading cause of illness burden globally by the World Health Organization (WHO), which anticipates that MDD will become the foremost cause by 2030 (World Health Organization, 2021; Lundberg et al., 2023). According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), an individual must display five of the following symptoms: persistent low mood, anhedonia or reduced interest in pleasurable activities, feelings of guilt or worthlessness, fatigue, impaired concentration, changes in appetite, psychomotor retardation or agitation, sleep disturbances, or suicidal ideation (Baldessarini & Tondo, 2020; Lundberg, Cars et al., 2022; Lundberg, Cars et al., 2023). Suicidal ideation and behavior represent significant risks in people with major depressive disorder and are among the most distressing consequences of depression. The incidence of suicide among adults with Major Depressive Disorder (MDD) is significant, with up to 87% of patients completing the deed. Suicide is a significant yet predominantly preventable health issue, accounting for nearly half of all violent fatalities **(Dong, Zeng et al., 2019; Dunlop, Polychroniou et al., 2019).**

Suicide is a Latin phrase formed from the combination of two words: "sui," meaning "oneself," and "caedere," signifying the act of killing. Every suicide constitutes a tragedy that prematurely extinguishes an individual's life and exerts a profound and lasting impact on the lives of families, friends, communities, regions, and even nations **(Pirkis et al., 2024; Grossberg, & Rice., 2023).** It is characterized as an act of hostility perpetrated by an individual against themselves, deliberately and freely, resulting in death; It is not classified as a diagnostic or disorder, but rather as a behavior. It is not a mental ailment in its own right, but rather a potential consequence of a number of mental disorders **(World Health Organization, 2014; Large, Soper& Ryan., 2022).**

Self-compassion denotes an individual's disposition towards oneself in situations of perceived failure, insufficiency, or distress **(Neff K, Tóth-Király I, et al., 2021)**. Six components comprise self-compassion: self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification **(Liu A., Wang W., and Wu X., 2020; Liu A., Wang W., and Wu X., 2022).**

Positive self-compassion is a beneficial psychological trait that serves as an individual's safeguard against adverse experiences. According to the emotion regulation theory of self-compassion, negative emotions are alleviated by positive self-compassion, positively influences mental health development, and diminishes levels of suicide ideation **(Liu, Wang, & Wu, 2020).**

Conversely, negative self-compassion impairs emotional regulation, adversely impacting an individual's mental health and exacerbating feelings of isolation and hopelessness. Suicide is clearly the ultimate outcome of an individual's sense of hopelessness, worthlessness, and inability **(Fehling & Selby, 2021; Kelliher Rabon, Sirois & Hirsch, 2018).** Numerous studies investigating the correlation between self-compassion and suicidal behavior have demonstrated that diminished self-compassion exacerbates suicidal tendencies, while elevated self-compassion may foster adaptive mood regulation strategies (depression), consequently mitigating suicidal behavior **(Breines & Chen, 2013; El-Masri & El-Monshed, 2021).**

Significant of the study:

Suicide is common in mental health practice and is frequently linked to significant depressive illnesses. It is a primary contributor to premature mortality globally and regarded as a significant predictor of eventual death in young adults. It significantly impacts the life of families, friends, communities, provinces, and even nations (**Stone D, Holland K, et al., 2017; World Health Statistics, 2016).** The Egyptian government urgently needs a strategic plan for suicide prevention and the implementation of psychological interventions for individuals with significant depressive illnesses. The Psychiatric Nurse should spearhead efforts to enhance patient awareness regarding suicide and prioritize psychological first aid for individuals in active suicidal crisis, alongside offering adaptable supportive measures as a long-term strategy **(Taylor F, 2022).**

Aim of the study:

Examine the relationship between suicidal behavior and self-compassion among patients with major depressive disorders.

Research questions:

1-What are the levels of suicidal ideation among patients with major depressive disorders?

2- What are the levels of self-compassion among patients with major depressive disorders?

Subjects and method:

Study design:

Descriptive research design was utilized to accomplish the aim of present study.

Setting:

The study conducted at inpatients psychiatric ward of Tanta University hospital, it has a total capacity of 31 beds, which are divided into two wards for males (17 beds) and two wards for females (14) beds as well as at Psychiatry, Neurology, and Neuro Surgery center. The center composed of two floors for psychiatric male with a capacity of 30 beds, one floor for psychiatric female with a capacity of 20 beds, two floors for child psychiatry and one floor for substance drug users. Both hospitals are under the supervision of the Ministry of higher education and Scientific Research, they work 24 hours \day 7dayes\ week.

Subjects:

A convenient sample of 60 patients with major depressive disorders selected from the previously mentioned settings.

Inclusion criteria:

- Patients age above 18 years,

-Both sex patients diagnosed with MDD according to DSM-5

-Has active suicide attempt during admission.

- Willing to participate in the study.

-Able to communicate in a coherent manner.

Exclusion criteria:

-Patients diagnosed with mental retardation, comorbid psychiatric disorders or substance use disorders.

-They divided randomly into experimental and control group 30 patients in each group by using simple random technique through picking their codes up from a pool. The first two-selected codes will be assigned for the control group and the second two for the experimental group. The process repeated till the required number obtained.

Tools of the study:

Tools of data collection: -

Three tools used in this study to collect **patient's data: -**

Tool (I): Depression Scale (CES-D): It consists of two parts as the following:

Part (a): - Socio demographic and clinical Characteristics: -

These parts was developed by the researcher and include socio demographic characteristics including age, gender, marital status, place of residence, levels of education, cohabitation, occupation, and clinical information such as admission method and age at disease onset, duration of disease, current medication, previous suicidal attempts and previous hospitalization.

Part (b):- Depression Scale (CES-D):

It was developed by the center for Epidemiologic Studies Depression scale (CES-D) **Andresen E, Malmgren J, et al (1994),** it adopted by the researcher. This scale used to assessing severity of depressive

symptoms. It consists of 10-item Likert scale questionnaire and divided into three subscales namely; depressed affect (3 items), somatic symptoms (5 items), and positive affect (2 items). Each item has a variety of options from 0 to 3. "Never or rarely" (score of 0) to "always" (score of 3) . The score is reversed in the positive affects subscale items (5 and 8). The total score may vary from 0 to 30. Scores that are higher indicate that the symptoms are more severe.. The total score will be as follow:-

- Zero < 10 = Mild depression.
- 10 < 20 = Moderate depression.
- 20 < 30 = Sever depression.

Tool II: Self-Compassion Scale:

This scale was developed by **Dr. Kristin Neff (2003)**, it adopted by the researcher. It used to measure the appraisal and perception of one's life situations. It consists of 26 items divided into 6 subscales namely; Self-Kindness subscale (items 5, 12, 19, 23, 26), Self-Judgment subscale (items 1, 8, 11, 16, 21), Common Humanity subscale (items 3, 7, 10, 15), Isolation subscale (items 4, 13, 18, 25), and Mindfulness subscale (items 9, 14, 17, 22) Additionally, there is the Over-identification subscale (items 2, 6, 20, 24). On a five-point Likert scale, patients respond with a score of 1 (almost never) to 5 (almost always). The score for the negative subscales (self-judgment, isolation, and over-identification) will be reversed. The total score will be as follow:-

- 26 <44= Low self-compassion.
- From 44 <87 = Moderate self-compassion.

-From 87 < 130 =High self-compassion.

Tool III: The Suicide Ideation Scale:

It was developed by Beck & Kovacs (1979), it adopted by the researcher. This scale used to evaluate the extent of suicidal impulses or desires and the degree of overt behavior or verbalization that has been used to communicate them to others. The scale consists of 19 items that are divided into three subscales: the active suicide desire subscale, which is characterized by an existing wish to die and a plan for how to carry out the death (items 1-8, 10, 11, and 15), and the passive suicide desire subscale, which is characterized by a desire to die but without a specific plan for carrying out the death (items 5, 9, 14, and 19), And preparation subscale; which include specific plan for suicide (items 12, 13, 16-18). All items rated on 3-point Likert scale that ranging from 0 to 2. Higher scores indicate high suicide intention. The total score will be as follow:-

- < 50% = Low suicide intention

-50% -75%=Moderate suicide intention

- > 75. = High suicide intention

Method

The steps to be followed in this study were:

Obtaining approval

-Official permission was obtained before conducting this study from the following settings:

-The dean of Faculty of Nursing, Tanta University.

-The director of inpatient Psychiatry ward as well as Psychiatry, Neurology, and Neuro-Surgery center of Tanta University

Ethical consideration:

-Approval obtained from Faculty of Nursing Scientific Research Ethical Committee to conduct the study (Code. 340-12-2023).

-An informed consent obtained from the patients after explanation the purpose of the study.

- Anonymity and confidentiality of the collected data will be considered.

-Respecting the patient's right to withdraw from the study at any time.

- The nature of the study was cause no harm or pain

-The data confidentiality and the participant's privacy were considered.

Preparing the study tools:

-The tool I part (a) developed by the researcher based on reviewing of the related literature **(Lundberg, Cars et al., 2023)**.

-All tools were translated into Arabic by the researcher.

Validity of the study tools:

The study tools were tested for face and content validity by jury of five professors' expertise in the Psychiatric and Mental Health Nursing field to examine validity of the study tools.

Reliability of the study tools

The validated tools were tested for its reliability using Chronabach's alpha test. The test found that, the entire study tools had an excellent internal consistency (α =0.872).

A pilot study

-It carried out before embarking in the field of work to ascertain the clarity and applicability of the study tools and to identify obstacles that might be faced during data collection. Pilot study was carried out on 10% of the study sample to assess the clarity, viability and the applicability of study tools. Necessary modifications were done accordingly.

-Data was collected using interview method on the individual bases within six month started from February (2024) to August (2024).

Statistical analysis of the data

The data analysis was conducted using IBM SPSS software version 20.0 (Armonk, NY: IBM Corp, released 2011). Categorical data were presented as numbers and percentages. For continuous data, normality was checked using the Kolmogorov-Smirnov test. Quantitative data were

described using the range (minimum and maximum), mean, and standard deviation. Results were considered significant at the 5% level. The tests used included the student's t-test for comparing two groups with normally distributed quantitative variables, the F-test (ANOVA) for comparing more than two groups with normally distributed quantitative variables, and the Pearson correlation coefficient for assessing the relationship between two normally distributed quantitative variables.

Results

Table (1): Represents the distribution of the studied patients regarding their socio-demographic characteristics. This table found that more than half of studied patients belonged to the middle age category between age 20 – <30 56.7% with a mean age (26.77 ± 6.36). An even distribution of sex was observed with an inclination toward female 58.3% and male 41.7%. The large portion of studied patients reputed being single followed by divorced (51.7%, 20.0% respectively). It was found that the highest percentage of patients had university and post university education 36.7%, followed by Secondary education 25.0% and only 16.7% had primary and preparatory education. The majority studied patients were unemployed 73.0%. Rural was common for patients residence.

Table (2): Illustrates the distribution of the studied patients according to their clinical characteristics. Clinically the onset of MDD in the current sample between age 25 – 30 years old represent with mean age (21.40 ± 3.57) emphasizing its early onset nature. Hospital admission for treatments were less frequent in which 56.7% of studied patients have been admitted for less than 5 times with duration of illness less than five years. The minority studied patients 15.0% have been admitting for less than 15 times. The majority 81.7% of studied patients were admitted involuntary. As regard to previous suicide it was noted that, more than half 55.0% of them had previous suicide behavior. More than two thirds 65.0% of studied patients were taking typical antidepressant medication.

Table (3): The table showed that there was a high statistically significant negative correlation between total depression scale and total self-compassion of study group post intervention (r = -0.505, p =0.004*). This mean increase self-compassion associated with decrease depression. While, there was a high statistically significant positive correlation between total depression scale and suicide ideation of study group post

intervention (r = 0.373, p =0.042*). This mean increase level of depression associated with increase suicidal behavior. The matrix also showed that there was high statistically significant negative correlation between self-compassion and suicide ideation of study group post intervention (r = -0.446, p =0.014*,). This mean increase self-compassion associated with decrease suicide.

Figure (1): Represents the distribution of the studied patients according to their level of depression. It was noted that the majority 73.3% of studied patients had sever level of depression, while the minority 8.3 of them had mild level of depression and only 18.4% of them had moderate level of depression.

Figure (2): Represents distribution of the studied patients according to their level of self-compassion among patients with MDD. It was noted that only 10.0% of patients had high level of self-compassion. On the other hand, slightly more than two fifth 43.3% of the studied patients had moderate level of self-compassion while about half of them 46.6% had low level of self-compassion.

Figure (3): Shows distribution of the studied patients according to their suicidal ideation level among patients with MDD. It was noted that the majority 83.3% of studied patients had sever level of suicide among patients with MDD, while the minority of them had mild level of suicide and only 10.0% of them had moderate level.

Table (1): Distribution of the studied patients according to their socio-demographic characteristics.

socio-demographic	Studied patients (n = 60)	
	No.	%
Age (years)		
<20	7	11.7%
20 – <30	34	56.7%
≥30	19	31.6
Min – Max. Mean ± SD	18.0 – 42.0 26.77±6.36	
Sex		
Male	25	41.7%
Female	35	58.3%
Marital status		
Single	31	51.7%
Married	9	15.0%
Divorced	12	20.0%
Widowed	8	13.3%
Educational level		
Illiterate	0	
Literate	0	
Basic Education	10	16.7%
Secondary education	15	25.0%
Intermediate institute	13	21.7%
University and post-university education	22	36.7%
Occupation		
Employed	18	30.0%
Unemployed	42	70.0%
Residence		
Urban	26	43.3%
Rural	35	58.3

Table (2): Distribution of the studied patients according to their clinical characteristics.

clinical characteristics	Studied patients (n = 60)	
	No.	**%**
Onset of disease		
<20	23	38.3%
25 – 30	27	45.0%
≥31	10	16.7%
Min – Max. Mean ± SD.	18.0 – 35.0 21.40 ± 3.57	
Duration of illness	**No.**	**%**
<5 6 – 9 ≥10	36 16 8	60.0% 26.7% 13.3%
Min – Max.	0.0 – 14.0	
Admission route		
Voluntary	11	18.3%
Not Voluntary	49	81.7%
Number of Previous hospitalization		
<5	34	56.7%
5 – <10	17	28.3%
≥15	9	15.0%
Previous suicide		
Yes	33	55.0%
No	27	45.0%
Current medication		
Typical	39	65.0%
Atypical	21	35.0%

Table (3): Correlation matrix between depression, suicide and self-compassion post intervention.

Scales	Suicide Ideation		Self-Compassion	
	r	P	r	P
Depression Scale	**0.373**	**0.042***	**-0.505**	**0.004***
Self-Compassion	**-0.446**	**0.014***	-	-

r:Pearson coefficient *: Statistically significant at $p \leq 0.05$

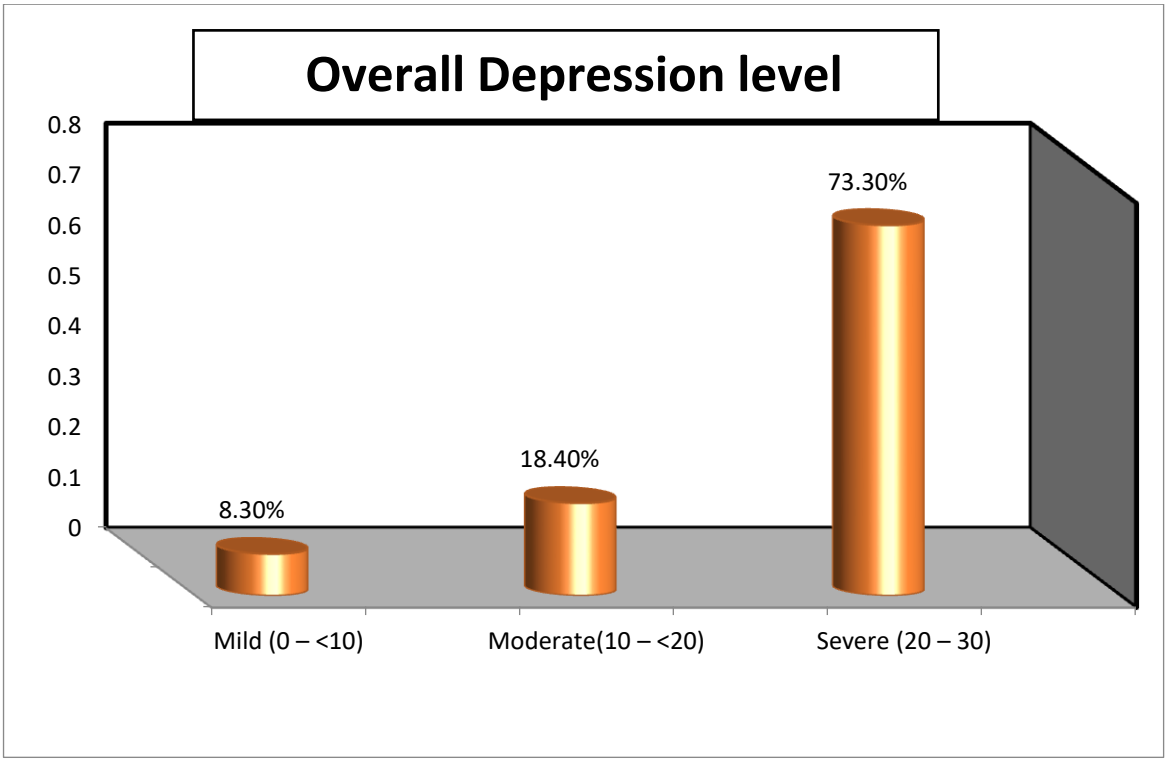

Figure (1): Distribution of the studied patients according to their level of depression among patients with MDD (n = 60).

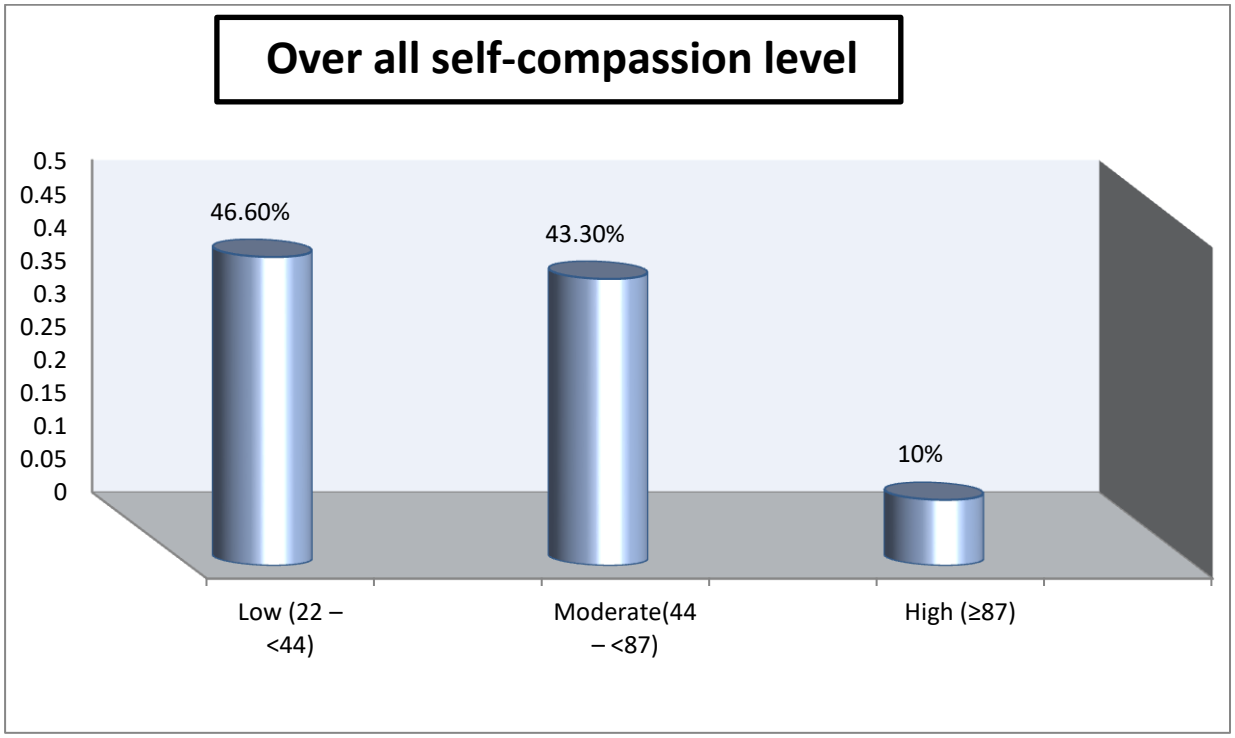

Figure (2): Distribution of the studied patients according to their level of self-compassion among patients with MDD (n = 60).

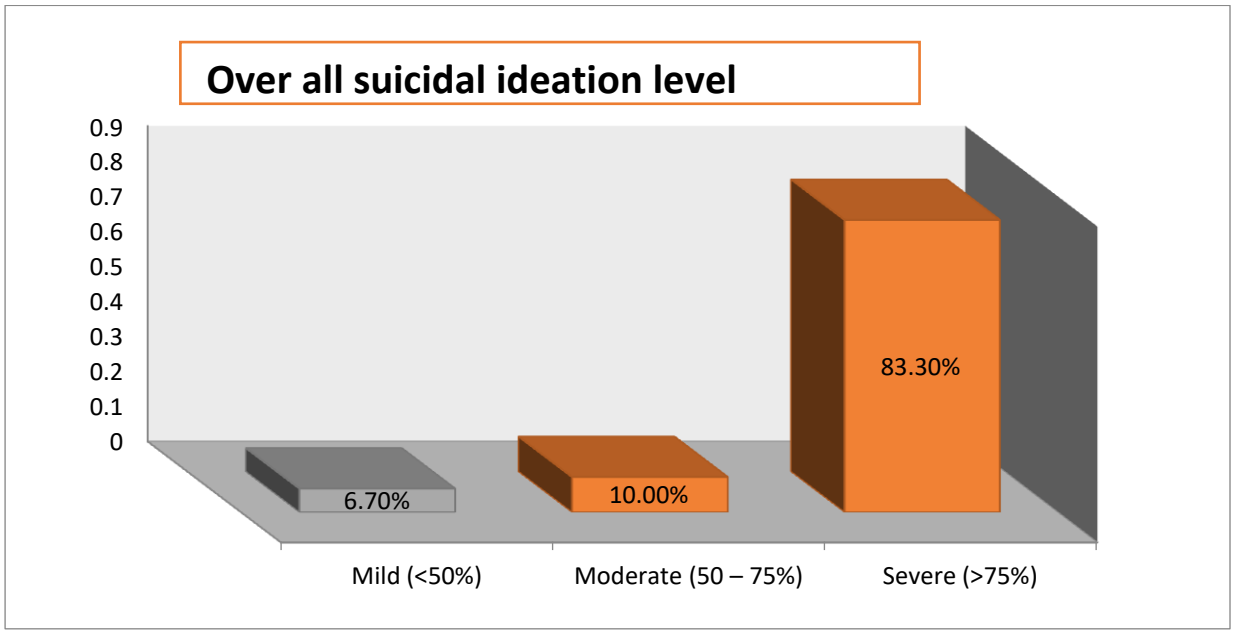

Figure (3): Distribution of the studied patients according to their suicidal ideation level in the study (n = 60).

Discussion

Suicide continues to be a significant public health concern; the risk is prevalent among psychiatric patients with major depressive disorders, resulting in potentially preventable fatalities, despite advancements in science and advocacy **(Melhem, Moutier & Brent D., 2023; Stone, Mack & Qualters., 2021; Shaygan et al., 2021)**. Fostering self-compassion in patients early in treatment might mitigate negative emotional states linked to Major Depressive Disorder (MDD), strengthen coping strategies, enhance mental well-being, and facilitate more enduring recovery **(Yotsidi et al., 2024).** Therefore, the current study aimed to assessment the relationship between Suicidal behavior and self-compassion among patients with major depressive disorders.

The present study revealed that the majority of the patients had sever level of depression and suicide. This may be ascribed to various factors, including the characteristics of the underlying sickness, which frequently imposes a considerable psychological load. Major Depressive Disorder (MDD) is the principal contributor to suicidal conduct, although sleep disturbances, feelings of worthlessness, hopelessness, and anhedonia reduced interest in pleasurable activities both directly and indirectly elevate the likelihood of suicide attempts. Supporting this explanation, a study conducted by **Okamura et al., 2021** found that cognitive, behavioral, and emotional disturbance among patients with MDD may directly and indirectly increase the risk of suicidal attempt.

Additional explanation to this result indicate that depressed and suicidal individuals frequently exhibit irrational thinking characterized by self-deprecation and diminished self-esteem. These traits of negative self-assessment broadly corroborate cognitive theories of Major Depressive Disorder and suicide. Supporting this explanation, a study conducted by **Cheng et al., 2020** reported that this perspective is more accurately represented by negative self-evaluation (i.e., internal thoughts and feelings, traits, physical features, social roles, past experiences, and future objectives).

This explanation confirmed by a study of **Hassan et al., 2020** stated that suicide to be more among young individuals than the elderly and 54% of suicide patients were under 25, and 21% were between 25 and 29, indicating a high incidence among young adults. Also, the result of

Bains Navneet et al., 2022 , revealed that earlier ages of onset were associated with more lifetime suicide attempts, and greater suicidal ideation alongside with substantial functional impairment, nearly one half of the studied patients in age group from 20 -30 years.

Moreover, the current study result was at the same line with result of **Zhong et al., 2023** about the mediating effect of distress tolerance on the relationship between stressful life events and suicide risk in patients with MDD discovered that nearly half of the studied patients with MDD had high suicidal probability. Also, **Roca et al., 2019** studied suicidal risk and executive functions in MDD indicated that nearly two third of the studied patients with MDD are at risk for suicidal probability.

The present study's findings demonstrated a highly statistically significant positive correlation between the total depression scale and the total suicidal ideation. This may be attributed to individuals with Major Depressive Disorder being incapable of managing psychological distress, despair, and significant self-criticism, leading them to contemplate suicide as a means to escape their unbearable suffering. Individuals with self-critical tendencies often resort to suicide as a method of evading the anguish associated with painful self-awareness following the internalization of failed experiences. On the same way, a study conducted by **Okamura et al., 2021)** found that cognitive, behavioral, and emotional disturbance among patients with MDD may directly and indirectly increase the risk of suicidal attempt.

Furthermore, this result may be due to increased suicidal probability suicidal ideation, and suicidal thoughts are a major risk factor for suicide attempts among patients with MDD caused by guilt feeling, feeling of worthlessness, hopelessness, helplessness, and absence meaning of life. Moreover, disruption of family connections, lack of social support and interpersonal relationship may be attributed to increase the risk of suicide. A study conducted by **Ribeiro et al ., 2018, Riera-Serra et al., 2024** indicated that there were positive relationships between depression and hopelessness and subsequent suicidal thoughts .

In explaining the findings of this research, it can be said that, according to **(Shin et al., 2023)**, self-compassion is defined as gentleness and tenderness combined with a profound awareness of

suffering and stress and a desire for alleviation. It also includes kindness toward oneself during difficult and stressful situations rather than self-judgment.

Regarding level of self-compassion among patients with MDD it was found that, the majority of study group had low level of self-compassion. This may be attributed to lack of clear understanding of what self-compassion entails. Cultural norms and societal expectations often emphasize achievement and perfectionism which can undermine self-compassion. Individuals socialized to prioritize external success or to suppress vulnerability may view self-compassion as a sign of weakness or complacency.

Negative self-compassion impairs emotional regulation and adversely impacts an individual's mental health, resulting in heightened feelings of loneliness and hopelessness. Negative self-beliefs, sometimes reinforced by past experiences such as failure, rejection, or trauma, result in internalized critiques manifested through a hostile inner dialogue that obstructs self-compassion and cultivates emotions of shame, worthlessness, and inadequacy **(Fehling et al., 2021)**.

This explanation is supported by **(Yotsidi et al., 2024)**, found that the establishment of secure attachment and self-compassion as critical protective factors against suicidality. In the same approach, the study of **(Bui et al., 2021)**, discovered that self-compassion plays a mediating function in the relationship between perceived stress and proactive coping, indicating that self-compassion has a protective effect on psychological health. There was high statistically significant negative correlation between self-compassion and suicide ideation. This may be attributed to promoting self-compassion not only improves psychological well-being but may also serve as a critical protective factor against suicidal thoughts and behaviors. In addition help to facilitate the awareness and identification of effective and acceptable targets for the prevention suicide-related behaviors. Patients' having higher levels of compassionate self-responding (i.e., self-kindness, sense of common humanity, mindfulness) were identified as a potentially important protective against suicidal risk. Reducing uncompassionate responses, including self-judgment, isolation, and over-identification. Suicide prevention strategies are

consistent with the promotion of practical skills and awareness among individuals regarding self-compassionate responses to interpersonal and life stressors. Conversely, those with higher self-compassion are more likely to approach difficult emotions with acceptance and care, reducing the impact of negative cognitive patterns that fuel suicidal thinking

Supporting this explanation, a study conducted by **(Djaja et al.,2025)** cleared that Self-compassion acts as a protective factor in modulating the link between unmet interpersonal needs and recent suicidal ideation in young Indonesian adults. Also, a study conducted by **(Per et al ., 2022)** reported that there was significant negative relationships emerging between mindfulness and self-compassion with suicide attempt history

Conclusion

The findings of the present study highlight the significant enhancing self-compassion to reduce self-criticism , improve suicide behavior and fostered greater emotional stability, resilience, self-kindness and hope among patients with Major Depressive Disorders (MDD).

Recommendations

Based upon the current study findings of this study, the following recommendation was proposed:

-Emphasize self-compassion training includes self-compassion focused interventions (e.g., mindfulness, self-kindness exercises) to reduce self-criticism and improve suicide behavior with MDD.

-Replication of the study on a larger sample size of patients in different hospitals and multiple geographical areas for more understanding of the nature of relationships between suicide and self- compassion, and their relationship with recovery from MDD, also to confirm the result of the study.

-Implement follow-up support programs post-triage to maintain and enhance self-compassion levels, preventing relapse and promoting long-term emotional well-being.

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Effects of Organizational Corruption and Institutional Transparency on Nurses' Well-Being

Zohor Zakaria Elsaeed [1], Loly Mohamed Shawky Elbus[2] , Moshera Mohamed Elsayd[3]

[1]Assistant professor of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

[2,3]lecturer of Nursing Administration, Faculty of Nursing, Tanta University,Egypt.

Corresponding author: Zohor Zakaria Elsaeed

Email: Zohour.ahmed@nursing.tanta.edu.eg

Abstract

Background: Organizational corruption in healthcare environment can apparent in innumerable forms, involving inducement, misappropriation, fraud, and extortion. It is a collective responsibility that requires a multifaceted approach, including the creation of successful anti-corruption strategies and policies, a culture and philosophy of transparency, and the enhancement of ethical and acceptable behavior that promote nurses well-being. **Aim:** to assess effect of organizational corruption and institutional transparency on nurses' well-being. **Research design:** A descriptive correlational research design was applied. **Setting:** The study was implemented in all departments and ICU at Tanta International Teaching Hospital. **Sample:** A stratified disproportional random sample (n= 320) from nurses. **Tools:** Three tools were utilized. Organizational corruption, institutional transparency and nurses' well-being Scales. **Results:** About two thirds of nurses had a low level regarding overall organizational corruption. More than half of nurses had high level regarding institutional transparency. Also, less than half of nurses had high level regarding nurses' wellbeing. **Conclusion:** there was statistically significant correlation between organizational corruption and wellbeing and there was statistically significant correlation between institutional transparency and nurses' wellbeing. **Recommendations:** The study suggested educating nurses on anti-corruption tactics and approaches for organizational respect and transparency. Put steps to combat and struggle corruption, involving imposing and implementing policies, rules and regulations, creating an anti-corruption team, structure and systems for monitoring, punishing offenders, and gratifying truthful conduct. Also, acknowledge and celebrate nurses' efforts and achievements to boost spirits and nurses well-being

Keywords: Institutional transparency, nurses' wellbeing, organizational corruption

Introduction

Corruption in healthcare organization is a prevalent issue that influences the quality, availability, and affordability of healthcare services globally. It is a multifaceted and complicated problem with extensive consequences, compromising poor patient care and outcomes, increased healthcare expenses and costs, and corrosion of trust in the healthcare organization. Corruption, frequently labelled as a cancer in society, create a significant hazard to democratic legitimacy, damage organizations, and breaks public trust **(Aarb., Mushtaq., Hameed ,2021)**. Organizational corruption (OC) represents an unfavorable manifestation of counterproductive work behavior, and individuals abuse their positions of power, authority, or organizational standing for personal or collective profit. It involves a withdrawal from created standards, values, norms, ethics and modern bureaucratic protocols **(Saputra & Saputra, 2021)**.

Organizational corruption has been exposed in the medical field in a different areas, including hospital building, purchasing of materials and equipment, drug supply and usage, health employee education, production of medical studies, absenteeism, unofficial and illegal fees, dishonesty, misbehave of resources, and requirements, stealing, differentiation among health care providers, and financial mishandling **(Fotaki, 2020)**. Furthermore, corruption occurred due to insufficient oversight, follow-up, and responsibility and accountability, low income, and earnings, encouragements deficit, lack of independence to employ and regulate payment, when it comes to working hours, or taking pieces of training and allowing absences, executives treat their subordinates uncooperatively. Additionally, mistakes extend from small scale actions by physicians and nurses who demand kickbacks or unofficial costs to more significant actions at the highest level when individuals in positions of authority steal money or divert funds from those who require it for their own financial gain (**Atiya , Sliman, Attia , 2022).**

Organizational corruption includes four dimension which includes the following: Favoritism, which occurs when people in positions of authority exhibit unfair preference, inappropriate use of resources involving the misuse of authority for personal preferences; negligence of duty, which refers to officials failing in their responsibilities; and conflict

of interests, which occur when decision-makers struggle to strike a balance between their own interests and those of the public or their organization. Organizational corruption severely undermine institutional transparency by fostering secrecy, diverting resources and creating a culture of denial and misrepresentation making it difficult to detect wrong doing and hinder accountability.

(**Bittencourt., Reck ., & Arafa, 2022)**

Transparency in healthcare organizations is vital for generating a culture of patient-centered care where patients are valued, knowledgeable, and actively involved in their health and well-being. Institutional transparency is an essential component of health care to improve patient safety and quality. Transparency comprises open communication about the performance, results, and procedures of health care organization that leading to improved accountability, trust, and patient engagement. (**Solteo., & Schneider, 2022).** Patient centered care is given top priority by transparent which also, encourage shared mental models between patient and health care providers and involve patients in decision making. Health care institutional transparency is a complex idea with many facets, all of which are essential to the general efficacy and quality of health care systems. **(Ruppel., Stranzl,J & Einwiller, 2022)**

There are five dimensions to institutional transparency namely Disclosure refers to the sufficient information is shared by the sender. Clarity indicates whether the shared information is recognized as being clear and can be understood as a measure of the congruence of the proposed and understood meaning of shared information. Accuracy is the degree to which the shared information is perceived to be accurate and correct and not influenced and biased at the time of sharing **(Schnackenberg & Tomlinson, 2016)**. Timeliness is about the right time and moment to share information; sharing information too early or too late decreases the worth of the information. Finally, Relevance is the degree of personal importance (professionally and/or privately) of disclosed information. Organizational corruption has adverse effect on institutional transparency and nurses' wellbeing by causing chronic stress, anxiety, burn out and moral distress.

(Hossiep, Märtins, & Schewe, **2021)**

Nurses Well-being at the workplace is crucial for reinforcement a positive work environment, promoting nurses' involvement, and improving overall organizational productivity. It can be defined as a state of being well, pleased, and comfortable both mentally and physically. It displays how nurses perceive their lives, involving their sense of purpose, constancy, faithfulness, and relationship quality. Promoting well-being in the workplace is crucial for both nurses and organizations. A healthy work environment contributes to increased productivity, nurses' retention, and job satisfaction. When nurses feel supported and valued, they are more likely to be engaged and inspired in their roles. Additionally, organizations that prioritize well-being can reduce absenteeism and healthcare costs associated with stress and mental health issues. **(Chang 2024**) Nurses' wellbeing included six dimensions; Physical wellness: Keeping health through regular exercise, good nutrition, enough sleep, and regular medical check-ups. Physical wellness comprises taking initiative steps to prevent sickness and manage existing conditions. Emotional wellness: is a psychological stability, and the capability to handle with anxiety and stress. Occupational wellness: Having a gratifying and significant career. Occupational wellness encompasses satisfaction of job, career growing, balance in work-life, and arrangement between one's role, personal values, and goals. Intellectual wellness: Engaging in lifelong learning, creative pursuits, and critical thinking to stimulate the mind. Intellectual wellness involves seeking out new knowledge, embracing curiosity, staying mentally active, and being open to new ideas and perspectives **(Tremayne, de Bourg, 2023).**

Spiritual wellness: Finding purpose, meaning, and alignment between personal values and life choices. Spiritual wellness is about feeling connected to something better than oneself, whether through conviction, religion nature, personal reflection, or community service. Environmental wellness: Creating and sustaining healthy surroundings that support well-being and reflect respect for the planet. Environmental wellness includes maintaining safe, clean, and organized spaces (e.g., at home, at work, in the community) as well as

being mindful of one's ecological impact. **(Altman., Delgado , 2021)**

Significance of the study

Organizational corruption in healthcare is a significant problem that undermines the effectiveness, superiority, and availability of health care facilities. It distracts resources, increases service costs, and cause the employment of poorly qualified decision-makers and care providers. Addressing organizational corruption needs a complete strategies and technique to promote honesty, integrity and transparency within organizations. Transparency International's advocacy and corporate sustainability initiative aim to end corruption by promoting transparency, accountability, and integrity globally. Also, institutional transparency plays a crucial role in enhancing nurses' well-being in healthcare settings. It raises leadership quality and improves teamwork. Organizational corruption may affect negatively on nurses well-being. So, this study aim to assess effect of organizational corruption and institutional transparency on nurses well-being.

Aim of the study

The study aimed to:

Assess the effect of organizational corruption and institutional transparency on nurses' well-being.

Research Questions:

1. What are the perception levels of nurses' organizational corruption?
2. What are the perception levels of nurses' institutional transparency?
3. What are the perception levels of nurses' well-being?
4. What is the effect of organizational corruption and institutional transparency on nurses' well-being?

Subjects

Study design

The research design used in this study was descriptive-correlational.

Study setting:

The study was conducted in Tanta International Teaching Hospital which is affiliated to the Ministry of the Higher Education and Scientific Research at all intensive care units (Internal Medicine, Pediatric, Cardiothoracic, Anesthesia, Cardiac and Neonatal ICUs) & all department (Dialysis Unit, Operating Room Unit, Oncology Surgery, Gastrointestinal department, Outpatient Clinics, Pediatric Surgery, Vascular Surgery, Neurosurgery, Cardiac Catheterization, Endoscopy Unit) .

Subjects

A stratified disproportional random sample (n=320) were taken from nurses who are working in the previously mentioned setting, the

total study sample was calculated using Epi. Info. Microsoft to ensure obtaining an adequate and representative size, where N= population size (612),Z= confidence level at 99%, and d= margin of error proportion (0.05).

Tools of data collections

Three tools were used in this study

Tool I: Organizational Corruption Scale: This scale was developed by **Balcı, O¨ zdemir, Apaydın, & O¨ zen (2012)** . It included two parts

Part (1): Personal and work related characteristics of nurses: age, gender, marital status, years of experience, department, and educational qualification. Part (2): Organizational Corruption Scale: to measure organizational corruption as perceived by nurses. The scale consisted of 18 items grouped into four dimensions: inappropriate use of resources (7 items), favoritism (3 items), negligence of duty (4 items), and conflict of interests (4 items) with a five points Likert Scale ranged from 1 to 5 where (1) never, (2) rarely, (3) sometimes, (4) often and (5) always.

Scoring system: Nurses' responses were categorized and all items scores summed up according to statistically cutoff points into: High level of organizational corruption >75% moderate level of organizational corruption 75%-60%, and low level of organizational corruption <60%.

Tool II: **Institutional Transparency Scale**:

This scale was developed by **Hossiep, Märtins, & Schewe**, (**2021); Schnackenberg, Tomlinson, & Coen**, **(2021)** to measure nurses' perceptions of institutional transparency. It consisted of 10 items grouped into five dimensions: Disclosure (2 item), Clarity (2 items), Accuracy (2 items), Timeliness (2 items), and Relevance (2 items). Nurses' agreement were measured on a five points Likert Scale ranged from 1 to 5 where (1) strongly disagree, (2) disagree, (3) little agree, (4) agree and (5) strongly agree. **Scoring system:** The total score was calculated by cut off points and summing scores of categories into: High level of institutional transparency >75%, moderate level of institutional transparency 75%-60%, and low level of institutional transparency <60%.

Tool III: **Nurses' Well-being Scale**: This scale was developed by **Giordano, et al. (2024; De Souza, and Hidalgo,2012)**. It used to measure nurses' well-being. This scale consisted of six dimensions of emotional (5 items), occupational(5 items), intellectual(7 items),

environmental(5 items), physical (8 items), and spiritual wellness (3 items). Nurses' responses were measured on a five points Likert Scale ranged from 1 to 5 where (1) strongly disagree, (2) disagree, (3) little agree, (4) agree and (5) strongly agree. **Scoring system:** The total score was calculated by cut off points and summing scores of categories into: High level of nurses' well-being >75%, moderate level of nurses' well-being 75%-60%, and low level of nurses' well-being <60%.

Validity and reliability:

The scales of this study were submitted to a panel of five specialists in the field of nursing administration to judge and evaluate its clarity, content, and face validity. They were asked to perform the modifications essential for items that are vague or distinct. The value of Cronbach's coefficient alpha was used to judge and evaluate the study scales internal consistency that revealed 0.98 for organizational corruption scale, 0.91 for institutional transparency scale, and 0.95 for nurses' well-being scale.

Pilot study:

The pilot study was applied on 32 nurses, representing 10% of study sample and they excluded from the main study subjects because it collected from another place but with the same characteristics of study sample. Pilot study aimed to check items sequence and applicability, relevance of questions, consistency, clarity, understandable language, and fitness of the tools, beside, control any obstacles faced during data collection. Essential modifications were done. The expected time required for filling the questionnaire sheet approximately taken 20-30 minutes for each subject.

Data collection technique:

This phase lasted for about three months, commencing in October 2025 and ending in January 2026. The data was gathered via a self-administered questionnaire. It was back-translated to guarantee correctness and translated into Arabic so that it was understandable to nurses of different educational levels. In small groups, the questionnaire was given to the nurses in their respective units.

Ethical considerations:

Tanta Faculty of Nursing Research Ethical Committee code number (823-10-2025) was received. Before to data collection, Tanta International Teaching Hospital Chief Executive Officers received authorization to conduct the study, which was sent to department

supervisors before to the research's execution. The purpose of the study was explained to the participants, and consented to participate. They were assured that all data acquired would be utilized only for research, that the study was risk-free, and that their permission to share was required in order to be a part of the research. Every participant was promised that they might leave at any time.

Statistical analysis of the data

The statistical analysis of the data was performed using IBM SPSS software version 27.0 (Armonk, NY: IBM Corp, released 2020).Categorical data were summarized as numbers and percentages. For continuous data, normality was assessed using the **Kolmogorov-Smirnov test**. Quantitative data were described using range (minimum and maximum), mean and standard deviation. Significance of the obtained results was judged at the 5% level. The used tests were coefficient to correlate between two normally distributed quantitative variables

Results

Table (1): Illustrates nurses personal and work related characteristics. As noticed in this table, the age of nurses ranged between 22-42 years old with mean age 29.17 ± 4.03. More than half (59.1%, 57.8%) of nurses were females and married, respectively. About two third (66.6%) of nurses had Bachelor of nursing. Regarding to years of experience more than half (54.7%) of nurses had -<5 year, with mean years of experience 5.57 ± 3.59. For about work unit, majority (82.5%) of nurses worked in wards and minority (17.5%) of them worked in ICU.

Figure (1): Demonstrates level of nurses' perception regarding overall organizational corruption. This figure revealed that about two thirds of nurses had a low level regarding overall organizational corruption. While, above quarter of them had high level and low percent of them had moderate level regarding overall organizational corruption

Table (2): Illustrates nurses' perception level of organizational corruption dimensions. This table showed that high percent (76,6%, 70.3%) of nurses had low levels of organizational corruption regarding to inappropriate use of resources and favouritism respectivly. Also, equal percent (67.8%) of nurses had low level of perception regarding negligance of duty and conflict of interest.

Table (3): Reveals nurses' mean score, standard deviation and ranking regarding organizational corruption dimensions. The table showed that the highest mean score (45.29 ± 38.55) of nurses perception about organizational corruption was for negligence of duty with average score 2.81 ± 1.54, followed by conflict of interest with mean score 44.88 ± 37.93, with average score range (2.80 ± 1.52) followed by favoritism with mean score 43.15 ± 36.37 and average score (2.73 ± 1.45) while, inappropriate use of resources was the lowest mean score (34.50 ± 23.61).

Figure (2): Shows levels of nurses' perception regarding overall institutional transparency. Above half of nurses had high level regarding institutional transparency and more than quarter had moderate level and low percent had low level regarding institutional transparency.

Table (4): Illustrate overall levels of nurses' perception regarding institutional transparency dimensions. It was observed that more than half (54.4%) of nurses had moderate level regarding disclosure dimension. Less than half (44.4%, 43.4 %42.8%, 41.9%) of nurses had moderate levels regarding clarity, relevance, timeliness, and accuracy dimensions of institutional transparency, respectively.

Table (5): Demonstrates nurses mean score, standard deviation, and ranking regarding institutional transparency dimensions. It was observed that the highest mean score (73.91 ± 21.52) nurses' perception about institutional transparency was for relevance and the disclosure was the lowest mean score (68.87 ± 23.34)

Figure (3): demonstrates levels of nurses' perception regarding nurses' overall well-being dimensions. This figure showed that less than half (45.6%) of nurses had high level regarding overall nurses' well-being's and more than one third (34.4%)of nurses had low level regarding overall nurses' well-being and low percent (20%) of them had moderate level regarding overall nurses' wellbeing.

Table (6): Demonstrate levels of nurses' perception regarding wellbeing dimensions. Equal percent (44.7%) of nurses had high level regarding intellectual wellness and physical wellness dimension respectively. Less than half (44.1%, 42.8 %, 41.9 %,) of nurses had high level regarding occupational wellness, environmental wellness and emotional wellness dimensions respectively. Also, more than one

third (35.6%) of nurses had high level regarding spiritual wellness dimension.

Table (7): **Reveals mean score, standard deviation, and ranking of nurses' wellbeing dimensions**. It was observed that environment wellness dimension was ranked as the highest mean score (67.56 ± 22.18) with average score (3.70 ± 0.89) . While the lowest mean score (65.70 ± 24.50) was for Spiritual wellbeing with average score (3.63 ± 0.98)

Figure (4): Shows correlation between organizational corruption and nurses' well-being. There were statistically significant correlation was found between organizational corruption and nurses wellbeing at p=0.001

Figure (5): Shows correlation between institutional transparency and nurses' well-being. There were positive statistically significant correlation was found between institutional transparency and nurses well-being at $p<0.001$.

Table (1): Nurses' personal and work related characteristics (n = 320)

	No.	%
Age (years)		
≤30	222	69.4
>30	98	30.6
Min – Max.	22.0 – 42.0	
Mean ± SD.	29.17 ± 4.03	
Sex		
Male	131	40.9
Female	189	59.1
Marital status		
Married	185	57.8
Not married	135	42.2
Qualification		
Nursing Diploma	12	3.8
Technical Nursing Institute	84	26.3
Bachelor Of Nursing	213	66.6
Post Graduate Studies	107	33.4
Years of Experience		
≤5	175	54.7
>5	145	45.3
Min – Max.	1.0 – 20.0	
Mean ± SD.	5.57 ± 3.59	
Work unit		
ICU	56	17.5
Wards	264	82.5

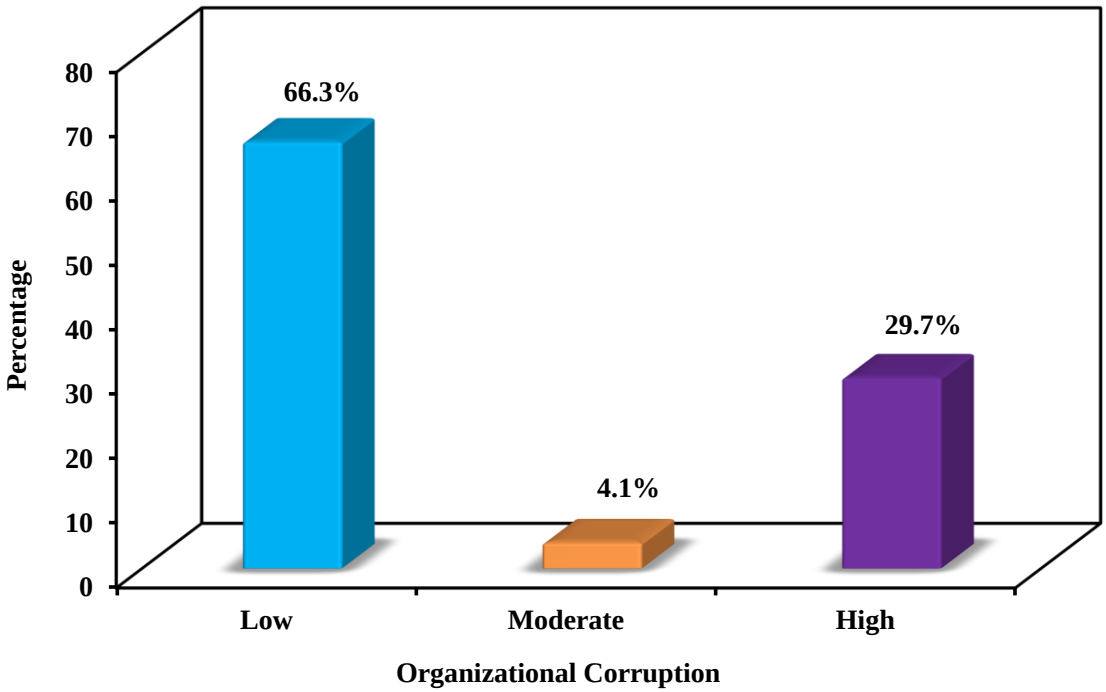

Figure (1): Level of nurses' perception regarding overall organizational corruption

Table (2): Nurses' perception levels regarding organizational corruption dimensions (n = 320)

Organizational corruption dimensions	Levels of Organizational Corruption					
	Low (<60%)		Moderate (60 – 75%)		High (>75%)	
	No.	%	No.	%	No.	%
Inappropriate use of resources	245	76.6	75	23.4	0	0.0
Favoritism	225	70.3	20	6.3	75	23.4
Negligence of duty	217	67.8	7	2.2	96	30.0
Conflict of interest	217	67.8	7	2.2	96	30.0

Table (3): Nurses' mean score, standard deviation and ranking regarding organizational corruption dimensions (n = 320)

Organizational corruption Dimensions	Score Range	Total Score		Average Score (1 – 5)	Percent Score	Rank
		Min. – Max.	Mean ± SD	Mean ± SD	Mean ± SD	
Inappropriate use of resources	(7 – 35)	7.0 – 28.0	16.66 ± 6.61	2.38 ± 0.94	34.50 ± 23.61	**4**
Favoritism	(3 – 15)	3.0 – 15.0	8.18 ± 4.36	2.73 ± 1.45	43.15 ± 36.37	**3**
Negligence of duty	(3 – 15)	3.0 – 15.0	8.43 ± 4.63	2.81 ± 1.54	45.29 ± 38.55	**1**
Conflict of interest	(4 – 20)	4.0 – 20.0	11.18 ± 6.07	2.80 ± 1.52	44.88 ± 37.93	**2**

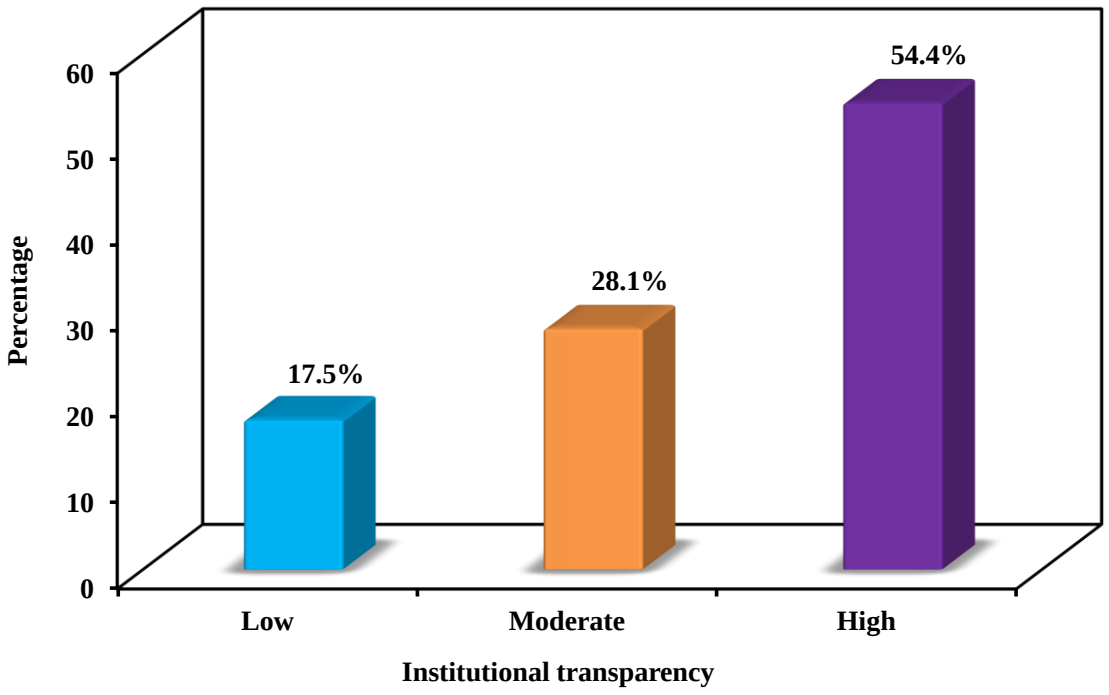

Figure (2): Levels of nurses' perception regarding overall institutional transparency (n = 320)

Table (4): Levels of nurses' perception regarding institutional transparency dimensions (n = 320)

Institutional transparency dimensions	Levels of Institutional transparency					
	Low (<60%)		Moderate (60 – 75%)		High (>75%)	
	No.	%	No.	%	No.	%
Disclosure	64	20.0	174	54.4	82	25.6
Clarity	55	17.2	142	44.4	123	38.4
Accuracy	58	18.1	134	41.9	128	40.0
Timeliness	68	21.3	137	42.8	115	35.9
Relevance	53	16.6	139	43.4	128	40.0

Table (5): Nurses' mean score, standard deviation and ranking regarding institutional transparency dimensions (n = 320).

Institutional transparency dimensions	Score Range	Total Score		Average Score (1 – 5)	Percent Score	Rank
		Min. – Max.	Mean ± SD	Mean ± SD	Mean ± SD	
Disclosure	**(2 – 10)**	2.0 – 10.0	7.51 ± 1.87	3.75 ± 0.93	68.87 ± 23.34	**5**
Clarity	**(2 – 10)**	2.0 – 10.0	7.73 ± 1.97	3.87 ± 0.98	71.68 ± 24.57	**2**
Accuracy	**(2 – 10)**	2.0 – 10.0	7.71 ± 2.03	3.86 ± 1.02	71.41 ± 25.38	**3**
Timeliness	**(2 – 10)**	2.0 – 10.0	7.66 ± 1.84	3.83 ± 0.92	70.70 ± 22.98	**4**
Relevance	**(2 – 10)**	2.0 – 10.0	7.91 ± 1.72	3.96 ± 0.86	73.91 ± 21.52	**1**
Overall	**(10 – 50)**	**13.0 – 50.0**	**38.53 ± 8.16**	**3.85 ± 0.82**	**71.31 ± 20.39**	

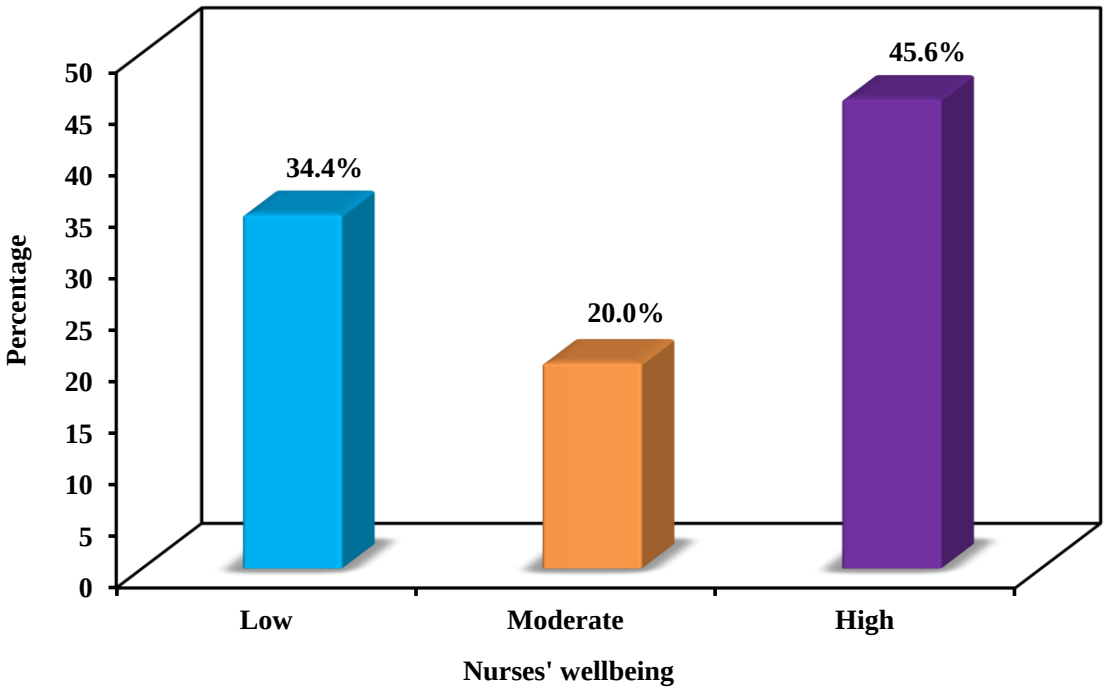

Figure (3): Levels of nurses' perception regarding nurses' overall well-being dimensions (n = 320).

Table (6): Levels of nurses' perception regarding nurses well-being dimensions (n = 320)

Nurses well-being dimensions	Levels of Nurses' wellbeing					
	Low (<60%)		Moderate (60 – 75%)		High (>75%)	
	No.	%	No.	%	No.	%
Emotional wellness	97	30.3	89	27.8	134	41.9
Occupational wellness	88	27.5	91	28.4	141	44.1
Intellectual wellness	89	27.8	88	27.5	143	44.7
Environment wellness	89	27.8	94	29.4	137	42.8
Physical wellness	108	33.8	69	21.6	143	44.7
Spiritual wellness	119	37.2	87	27.2	114	35.6

Table (7): Mean score, standard deviation, and ranking of nurses well-being dimensions (n = 320)

Nurses wellbeing dimensions	Score Range	Total Score		Average Score (1 – 5)	Percent Score	Rank
		Min. – Max.	Mean ± SD	Mean ± SD	Mean ± SD	
Emotional wellness	**(5 – 25)**	6.0 – 25.0	18.36 ± 4.47	3.67 ± 0.89	66.80 ± 22.34	**4**
Occupational wellness	**(5 – 25)**	5.0 – 25.0	18.44 ± 4.58	3.69 ± 0.92	67.22 ± 22.91	**3**
Intellectual wellness	**(7 – 35)**	8.0 – 35.0	25.86 ± 6.12	3.69 ± 0.87	67.34 ± 21.84	**2**
Environment wellness	**(5 – 25)**	5.0 – 25.0	18.51 ± 4.44	3.70 ± 0.89	67.56 ± 22.18	**1**
Physical wellness	**(8 – 40)**	9.0 – 40.0	29.37 ± 7.14	3.67 ± 0.89	66.78 ± 22.30	**5**
Spiritual wellness	**(3 – 15)**	3.0 – 15.0	10.88 ± 2.94	3.63 ± 0.98	65.70 ± 24.50	**6**
Overall	**(33 – 165)**	**38.0 – 165.0**	**121.4 ± 28.95**	**3.68 ± 0.88**	**66.99 ± 21.93**	

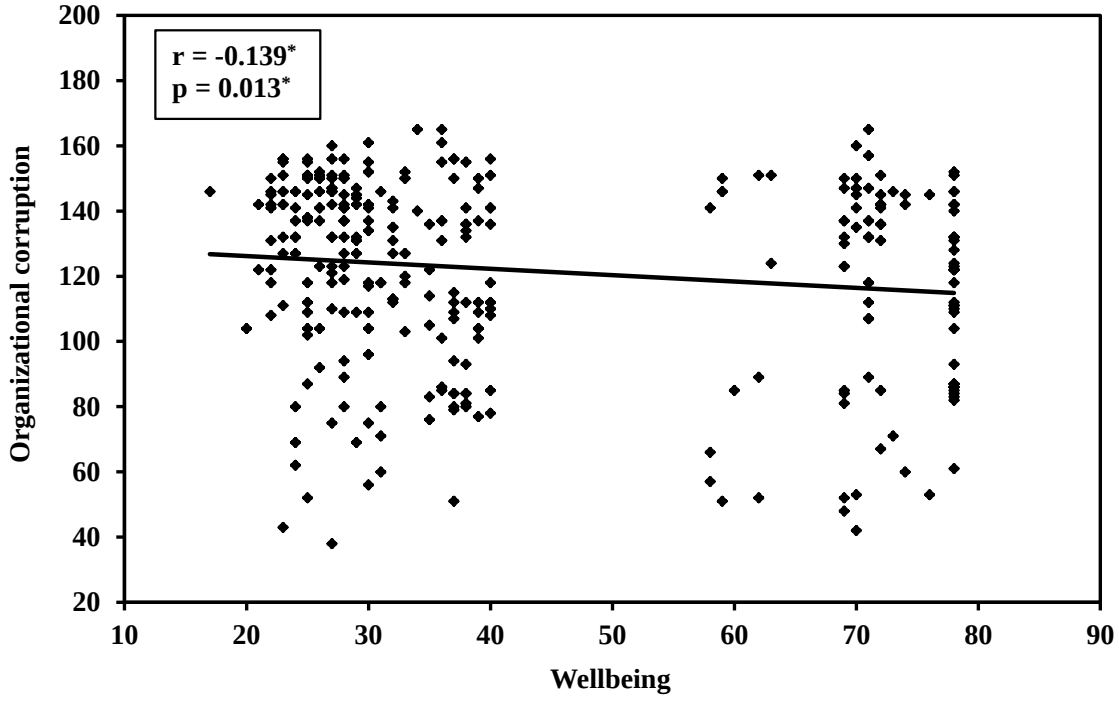

Figure (4): Correlation between organizational corruption and nurses' well-being (n = 320)

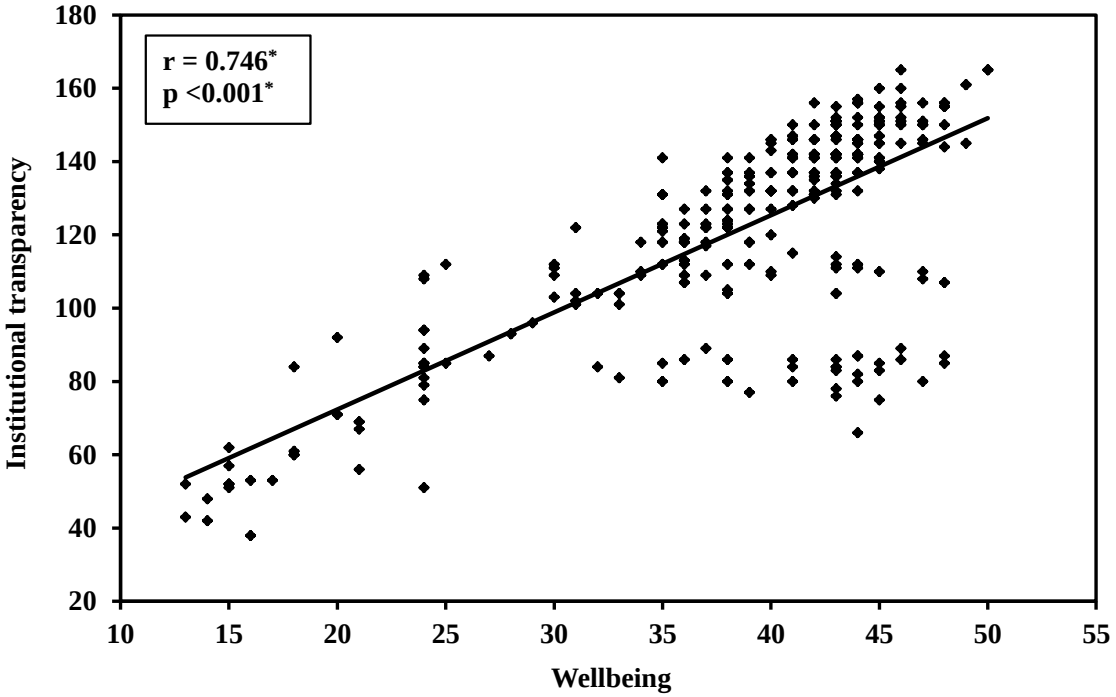

Figure (5): Correlation between institutional transparency and nurses' wellbeing (n = 320).

Discussion

The sickness that destroys an organization's performance is the corruption. It is any abuse of authority and position for one's own benefit **Aarb., Mushtaq., Hameed (2021)**. Organizational corruption negatively affects nurses' well-being by fostering unfair practices, ethical violations, and a lack of trust, which increase work-related stress and emotional exhaustion **Ashforth & Anand (2003) ; Lasthuizen et al. (2011).** Equally, institutional transparency enhances nurses' well-being by promoting openness, accountability, and clear communication, thereby reducing uncertainty and strengthening trust in management **(Grimmelikhuijsen et al. (2013) ;Hassan & Wright (2020).** So the study intended to assess the effect of organizational corruption and institutional transparency on shaping nurses' well-being.

Nurses' perception about organizational corruption

This study's results showed that two thirds of nurses had overall low level of organizational corruption. From the viewpoint of the researchers, this outcome could be attributed to the Tanta International Teaching Hospital administration has strong ethical cultures, forceful governance, transparency, clear accountability, effective enforcement, and fair systems, good management, high staff morale and rules, and genuine commitment to justice, rather than just profit. This result is in line with the study carried out by **Valverde, Fernandez, Buenaño, González-Avella, Cosenza (2024)** who suggested that the reduction of organizational corruption is a result of both a limited distribution of public servant pay and huge groups of interacting servants and businesspeople. Also **Tafolli & Kräuter, (2020)** reported that perceived organizational corruption was negative among participants. Additionally **Gorsira, Steg, Denkers, & Huisman (2018)** indicated that the respondents reported themselves not to be very corruption-prone. Conversely **Abd-Elrhaman, Bakr, Zaki (2023)** showed that almost of the staff nurses in the study had a high view of organizational corruption, Furthermore, **Atiya, Sliman, Attia (2021)** discovered that nearly three-quarters of nurses surveyed had a good impression of the presence of organizational corruption. **Aarb, Mushtaq, & Hameed (2021)** discovered that corruption exists in various forms and at various levels in organizations, and that corruption has a negative impact on organizations**.** Also, **Fotaki, (2020**) found that perceived organizational corruption was positive. **Al-Mahayreh, Abedel-Qader** (**2015)** disagreement with the contemporary study and

initiate that the majority of participant believes that there is one or more of the forms of corruption in the organization.

The existing results presented that the highest mean score was for negligence of duty dimension while the inappropriate use of resources dimension had the lowest mean score among dimensions of organizational corruption as perceived by nurses. Researchers believe this could be attributed to that negligence of duty is considered one of the most visible and frequently encountered forms of hospitals corruption. Nurses are directly involved in day-to-day clinical and administrative activities; therefore, they are more likely to observe behaviors such as lack of commitment to work responsibilities, delay in providing care, absenteeism, and failure to adhere to professional standards. Moreover, heavy workload, staff shortages, in healthcare organizations may contribute to the prevalence of negligence of duty. While, the inappropriate use of resources dimension had the lowest mean score as perceived by nurses, explained by the fact that Tanta International Teaching Hospital applies strict policies, inventory control systems, and auditing procedures to regulate the use of resources, particularly medical supplies and equipment. These control mechanisms may reduce the occurrence of inappropriate resource use or, at least, minimize its detectability by nurses.

The current finding in contrast with **Abd-Elrhaman, Bakr, Zaki (2023)**who revealed that the factor with the greatest mean score among nurses was favoritism, while the dimension with the lowest mean score was the conflict of interests. According to **Zobdeh, Soheylizad, Ezati, Shafieipour, Raziee (2019),** financial corruption was associated with the highest mean score of perceived organizational corruption. Additionally, **Al-Mahayreh & Abedel-qader's (2015)** findings, which showed a notable variation in the prevalence of administrative corruption, conflict with the current findings. Wasta was shown to be the main type of corruption.

Nurses perception about institutional transparency

Over half of nurses experienced an overall high level of institutional transparency, according to the results of the current survey. This could be due to that Tanta International Teaching Hospital have increasingly adopted formal regulations, policies, and standardized procedures to enhance accountability, reduce corruption, and improve service quality. The presence of clear job descriptions, written rules, and structured administrative systems enhances nurses' awareness of

hospital procedures, thereby increasing their perception of transparency. Regular staff meetings, performance evaluations, feedback systems, and accessible administrative information help nurses feel knowledgeable and engaged in the process of making decisions. These findings demonstrate how nurses at Tanta International Teaching Hospital generally have a positive perception of institutional transparency.

The findings of present study supported by **Ahmed, Keshk , Ismail (2024)** who revealed that The majority of the nursing staff under study had a high opinion of the organization's transparency because nursing administration is upfront, honest, and open with nurses, understands their rights and responsibilities, and punishes them when they make mistakes. Additionally, the results of this study were consistent with those of **Emmel et al. (2020)** who discovered that most study participants had a high degree of organizational transparency. On the other hand, the findings of this study contradict those of **Siddiqui's (2020)** study, which found that most participants had a low degree of organizational transparency.

The results of this study showed that nurses' perceptions of institutional transparency dimensions were ranked according to mean scores, with the relevance dimension receiving the highest mean score and the disclosure dimension receiving the lowest. From researchers' point of view this can be explained by differences in how transparency is operationalized and practiced within the hospitals. The high score of the relevance dimension may reflect that nurses perceived the information they receive as directly related to their daily tasks, clinical responsibilities, and immediate decision-making needs, which enhances their sense of clarity and functional transparency in the workplace. In contrast, the low score of the disclosure dimension may indicate limited access to information regarding organizational policies, decision-making processes, financial issues, or administrative changes. Such information is frequently restricted to higher management levels, and inadequate communication channels or hierarchical structures may further hinder full disclosure to nursing staff.

Men and Stacks (2014) found that healthcare staff rated task-related and job-relevant information more positively than information related to strategic or administrative disclosure, indicating a gap between operational transparency and full organizational openness. Additionally, **Clausen, Borg, and Hogh (2012)** demonstrated that hierarchical organizational structures in healthcare often restrict disclosure to upper management,

leading nurses to perceive relevance as high but disclosure as comparatively low.

Several scholars have reported findings that contradict the results of the existent study, showing that disclosure scored higher than relevance in employees' or nurses' perceptions of institutional transparency. For example, **Carnevale and Hatak (2020)** showed that transparent leadership styles emphasizing openness and information sharing led employees to perceive disclosure more strongly than task-related relevance. In healthcare settings, **Bourne, Jenkins, and Parry (2019)** observed that nurses working in participative and decentralized management environments reported higher perceptions of disclosure due to involvement in decision-making processes and access to administrative information. Additionally **Schnackenberg and Tomlinson (2016)** found that open disclosure practices, including sharing organizational decisions, policies, and rationales, enhanced employees' trust and were perceived as a core component of transparency, often scoring higher than role-specific relevance. Similarly, **Christensen and Cornelissen (2015)** reported that organizations adopting open-management and participatory communication strategies demonstrated higher levels of perceived disclosure among staff, sometimes exceeding perceptions of information relevance. Additionally,

Perception level of nurses' well-being

The current study's findings found that nearly half of nurses had a high overall level of well-being. Factually this could be because nurses at Tanta international Teaching Hospital have higher perception of low organizational corruption and high level of transparency which directly effect on nurses trust, satisfaction and psychological condition as several researchers **Auger (2014) ; Schnackenberg et al. (2021),** claimed that key organizational outcomes like trust, work satisfaction, acceptance of technology, and perceptions of justice are all enhanced by organizational openness and improve nurses' well-being. Additionally from the perspective of the researchers, this result could be explained by the information that nursing provides a sense of professional meaning, social support, and adaptive coping skills, which contribute to higher levels of well-being among Tanta international teaching hospital nurses. This result with the same line with **Azer, Abd El-Aziz (2025)** who exposed that about the half of participants exhibited a favorable level of well-

being. Also **Han (2023)** revealed that nurses had high level of well-being

The current findings disagreement by **Alharbi et al (2025)** who found that nurses reported moderate overall well-being. Also, **Qin, & Lee (2024)** indicated that the well-being among participant decreased, **Hussein, Abou Hashish, & Younes (2024)** shown that the majority of the nurses under study had a low level of well-being. The results of this study showed that the environment wellness dimension of nurses' well-being had the greatest mean score, while the spiritual wellness dimension had the lowest mean score. The present finding may be explained by the greater organizational focus on physical and environmental aspects of the workplace, such as safety measures, infection control standards, availability of resources, and supportive working conditions. In contrast, spiritual wellness is typically less emphasized within hospital settings and is rarely addressed through formal policies or support programs.

The present findings congruent with **Aiken et al. (2012)** which indicated that environmental wellness had the highest mean score while spiritual wellness had the lowest among nurses' well-being dimensions. Also **Puchalski et al. (2014)** demonstrated that spiritual wellness is frequently reported as one of the lowest dimensions of nurses' well-being. **McSherry & Jamieson (2011)** contradictory results to the findings of the existing research findings who found that spiritual well-ness ranked higher than other dimensions of nurses' well-being. **Koenig, (2012); Aiken et al. (2012)** indicated that environmental wellness scored lower. Also, **Alharbi et al (2025)** demonstrated that environmental well-being was in third place when the wellbeing domains were ranked from lowest to greatest scores.

Correlation between study variables

The present study illustrates positive statistically significant correlation between organizational corruption and nurses' well-being. The literatures indicates that changes at the non-organizational level through increased fairness, ethical regulation, and transparency are positively correlated with nurse wellbeing indicators such as changes in burnout, increased job satisfaction, and shifts in work attitudes. This suggested s that enabling good governance within healthcare institutions helps promote the well-being of nursing staff **(Kivimäki, Elovainio, Vahtera, Ferrie. (2003)**. Organizational corruption has been widely recognized as a critical factor undermining nurses' well-being, as it fosters unfair practices, misuse of authority, and ethical violations that

contribute to job stress, emotional exhaustion, and reduced psychological well-being. Previous studies have shown that corrupt organizational climates weaken trust, increase perceived injustice, and negatively affect nurses' morale and overall quality of work life **(Ashforth & Anand, 2003; Lasthuizen et al. (2011).**

In contrast, institutional transparency plays a protective role in promoting nurses' well-being by enhancing openness, accountability, and access to accurate information, which strengthens trust in management and reduces uncertainty and role ambiguity **(Grimmelikhuijsen et al. (2013) ; Hassan & Wright (2020).** High levels of transparency have been connected to greater job happiness, psychological safety, and organizational commitment among healthcare professionals. Importantly, transparency may mitigate the adverse effects of organizational corruption by limiting opportunities for unethical behavior and reinforcing ethical standards within healthcare organizations **Kolstad & Wiig (2009).** Therefore, the interaction between organizational corruption and institutional transparency represents a crucial organizational mechanism influencing nurses' well-being, where reduced corruption and enhanced transparency jointly contribute to healthier, more supportive work environments.

Conclusion

Based on the findings of the present study, it can be concluded that two thirds of nurses had a low level regarding overall organizational corruption. Above half of nurses had high level regarding overall institutional transparency. Above one third of nurses had high level regarding overall nurses' well-being. Also, there was statistically significant correlation between organizational corruption and wellbeing and there was statistically significant correlation between institutional transparency and well-being.

Recommendations

-Enhance ethical leadership, encourage transparency and responsibility for nurses, and applied organizational controls to avoid and discover corruption.

-Protect whistleblowers, wrongdoer consequences, and truthful and honest behavior should reward.

-Regular feedback and continuing evaluations are crucial for determine deviance and preserving high standards of care, additionally investing in continuing educational programs on anti-corruption approaches is crucial for endorsing organizational respect and transparency.

-Improve nurses' wages, treating nurses equally, develop strategies to increase satisfaction of nurses', and confirm a positive climate for good working.

-Enhance resilience, psychological well-being, and self-efficacy through tailored training programs, mentorship, and leadership development.

-Assess workload, staffing levels, and their impact on nurses' well-being and patient outcomes

-Train managers to recognize moral distress and support staff experiencing value conflict or loss of meaning.

-Encourage leaders to model empathy, respect, and ethical awareness.

-Actively challenge blame cultures and normalized burnout.

-Explicitly include spiritual wellbeing in organizational wellbeing strategies and policies.

-Provide quiet rooms or reflection spaces that are inclusive and non-denominational.

-Foster compassionate and values-based leadership

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Parental Awareness about Cryptosporidium, Related Health behaviors, Risks and Self -reported Morbidities in Swimming Pools at Assiut City

Shaimaa Gh. Ali [1], Asmaa A. Ibrahim[2], Shaimaa M. Goda[3]

[1,2,3]Lecturer of Community Health Nursing, Faculty of Nursing, Assiut University,Egypt.

Corresponding author: Shaimaa Gh. Ali

Email: Shaimaaarafat@aun.edu.eg.

Abstract

Background

Cryptosporidium is a protozoan parasite that causes diarrhea and affects individuals of all ages. Parents of children who use swimming pools play a crucial role in minimizing transmission by encouraging and modeling healthy practices **Aim:** assess parental awareness about cryptosporidium, related health behaviors, risks and self -reported morbidities in swimming pools at Assiut city. **Methods**: Descriptive study was used in this study, non-probability purposive sampling technique on 235 parents in 4 swimming pools. Data was collected using a self-administered structured questionnaire which included socio-demographic, parental awareness about cryptosporidium, related health behaviors, risks, self-reported symptoms and morbidities in swimming pools. **Results**: the study revealed that 62.6% of parents have unsatisfactory total knowledge level about cryptosporidium, related health behaviors and risks while 37.4% of them get satisfactory level of knowledge. Self -reported morbidities was 41.3 % of participants have mild morbidity during swimming. Positive significant correlation between knowledge about cryptosporidium and health risks among swimming pool users' parents. **Conclusion:** there was unsatisfactory knowledge about cryptosporidium, related health behaviors and risks. **Recommendation**: Educational programs should be implemented to improve knowledge of swimming pool attendance about cryptosporidiosis and preventive measures.

Key Words: Cryptosporidium, Health behaviors, Parental awareness, Risks, Self -reported morbidities, Swimming pools.

Introduction

Cryptosporidium infection causes diarrheal illness that can result in malnutrition, growth faltering, cognitive impairment, and even mortality if left untreated. Cryptosporidiosis remains a major public health concern, particularly in low-income countries. The parasite is highly resilient, able to survive under harsh environmental conditions, and is notably resistant to standard chlorine disinfection methods commonly used in swimming pools.

Transmission occurs primarily via the fecal–oral route, with contaminated recreational water, including public swimming pools, representing a significant source of infection. **(Abate et al.,2025, Public Health Wales ,2020& Painter et al.,2016).**

Ingestion of even a small number of *Cryptosporidium* oocysts can cause infection, leading to gastrointestinal symptoms that range from mild to severe, including watery diarrhea, abdominal cramps, nausea, vomiting, and fever. The infection poses a heightened risk to young children, immunocompromised individuals, and older adults, underscoring the importance of effective preventive strategies in public health **(National Health Service, 2019).**

Despite regular treatment and monitoring, swimming pools can still facilitate the rapid spread of Cryptosporidium. The risk is increased by behaviors such as swimming while experiencing diarrhea, poor personal hygiene, and inadequate supervision of children. Although anyone can develop cryptosporidiosis, it is most reported among children aged 1–5 years, particularly those attending daycare, as well as immunocompromised individuals, older adults, and travelers to regions with poor sanitation **(Bouzid et al.,2018).**

Swimming pools are commonly used by families, especially those with young children, making them key sites for potential exposure to waterborne pathogens. Children are especially vulnerable due to their developing immune systems, increased likelihood of swallowing water, and lower adherence to personal hygiene practices. In this context, parents play a pivotal role in preventing disease transmission by supervising children, enforcing hygiene rules, and making informed decisions about pool use, especially during illness (**Cullinan et al.,2020 & Chukwuma C ,2019).**

Many parents may have limited awareness of the risks posed by Cryptosporidium or of the preventive measures needed to protect their children and others. In addition, young children are more likely to swallow pool water and less likely to adhere to proper hygiene practices, increasing both their susceptibility to infection and their potential to transmit the parasite. Conversely, limited knowledge may result in risky behaviors that facilitate the spread of infection. Understanding parents' knowledge of *Cryptosporidium*, their health-related behaviors, and their perception of risk is essential for developing effective public health campaigns and targeted intervention programs **(Gallè et al.,2016).**

Community health nurses play a crucial role in educating parents and swimming pool users about the risks of Cryptosporidium infection, effective preventive measures, and the importance of good hygiene in pool environments. Parental awareness and behaviors are key to preventing cryptosporidiosis, as informed parents are more likely to promote appropriate hygiene practices for their children, such as handwashing before food preparation and eating, after using the toilet, and after contact with individuals who have diarrhea **(Pal etal.,2021).**

In addition, immunocompromised individuals and children should avoid contact with animals experiencing diarrhea and refrain from swimming while ill. Supporting community health initiatives that enhance pool safety is also essential. Strengthening public health education on environmental hygiene and personal cleanliness remains a vital component of effective prevention strategies **(Dellafiore et al.,2022).**

Significance of Study:

Cryptosporidiosis is one of the most prevalent waterborne diseases and the leading cause of waterborne disease outbreaks worldwide, understanding the human behaviors and awareness levels that contribute to its spread is vital to developing effective prevention strategies **(Helmy et al .,2017).**More than 58 million cases of diarrhea are detected annually in children and are associated with protozoal infections. Specifically, waterborne pathogens such as Cryptosporidium and Giardia were involved in the World Health Organization's "Neglected Disease Initiative" **(Helmy et al .,2018).**

Cryptosporidium causes up to 20% of all cases of diarrhea in children in developing countries and causes fatal complications in HIV-infected persons (**Helmy and Hafez, 2022).** The global pooled prevalence of cryptosporidium infection was 7.6 %. It is the fourth most common cause of gastrointestinal infection in the UK. (**Dong et al.,2020).**

The study conducted in Egypt, revealed that 20.83% of the human subjects were positive for Cryptosporidium infection tested by ELISA. The seropositivity was positively correlated with age **(Elshahawy and AbouElenien , 2019).**

In the Nile River Delta, Egypt, Cryptosporidium has been recognized as a widespread and contagious agent of childhood diarrhea, with limited studies on Cryptosporidium as a thropozoonotic parasite. Previous studies have demonstrated big variations in the prevalence of cryptosporidiosis between 0% and 47% among immunocompetent individuals with

diarrhoea in Egypt. **(Elshahawy and AbouElenien , 2019).**

Aim of the study

To assess parental awareness about cryptosporidium, related health behaviors, risks and self-reported morbidities in swimming pools at Assiut city.

Research question

Are the swimming pool users' parents having adequate knowledge about cryptosporidium, related health behaviors and risks?

What are levels of self-reported morbidities by parents in swimming pools?

Subjects and Method

Research design

Descriptive study was used in this study.

Study setting

The study was conducted in four swimming pools including- swimming pool at Faculty of physical education, swimming pool at the Olympic Village at Assiut University, Assiut Sports Club (Elbaldia club), Young Men's Christian Club (Al-Wai Club) in Assiut city.

Population

Parents of swimming pool users who were swimming in all selected swimming pools of Assiut city.

Sampling technique

A non-probability purposive sampling technique was used to recruit samples. This allows researchers to select participants who are most relevant to their research questions or objectives.

Sample size determination and sampling techniques

The required sample size was calculated using G-Power version 3.1.9.7 for a one-sample proportion test. The analysis was conducted using a two-tailed test, a significance level of 0.05, and a statistical power of 0.90. Based on previous literature **(Mohamed et al., 2024)**, the expected proportion of adequate knowledge among mothers was 39% (p_1 = 0.39), compared with a reference proportion of 50% (p_0 = 0.50)**.** Under these parameters, G-Power estimated the required sample size of 213 participants. After adding a 10% non-response rate, the final sample size was adjusted to 235 participants.

Study tools

Tools I: A structured self – administered questionnaire was developed by researcher to collect necessary data which will be included 3 parts:

Part 1: Socio-demographic data of swimming pool user's parents as age, sex, education status, marital status, occupation, family income, residence, Attendance in swimming pool per week.

Part 2: Assess parental awareness in swimming pools about:

A-Cryptosporidium, it was designed after reviewing related literature **(Braima et al., 2022 & Pal et al., 2021).** It included (**18 points**) such as (what is cryptosporidium, transmission, primary symptom, most risk group, likely environment, common source of contamination, why chlorine is ineffective, duration of symptom, human to human transmission, diagnosis method, treatment, Environmental survival of oocysts, risk groups, primary preventive measure, Most effective water treatment, safe pool practices, hygiene practice after handling animals and handling contaminated produce wash water).

Scoring system for knowledge:

Each item was scored as one degree for a correct answer, while incorrect responses or selecting don't know was given zero. The total score was 19 degrees, distributed as the following: Participants were classified as ≥50% of the total score (score 9–18) was satisfactory knowledge, <50% of the total score (score <9) was unsatisfactory knowledge **(Mohamed et al., 2024).**

B- Related health behaviors (8) questions such as (Pre-swim shower, uses of proper footwear, Footbath before entering the swimming area, use of swimming cap, Consumption of food in changing room, using of swimming goggles, avoid use of cosmetics in swimming water and Avoid swimming if ill with sickness or diarrhea). It was adopted by **Natnael, 2022.**

Scoring system:

Each item took a score of 2 points for always response, sometimes was taken 1 point and never marked 0 point. Then, the total health-related behaviors score ranges from 0 to 16. Based on the total score, participants were categorized as: good health-related behavior (satisfactory) was 11–16 points and poor health-related behavior (unsatisfactory) was 0–10 points.

C-**Health risks in swimming environment** (7) questions includes Individuals with infectious skin disease can enter swimming pools, swimming with sickness or diarrhea is risk for developing an infection, bath before swimming help to remove traces of sweats, urine, fecal matter, cosmetics and other potential water contaminants, using toilet before swimming help to minimize urination in pool and accidental fecal release, using swimming cap during swimming help to avoid releasing of hair into water, the entrance of microorganisms can be prevented by goggles during swimming and lack of knowledge about mode of transmission and infection control measures contributes to increase health risks related to attendance in swimming pools **(Natnael, 2022).**

Scoring system

Each item had "correct" or "incorrect" response options, with correct answers scored 1 point and incorrect answers scored 0 points, a total score of 0–7. Participants scoring at or above the mean were classified as having good knowledge about health risks during swimming, while those scoring below the mean were classified as having poor knowledge.

Part 3: Assess self- morbidities in Swimming Pool users 'parents at Assiut City (**Gallè et al.,2016).** The questionnaire asked parents whether their child had experienced any of the following since using the pool such as (upper respiratory tract symptoms (e.g. sore throat, nasal irritation/runny nose), eye symptoms (irritation, lacrimation), skin conditions (e.g. mycosis, urticaria, verrucae), ear issues, gastrointestinal issues (vomiting, diarrhea), other itching (e.g Body itching after swimming) and injuries (e.g. slips/falls, minor trauma). These were recorded as **Yes/No** responses for each symptom.

Scoring system

Each "Yes" response was scored 1 and each "No" response 0, producing a total symptom score ranging from 0 to 7. The total score was categorized as No symptoms (0), Mild morbidity (1–2), Moderate morbidity (3–4), and High morbidity (5–7).

Tools Validity

The content validity examined by three experts in the community health nursing specialty to test the clarity and comprehensiveness of the tool.

Pilot study

It was conducted on 10% (28) of swimming pool users' parents to assess the simplicity and feasibility of the tool. No changes were implemented to the tool; therefore, the pilot study was included in the overall sample.

Reliability Tools

The Cronbach Alpha coefficient was determined for A structured self – administered questionnaire (0.731)

Data collection

Data collected from 1st of May, 2025 until the end of August 2025, the study was conducted in four swimming pools at Assiut city, Egypt. The researchers gave clarification to parents regarding the purpose and importance of the study to facilitate understanding and accurate responses.The researchers made interviews with parents in swimming pools by using self-administrated questionnaire, each questionnaire took 20-25 minutes with each parent. Researchers took 7-8 parents. Questionnaires were completed through a period of 32 days, requiring approximately 2–3 hours daily.

Ethical considerations:

Before starting the research, ethical approval obtained from the ethical committee of the Faculty of Nursing, Assiut University (Approval No: 1120240929). An official approval obtained from directors in the selected setting. The agreement for participation in the study was taken from parents of swimming pools users and then explaining the purpose of the study to them. Before data collection, oral consent to participate in the study obtained and informed about the aim and the nature of the study. Also, they are assured that the information remained confidential and used for purpose of research only. The participants informed that participating in the study is voluntary; they have the right to withdraw from the study at any time.

Statistical analysis

The collected data was organized, categorized, coded, tabulated and analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Data was presented in tables and figures using numbers, percentages, means, standard deviation and, Pearson and chi square test were used in order to find an association between variables. Statistically significant was considered at P-value < 0.05.

Results

Table (1): Reveals that 60.4 % of swimming pool users' parents were 20-35 years old. 88.9 % of them fall into the moderate level of socioeconomic status. Regarding residence, 68.1% of participants lived in urban areas, while 31.9% of them were in rural areas. 53.6% of those studied sample haven't read or informed of the facility regulations. Finally, 50.2% of them attend the swimming pool 2-3 hours per week.

Figure (1): Indicates 73.4% of participants have unsatisfactory knowledge about cryptosporidium while only 26.6% of them have satisfactory level.

Figure (2): Shows 89.8% of parents of swimming pool users get satisfactory knowledge level about health risks during swimming but only 10.2% of them get unsatisfactory level.

Figure (3): Mentions 78.3% of studied hold good behaviors, however 21.7% of them hold poor level.

Figure (4): Presents 62.6% of parents have unsatisfactory total knowledge level about cryptosporidium, health risks and health behaviors while 37.4% of them get satisfactory level of knowledge.

Figure (5): Illustrates that 41.3 % of participants have mild ,34% have moderate and 20.4% have high morbidity while only 4.3% have no symptoms among swimming pool user's parents.

Table (2): Clears that age shows a significant negative correlation with both knowledge about cryptosporidium ($r = -0.209$, $p = 0.001$) and healthy behaviors scores ($r = -0.232$, $p < 0.001$). Family income reveals that a significant positive correlation with knowledge score about cryptosporidium ($r = 0.146$, $p = 0.026$). According to reading or informing about facility regulations presents that a significant negative correlation with both knowledge score about cryptosporidium ($r = -0.242$, $p < 0.001$) and healthy behaviors score ($r = -0.270$, $p < 0.001$).

Figure (6): Shows that positive significant correlation between knowledge about cryptosporidium and health risks among swimming pool users' parents.

Table (3): Clears that there is highly statistically significant between knowledge about cryptosporidium and healthy behaviors level.

Table (1): Socio-demographic data of swimming pools users 'parents (n=235)

Socio-demographic data	N	%
Age/ years:		
<20 year	31	13.2
20-35	142	**60.4**
More than 35 years	62	26.4
Age(mean±SD) years:	**29.80±7.957**	
Family income:		
Low	26	11.1
Moderate	209	**88.9**
High	0	0.0
Residence:		
Urban	160	**68.1**
Rural	75	31.9
Have read or have been informed of the facility regulations:		
Yes	109	46.4
No	126	**53.6**
Attendance in swimming pool per week (hours):		
≤ 1	103	43.9
2-3	118	**50.2**
4-5	9	3.8
≥6	5	2.1

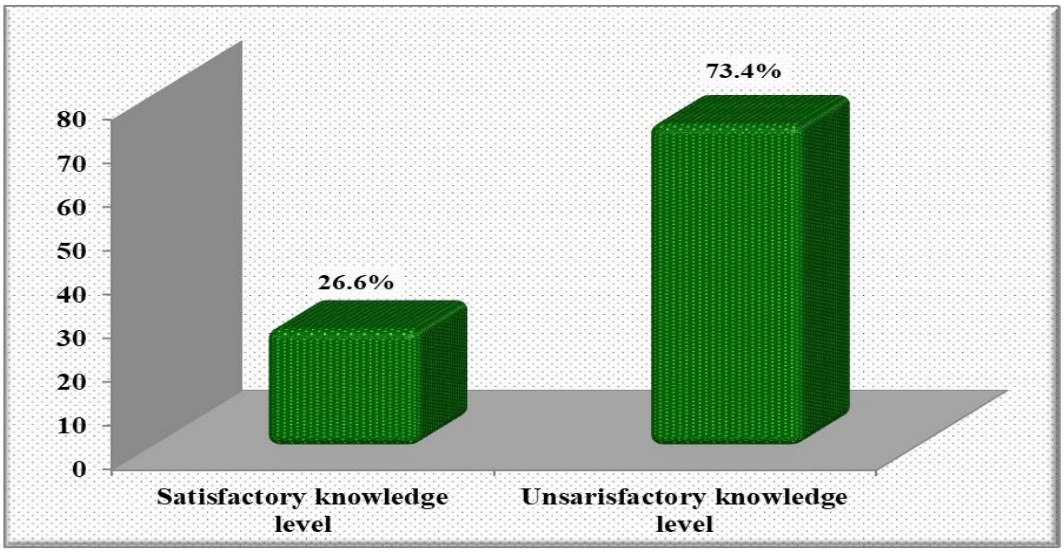

Figure (1): Knowledge about cryptosporidium of swimming pools users' parents (n=235)

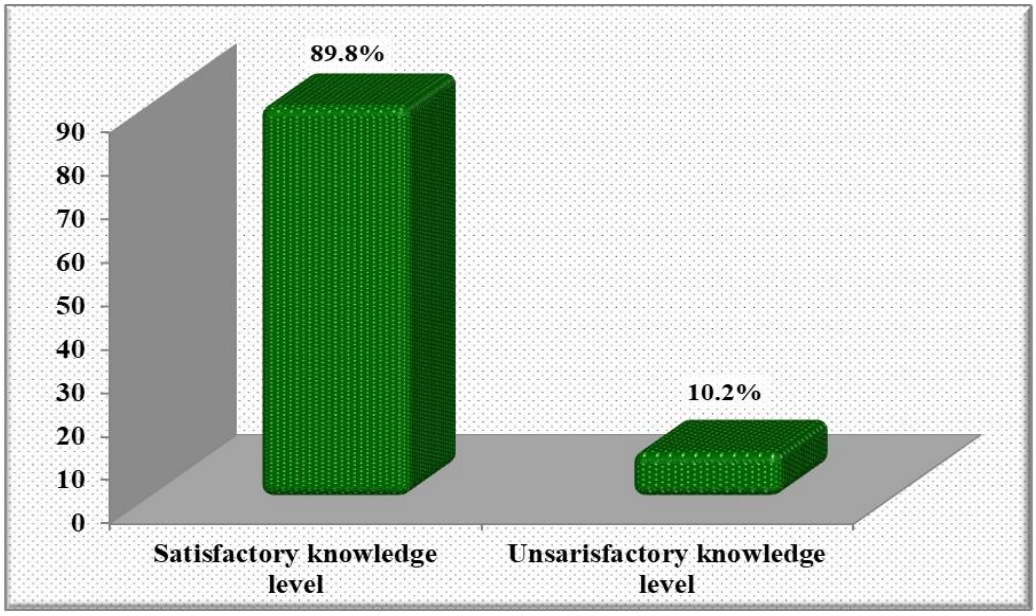

Figure (2): Knowledge about health risks of swimming pools users' parents (n=235)

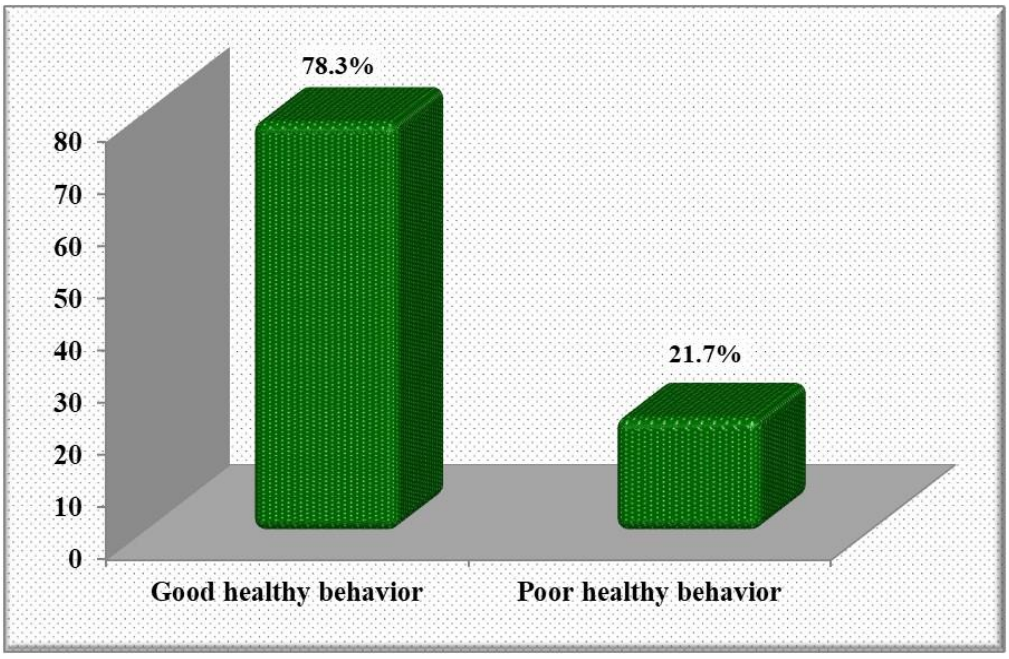

Figure (3): Knowledge about related healthy behaviors of swimming pools users' parents (n=235)

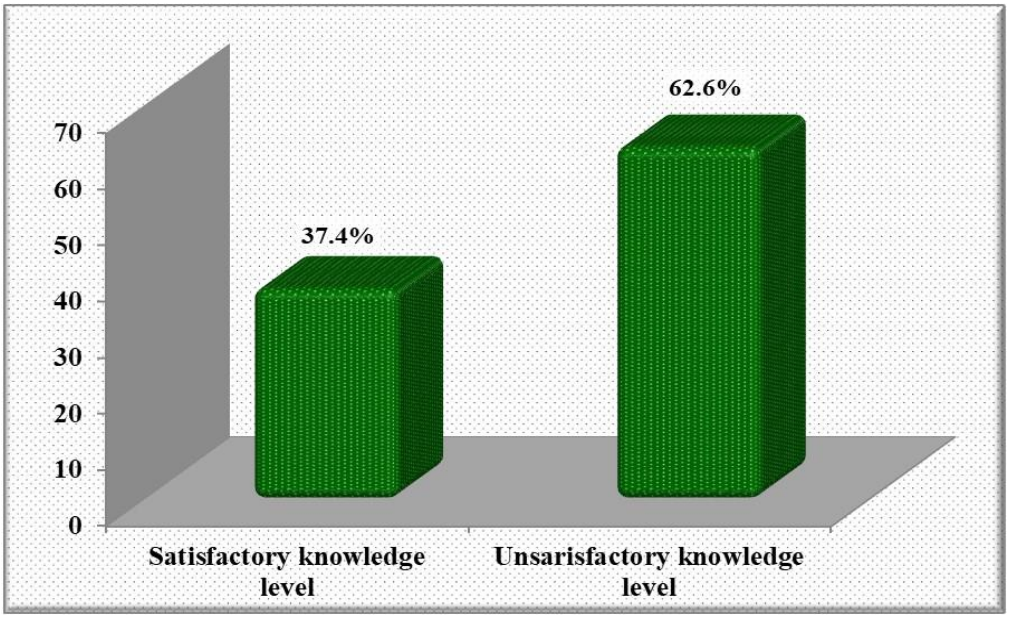

Figure (4): Total knowledge about cryptosporidium, related health behaviors and risks of swimming pools users' parents (n=235)

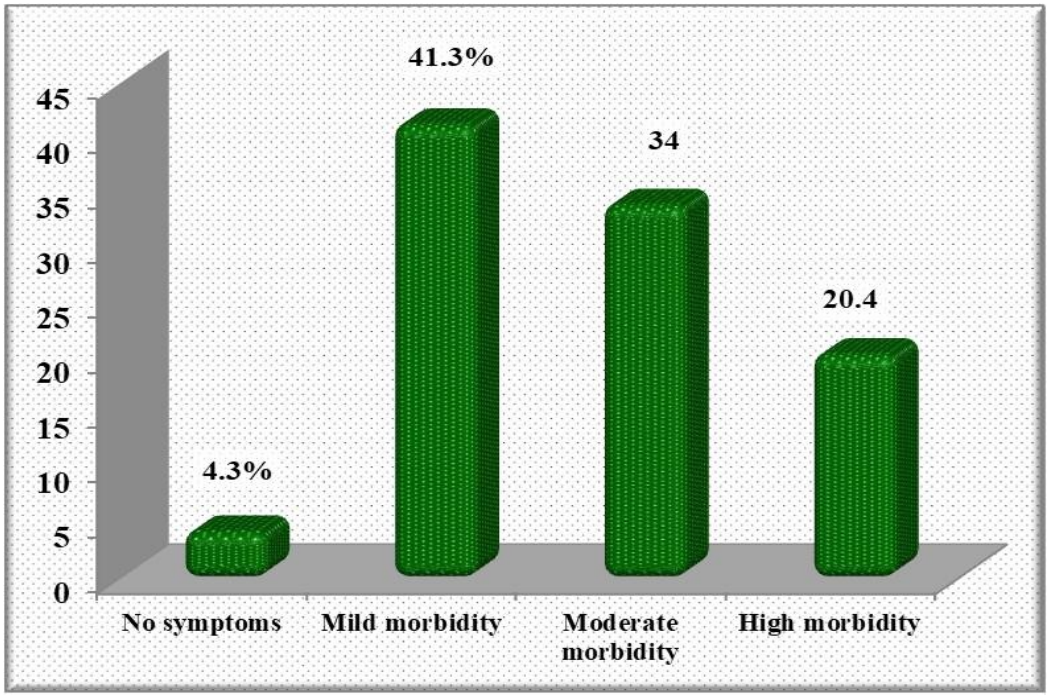

Figure (5): Self- reported morbidities by swimming pools users' parents (n=235)

Table (2): Correlation between socio-demographic data and knowledge about cryptosporidium, and related health behaviors of swimming pools users' parents (235)

Socio-demographic data		knowledge about cryptosporidium score	Knowledge about related health behaviors score
Age/ years	**r**	**-.209****	**-.232****
	p-value	**.001**	**.000**
Family income	r	**.146***	-.106
	p-value	**.026**	.106
Have read or have been informed of the facility regulations:	r	**-.242****	**-.270****
	p-value	**.000**	**.000**
Attendance in swimming pool per week (hours)	r	.029	-.042
	p-value	.658	.518

Pearson test

**** Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).**

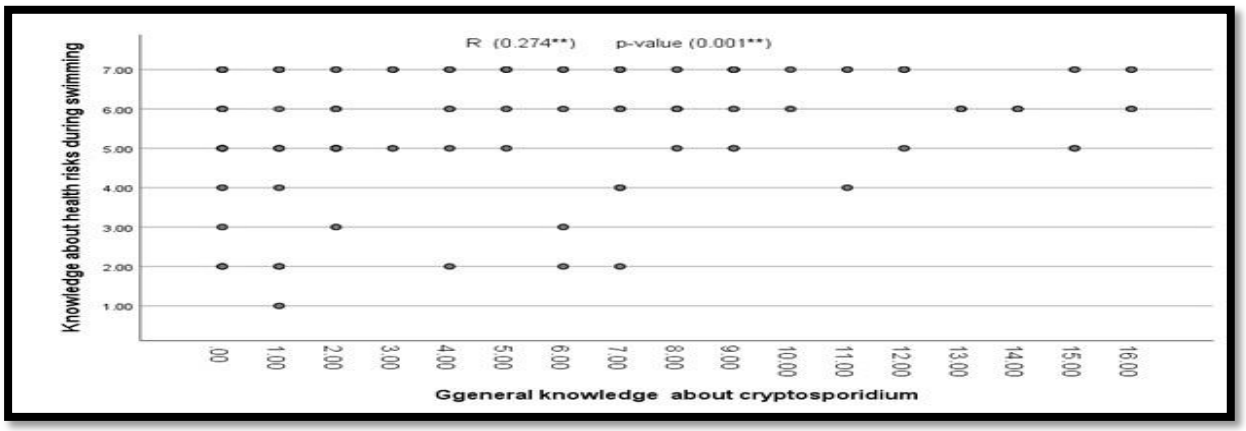

Figure (6): Correlation between knowledge about cryptosporidium and health risks of swimming pools users' parents (235).

Table (3): Relation between the studied participants' knowledge about cryptosporidium and related healthy behaviors level

Related healthy behaviors level	knowledge about cryptosporidium				X^2 (P-value)
	Satisfactory		Unsatisfactory		
	N	%	N	%	
Good healthy behaviors level	82	93.2	102	69.4	**18.341 (0.001**)**
Poor healthy behaviors level	6	6.8	45	30.6	

chisquare test (**) highly statistical significant

Discussion:

Cryptosporidium is an emerging/reemerging highly infectious disease threat whose transmission has increased. Cryptosporidiosis is a gastrointestinal disease caused by the protozoan parasite Cryptosporidium spp., with the disease presenting as gastroenteritis. In addition to contributing to morbidity and mortality (**Cullinan et al.,2020 & Chukwuma C ,2019).** The aim of the current study is to assess parental awareness about cryptosporidium, related health behaviors, risks and self -reported morbidities in swimming pools at Assiut city.

The current study reveals that about two thirds of swimming pool users' parents were 20-35 years old. In contrast, **Abate et al., (2025)** who told that more than one quarter of caregiver's age was 26-35 years old.

The present results show the majority of parents fall into the moderate level of socioeconomic status, it may reflect the greater accessibility and affordability of swimming pool facilities for middle-income families, who are more likely to prioritize recreational and health-promoting activities for their children compared with families at lower or higher socioeconomic extremes. These results disagree with **Natnael T (2022)** who cleared that more than half of swimming pool users'Monthly income is moderate level.

Regarding residence, more than two thirds of participants lived in urban areas. The current study is consistent with **Natnael T (2022).** It may be attributed to the urban setting of Assiut city, where swimming pool facilities are more available and accessible, and where parents are more likely to utilize organized recreational activities for their children.

In this study more than half of those studied parent haven't read or informed of the facility regulations, may be attributed to inadequate communication of rules by swimming pool management, lack of visible or clear signage, and limited parental awareness or attention to health and safety instructions when accompanying children to swimming facilities. These results congruent with **Natnael T (2022)**who noted more than half of users had read the facility regulations. This finding was different from **Gallè etal.,(2016)** who reported that the majority of respondents had read the rules.

Also was disagreement with **Braima et al.,(2022)** who revealed that about

third of patrons were aware of their pool policy concerning gastroenteritis and Cryptosporidium.

The present study revealed that more than half of parents attended the swimming pool 2-3 hours per week, which may reflect typical recreational swimming patterns, where parents allocate limited but regular time for their children's leisure and physical activity, balancing swimming with other families, work, and school commitments. This was disagreed with **Jones H,(2020)** who found that more than half of the children went swimming 1-2 times a week.

The current results indicate more than one quarter of swimming pool users' parents have satisfactory knowledge about cryptosporidium, which may be due to limited public health education on waterborne parasites, low emphasis on parasite-related risks in swimming facilities, and the generally low awareness of cryptosporidiosis compared with more common infectious diseases, this supported from **Braima et al.,(2022)** who illustrated that only more than one quarter of patrons and staff had heard of cryptosporidium.

The current results show the majority of parents of swimming pool users get satisfactory knowledge level about health risks during swimming, which may be explained by routine interactions with pool staff, access to informational materials at the facilities, and widespread media coverage on common swimming-related hazards, all of which help parents stay informed and adopt safer practices for their children. **but these results are inconsistent with Natnael T., (2022)** who demonstrated more than half of swimming pool users had good knowledge about health risks during swimming.

This current results clear that age shows a significant negative correlation with both knowledge about cryptosporidium ($r = -0.209$, $p = 0.001$) and healthy behaviors scores ($r = -0.232$, $p < 0.001$). This indicates that younger participants had higher knowledge levels and better healthy behaviors related to Cryptosporidium. Family income reveals that a significant positive correlation with knowledge score about cryptosporidium ($r = 0.146$, $p = 0.026$), suggesting that participants from families with higher income had better knowledge about Cryptosporidium.

According to reading or informing about facility regulations presents

that a significant negative correlation with both knowledge score about cryptosporidium ($r = -0.242$, $p < 0.001$) and healthy behaviors score ($r = -0.270$, $p < 0.001$), This reflects a significant association between awareness of regulations and better knowledge and healthier behaviors.

Regarding to symptoms and morbidities, the current study signified more than two-fifths of study participants reported mild morbidities among their children. This may be attributed to swimming pool environments 'children exposed to multiple health hazards, including contaminated water, poor ventilation, and close person-to-person contact. Children are particularly vulnerable due to their immature immune systems, longer duration of water exposure, and behaviors such as swallowing pool water and inadequate hygiene practices, this results in line with **Bonadonna and La Rosa (2019),** who reported that high morbidities among swimming pool users, and the most commonly reported symptoms were gastroenteritis, respiratory symptoms, and conjunctivitis, and the majority of the outbreaks described involved mainly children and young people less than 18 years of age.

Also, supported with **Kaydos-Daniels et al. (2008)** who declared that, exposure to both pool water and the room air surrounding the pool were strongly associated with illness. In addition **(Gallè et al., 2016)** cleared that, parents were reported different symptoms and morbidities suffered by their children/adolescents as rhinitis, eye complaints, skin infections and itching.

It's important to highlight that, there was a **positive significant correlation between knowledge about cryptosporidium and health risks among swimming pool users' parents, this may be because** because parents with greater knowledge about *Cryptosporidium* and its health risks are more likely to adopt preventive behaviors, supervise their children effectively, and reduce the likelihood of infection, **this finding aligned with (Braima et al., 2022) who found that** knowledge gap increases the risk of an infectious patron.

The current study revealed that, highly statistically significant between **knowledge** about cryptosporidium and healthy behaviors, in contrast **(Natnael, 2022),** found that more than half of the swimming pool users had poor health-related behaviors.

Strengths of the study

However, existing research suggests that public awareness of Cryptosporidium and the importance of related health behaviors remain limited. Many parents may not be fully aware of cryptosporidium, the parasite's resistance to chlorine, its transmission pathways, or the risks associated with swimming while experiencing gastrointestinal symptoms. This gap in knowledge can lead to behaviors that unintentionally promote the spread of infection, not only affecting individual families but also the broader community.

The study done on a large sample (n=235) allowed clear assessment on awareness about cryptosporidium, health behaviors, risks and self-reported symptoms and morbidities.

Recommendations

1-Educational programs should be implemented to improve knowledge of swimming pool attendance about cryptosporidiosis and preventive measures.

2-Display charts and posters in clubs to reinforce healthy behaviors and raise awareness of health risks.

3-Conducting future study among different age groups as (adults, adolescents, and children).

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Effect of Oral Honey as an Adjunct Therapy for Post-Tonsillectomy Pain Management among Children

Eman Sayed Masoad[1], Shaima Shaban Mohamed[2], Al shaimaa Gamal Hasan[3]

[1]Professor of Pediatric Nursing, Faculty of Nursing, Minia University,Egypt.
[2]Assistant Professor of Pediatric Nursing, Faculty of Nursing, Minia University, Egypt.
[3]Lecturer of pediatric Nursing, Faculty of Nursing, Minia University, Egypt.

Corresponding author: Shaima Shaban Mohamed
Email: shaimashaban1028@gmail.com

Abstract

Background: Tonsillectomy is a popular pediatric surgical operation and ranks as the 24th out of 179 surgical procedures .Honey consumption can help reduce the frequency of painkiller intake and severity of pain after surgery. **Aim:** Evaluate the effect of oral honey as an adjunct therapy for children's post-tonsillectomy pain management. **Research design:** Quasi-experimental research design was utilized. **Setting:** Inpatient and outpatient of ear, nose and throat department at Minia University Hospital. **Sample:** A purposive sample of 108 children divided equally into two groups. **Tools:** One tool was used and included an interview questionnaire sheet covering demographic characteristics of the studied children and their mothers; Wong-Baker faces scale (WBFS), numerical rating scale (NRS), number of analgesics taken and the number of awake at night following tonsillectomy. **Results:** It was found that; there were highly statistically significant variations between the study and control groups related to WBFS and NRS pain severity levels from the 1st to 10th day after tonsillectomy ($p< 0.001$). In addition: there were statistically significant differences between the study and control groups regarding the number of analgesic consumption and the number of awake at night from the 1st to 10th day after tonsillectomy. **Conclusion:** Oral honey is effective in pain reduction after tonsillectomy among children evidenced by reduction in total level of pain, analgesic consumption and awake at night. **Recommendations:** Oral honey should be a part of hospitals' protocols and endorsed as a part of the dietary instructions given to mothers to alleviate pain among children after tonsillectomy.

Keywords: Children, Honey, Pain, Tonsillectomy

Introduction

Tonsillectomy is the removal of the tonsils surgically either with or without removing the adenoids, via peri tonsillar space dissection between the muscle wall and the tonsillar capsule, it has been reported that the number of tonsillectomy procedures performed on children younger than 15 years is displaying an annual upward trend (**Liu et al., 2025**). It is a popular pediatric ambulatory surgery, 2nd occurrence after myringotomy combined with tube implantation (**Shih et al., 2023**).

Tonsillectomy guidelines from the American Academy of Otolaryngology, Head, and Neck Surgery claims that; clinicians may recommend tonsillectomy if a child has re actual throat infections with a minimum of seven episodes per year, a minimum of five episodes annually for the preceding two years, or a minimum three episodes annually for the preceding three years, as long as each episode is documented in the child medical file and at least one of the following criteria, a positive test for Group A beta-hemolytic Streptococcus, tonsillar exudates, cervical adenopathy and a temperature greater than 38.3 °C (101 °F) (**Keskin et al., 2025**).

Although tonsillectomy is a safe procedure for children with tonsillitis, it can result in complications like pain, dry throat, difficulty swallowing, infection, hemorrhage, obstruction of the nasopharynx and airway, pulmonary swelling, high temperature, otalgia, pain in the jaw, and aspiration of foreign bodies (**Yuliastuti et al., 2025**). After tonsillectomy, children may experience severe postoperative pain, particularly during the first two days which may last for ten days and can negatively influence the quality of life of the patient via the recovery time and interfere with their ability to eat, sleep, and perform every day tasks (**Grati et al., 2025**).

Honey is one of the common treasured as well as appreciated natural gifts that people has received from the beginning of time; it is a viscous, delectable liquid produced by honeybees, honey's ingredients have been linked to antibacterial, anti-oxidative, anti-inflammatory, anticancer, anti-proliferative and anti-metastatic qualities. Honey's antimicrobial, anti-inflammatory and pain-relieving qualities allow it to be topically administered to wounds (**Roy et al., 2025**). Honey application is useful in both wound healing and pain reduction, consumption of honey

can help reduce the frequency of painkillers intake and severity of pain after surgery (**Żak et al., 2025**).

Pre-operative nursing counseling can be helpful in finding and characterizing risk factors for pediatric patients undergoing elective surgeries as well as preoperative care protocols. Furthermore, due to nurses' extensive patient interaction throughout the perioperative pathways, they play a crucial role in the early post-operative period as well as post-discharge time and during the follow-up (**Fan & Xue 2025**). Nurses act a vital role in managing children's post-tonsillectomy pain by promptly administering painkillers, teaching children and their caregivers efficient pain management techniques and providing emotional support to improve comfort and recovery (**Hosseini et al., 2025**).

Telephone services are extension of the conventional "face-to-face" medical services, which are more convenient, more individualized, more adaptable and faster to be provided (**Shou et al., 2023**). Following tonsillectomy in children and teenagers, a nurse-led telephone follow-up is likely to help children and parents manage pain after surgery and can lessen unscheduled and need less hospital re-admissions (**Rosén et al., 2024**).

Significance of the Study

In otolaryngology as a field, tonsillectomy is the most common surgical procedure for children which significantly reduces the frequency and duration of sore throat episodes, especially in those who are seriously affected (**Iftikhar et al., 2025**). It ranks as the 2nd common surgical operation for pediatric patients, with hundreds of thousands of surgeries carried out annually (**Rossi et al., 2025**). Moreover, in terms of post-operative discomfort, it comes in at number 24th out of 179 surgical operations, as children experience considerable pain for many days (**Gostian et al., 2025**). Ineffective postoperative pain treatment raises morbidity with detrimental psychological alterations, lengthens recovery period, lowers life quality, and raises expenses that impact the healthcare system (**Roskvist et al., 2024**).

The study conducted by **Hefnawy (2022)** about the ability of oral honey to lessen pain after tonsillectomy revealed that; honey has a beneficial impact on pain after tonsillectomy as well as lowers the dosage of analgesics, and it can be utilized as an

adjuvant treatment to improve pain management post-tonsillectomy.

So, the actual study was conducted to evaluate the effect of oral honey intake on pain severity after tonsillectomy among children. Hopefully, the actual study results will provide guidance and recommendations and provide evidence-based data for routine use of honey along with analgesics following tonsillectomy within the field of otorhinolaryngology.

Aim of the Study

This study aimed to evaluate the effect of oral honey as an adjunct therapy for post-Tonsillectomy pain management among children

Research Hypotheses

H_1: Children who will take oral honey after tonsillectomy may experience low pain level, less analgesics consumption and less awake at night compared to children in the control group.

Subjects and Method

Research design:

Two groups quasi-experimental research design (the study as well as the control).

Setting:

This study was implemented in the inpatient as well as outpatient of ENT department at Minia University Hospital. The in-patient of the ENT department is at the third floor, composed of four rooms with a capacity of about 20 beds and the outpatient of the ENT department is at the 1st floor and composed of 4 rooms.

Sample:

A purposive sample of 108 children and their mothers were included to conduct the study based on the following equation:

$$N = \frac{t^2 \quad x \quad p\,(1\text{-}p)}{m^2}$$

$$N = \frac{(1.96)^2 \quad x \quad 0.075\,(1\text{-}\,0.075)}{(0.05)^2}$$

N=108 (which was classified equally into two groups study as well as control group every group included 54 children).

Inclusion Criteria:

-Children who underwent tonsillectomy.

-Children who had 6-15 years.

-Both sexes were included.

Exclusion Criteria:

-Children who underwent tonsillectomy combined with adenoidectomy.

-Children who had diabetes mellitus.

-Children who had allergy to honey or disliked honey.

-Children who had post-operative bleeding and infection.

-Children who had post-operative intensive care unit admission.

Data Collection Tools:

One tool was used to gather the needed data for this research:

Tool (I): An interview questionnaire sheet: was used and composed of four parts.

Part (1): Demographic data of children and their mothers included child's age and gender, residence, mothers' education and occupation.

Part (2): Wong-Baker faces scale (WBFS) was developed by **Wong and Baker (1988)** to assess pain intensity in children; it consisted of three scales in one: facial expressions, words and numbers ranging from (zero to five). Coding as follows; face 0: No hurt, face 1 is slightly hurt, face 2 is slightly more hurt, face 3 is much more hurt, face 4 is extremely hurt, and face 5 is the most hurt, these faces are assigned scores ranging from 0 to 5. The children were asked to choose the face that most accurately represented their own level of pain, with a high score denoting a high level of pain.

Regarding the scores, the severity of pain was categorized into 4 groups: No pain (Face zero), mild pain (Faces 1 & 2), moderate pain (Faces 3 & 4), and severe pain (Face 5) **(Raoufian et al., 2020**).

Part (3): Numeric pain rating scale: It was utilized to evaluate pain severity, adopted from **Williamson and Hoggart (2005)**. The children were asked to rate their level of discomfort on a scale of 0 to 10, where 10 represents sever pain and 0 represents no pain at all. Scoring system was categorized as the following: (zero) for No pain, (one to three) for mild pain, (four to seven) for moderate pain and (eight to ten) for severe pain.

Part (4): Assessment chart to record the number of daily intake of analgesics and the number of awake at night because of pain for ten consecutive days post-tonsillectomy.

Tools Validity and Reliability

A panel of five experts from the pediatric nursing and ENT departments evaluated the tools' content validity and made the required adjustments. Every juror concurred that the research instruments were legitimate and pertinent to the study's objectives. The Cronbach's alpha test was used to verify the tools' consistency; the dependability of WBFS and NRS is 0.94 and 0.95 respectively.

Ethical Considerations:

Written approval obtained from the Research Ethics Committee of the faculty of Nursing at Minia University

coded (REC2025914). An official permission and consent was obtained from the director of the ENT department, the managers of Minia University Hospital. An informed consent were obtained from mothers' of children that satisfied the selection criteria, the researcher personally communicated with them to explain the nature, significance, and anticipated results of the study. Mothers of children were told that the information they provided would only be used for research, that the data would be coded to ensure anonymity that each evaluation instrument would be coded anonymously, and that study participants could leave the study at any time.

Pilot Study:

In order to test the study tools' clarity, completeness, adequacy, objectivity, applicability, content validity, and internal consistency, a pilot study was carried out on ten percent (11 children) of the sample from the study and the control groups who satisfied the inclusion criteria for selection. Based on the pilot study's findings, the necessary additions and/or deletions were made. The children that participated in the pilot study were not included in the research sample.

Data Collection Procedure:

The study sample involved 108 children who had tonsillectomies in; each child had the same procedure, which was carried out by bipolar diathermy. The sample was split into two equal groups at random, with 54 children in the study group and 54 in the control group.

The researcher explained the WBFS and the NRS to the mothers and their children before tonsillectomy surgery. The researcher colored the areas of mild, moderate, and severe pain on the NRS with various colors. According to **Sadik et al. (2016),** the colors were as follows: white indicates no discomfort, yellow indicates mild pain, orange indicates moderate pain, and red indicates severe pain. Following consent, the children and their mothers were given a daily card in the Arabic version of the WBFS and the NRS, and they were asked to choose the face and the number that best describe their own pain experience from 1^{st} to 10^{th} day after operation.

For the study group:

All children take oral honey along with routine care, which included a written prescription of warning signs, dietary instructions and medications such as antibiotics and diclofenac sodium prescribed according to body

weight as per doctor's orders for a period of ten days.

The researcher started administration of honey on the day of operation when the child was able to have oral intake post recovery from anesthesia as well as withdrawal of the impact of sedative or narcotics; a teaspoon (5 ml) of honey according to **Boroumand et al., (2013)**. Freshly obtained flower honey available from the Faculty of Agriculture was used in this study. Honey was provided "free" to each participant of the study group. The researcher instructed the mothers to give their children honey at least 4 times per day for a period of ten days, and when children had to take medicine together with honey, they were told to take honey first, followed by the medication according to **Ahmad et al., (2018**).

For the control group:

All children take the routine care, which included a written prescription of warning signs, dietary instructions, and medications such as antibiotics and diclofenac sodium prescribed according to body weight as ordered by the doctor for a period of ten days.

Assessment of pain was performed for the study and control groups once a day every day for each child from the first to the tenth day after tonsillectomy by using the WBFS, the NRS, the number of daily intake of analgesics as well as the times number of awake at night because of pain were evaluated (**Tool I, part 2, part 3 & part 4**). Pain assessment was done on the 1st day after tonsillectomy in the ward and then assessed on the 5th and 10th days in the ENT outpatient clinic by the researcher, while on the other days after discharge, the pain assessment at home was performed through telephone follow-up. Data collection was done over a period of three months, started from the beginning of October 2025 to the end of December 2025.

Statistical Analysis:

The Statistical Package for Social Science (SPSS version 23) was used to code, classify, tabulate, and analyze the gathered data. Descriptive statistics were used to display the data in the form of mean and standard deviations for quantitative variables and frequencies and percentages for qualitative variables. Fisher's exact test, the Chi square test (X2) for significance, and the t-test for comparing mean scores between two groups were employed to compare qualitative variables. P-value of less than 0.05 was deemed statistically significant, a p-value of less than 0.001 was deemed very significant,

and a p-value greater than 0.05 was deemed to have no statistically significant difference.

Results:

Table (1): Shows the demographic traits of the children and their mothers; it was observed that; 31.5% and 35.2% of children aged between 12 to15 years with mean age 9.8 ± 3.1 & 10.3 ± 2.9 years in the study as well as the control groups respectively. It was illustrated that; 59.3% and 55.6% of children in study as well as control groups respectively were females. Also, it was noted that; 70.4% and 63% of them in study as well as control groups respectively live in rural settings. It was found that; 35.2% and 37% of them in study as well as the control groups their mothers respectively had secondary education, and 90.7% and 87% of them their mothers respectively were housewives.

Table (2): Illustrates that; there was a reduction in the WBFS pain severity levels after oral honey intake for children post tonsillectomy with statistically significant variations between children in the study and the control groups from the 1st to the 10th day after tonsillectomy P. value was 0.002 at first day but in other days was 0. 0001.

Table (3): Presents that there was a reduction in the NRS pain severity levels after oral honey intake for children with highly statistically significant variations between the study and control groups from the 1st to the 10th day after tonsillectomy (P < 0.001).

Table (4): Illustrates that; children in the study group had consumed less analgesics than those in the control group, with highly statistically significant variations between the study and the control groups from the 1st to the 10th day after tonsillectomy (P < 0.001).

Table (5): Shows that; there was a reduction in the number of awake at night due to pain after oral honey intake, with statistically significant variations between children in the study and the control groups from the 1st to the 10th day after tonsillectomy (P < 0.05).

Table (1): Percentage Distribution of the Studied Children and their Mothers regarding their Demographic Data in the study and control groups (n= 108).

Demographic Data	The Study Group		The Control Group		Significance test	
	n.=54	%	n.=54	%	X^2	*P value*
Age/ years						
6 - < 8	18	33.3	12	22.2	1.978	0.577
8 - < 10	9	16.7	9	16.7		
10 - < 12	10	18.5	14	25.9		
12- 15	17	31.5	19	35.2		
Mean ± SD	9.8 ± 3.1		10.3 ± 2.9		0.926	0.357
Gender						
Male	22	40.7	24	44.4	0.151	0.697
Female	32	59.3	30	55.6		
Residence						
Urban	16	29.6	20	37.0	0.667	0.414
Rural	38	70.4	34	63.0		
Mother's Education						
Not read and write	14	25.9	10	18.5	1.677	0.639
Basic education	18	33.3	18	33.3		
Secondary education	19	35.2	20	37.0		
High education	3	5.6	6	11.1		
Mother's Occupation						
Working	5	9.3	7	13.0	0.375	0.540
Housewife	49	90.7	47	87.0		

Table (2): Comparison between Children in the study and control groups regarding WBFS Pain Severity Levels from the 1st to the 10th Day after Tonsillectomy (n = 108).

Items	Study group n.=54		Control group n.=54		Test of significance	
	No	%	No	%	X^2/Fisher's test	P value
1st day						
Moderate	29	53.7	13	24.1	9.974	0.002**
Severe	25	46.3	41	75.9		
2nd day						
Moderate	38	70.4	15	27.8	19.599	0.0001**
Sever	16	29.6	39	72.2		
3rd day						
Mild	9	16.7	0	0.0	24.087	0.0001**
Moderate	40	74.1	29	53.7		
Severe	5	9.3	25	46.3		
4th day						
Mild	23	42.6	2	3.7	28.218	0.0001**
Moderate	28	51.9	35	64.8		
Severe	3	5.6	17	31.5		
5th day						
Mild	32	59.3	14	25.9	13.495	0.001**
Moderate	20	37.0	38	70.4		
Severe	2	3.7	2	3.7		
6th day						
Moderate	38	70.4	14	25.9	21.363	0.0001**
Severe	16	29.6	40	74.1		
7th day						
Mild	15	27.7	0	0.0	31.631	0.0001**
Moderate	32	59.3	23	42.6		
Severe	7	13.0	31	57.4		
8th day						
Mild	28	51.9	3	5.6	28.279	0.0001**
Moderate	23	42.6	45	83.3		
Severe	3	5.6	6	11.1		
9th day						
Mild	36	66.7	16	29.6	14.835	0.0001**
Moderate	18	33.3	38	70.4		
10th day						
No pain	29	53.7	5	9.3	33.959	0.0001**
Mild	18	33.3	16	29.6		
Moderate	7	13.0	33	61.1		

****** Highly statistically significant difference

Table (3): Comparison between the studied Children Regarding NRS Pain Severity Levels from the 1st to the 10th Day after Tonsillectomy among the Study and control groups (n = 108).

Items	Study group n=54		Control group n=54		Test of significance	
	No	%	No	%	X^2/Fisher's test	P value
1st day						
Moderate	28	51.9	12	22.2	10.165	0.001**
Severe	26	48.1	42	77.8		
2nd day						
Moderate	38	70.4	15	27.8	19.599	0.0001**
Severe	16	29.6	39	72.2		
3rd day						
Mild	1	1.9	0	0.0	19.022	0.0001**
Moderate	48	88.9	29	53.7		
Severe	5	9.3	25	46.3		
4th day						
Mild	22	40.7	2	3.7	27.029	0.0001**
Moderate	29	53.7	35	64.8		
Severe	3	5.6	17	31.5		
5th day						
Mild	31	57.4	14	25.9	12.156	0.002**
Moderate	22	40.7	39	72.2		
Severe	1	1.9	1	1.9		
6th day						
Moderate	39	72.2	14	25.9	25.311	0.0001**
Severe	15	27.8	40	74.1		
7th day						
Mild	12	22.2	0	0.0	31.756	0.0001**
Moderate	36	66.7	23	42.6		
Severe	6	11.1	31	57.4		
8th day						
Mild	27	50.0	3	5.5	28.591	0.0001**
Moderate	25	46.3	36	66.7		
Severe	2	3.7	15	27.8		
9th day						
Mild	35	64.8	16	29.6	13.412	0.0001**
Moderate	19	35.2	38	70.4		
10th day						
No pain	29	53.7	5	9.3	34.994	0.0001**
Mild	18	33.3	15	27.8		
Moderate	7	13.0	34	63.0		

** Highly statistically significant difference

Table (4): Comparison between the studied Children Regarding Daily Consumption of Analgesics from the 1st to 10th Day after Tonsillectomy among the study and control groups (n = 108).

Items	Study group n=54		Control group n=54		Test of significance	
	No	%	No	%	X^2/Fisher's test	P value
1st day						
Once	20	37.0	1	1.9	24.581	0.0001**
Twice	34	63.0	48	88.9		
Three times	0	0.0	5	9.3		
2nd day						
Once	38	70.4	6	11.1	39.273	0.0001**
Twice	16	29.6	48	88.9		
3rd day						
Once	46	85.2	11	20.4	45.511	0.0001**
Twice	8	14.8	43	79.6		
4th day						
Once	46	85.2	22	40.7	22.871	0.0001**
Twice	8	14.8	32	59.3		
5th day						
Once	52	96.3	31	57.4	22.953	0.0001**
Twice	2	3.7	23	42.6		
6th day						
Once	38	70.4	0	0.0	59.515	0.0001**
Twice	16	29.6	50	92.6		
Three times	0	0.0	4	7.4		
7th day						
Once	38	70.4	2	3.7	51.459	0.0001**
Twice	16	29.6	52	96.3		
8th day						
Once	39	72.2	12	22.2	27.084	0.0001**
Twice	15	27.8	42	77.8		
9th day						
Once	45	83.3	20	37.0	24.150	0.0001**
Twice	9	16.7	34	63.0		
10th day						
None	29	53.7	0	0.0	42.565	0.0001**
Once	18	33.3	27	50.0		
Twice	7	13.0	27	50.0		

** Highly statistically significant difference

Table (5): Comparison between the studied Children Regarding Number of Awake at Night due to Pain from the 1st to 10th Day after Tonsillectomy among the study and control groups (n = 108).

Items	Study group n=54		Control group n=54		Test of significance	
	No	%	No	%	X^2/Fisher's test	P value
1st day						
Twice	10	18.5	10	18.5	42.308	0.0001**
Three times	41	75.9	11	20.4		
Four times	3	5.6	33	61.1		
2nd day						
Twice	18	33.3	12	22.2	7.569	0.023*
Third	34	63.0	31	57.4		
Four times	2	3.7	11	20.4		
3rd day						
Once	5	9.3	1	1.9	15.745	0.001**
Twice	30	55.6	18	33.3		
Three times	19	35.1	35	64.8		
4th day						
Once	20	37	1	1.9	40.357	0.0001**
Twice	30	55.6	30	55.6		
Three times	4	7.5	23	42.6		
5th day						
Once	26	48.1	10	18.5	13.371	0.001**
Twice	25	46.3	32	59.3		
Three times	3	5.6	12	22.2		
6th day						
Twice	21	38.9	8	14.8	9.041	0.011**
Three times	30	55.6	38	70.4		
Four times	3	5.6	8	14.8		
7th day						
Once	7	13.0	0	0.0	16.083	0.001**
Twice	30	55.5	20	37.0		
Three times	16	29.6	33	61.1		
Four times	1	1.9	1	1.9		
8th day						
Once	16	29.6	3	5.6	17.911	0.0001**
Twice	28	51.9	23	42.6		
Three times	10	18.5	28	51.9		
9th day						
Once	39	72.2	16	29.6	19.599	0.0001**
Twice	15	27.8	38	70.4		
10th day						
None	29	53.7	5	9.3	40.830	0.0001**
Once	19	35.2	17	31.5		
Twice	6	11.1	32	59.3		

Discussion

The findings of the present study demonstrated a substantial reduction in pain severity after tonsillectomy among children as well as there was a reduction in the number of awake at night and analgesic consumption after ingestion of oral honey.

Regarding Wong-Baker faces scale (WBFS) after tonsillectomy

The study results revealed that; there were highly statistically significant variations among children in the study group compared to those in the control group from the 1st to the 10th day after tonsillectomy ($p< 0.001$). The findings of this research were in line with the findings of **Lubis et al., (2023)** who assessed the impact of honey on the alleviation of post-tonsillectomy pain among patients for 10 days and reported that; the pain levels of the study group were lower than the placebo and the control groups. Also, the present findings were consistent with the study findings conducted by **Hefnawy (2022)** who declared that; there was a decrease in pain between the study as well as the control groups from the 1st to the 7th day post the tonsillectomy.

Moreover, the actual study findings were confirmed by **Raoufian et al., (2020)** who compared the effects of gargling honey mixed with normal saline versus cold normal saline on pain alleviation following tonsillectomy in children and pointed out that; there were statistically significant variations between the honey group compared to the control group in the intensity of throat pain via the resting as well as swallowing on WBFS for seven days ($P < 0.001$).

Regarding the Numeric Rating Scale (NRS) after tonsillectomy

The actual study showed that; there was a reduction in the NRS pain severity levels among children in the study group compared to those in the control group from the 1st to the 10th day after tonsillectomy with highly statistically significant variations ($p< 0.001$). The study results were supported by **Erkorkmaz (2019)** who studied the influence of using oral honey in tonsillectomy patients and documented that; the pain scores were significantly lower in the honey group than in the control group ($p< 0.05$) on the 2nd, 4th, 7th and 14th days post tonsillectomy and pain relief was a little quicker in the honey group. **From a researcher's perspective**, this is due to the calming effects of oral honey application, which reduce inflammation and postoperative pain and speed up wound healing.

Tonsillectomy causes moderate to severe pain in the throat and ear until the exposed, inflammatory muscle is coated in a mucosal membrane that has regenerated; pain is an integral component of the recovery process

after tonsillectomy as well as is frequently described as being severe and lasting seven to ten days (**Swain 2021**).

Concerning daily consumption of analgesics after tonsillectomy

Current study results found that; children in the study group had consumed less analgesics than the control group with highly statistically significant variations from the 1st to the 10th day post after tonsillectomy ($p< 0.001$) among children in the study as well as the control groups. These results were in agreement with the findings of **Lubis et al., (2023)** who documented that; the mean analgesic received in the study group was significantly less the placebo and control groups from the 2nd to the 7th day post the tonsillectomy ($p < 0.05$). Also, the findings of the actual study were in accordance with **Hefnawy (2022)** who found that; the number of analgesics received post the tonsillectomy was reduced from the 3rd to the 7th days in children in the study group compared to those in the control group with statistically significant variations from the 5th to the 7th day ($P \leq 0.05$).

Similarly, these results were consistent with **Erkorkmaz (2019)** who revealed that; on the four, seven and fourteen days, the number of analgesics taken was statistically significantly less in the honey group than the control group ($p< 0.05$). **Abd Rashid et al., (2022**) stated that; honey has the potential to be employed as an analgesic since it either modulates a peripheral nociceptive neuron or binds to an opioid receptor in the higher center. The antioxidant and anti-inflammatory qualities of honey, which were crucial for healing and stopping the disease's progression, were strongly associated with its anti-nociceptive action.

From a researcher's perspective, children's usage of postoperative analgesics is a key predictor of their level of pain; children indicate that they are in pain and require some kind of treatment to alleviate this pain by taking analgesics.

Regarding the number of awake at night due to pain post the tonsillectomy

The actual study results proved that; there was a reduction in the number of awake at night due to pain after oral honey intake with statistically significant variations between the study and the control groups from the 1st to the 10th day post the tonsillectomy. The actual research findings were in the same with the research results carried out by **Geißler et al., (2020)** who studied the effectiveness of honey applied orally in treating postoperative pain following tonsillectomy and found that; nearly half of patients in the

study group wake up via the night due to pain, compared to the majority in the control group.

Jiang et al., (2023) stated that; tonsillectomy in children is a popular surgical procedure that could lead to consequences like pain in the operation site, which can negatively influence the children's lives and sleep quality. **Abd Rashid et al., (2022)** declared that; applying honey topically to wounds after tonsillectomy decreases the average pain scores and the frequency of nighttime awakenings; this might be because honey has a calming effect on the tonsillar mucosa.

From the researcher's point of view, tonsillectomy causes pain that interferes with sleep the degree and intensity of pain could be measured by tracking the number of awake at night; which gives an approximate level of pain that could be recorded and evaluated. Honey has a calming effect on the tonsillar mucosa, which can be a factor in the mechanism that causes less pain, fewer awakenings at night, and improves sleep quality.

Overall, the results strongly support the research hypotheses. Oral honey intake significantly decreased pain severity among children post tonsillectomy, as well as the number of analgesic consumption and awake at night. These findings highlight the crucial role of oral honey intake on pain management.

Limitation of the study

The study was implemented in a single hospital setting, potentially limiting generalization. Pain assessment relied partially on caregiver reporting during telephone follow-up which may introduce reporting bias.

Conclusion

The present study concluded that; oral honey intake was effective in reducing pain severity after tonsillectomy evidenced by a reduction in WBFS and NRS pain severity levels with highly statistically significant variations between the study as well as the control groups from the 1st to the 10th day after tonsillectomy. As well as, there was a reduction in the number of daily consumption of analgesics with statistically significant differences p. value at0.0001. Also, the number of awake at night due to pain was reduced in the study group compared to control group after oral honey intake post tonsillectomy.

Recommendations

The actual research recommended that:

-Oral honey intake must be a part of hospitals' protocols to alleviate post tonsillectomy pain among children.

-The hospital settings should be provided with brochures, booklets, and posters about the benefits of honey after tonsillectomy for children.

-Nurses should be provided with educational training about using oral honey after tonsillectomy to be practiced at hospitals.

-Oral honey intake after tonsillectomy for children should be endorsed as a part of the dietary instructions given to mothers.

-Repeated of this research on a larger sample size, various hospital settings and longer follow-up period is recommended for future studies.

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Assessment of Nurses' Performance Regarding Chemotherapy for Children Undergoing Conditioning Regimen Stem Cells Transplantation

Marwa Ibrahem Mohamed Gamal Elden Eldeeb[1,2], Rahma Soliman Bahgat[3], Amal Abo El-Azm Younis [4]

[1]Master student of Pediatric Nursing, Faculty of Nursing, Tanta University, Egypt.
[2]Nurse Specialist at Bone Marrow Transplantation unit of Tanta International Educational Hospital, Tanta University, Egypt.
[3]Professor of Pediatric Nursing, Faculty of Nursing, Tanta University, Egypt.
[4]Assistant Professor of Pediatric Nursing, Faculty of Nursing, Tanta University, Egypt.

Corresponding author: Marwa Ibrahem Eldeeb
Email: PG_176212@nursing.tanta.edu.eg

Abstract

Background: Stem cells transplantation is a widely recognized treatment option for damaged or diseased bone marrow. High qualified nurses play a pivotal role in administration chemotherapy using standardized protocols during the conditioning phase. **Aim:** The current study was aimed to assess nurses' performance regarding chemotherapy for children undergoing conditioning regimen stem cells transplantation. **Research design:** A descriptive research design was utilized in current study. **Setting:** Bone Marrow Transplantation unit of Tanta International Educational Hospital. **Subjects:** All available nurses (30) working in Bone Marrow Transplantation Unit of Tanta Universal Educational Hospital and responsible for providing direct care for children (20) undergoing bone marrow transplantation. **Tools:** Two tools were utilized, Tool I: Nurses Knowledge Structure Interview Schedule, Tool II: Chemotherapy administration using observational checklists. **Results:** More than half of nurses had low total scores of knowledge level and nearly three quarters of them had unsatisfactory level of practice. **Conclusion**: Nurses' knowledge level was low and practice scores were unsatisfactory regarding chemotherapy administration. **Recommendation**: Periodically in service training program should be conducted and organized regularly for nurses of Bone marrow transplantation unit about the basic performance regarding chemotherapy administration.

Keywords: Chemotherapy, Conditioning regimen, Nurses' performance, Stem cells transplantation.

Introduction

Stem Cells Transplantation (SCT) is a medical procedure that uses stem cells sourced from bone marrow, peripheral blood or placental cord blood to address a range of conditions, including blood cancers, bone marrow disorders, immune deficiencies and genetic diseases **(Piccaluga, Visani & Khattab, 2024)**. The primary goal of this treatment is to replace damaged or diseased bone marrow cells, often compromised by illness or chemotherapy, with healthy stem cells. After the transplantation, these stem cells migrate to the bone marrow, promoting the production of new blood cells and support the restoration of normal bone marrow function (**Khaddour, Hana & Mewawalla, 2023)**.

Hematopoietic Cell Transplantation (HCT) is a proven treatment for a variety of hematologic illnesses, including both malignant and nonmalignant ones, immune system problems that are acquired or congenital, solid tumors and hereditary metabolic disorders **(Kanate et al., 2020)**. Hematopoietic stem cell transplantation is frequently recommended for children affected by severe, life-threatening disorders that compromise the bone marrow's capacity to produce functional blood cells. Conditions that typically require this intervention include leukemia, lymphoma, aplastic anemia, and certain genetic abnormalities such as sickle cell anemia and thalassemia (**Modi & Uberti, 2023; Levine et al., 2020)**.

Hematopoietic Cells Transplantation (HCT) is typically categorized into three main types: autologous, allogeneic and syngeneic. In an allogeneic transplant, the stem cells are sourced from a donor other than the child. While in an autologous transplant, the child's own stem cells are utilized. Syngeneic transplantation, on the other hand, involves the use of stem cells from the child's identical (monozygotic) twin. The selection of the transplantation type whether allogeneic, autologous or syngeneic is determined by the specific disease being treated and the availability of an appropriate donor **(Bishop & Keating, 2019)**.

The National Institutes of Health estimates that around 50,000 stem cells transplants are conducted worldwide each year, with a projected annual growth rate of 10-15%. In 2020, Egypt's population exceeded 100 million, and the

number of stem cell transplants inhabitants rose to 8.4 per million **(Mahmoud et al., 2020)**. Egypt hosts a total of ten HSCT centers, distributed across various regions and of these, five centers are located in Cairo, two are military facilities, one is situated in Alexandria, another in Upper Egypt and one more is based in Tanta. On average, approximately 580 transplants procedures are conducted annually, with the associated cost ranging from 150,000 to 200,000 Egyptian pound per procedure **(Khalil, Sheta, & Ibrahim, 2022)**.

Conditioning plays a pivotal role in preparing children for transplantation and is typically administered several days before the infusion of stem cells. This process involves implementing various protocol regimens, including chemotherapy, radiotherapy, and/or immunotherapy, both prior to and following the stem cell transplantation, which can be delivered orally or through intravenous infusion. Notably, conditioning for stem cell transplantation can also involve chemotherapy alone, without the inclusion of radiation therapy **(Eder et al., 2017).**

Chemotherapy pre-stem cell infusion is used to eradicate disease, prepare the child's bone marrow by creating space for the transplantation of new stem cells while chemotherapy post-stem cell infusion serves as an immunosuppressant to reduce the potential risk of host cells rejecting the transplanted stem cells **(Elsantawy, Bahgat, Elshanshory & Dawood, 2023)**. The child requires additional attention during preparation, alongside conditioning regimens, to minimize potential challenges related to transplantation.

Significance of the study

Hematopoietic Stem Cells Transplantation is a critical medical procedure undertaken when children’s bone marrow lacks the capacity to sufficiently produce blood components. This treatment approach is primarily employed in managing conditions such as sickle cell anemia, lymphoma, leukemia, aplastic anemia and thalassemia. The accessibility of hematopoietic stem cell transplantation for the Egyptian population, as indicated by the transplant rate per million children, has also shown a positive trend **(Fitch, Myers, Dewan, Towe, & Dandoy, 2021)**.

Stem cells transplantation offers a chance for long-term remission or cure, especially when conventional therapies fail. Moreover, stem cell

transplantation has enabled the advancement of personalized medicine, allowing for tailored treatment strategies based on genetic and immunological compatibility. The growing number of transplant centers in Egypt and the increasing success rates underscore the importance of stem cell transplantation in the national healthcare strategy **(Liu, Yang, Lockey, Greif, & Cheng, 2024)**.

Aim of the Study

The current study was aimed to assess nurses' performance regarding chemotherapy for children undergoing conditioning regimen stem cells transplantation.

Research questions

1- What is nurses' knowledge regarding chemotherapy for children undergoing conditioning regimen stem cells transplantation?

2- What is nurses' practice regarding chemotherapy?

Subjects and method

Study design:

Descriptive research design was utilized in the current study.

Setting:

The study was conducted at Bone Marrow Transplantation unit of Tanta International Educational Hospital, which is affiliated to the Ministry of Higher Education and Scientific Research. The unit is divided into two main zones: the outer zone and the inner zone.

-The outer zone comprises six rooms including clinic, a meeting room, the secretory office, the clinical pharmacy, a laboratory equipped with vapor-phase liquid nitrogen freezers for stem cells storage and biosafety cabinet for chemotherapy preparation and another laboratory utilized for stem cell apheresis device, along with the blood storage refrigerator, platelet agitator (or shaker) and automated thawing device for frozen stem cells.

-The inner zone is divided into three sections: A, B and C, represented by door marked by red lines. First section A includes a post-transplant room equipped with two beds and nurses' room. Second section B comprises nurses' counter and two intermediate rooms, each containing a single bed. Third section C includes four isolation positive pressure rooms, referred to as capsules with HEPA filtration. Each capsule is split into two areas: the anteroom designated for medication preparation and the main room, which includes one bed, a television, sealed window and a single bathroom.

Subjects:

-All available nurses (30) who provide direct care for children at the

previously mentioned setting were involved in the present study.

-Children (20) who were admitted to Bone Marrow Transplantation unit undergoing stem cells transplantation through the period of data collection one year.

Tools of data collection

Two tools were used to collect the necessary data from the study sample.

Tool I: Nurses Knowledge Structure Interview Schedule:

It was developed by the researcher after reviewing related literatures **(Abd Elrhman, Sheta, & Ibrahim, 2022; Elsantawy et al., 2023)**. It was divided into three parts:

Part (1): Socio-demographic characteristics of studied nurses: as age, sex, level of education, residence and years of experience.

Part (2): Bio-socio-demographic characteristics of children: as age, gender, birth order, number of family members and diagnosis.

b- Medical history of the children: past and present medical history.

Part (3): Nurses knowledge assessment sheet: It was developed by the researcher after reviewing the recent literatures **(Nwagbo, Ilesanmi, Ohaeri, & Oluwatosin, 2017; Elsayed, Rahman & Seddek, 2018)** to assess the nurses' knowledge regarding:

(a) Stem cells transplantation such as: definition of stem cells, sources, definition of stem cells transplantation, types of stem cells transplantation, common blood diseases can be treated by stem cell transplantation, complications of stem cell transplantation, stem cells transplantation collection (donor mobilization, leukapheresis, medication given).

(b) Chemotherapy administration such as: definition, action of chemotherapy, side effects and complications, classification of chemotherapeutic agents, types of chemotherapy, route and dose of each type, duration of administration for each type, how many days each type is given, safe handling, precautions, medication associated and chemotherapy protocol to each disease.

Scoring system for nurses' knowledge was scored as follows:

Questionnaire sheet contained 87 questions; each question was scored from 0-2 grades. Correct and complete answer was scored (2), correct and incomplete answer was scored (1) and wrong or don't know was scored (0). The sum of all questions was 174.

Total scoring system for nurses' knowledge was categorized as the following:

-High level of knowledge was considered from 80 - 100%.

-Moderate level of knowledge was considered from 60 < 80%.

-Low level of knowledge was considered < 60%.

Tool II: Chemotherapy administration using observational checklists:

It was developed by the researcher after reviewing the recent literatures **(Nwagbo et al., 2017; Elsayed et al., 2018)** to assess the nurses' practice regarding administration of chemotherapy. It included nurses' practice before administration of chemotherapy (15 items), during administration of chemotherapy (19 items) and after administration of chemotherapy (14 items).

Scoring system of nurse's practice was scored as follows:

Checklist contained 48 items; each item was scored 0 or 1 grades. Done was scored (1) and not done was scored (0). The sum of all items was 48.

The total score of the nurses was classified as follows:

-Satisfactory total score ≥ 80% of the total score.

-Unsatisfactory total score <80% of the total score.

Method

The research was conducted through the following stages:

Administrative process:

Official permission to conduct the study was obtained from the Dean of the Faculty of Nursing, Tanta University and also from the Bone Marrow Transplantation Unit administrators at Tanta Universal Educational Hospital to facilitate performance and ensure smooth implementation of the study.

Ethical considerations:

-Ethical approval was taken from the Scientific Researcher Ethical Committee member of Faculty of Nursing, Tanta University before conducting. The study code number was 349-12-2023.

-Confidentiality and privacy were taken into consideration regarding the data collection and were maintained by coding number. Informed consent was taken from nurses, children and their mother to participate in this study after explanation of the aim and benefits by the researcher. Nature of the study did not cause any harm to the sample.

Tools Development: Two tools **(I, and II)** were developed by the

researcher after literature review and used in the current study.

Content validity: The study tools were tested for content validity by five experts in pediatric nursing. The content validity index was 98% and modifications were carried out accordingly.

Pilot study was carried out on 10% of nurses working in pediatric bone marrow unit to test the clarity and feasibility of the tools, the necessary modification was done. The pilot study was excluded from the study.

Reliability of the tools was tested by using the appropriate statistical Cronbach's alpha coefficient test. Developed tools were tested through internal consistency and the value was 0.888 for tool I and 0.752 for tool II.

Statistical analysis

The collected data were coded, entered, tabulated and analyzed using SPSS (Statistical Package for Social Science) version 23. Reliability is measured by using Cronbach's Alpha. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, which describes a categorical set of data by frequency, percentage or proportion of each category **(White, 2019)**?

Results

Table (1): Illustrates distribution of the studied nurses according to their socio-demographic characteristics. It was observed that nearly two thirds (60%) of them were between the ages of 20 and less than 30 years with the mean ±SD **(29.53±1.171)** and nearly three quarters (73.3%) of them were females. Regarding nurses' level of education, nearly two thirds (60%) of them had Bachelor of Nursing and majority of them (90%) lived in rural areas. As regards years of experience, it was evident that about two thirds (63.3%) of nurses had less than 5 years of experience, while more than one third (36.7%) of them had more than 5 to less than 10 years of experience at Bone Marrow Transplantation unit with the mean ±SD **(4.50±2.01)**.

Figure (1): Demonstrates distribution of the studied children according to their age. The figure shows that 45% of children aged from 3 to less than 6 years old with the mean ±SD **(6.70±3.40)**.

Figure (2): Clarifies distribution of the studied nurses' total knowledge scores regarding the stem cell transplantation and chemotherapy administration of children levels. It was found that more than half

(56.7%) of nurses had low total scores of knowledge level.

Table (2): Explains distribution of the studied nurses related to their practice before chemotherapy administration. It was found that 96.7% of the nurses had isolated the child at positive pressure room and 93.3% of them measure and monitor vital signs correctly.

Figure (3): Clarifies distribution of the studied nurses total practice scores regarding chemotherapy administration. It was found that nearly three quarters (73.3%) of nurses had unsatisfactory level of practice.

Table (3): Illustrates correlation between total scores of knowledges and total score practices of studied nurses. The table showed that, there was highly statistically significant positive correlation between total scores of knowledges and total practice scores as (r=0.559, P=0.001).

Table (1): Distribution of the studied nurses according to their socio-demographic characteristics (n=30).

Socio-demographic characteristics items	Total Studied Nurses (n=30)	
	No	**%**
Age (years)		
20<30	18	**60**
30<40	12	**40**
Range	**(26-33)**	
Mean &SD	**29.53±1.171**	
Gender		
Male	8	**26.7**
Female	22	**73.3**
Education		
Nursing Technical Institute	10	**33.3**
Bachelor of Nursing	18	**60**
Master degree	2	**6.7**
Residence		
Rural	27	**90**
Urban	3	**10**
Years of Experience (years)		
< 5	19	**63.3**
5 <10	11	**36.7**
Range	**(1-7)**	
Mean &SD	**4.50±2.01**	

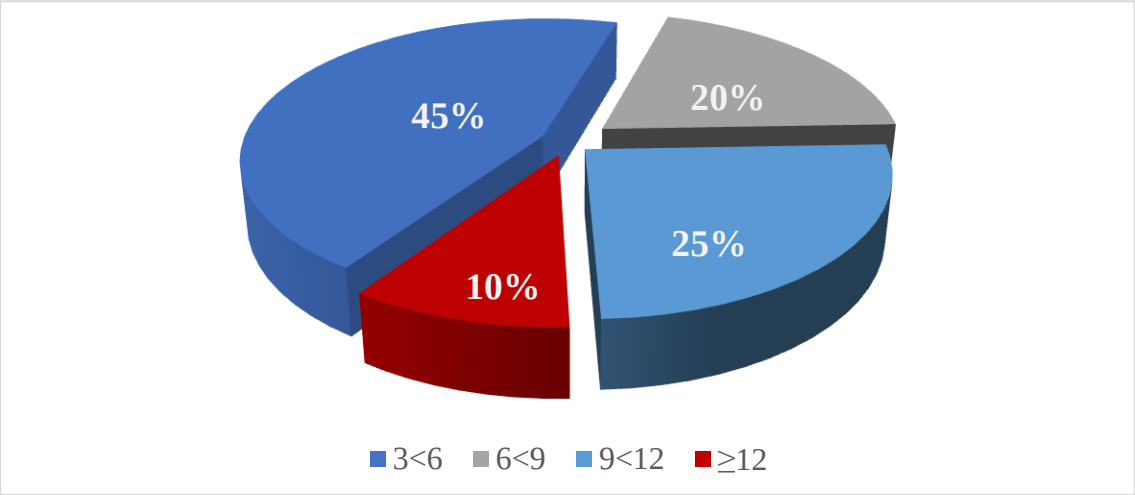

Figure (1): Distribution of studied children according to their age

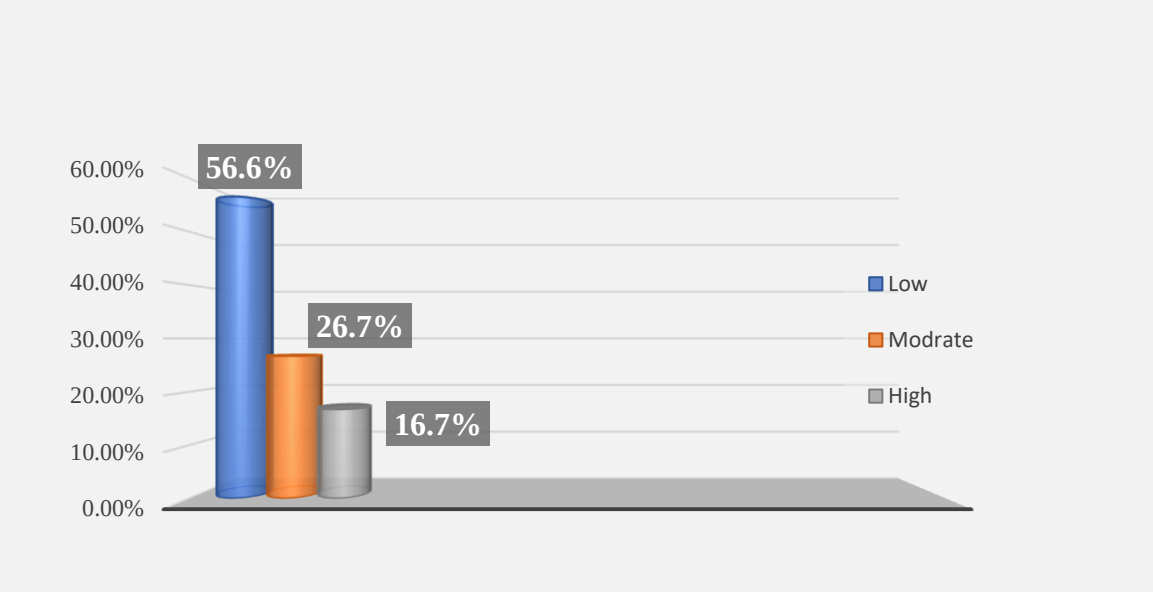

Figure (2): The studied nurses according to total knowledge scores regarding stem cell transplantation and chemotherapy for children

Table (2): Percentage distribution of the studied nurses related to their practice before chemotherapy administration (n=30)

The Studied Nurses (n=30)				
Items	**Not Done**		**Done**	
	No	**%**	**No**	**%**
Measure child weight and height for medication dose	27	90	3	10
Ensure insertion of central venous catheter	19	63.3	11	36.7
Ensure administration of pre-post-operative medication	18	60	12	40
Review the medication and conditioning protocol arrange	26	86.7	4	13.3
Sterilize child and caregiver clothes	23	76.7	7	23.3
Isolate the child at positive pressure isolation room	1	3.3	29	96.7
Start continuous intravenous fluid until end of isolation	8	26.7	22	73.3
Administration of antibiotics, antivirals and antifungals	9	30	21	70
Explain to the child or his caregiver about the procedure	26	86.7	4	13.3
Assess emotional aspects of the child and his caregiver	25	83.3	5	16.7
Measure and monitoring vital signs	2	6.7	28	93.3
Prevent medication error and child safety	21	70	9	30
Ensure right storage for chemotherapy	21	70	9	30
Daily weight before each dose	23	76.7	7	23.3
Ensure that chemotherapy in designated area	21	70	9	30

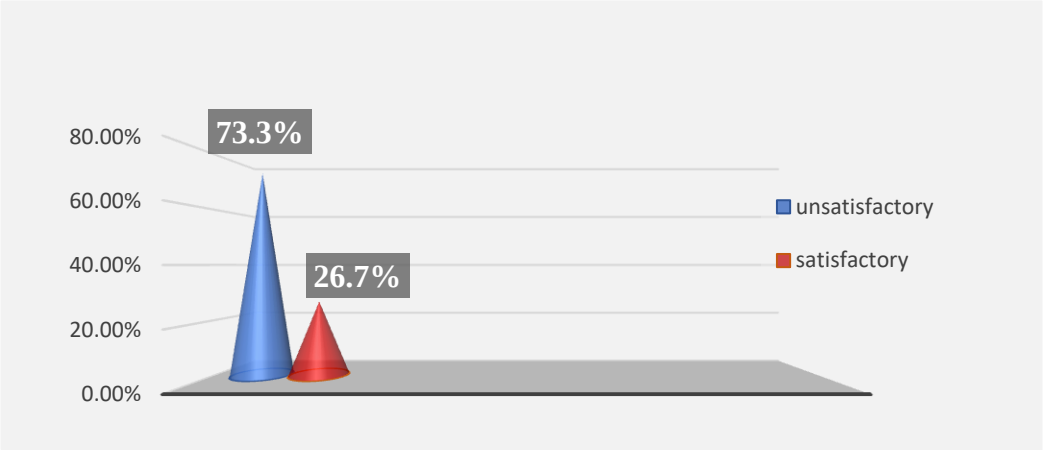

Figure (3): The studied nurses total practice scores regarding chemotherapy administration.

Table (3): Correlation between total scores of knowledges and total score practices of studied nurses (n=30)

Total Practice scores	Total Knowledge Score	
	Nursing care protocol	
	r	P
	0.559	0.001**

** Highly Significant correlation at p<0.01 (two sides)

* Significant correlation at p<0.05 (two sides)

Discussion

Hematopoietic Stem Cells Transplantation (HSCT) represents a curative approach for many pediatric malignancies and immune disorders. A key stage of this procedure is the conditioning regimen, which involves the administration of high-dose chemotherapy and/or radiation therapy. The primary objectives of this regimen are to suppress the child's immune system in order to prevent donor stem cell rejection, to create adequate space in the bone marrow for successful engraftment and to eliminate any remaining cancer cells **(Shaw, Shizuru, Hoenig & Veys, 2019)**.

Consequently, the present study aimed to assess nurses' performance regarding chemotherapy for children undergoing conditioning regimen stem cells transplantation.

Regarding total scores of nurses' knowledge about stem cells transplantation, the result of current study revealed that nearly half of nurses had low knowledge. From researcher's point of view, this result might be due to the fact that stem cell transplant therapy is new advanced trend especially for new recured nurses.

These results were parallel to **Ahmed, Mahmoud & Said (2024)** who conducted a study entitled "Effect of designed educational guidelines on nurses' performance regarding management of children undergoing bone marrow transplantation" who presented that the one third of the studied nurses had low knowledge regarding bone marrow transplantation. In addition to, **Elsantawy et al. (2023)** who conducted a study about "Effect of implementing evidence based nursing guidelines on nurses' performance and clinical outcomes for children undergoing stem cells transplantation" mentioned that all studied nurses had low level of total knowledge sores about stem cells transplantation.

Concerning total scores of nurses' knowledge about chemotherapy administration, the result of current study revealed that about two third of the nurses had low knowledge. From researcher's point of view, this result might be due to lack of orientation programs and improper preparation for the nurses working with such group of children.

These results were consistent with **Abd Elfatah, Aldein, El-Aasar & Said (2022)** who conducted a study entitled "Effect of nursing care protocol on nurses' performance among children undergoing

chemotherapy" demonstrates that, the level of knowledge regarding chemotherapy administration for more than half of nurses was poor.

Regarding total scores of nurses' practice about chemotherapy administration, it was found that nearly three quarters of nurses had unsatisfactory level of practice. From researcher's point of view, this may be due to the nurses performed essential steps incompletely during chemotherapy administration.

These results were in same direction with **Abd Elfatah et al., (2022)** who revealed that only less than half of the studied nurses had correct total practices regarding administration of chemotherapeutic agents for children. Also, these finding were in line with **Mahdy, Rahman & Seddek (2018)** who conducted a study entitled "Nurses' performance regarding chemotherapy administration in the clinic" mentioned that mean scores of the guidelines intervention of nurses' practices regarding chemotherapy administration was unsatisfactory.

Regarding correlation between total scores of knowledges and practices of studied nurses, the study presented that there was statistically significant positive correlation between total scores of knowledges and practices. This finding was consistent with **Mahdy et al., (2018)** who mentioned that there were statistically significant positive correlations between nurses' knowledge and practice regarding chemotherapy administration.

Conclusion

Based on the present study findings, it can be concluded that Nurses' knowledge level was low and practice scores were unsatisfactory regarding chemotherapy.

Recommendations

Based on the present study findings, the following recommendations were suggested:

1-Periodically in-service training program should be conducted and organized regularly for nurses of Bone marrow transplantation unit about the basic knowledge and clinical skills regarding chemotherapy administration.

2-Replicated the study with large sample size and different sitting to be generalized.

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Nurses' Perception regarding Utilization of Artificial Intelligence in Primary Health Care Settings

Eslam Mohamed Elshamy[1], Latifa Mahmoud Fouda[2], Amira A. Elbialy [3], Nahla Said Mahmoud [4]

[1]Demonstrator of Community Health Nursing, Faculty of Nursing,Tanta University, Egypt.

[2] Professor of Community Health Nursing, Faculty of Nursing, Tanta University, Egypt.

[3,4]Assistant Professor of Community Health Nursing, Faculty of Nursing, Tanta University, Egypt.

Corresponding Author: Eslam Mohamed Elshamy

Email: Elslam.Elshamy@nursing.tanta.edu.eg

Abstract

Background: In the light of the rise of artificial intelligence in primary health care, nurses should incorporate technology into their work to strengthen nursing skills and practices. **Aim of the study is to** assess nurses' perception regarding utilization of artificial intelligence in primary health care settings**. Design**: A descriptive cross-sectional research design was utilized. **Setting:** This study was conducted at 4 Maternal and Child Health centers at Tanta city and two medical centers affiliated to the Ministry of Health and Population, offering maternal and child health care in Tanta city El-Gharbia governorate. **Subjects:** All nurses (144) who are working in mentioned centers. **Tools**: One tool was used. It was consisted of three parts: **Part (I):** Socio-demographic data of the studied nurses' **part (2):** Nurses' knowledge about AI**. Part (3):** Nurses' attitudes regarding utilization of (AI) in PHC settings. **Results:** Less than two-thirds (62.5%) of the studied nurses had a low level of knowledge about AI, and less than one-quarter of them had a moderate knowledge level, while a minority of them (14.6%) demonstrated a high knowledge level. About nearly two-thirds (65.3%) of the studied nurses held a negative attitude toward AI in PHC settings, while slightly more than one-third held a positive attitude. **Conclusion**: There was a statistically significant relation between the nurses' total knowledge score and their age, residence, educational level and job grade. Additionally, a statistically positive correlation was found between the total knowledge score and the total attitude score. **Recommendation:** Educational programs are recommended to improve nurses' perceptions about AI integration in PHC settings.

Key words*:* Artificial intelligence, Attitude, Educational program, Perception, Primary health care.

Introduction

Digital globalization has progressed significantly in recent years, as seen by the accelerated growth of the healthcare industry **(Forster, Kentikelenis, Stubbs & King, 2020).** Healthcare digitalization changes the way people engage with healthcare professionals, make quick decisions about treatment and outcomes, and share medical data **(Kraus, Schiavone, Pluzhnikova& Invernizzi, 2020).**

Furthermore, creating a safe environment for citizens and enterprises is a top priority in Egypt's Vision 2030. As a result, the nation has started integrating technology across a number of fields, as our Egyptian healthcare system becomes more digitally enabled, emerging technologies such as Artificial Intelligence (AI) are expected to transform the way healthcare is delivered **(Egypt's Artificial Intelligence Future, 2020).**

Artificial intelligence includes technology that let computers assess, evaluate, predict, and make judgments while also learning and perceiving like people **(Tang, Chang, & Hwang,2021).** Furthermore, artificial intelligence in healthcare settings aids in the creation of disease-specific nursing care plans that commence with assessment and diagnosis and culminate in a prognosis **Bhamidipaty,Bhamidipaty,Bhamidipaty& Botchu,2025).**

The use of artificial intelligence (AI) in healthcare is rapidly increasing, with a range of statistics demonstrating the potential for AI to revolutionize the industry **(Patil& Shankar,2023).** In Egypt, the government is becoming more intrusive in sparking the growth of artificial intelligence through initiatives aimed at boosting research and development within its borders. regarding an Egyptian society powered by artificial intelligence and robotics, the government has set a general target of 7.7% of Egypt's Gross Domestic Product to be derived from artificial intelligence and robotics by 2030 **(Zahran, 2024).**

Primary health care settings encounter various issues in the context of globalization, including disease outbreaks, conflicts, instability, insufficient monitoring, and shifting needs. Nowadays, information technology is becoming more popular in the healthcare sector, where it has the potential to revolutionize many aspects of patient care **(Kooienga& Carryer, 2022)**.

One of the most important areas where artificial intelligence can have

a substantial impact on primary health care is diagnosis accuracy. AI can analyze complicated medical data, such as medical imaging, patient history, and test findings, to help healthcare providers make more accurate and fast diagnoses **(Lee& Yoon, 2023).**

Furthermore, AI can help with more individualized and evidence-based treatment planning in primary care. Taking into account specific patient features and evidence-based guidelines **(Sarkar & Bates, 2024).**

Despite, the enormous potential, the effective application of AI in primary healthcare requires careful assessment and consideration of potential obstacles and constraints **(Kumar, 2023).**

In the light of significant improvements in Artificial Intelligence, nurses need to understand how AI technologies might enhance healthcare quality, raise staff awareness of AI, and improve their comprehension of AI. As artificial intelligence (AI) improves efficacy and efficiency, its integration into daily life is rapidly expanding **(Rasheed et al., 2024).**

Community health nurses play an important role in implementing AI principles in primary healthcare settings. They play critical roles as educators, advocates, and facilitators in the integration of AI technologies into healthcare systems. Community health nurses can use their skills and knowledge to change people perception about the AI integration in healthcare **(Zaman, 2024).**

Significance of the study: The nursing profession has undergone a significant disparity persists as nurses often find themselves on the periphery of AI development, integration, and practical application within the healthcare system. **(Paul, Maglaras, Ferrag& Almomani, (2023).**

In line with this, a recent survey of 675 US nurses found that just 30% knew how AI is applied in clinical nursing practice, revealing an existing knowledge gap in this field **(Swan, 2021).** During the previous 10 years, nurses' awareness of AI has changed, with increased anxieties about its ethical ramifications and predictable influences. However, more different attitudes are emerged about AI in (PHC) settings **Iqbal, 2024).**

The use of AI is not yet well understood among nurses in primary health care settings, as little is known about their readiness, confidence, attitudes, and barriers to embracing AI in (PHC) setting. Thus, this study aims to assess nurses' perceptions regarding utilization of artificial

intelligence in primary health care settings.

Study aim was to assess nurses' perception regarding utilization of artificial intelligence in primary health care settings.

Study design: descriptive- cross-sectional research design was used in the present study.

Study setting: This study was conducted at four Maternal and Child Health Care Centers (MCHs) at Tanta City and two medical centers affiliated to the Ministry of Health and Population, offering maternal and child health care in Tanta city, El-Gharbia governorate.

Subjects: All nurses (144) who are working in previously mentioned centers were included in this study.

Tool of data collection:

The data of the study was collected using **Nurses' Perception regarding utilization of Artificial Intelligence questionnaire.**

This tool was adapted by the researcher based on relevant literature reviews**Abdullah& Fakiehan,(2020); Lennartz et al., (2021); Oh et al., (2019); Ongena et al., (2020) and Shinners et al., (2021),** to assess nurses' perception (Knowledge and Attitudes) about artificial intelligence.

It was consisted of three parts:

Part 1: Socio-demographic data of nurses: such as age, sex, educational level, marital status, department, position, and years of experience.

Part 2: Nurses' Knowledge about Artificial Intelligence: -

This part was developed by the researcher to assess knowledge of the nurses about artificial intelligence based on the related literatures. It contained multiple choice questions.

Scoring system: The subjects' response to knowledge questions was checked with a model key answer, which was prepared by the researcher. Complete and Correct answers was taken score "two", incomplete correct answers were taken score "one" while incorrect / don't know answers was take score "zero". These scores were summed up and the total score was converted into a percentage and classified as:

-Low knowledge: < 50 % of the total score.

-Moderate knowledge: 50 % - < 65 % of the total score.

-High knowledge: ≥ 65 % of the total score.

Part 3: Nurses' Attitudes regarding utilization of (AI) in PHC Settings

This part was adapted by the researcher based on relevant literature reviews **Schepman & Rodway (2020) and Hussein Mohamed *et* al.,**

(2023). to assess nurses' attitudes regarding utilization of (AI) in PHC settings.

Scoring System: All items were rated on a five-point Likert scale which is ranged from 1-5, as 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), and 5 (Strongly Agree) Based on a cut of value 60%. The nurse's attitude is determined as

-Negative attitudes ≤60% of total score.

-Positive attitudes > 60 % of total score.

Method:

Obtaining approvals: The Dean of the Faculty of Nursing granted an official authorization to conduct the study, which was then forwarded to the managers of MCH centers to acquire their consent to gather data from the chosen settings.

Ethical considerations: Approval was -obtained from the Scientific Research Ethical Committee at the faculty of nursing with the code number (506)-8-2024.

-The overall sample was not being harmed by the study's design.

-After introducing herself, the researcher gave the participants a detailed explanation of the study's purpose and methodology in order to get their cooperation, approval, and informed permission.

-Participants were given the right to withdraw.

-Data collection was conducted in a way that maintained anonymity and confidentiality.

Developing the tool of data collection:

-The study tool was developed by the researcher based on relevant literature reviews to assess nurses' perception (Knowledge and Attitudes) about artificial intelligence. It was consisted of three parts.

-The Study tool was adapted, modified and translated from English to Arabic by the researcher.

-The part 3 of the tool contain 5 reverse items (8-9-15-17-18) which mean that the response of strongly disagree has the highest degree 5 points and the response strongly agree has the lowest degree 1 point.

-The study tool was tested for face and content validity by a jury of five professor expertises in the field of community health nursing from the Faculty of Nursing at Tanta University before conducting the study. Their opinions and suggestions were done accordingly.

-The face validity value of tool part (II): nurses' knowledge about artificial intelligence was 97.3%, while part (III) nurses' attitudes regarding utilization of (AI) in primary health

care settings was 98.4 %.

-The reliability of tool was tested using the Cronbach Alpha Coefficient test. The value of the reliability test for tool part (II) nurses' knowledge about artificial intelligence was 0.835 and for tool part (III) nurses' attitudes regarding utilization of (AI) in primary health care settings questionnaire was 0.890.

Pilot study: pilot study was carried out on a sample (10%) of nurses (n= 15), which included in the total sample.

-The pilot study's objective was to evaluate the questions' item sequence, relevance, clarity, and application. Additionally, to calculate how long it will take to complete the questionnaire.

-It was expected that nurses would need 10 to 15 minutes to complete the questionnaire items, with the knowledge questions taking 5 to 7 minutes and the attitude questions taking 5 to 8 minutes.

-After conducting the pilot study, the recommendation of the five experts, is to change the scoring system of the tool part 1 to be the subjects' response to knowledge questions was checked with a model key answer, which was prepared by the researcher.

Actual study: The researcher met the nurses in the chosen MCH centers in Tanta City, El-Gharbia Governorate.

-The goal of the study was explained to the nurses, and their oral consent to participate was obtained.

-In order to answer any queries and clear up any ambiguities, each nurse was given a questionnaire to fill out in front of the researcher.

-The data were collected by the researcher over a period of 3 months starting from mid-February 2025 to mid-May 2025.

Statistical analysis: The data was statistically analyzed using IBM SPSS software version 20.0 (Armonk, NY: IBM Corp, 2011). Categorical data were summarized using numbers and percentages. Normality in continuous data was determined using the Kolmogorov-Smirnov test. Quantitative data were described as range (minimum and maximum), mean, and standard deviation. The significance of the acquired results was assessed at the 5% level.

Results

Table (1): Demonstrates the socioeconomic characteristics of the studied nurses shows that regarding age, more than half (56.3%) of the studied nurses were aged 40 years or older, while 43.8% of them were younger than 40 years, with a mean

age (40.76 ± 6.84) year. Concerning the educational level of the studied nurses, the table illustrates that, less than half (45.8%) of the studied nurses held a secondary diploma in nursing, followed by 39.6% of them had nursing technical institute, and 14.6% had a Bachelor's degree and postgraduate studies.

Table (2): Shows distribution of the studied nurses according to their knowledge about AI. Regarding the definition of artificial intelligence, the table reveals a significant knowledge gap, as three-quarters (75.0%) of the studied nurses incorrectly define the artificial intelligence or stating they did not know the answer. And only a small minority (9.0%) of them had a complete correct answer.

In addition to the applications of AI in primary health care settings, the table shows that a half of the studied nurses did not know or had incorrect answers. However, less than half (46.5%) of them had correct answers and completely identified the applications.

Concerning the advantages of using AI, less than one-third (31.9%) of the studied nurses correctly identified all advantages, and 30.6% of them had partially correct answers. While more than one-third (37.5%) of them did not know or answered incorrectly.

In relation to, the disadvantages of applying AI technology in PHC settings, about two-fifths (40.3%) of the studied nurses could completely and correctly identify disadvantages, and more than one-third (34.0%) of them gave partially correct answers. While a more than quarter (25.7%) of them did not know or answered incorrectly.

Related to barriers for implementing AI technologies, more than half (54.2%) of the studied nurses did not know or answered incorrectly. While less than a quarter (24.3%) had complete and correct answer about barriers. In addition to the challenges faced when using AI, less than half (45.8%) of the studied nurses did not know or answered incorrectly. And also, more than one-quarter (27.1%) correctly and completely identified challenges, and also more than one-quarter (27.1%) had partially correct answers.

Figure (1): Demonstrates the total levels of nurses' knowledge regarding AI in primary health care settings. It revealed that slightly less than two third (62.5%) of the studied nurses had a low level of knowledge, while the minority (14.6%) of them had a high level of knowledge regarding AI in primary health care settings.

Table (3): Shows distribution of the studied Nurses according to their sources of information about AI. It is noticed that the internet was the most common source of information for nurses (41.7%) followed by media (33.3%) and their friends (22.9%).

Figure (2): Demonstrates distribution of the studied nurses according to their total score of Attitude regarding AI in primary health care settings. It is clear that nearly two-thirds (65.3%) of the studied nurses held a negative attitude toward AI in PHC settings, while slightly more than one-third (34.7%) held a positive attitude.

Table (4): Reveals a statistically significant relationship between the mean total knowledge score and socio-demographic characteristics, including their age, residence, educational level and job grade.

Table (5): Reveals a statistically significant relationship between the total attitudes score and socio-demographic characteristics, including their age, educational level and job grade.

Table (6): Shows that there was statistically positive correlation between the total knowledge score and attitudes of the studied nurses regarding AI in primary health care settings. (r=0.277*, p=0.001)

Table (7): Reveals a strong positive correlation between educational level, total attitude and knowledge score regarding AI in primary health care settings (P= <0.001*) (P= <0.001*). Meanwhile, there was a strong, negative correlation was found between age, total attitude and knowledge scores regarding AI in Primary health care settings (r=-0.559*, p <0.001*) (r= -0.225*, P= 0.007*).

Table (1) Socio-demographic characteristics of the studied nurses

Socio -demographic Characteristics	The studied nurses (n= 144)	
	No.	%
Age		
<40	63	43.8
≥40	81	56.2
Mean ± SD.	40.76 ± 6.84	
Marital Status		
Married	118	81.9
Single and Other	26	18.1
Residence		
Rural	97	67.4
Urban	47	32.6
Years of Experience		
<15	77	53.5
15 – 25	36	25.0
>25	31	21.5
Mean ± SD.	17.26 ± 7.44	
Educational Level		
Secondary diploma in Nursing	66	45.8
Nursing Technical Institute	57	39.6
Bachelor's Degree and more	21	14.6
Job Grade		
Nursing Technician	123	85.4
Nursing Specialist	21	14.6
Have you ever attended seminars about artificial intelligence before?		
Yes	4	2.8
No	140	97.2

Table (2): Distribution of the studied nurses according to their knowledge about AI in PHC settings

	Nurses' knowledge about artificial intelligence	The studied nurses (n= 144)	
		No.	%
Definition of artificial intelligence			
	Complete Correct	13	9.0
	Incomplete Correct	23	16.0
	Incorrect / I don't know	108	75.0
Types of AI technology that can be used in primary health care settings			
	Complete Correct	45	31.3
	Incomplete Correct	27	18.8
	Incorrect / I don't know	72	50.0
Applications of Artificial intelligence (AI) in primary health care settings			
	Complete Correct	67	46.5
	Incomplete Correct	5	7.2
	Incorrect / I don't know	72	50.0
Benefits of using AI in Primary Health Care setting			
	Complete Correct	46	31.9
	Incomplete Correct	54	37.5
	Incorrect / I don't know	44	30.6
Advantages of Using Artificial Intelligence in PHC setting			
	Complete Correct	46	31.9
	Incomplete Correct	44	30.6
	Incorrect / I don't know	54	37.5
Disadvantages of applying artificial intelligence technology in PHC settings.			
	Complete Correct	58	40.3
	Incomplete Correct	49	34.0
	Incorrect / I don't know	37	25.7
Barriers for implementing artificial intelligence technologies in PHC settings.			
	Complete Correct	35	24.3
	Incomplete Correct	31	21.5
	Incorrect / I don't know	78	54.2
Challenges are faced when using artificial intelligence in PHC settings.			
	Complete Correct	39	27.1
	Incomplete Correct	39	27.1
	Incorrect / I don't know	66	45.8
Ethical principles endorsed by the World Health Organization (WHO) for the use of (AI) in primary healthcare settings.			
	Complete Correct	98	68.0
	Incomplete Correct	5	7.2
	Incorrect / I don't know	41	28.5

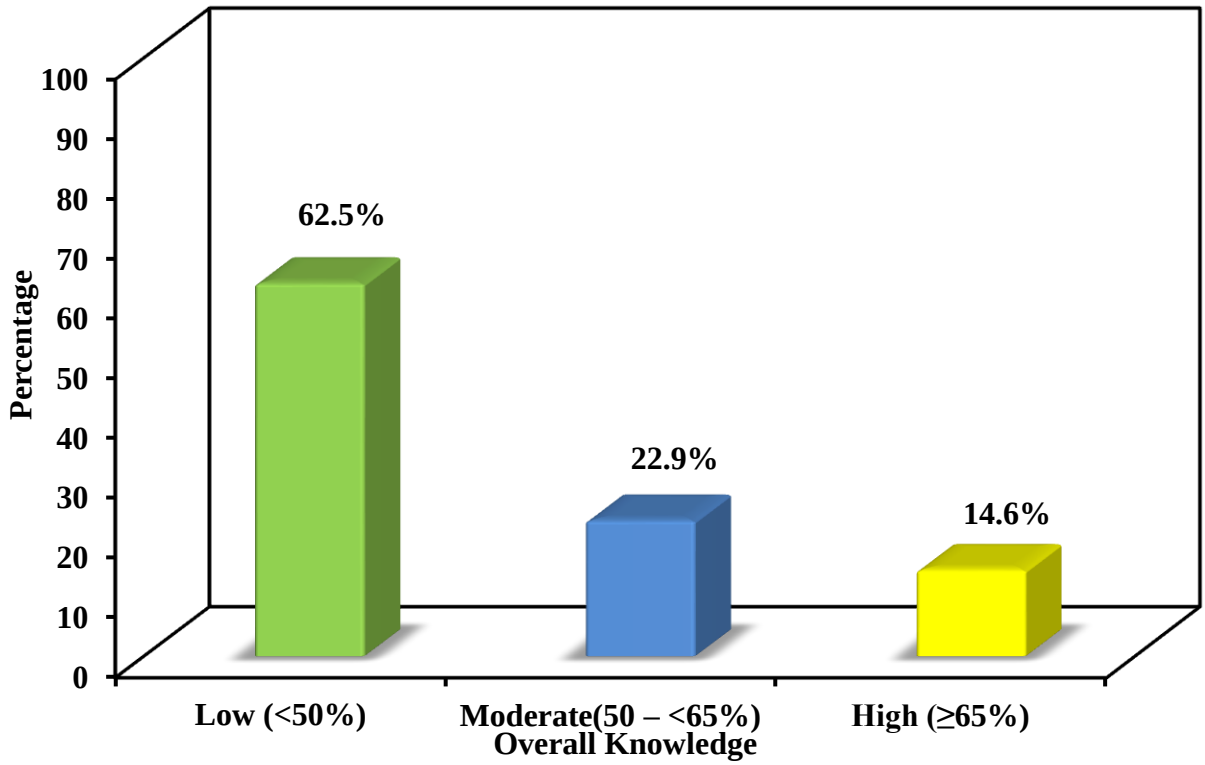

Figure (1): Distribution of the studied nurses according to their total score of knowledge regarding AI in primary health care settings

Table (3): Distribution of the studied nurses according to their sources of information about artificial intelligence

What are your sources of information about artificial intelligence?	The studied nurses (n= 144)	
	No.	%
Educational lectures	3	2.1
The internet	60	41.7
Friends	33	22.9
Media	48	33.3
No Source	0	0.0
Other, please specify	0	0.0

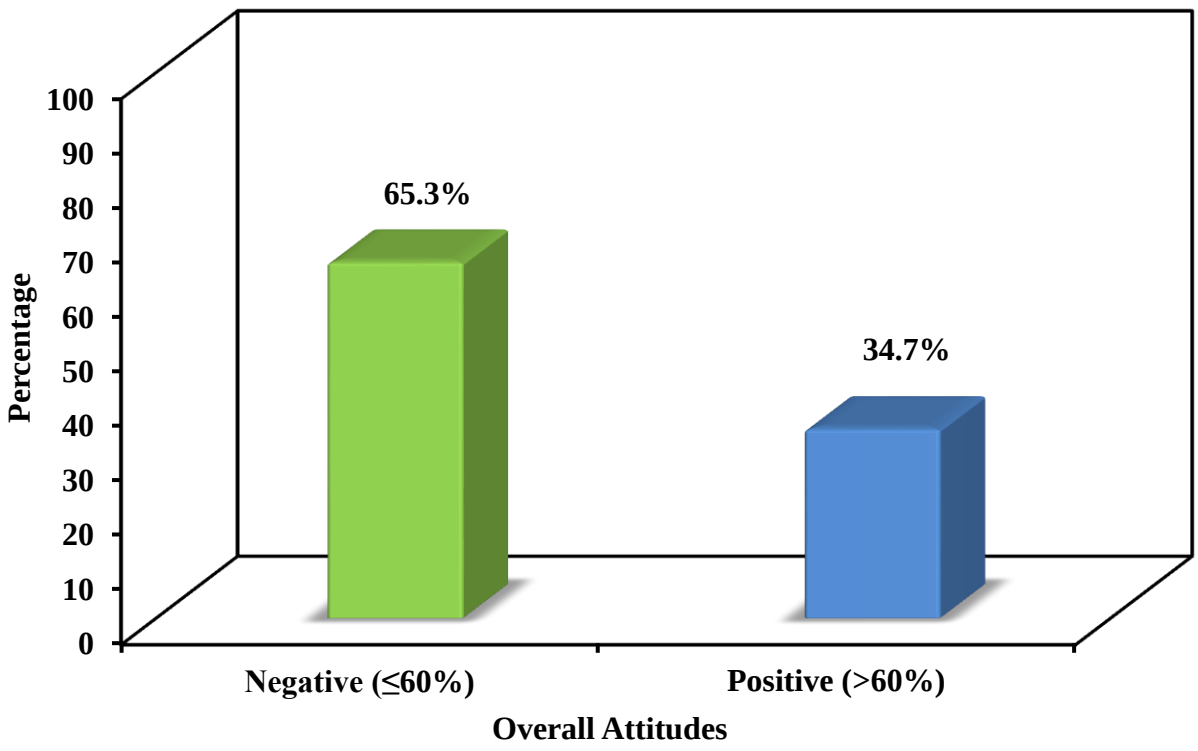

Figure (2): Distribution of the studied nurses according to their total score of attitudes regarding to AI in primary health care settings

Table (4): Relation between total knowledge score and socio-demographic characteristics of the studied nurses

Socio Demographic Characteristics	The studied nurses (n= 144)							
	Levels of Knowledge						χ^2	P
	Low (n = 90)		Moderate (n = 33)		High (n = 21)			
	No.	%	No.	%	No.	%		
Age								
<40	25	27.8	17	51.5	21	100.0	37.138*	<0.001*
≥40	65	72.2	16	48.5	0	0.0		
Residence								
Rural	68	75.6	18	54.5	11	52.4	7.357*	0.025*
Urban	22	24.4	15	45.5	10	47.6		
Years of Experience								
<15	52	57.8	14	42.4	11	52.4	5.587	0.232
15 – 25	24	26.7	8	24.2	4	19.0		
>25	14	15.6	11	33.3	6	28.6		
Educational Level								
Secondary diploma in Nursing	49	54.4	13	39.4	4	19.0	13.809*	MCp= 0.019*
Technical nursing institute	31	34.4	16	48.5	10	47.6		
Bachelor's Degree and more	10	11.1	4	12.1	7	33.3		
Job Grade								
Nursing Technician	81	90.0	29	87.9	13	61.9	9.073*	MCp= 0.010*
Nursing Specialist	9	10.0	4	12.1	8	38.1		

χ^2: **Chi square test** **MC: Monte Carlo test**

p: p value for comparing between the studied categories

*: Statistically significant at $p \leq 0.05$

Table (5): Relation between total attitude score and socio-demographic characteristics of the studied nurses

Socio Demographic Characteristics	The studied nurses (n= 144)					
	Levels of Attitudes				χ^2	P
	Negative (n = 94)		Positive (n = 50)			
	No.	%	No.	%		
Age						
<40	34	36.2	29	58.0	6.320*	0.012*
≥40	60	63.8	21	42.0		
Residence						
Rural	65	69.1	32	64.0	0.394	0.530
Urban	29	30.9	18	36.0		
Years of Experience						
<15	50	53.2	27	54.0	0.043	0.979
15 – 25	24	25.5	12	24.0		
>25	20	21.3	11	22.0		
Educational Level						
Secondary diploma in Nursing	55	58.5	11	22.0	23.342*	$^{MC}p=$ <0.001*
Technical Nursing Institute	33	35.1	24	48.0		
Bachelor's Degree and more	6	6.4	15	30.0		
Job Grade						
Nursing Technician	87	92.6	36	72.0	11.069*	0.001*
Nursing Specialist	7	7.4	14	28.0		

p: p value for comparing between the studied categories *: Statistically significant at $p \leq 0.05$

Table (6): Correlation between total knowledge score and attitudes of the studied nurses regarding to AI in primary health care settings.

Knowledge vs. Attitudes	
R	**P**
0.277*	**0.001***

r=Correlation Coefficient *statistically significant (P<0.05)

Table (7): Correlation between age, educational level and total score of knowledge and attitude regarding AI in Primary health care settings

		Age	Educational Level
Knowledge	**R**	-0.559*	0.306*
	P	<0.001*	<0.001*
Attitudes	**R**	-0.225*	0.473*
	P	0.007*	<0.001*

r: Pearson coefficient *: Statistically significant at p ≤ 0.05

Discussion

The incorporation of artificial intelligence (AI) technologies across various occupational sectors has significantly enhanced systems, decision-making processes, and overall outcomes. Healthcare professionals, who represent a critical segment of the contemporary workforce, are on the brink of considerable transformation through the application of AI technologies. Nurses, positioned at the forefront of healthcare delivery, assume a crucial role in providing effective and high-quality patient care and are essential to the successful integration and utilization of AI technologies within clinical environments **(Lora & Foran, 2024).**

The present study revealed that, less than two-thirds of the studied nurses had low level of knowledge regarding AI application in (PHC) settings **(Figure1)**. This finding is similar to a study conducted by **Sandanasamy et al. (2025**), who studied nurses' knowledge and attitudes towards artificial intelligence and related factors: a systematic review in Malaysia. And found that nurses had poor knowledge toward AI.

In addition, **Viljaras & Šukienė, (2025),** who studied healthcare workers' perspectives on artificial intelligence in primary care in Lithuania. They demonstrated that the studied nurses had a low level of knowledge regarding AI in primary health care settings.

Besides, **Nash et al.,(2024),** who studied perceptions of artificial intelligence use in primary care: a qualitative study with providers and staff of ontario community health in Canada. They found that primary care providers had a poor knowledge about AI. This result may be justified as more than two-thirds of them lived in rural areas where there is limited access to some technology. And also, more than half of the studied nurses were 40 years and older where their desire to learn is decreased.

Furthermore, the majority of the studied nurses were nursing technicians with a secondary diploma or technical institute education as they are unaware of the modern technologies like artificial intelligence that have been introduced in primary health care settings because of their low educational level compared with those with bachelor degree and post graduate studies.

And also, because of insufficient educational program and workshops for nurses to increase their awareness and knowledge about the utilization of AI in primary health care settings. Even in practice. Also, healthcare settings often provide

inadequate hands-on training and technical support.

On the other side, this result was contradicted with **Katonai, Árvai &Meskó, (2024),** who studied artificial intelligence and primary care: a scoping review in South Australia and displayed that the nursing participant had high level of knowledge regarding AI in primary health care setting. In addition, **Miró et al., (2023),** who studied knowledge and perception of primary healthcare professionals on the use of artificial intelligence as a healthcare tool in Spain? They explained that the majority of participant is knowledgeable about AI. It is expected to be due to that the most of the study participant receive an education about AI. Also, location where study was conducted also makes a difference, as in Central Catalonia there is advanced technology that applied in this area while, more than the locality of the current study.

Nurse's attitude must not be ignored. As it is one of the important factors that determine the nurse's willingness for AI integration into primary health care settings. **Akhtar et al., (2025)**. As regard, the overall levels of attitude among the studied nurses, the findings of the present study revealed a predominantly negative disposition toward the utilization of artificial intelligence in primary health care settings. (**Figure 2).** By the way, the results of the present study illustrated that nearly two-thirds of the studied nurses, exhibited a negative overall attitude toward using AI in PHC, while slightly more than one-third demonstrated a positive attitude.

This result is in harmony with a study conducted by **Reigas and Šukienė (2025),** who studied healthcare workers' perspectives on artificial intelligence in primary care and explained that the analysis by health care professional showed that nurses were more likely to had negative view toward artificial intelligence and didn't have practical experience for applying it.

In contrast, nurses had negative view and more frequently expressed concern about professional autonomy and identity, which AI is sometimes perceived as a threat to the human connection with patients, holistic care, or individual decision-making.

Conversely, the current study's findings are inconsistent with **Hussien & Mohammed (2025),** who studied attitudes of primary healthcare centers workers towards artificial intelligence in healthcare in Baghdad and found that more than half of the study participants showed positive attitudes towards artificial intelligence application in

primary health care settings. In addition, **Sandanasamy et al. (2025**). Found a generally high positive attitude among nurses toward AI.

From the researcher point of view in this study the prevailing negative attitude can be attributed to the substantial clinical experience with (mean of 17.26 years) which indicates a workforce that may be less interested in new digital health technology but is highly adept in traditional, hands-on care. And also, with increasing age the studied nurse's interest and sense of curiosity about new things such AI is decreased.

And also, other several interconnected factors like deep-seated concerns regarding loss of professional autonomy, ethical misuse by organizations, potential job displacement, and the perceived erosion of the humanistic core of nursing collectively contribute to a climate of apprehension and skepticism.

Furthermore, the lack of hands-on experience with beneficial, nurse-centric AI applications, coupled with prevalent misconceptions about AI's infallibility **(Table 2)**, likely fosters resistance rather than acceptance.

An analysis of the relationship between the studied nurses' knowledge of and their attitudes toward artificial intelligence reveals a significant and expected correlation, providing critical insight into the human factors shaping technology adoption in primary care **Sani et al., (2026).** The present study revealed a statistically significant, positive correlation between the total knowledge score and the total attitude score. **(Table 6).**

This is also, supported by the study conducted by **Catalina et al., (2023)** and **Hamedani et al. (2023)** who assessed acceptance, attitude, and knowledge towards artificial intelligence and its application from the point of view of physicians and nurses in medical centers in Iran.

They found that there was a significant correlation between knowledge and attitude of the study participants. And by **Alowais et al. (2023),** who studied revolutionizing healthcare: the role of artificial intelligence in clinical practice in Saudi Arabia, and concluded that healthcare professionals with a better understanding of AI's capabilities and limitations were more likely to view its integration favorably.

From the researcher point of view, the current study results can be justified as this positive correlation may be attributed to the role of knowledge in mitigating fear and correcting misconceptions. Nurses

with a more accurate understanding of AI's definitions, applications, benefits, and limitations are likely less influenced by speculative fears about job replacement or ethical misuse.

Knowledge empowers them to evaluate AI more objectively, potentially seeing it as a set of tools with specific, augmentative functions rather than as an amorphous threat. The level of knowledge regarding use of AI in PHC can be influenced by several factors including socio demographic characteristics of the study participants.

This was proved by the current study as a statistically significant relationship was found between level of knowledge and a nurse's age, place of residence, educational level, and job grade **(Table 4).** The most striking association was with age. A highly significant statistical relationship was found revealing a clear trend: all nurses in the high knowledge group were under 40 years of age. And those in the low knowledge group were aged 40 or older.

This finding aligns with a study conducted by **Reigas and Šukienė (2025),** who studied healthcare workers' perspectives on artificial intelligence in primary care and explained that there was a statistically significant positive correlation between level knowledge regarding artificial intelligence in primary healthcare and participants age, educational qualification, years of experience.

The present study results may be attributed to the "digital native" effect, where younger nurses have grown up in a technology-saturated environment and may be more comfortable engaging with and learning about emerging digital concepts like AI.

Additionally, more recent nursing curricula may have begun to incorporate elements of digital health and informatics, providing younger cohorts with a foundational exposure that older nurses, who completed their training in a different technological era, did not receive.

Regarding level of education, nurses with advanced academic training are likely more adept at self-directed learning and accessing complex information, skills that translate to acquiring knowledge about a novel topic like AI. For residence, urban settings typically offer greater access to continuous educational opportunities, professional networks, technology exposure, and healthcare institutions that are early adopters of innovation.

Related to relation with gob grade, specialist roles often entail greater responsibility, require engagement

with complex cases, and may involve more opportunities for professional development, all of which could facilitate exposure to and motivation for learning about AI applications in healthcare.

Overall attitudes toward Artificial Intelligence in PHC settings can be vary depend on combination of many factor that can shaping it, the results of the current study demonstrated that a statistically significant relationships was found between total attitude level score of nurses and their age, educational level, and job grade.

As more than half of studied nurses with a positive attitude were under 40 years of age, compared with more than one third of studied nurses with a negative attitude. While the most pronounced association was with educational level. The disparity is stark as more than half of studied nurses with a negative attitude held only a nursing secondary diploma.

Similarly, job grade showed a significant relationship with attitude. The majority of the studied nurses with a negative attitude were nursing technicians, while the positive attitude group included a substantially higher proportion of nursing specialists. These results are compatible with **Hussien & Mohammed (2025)** who emphasized that there was a statistically significant relation between the participant's age, educational qualification, job grade and the level attitudes towards artificial intelligence in primary healthcare.

The current study results may be attributed to younger nurses may view AI as an inevitable and integrated part of their future career landscape, and also use it in the daily life work also, may be attributed to the critical thinking skills, exposure to broader scientific discourses, and greater confidence in engaging with complex information systems that are fostered by higher education.

Nurses with advanced education may be better equipped to critically evaluate AI's potential and limitations, moving beyond fear-based reactions to a more nuanced assessment. Also, differences in professional roles and perspectives. Nursing specialists are often involved in more complex decision-making and leadership activities, may be more likely to perceive AI as a decision-support tool that could enhance their specialized practice. Technicians, whose roles may be more task-oriented and procedural, might perceive a greater direct threat of automation or increased monitoring to their core duties.

This result aligns with studies on technology adoption in

organizations, which frequently find that individuals in higher-status or knowledge-intensive roles perceive more benefit from supportive technologies.

High levels of knowledge are usually associated with more positive attitude. The present study revealed a strong and statistically significant correlation was found between the nurses' knowledge and attitudes regarding AI and their core demographic characteristics of age and educational level **(Table 7).**

The analysis showed that educational level in positive correlation with both outcomes. A weak positive correlation existed with knowledge, and a stronger positive correlation was observed with attitudes. while a strong negative correlation between age and total knowledge score, explained that younger nurses possessed significantly higher levels of knowledge about AI.

Concurrently, a moderate negative correlation was found between age and positive attitudes, suggesting that younger age is also associated with a more favorable outlook toward AI integration.

These findings were agreed with the results of the study conducted by **Reigas and Šukienė (2025),** who confirmed that younger healthcare professionals consistently demonstrate greater AI competency and acceptance. And also, with **Catalina et al., (2023),** who presented that there was positive correlation between level of attitude of study participants and level of education. The results of current study may be attributed to younger participants tended to use and expose to technology that rely on AI daily. Also, AI is a rapidly emerging field that has been integrated into standardized nursing curricula or continuing education for nurses in primary health care settings.

Conclusion:

It was concluded that less than two-thirds of the studied nurses had a low level of knowledge about AI, and less than one-quarter of them had a moderate knowledge level, while a minority of them demonstrated a high knowledge level. Furthermore, about nearly two-thirds of the studied nurses held a negative attitude toward AI in PHC settings, while slightly more than one-third held a positive attitude.

Besides, there was a statistically significant relation between the nurses' total knowledge score about AI and their age, residence, educational level and job grade. Also, there was a statistically significant relation was found between the nurses' total score of attitudes about AI and their age, educational level and job grade.

Additionally, a statistically significant positive correlation was found between the total knowledge score and the total attitude score.

Recommendations:

Based on the findings of the current study, the following recommendations are suggested**:** integrate AI literacy into the core nursing curriculum by develop a mandatory module that cover the fundamentals of AI, its applications in primary and community care.

-Facilitate hands-on workshops, simulations, or collaborations with health-tech partners where nurses can interact with real versions of AI-powered clinical software in a safe learning environment.

-Offer continuing professional development courses and certificate programs specifically designed for practicing nurses in PHC settings to bridge their AI knowledge gap.

-Train nursing educators in PHC settings to become AI-literate educators. Ensure they are equipped with the necessary knowledge and resources to teach AI concepts confidently and address nurses' concerns and misconceptions effectively.

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Relation between Organizational Strategic Intelligence and Nurse Managers' Decision Making

Aya Agamy Abo Zaid [1,2], Reda Abd EL-Fatah Abo Gad [3], Loly Mohamad Shawky Elbus [4]

[1]Master Student of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

[2]Nursing Specialist at Qutur Centeral Hospital, El-Gharbia Governorate, Egypt.

[3] Professor of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

[4] Lecturer of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

Corresponding author: Aya Agamy Abo Zaid

E-Mail: ayaagamy44@gmail.com

Abstract

Background: Organizational strategic intelligence is the ability of organizations to create a vision for the future, focus on the strategy, encourage creative thinking, and implement strategic decisions quickly and effectively. **Aim of the study**: To assess the relation between organizational strategic intelligence and nurse managers' decision making. **Research design**: A descriptive correlational design was used. **Setting**: The study was conducted in Tanta University Hospitals. **Subjects**: included all (n=280) nurse managers, who are working in the previously mentioned setting. **Tools:** Two tools were used to collect the data; Organizational strategic intelligence and Decision making Questionnaires. **Results**: About half (49.6%) of nurse managers had a moderate-level perception regarding overall organizational strategic intelligence. Majority (81%) of nurse managers had a high level perception decision making. **Conclusion:** A positive statistically significant correlation was found among nurse managers overall perception of organizational strategic intelligence and decision making. **Recommendations:** foster an atmosphere of trust and professional empowerment to increase nurses' engagement and accountability, which correlates positively with organizational strategic intelligence and work engagement.

***Keywords*:** Decision Making, Nurse Managers**,** Organizational Strategic Intelligence.

Introduction

Healthcare organizations are facing several challenges, such as the increasing difficulty of satisfying the demands of selective patients and the necessity to modify their internal organization to keep up with the quick and ongoing advancements in technology and procedures. All of these forced healthcare organizations to utilize administrative strategies that can adapt to these changes with

wisdom, vitality, and sustainability and one of the most important of these strategies that nurse managers used is strategic intelligence. **(Al-Hakim,. et al ,. 2024).**

Nurse managers are a licensed nurse in an upper management position who supervise nursing personnel, responsible for managing human and financial resources, ensure patient and staff satisfaction, maintaining a safe environment. Also, they put operationally developed strategic goals and objectives into practice, and align unit goals with organization strategic goals, being accountable for all patient care activities on the unit around-the-clock in addition to provide administrative and clinical leadership. **(Gunawan,. 2018).**

Organizational strategic intelligence enables nurse managers to analyze complex situations, anticipate challenges, and make data-driven decisions that enhance patient care and organizational efficiency. It improve nurse managers' traits, and support their capacity to create emergency plans in the face of complicated crises and fast change. **(El-latief,.2023)**. Organizational strategic intelligence refers to a revolution in innovative thinking and adaptation that organizations employ to secure chances for growth, survival, and performance improvement. It is the most crucial idea that addresses anticipated strategy shifts and how to respond to any circumstance in order to ensure the organization's sustainability. **(Al-Azzawi,.2021).**

Organizational strategic intelligence includes five dimensions, prospective, systems thinking, future vision, partnership, and ability to motivating nurses. First; prospective dimension , which includes not only understanding the causes that will influence future changes inside the organization but also, planning for the future, identifying potential dangers or crises early on, and offering other solutions. Second; systemic thinking dimension, is the capacity to combine and integrate various components in order to comprehend how they work together to accomplish the objectives of the organization. **(El-latief,.2023)**

Third; future vision dimension, which helps nurse managers create a thorough strategic plan for the organization that helps it determine its goals as well as make those goals a reality. Forth; partnership dimension, refers to the formation of partnership agreements with other organizations in order to create and sustain positive working relationships and collaborate for mutual gain. Strategic intelligence is demonstrated by nurse managers who establish partnerships and by their understanding of the objectives and tactics of other organizations. Finally;

motivating nurses dimension is the process of influencing nurses' behavior in terms of direction, continuity, and a strong orientation toward goal by giving them the tools to make practical decisions. **(Alkharabsheh, &Al-Sarayreh.,2022**)

Supporting the feasibility of decision-making and the creation of plans and policies is the fundamental purpose of strategic intelligence. In order to make a sound decision, nurse managers must analyze the pros and cons of each alternative. Also, it prepares recognized nurse managers, strengthens their attributes, and supports their capacity to develop emergency plans in the face of rapid modifications and extremely complicated emergencies. It also successfully aids in making decisions that are correct and decisive. **(Ahmed,.2018)**

Decision making is the cognitive process that results in a selection or choice between options. When attempting to make a decision, take into account every option. In order to make a good decision, nurse managers must be able to predict the results of each option as well as use all of these factors to determine which option is best in that particular circumstance. Decisions can be made effectively and logically when the right information is given to the right person at the right time. The process of making decisions starts with identifying the choice that must be made, investigating the available possibilities, choosing the best option for the situation, and then putting the choice into action and assessing it to make sure it is suitable and effective. **(Badran., 2022).**

Decision making consists of four domains summarized in strategy, environment, process and implementation, First; strategy, refers to needing a more comprehensive understanding of the issues and it's consequences, it concentrates on long-term goals and objectives. Second; environment, for decisions to be safe and effective, nurse managers must consider organizational, cultural, and technical environmental factors. Third; decision making process gives nurse managers the chance to generate ideas, assess each idea, and choose the best course of action.Finally; implementation, refers to establish a plan of action, communicate the final decision to all nurses, and carry it out. **(Pishgooie,2019)**.

Significance of study

Organizational strategic intelligence acts as a critical management tool, it plays a significant role in improving decision-making by providing organizations with actionable insights derived from comprehensive data analysis and environmental scanning. It foster nurse managers' creativity

and partnership in decision-making processes, equip them with better insights and analytical capabilities, leading to improved strategic flexibility and decisions. Strategic intelligence supports the thorough evaluation of multiple options, helping nurse managers' weigh risks and benefits before committing to a course of action.

Aim of the study

This study aimed to assess the relation between organizational strategic intelligence and nurse managers' decision making.

Research Questions

-What are the perception levels of organizational strategic intelligence among nurse managers ?

-What are the perception levels of decision making among nurse managers?

-What are the relation between organizational strategic intelligence and nurse managers' decision making?

Research design:

A descriptive-correlational research design was used in the present study.

Study setting:

This study was conducted at all departments of Tanta University Hospitals which is affiliated to the Ministry of Higher Education and Scientific research. Including Pediatric, Medical, Psychiatric, The New Surgical, Tanta International Educational, Emergency, Ophthalmology, Student and the Tanta University Main Hospitals (Gynecology and Obstetrics, Cardiac, Neurology, Tropical, Blood bank, Central Laboratory and Oncology departments).

Subjects:

The subjects of the study included all available (n=280) nurse managers, who are working in the previously mentioned setting and are available at the time of data collection.

Tools of data collection:

To achieve the aim of study, the following two tools were used.

Tool I: Organizational Strategic Intelligence Questionnaire,

It consisted of two parts as follow:

Part 1: Personal and work related characteristics of nurse managers included age, sex, marital status, years of experience, qualification, position, department and attending courses related to managerial skills and effective communication

Part 2: Organizational Strategic Intelligence Questionnaire ; This tool was developed by researcher based on **Maccoby and Scudder., (2011)** and related relevant literature **.(Keikha ., (2016) ; Al-Azzwai., (2020)** It was used to assess nurses managers' perception about health care organizational strategic intelligence**.**

-It contained 34 items divided into five dimensions as follow ;

-Prospective subscale included 5 items (1-5)

-Systemic thinking subscale included 8 items (6-13)

-Future vision subscale included 8 items (14-2)

-Partnership subscale included 7 items (22-28)

-Motivate nurses subscale included 6 items (29-34)

Nurse managers' responses was measured on a five points Likert Scale ranging from 1 to 5 where strongly agree =5, agree =4, little agree =3, disagree =2, strongly disagree =1. They were merged into 3 point where strongly agree and agree equal agree and strongly disagree and disagree equal disagree.

Scoring system:

Total score was summed up and categorized according to statistical cut-off point into levels as follow;

-High level of nurse managers' organizational strategic intelligence >75% (equal 128)

-Moderate level of nurse managers' organizational strategic intelligence 60 ≥75% (equal 102-128)

-Low level of nurse managers' organizational strategic intelligence <60% (equal 102)

Tool II : Decision making Questionnaire ,

This tool was developed by **Winchester et al.,(2006)** and modified by the researcher based on related literature (**Majid.,2011; Shaban.,2014).** It was used to assess nurse managers' ability to make decision. It was be divided into four dimensions with 35 items as follow,

-Strategy subscale included 15 items (1-15)

-Environment included 3 items (16-18)

-Process subscale included 13 items (19-30)

-Implementation subscale included 5 items (31-35)

Nurse managers' responses were measured on three points Likert scale ; always =3 , sometimes =2 , rarely =1.

Scoring system

Total score was summed up and categorized according to statistical cut off point into levels as follow;

-High level of nurse managers' decision making >75% (equal79)

-Moderate level of nurse managers' decision making 60 ≥75% (equal63-79)

-Low level of nurse managers' decision making <60% (equal 63)

Method

An official permission was obtained from the Dean of Faculty of Nursing to the authoritative personnel of the previously mentioned setting.

Ethical considerations:

-Approval was obtained from the Scientific Research Ethics Committee before conducting the study with code number 365-1-2024.

-The nature of the study was not causing harm to the entire sample.
-Informed consent was obtained from the study's participants after explanation of the study's aim.
-Confidentiality and anonymity were maintained regarding data collection and the participants have the right to withdrawal.

Tools (I, II) were translated from English to Arabic to ensure that they are comprehensible and culturally relevant for the participant. This translation process followed a standard translation and the back - translation procedure:

Tools (I, II)presented to jury of five experts in the area of specialty to check their content validity and the clarity of the questionnaire. The experts were two professors, and three assistant professors of nursing administration from the Faculty of Nursing, at Tanta University**.**
(minor modification are made).

-The face validity value of tool (I) nurse managers' perception regarding organizational strategic intelligence questionnaire was 94.9% & tool (II) nurse managers' perception regarding decision making questionnaire was 91.4%.

A pilot study was carried out on a sample (10%) of the subject (n=28), and they were included into the main study sample during the actual collection of data. The pilot study was done to test clarity, sequence of items, applicability, relevance of the questions, minor modifications were done. The pilot study was done also to determine the needed time to complete the questionnaire. The estimated time needed to complete the questionnaire items from nursing manager was 20 – 30 minutes for each sheet.

Reliability of tools was tested using Cronbach's Alpha Coefficient test. Reliability of tool (**I**) nurse managers' perception about organizational strategic intelligence questionnaire= 0.930 and reliability of tool (**II**) nurse managers' perception regarding decision making questionnaire = 0.840.

Data collection phase: the data were collected from nurse managers by the researcher. The researcher met the respondents' nurse manager individually in different areas under study during working hours to distribute the questionnaire. The subjects recorded the answer in the presence of the researcher to ascertain that all questions were answered.

8. The data was collected over a period of six months started from the beginning of November 2024 until the end of April 2025.

Statistical analysis:

The statistical analysis of the data was performed using IBM SPSS software version 20.0 (Armonk, NY: IBM Corp, released 2011).

Categorical data were summarized as numbers and percentages. For continuous data, normality was assessed using the Kolmogorov-Smirnov test. The used tests were student t-test for normally distributed quantitative variables to compare between two studied categories, F-test (ANOVA) For normally distributed quantitative variables to compare between more than two categories and Pearson coefficient to correlate between two normally distributed quantitative variables.

Results

Table (1): Shows distribution of nurse managers according their personal work related characteristics. It was observed that more than two thirds (68.6%) of nurse managers' age ranged between 30 – 40 years, minority (16.4%) of them was >40 years old and 15.0% was <30 years old with Mean score 36.28 ± 6.27. Majority (84.3% & 86.8%) of nurse managers were female and married respectively. Regarding to years of experiences, more than half (60.0%) of nurse managers had <10 years, 28.6% had 10-20 years, 11.4% of them had >20 years of experiences with mean score 11.36 ± 6.78.

For about qualification, about three quarters (73.2%) of nurse managers had bachelor in nursing sciences, and 20.0% of them had other post graduate studies. About two thirds (64.6%)of nurse managers were charge nurse and minority (9.3%) were nurse supervisor. More than half (56.1%) of them were worked at Tanta University Main Hospital, as well as, high percent (77.9 %) of them were attend at training program about management skills and effective communication courses.

Table (2): Displays mean scores, standard deviation, and ranking of nurse managers' organizational strategic intelligence dimensions. As noticed, organizational strategic intelligence overall with mean score was 134.2 ±11.24. Systemic thinking was ranked as the highest (80.4%) dimension with mean scores 32.17±3.14 followed by prospective of nurse manager (80.3%) with mean scores 20.07± 2.34.While, motivate nurses was ranked as the lowest (77.7%) dimension with mean scores 23.32 ± 3.23.

Table (3): Displays mean scores, standard deviation, and ranking of nurse managers' perception regarding decision making dimensions. As noticed, decision making overall with mean score was 94.58 ± 6.64. Process of decision making was ranked as the highest (40.5%) with mean 40.15 ± 4.48. While, environment of decision process was ranked as the lowest (86.8%) dimension of nurse managers' perception regarding decision making with mean scores 7.82 ± 1.21.

Figure (1): Denotes that, about half (49.6% 44.6%) &) of nurse managers had a moderate and high perception level, respectively regarding to organizational strategic intelligence. While minority (5.7%) of them had a low perception level regarding organizational strategic intelligence.

Figure (2): Denotes that majority (81%) of nurse managers had a high perception level regarding to overall decision making. While, minority (18.2%) of nurse managers had a moderate perception level regarding to decision making.

Figure (3): Illustrates a positive statistically significant correlation was found among nurse managers' organizational strategic intelligence and their decision making ($r = 0.257^*$) at ($p < 0.001^*$).

Table (4): Presents relations between nurse managers' organizational strategic intelligence and nurse managers' decision making and their personal and work related characteristics. There was no significant difference between nurse manager' perception about organizational strategic intelligence and their personal data except years of experiences where $p \leq 0.05$.

Table (5): Presents relations between nurse managers' decision making and their personal and work relate characteristics. There was no significant difference between nurse managers' perception about decision making and their personal and work related characteristics except hospital department, attending tanning on managerial skills and effective communication where $p \leq 0.05$.

Table (1): Distribution of nurse managers according to their personal and work related characteristics (n = 280)

Personal data	No.	%
Age (years)		
<30	42	15.0
30 - 40	192	68.6
>40	46	16.4
Min. – Max.	26.0 – 55.0	
Mean ± SD.	36.28 ± 6.27	
Sex		
Male	44	15.7
Female	236	84.3
Marital status		
Married	243	86.8
Un married	37	13.2
Years of experiences		
<10	168	60.0
10 - 20	80	28.6
>20	32	11.4
Min. – Max.	2.0 – 25.0	
Mean ± SD.	11.36 ± 6.78	
Qualification		
Diploma of secondary nursing school	3	1.1
Associated degree in nursing	16	5.7
Bachelor in nursing sciences	205	73.2
Other post graduate studies	56	20.0
Position		
Nurse supervisor	26	9.3
Head nurse	73	26.1
Charge nurse	181	64.6
Hospital		
Blood bank	35	12.5
Cardiac	30	10.7
Emergency	32	11.4
Gynecology	12	4.3
International Educational	3	1.1
Neurology	22	7.9
Obstetrics	20	7.1
Oncology	29	10.4
Ophthalmology	47	16.8
Pediatric	9	3.2
Psychiatric	2	0.7
Student hospital	37	13.2
Surgical	2	0.7
Attending training on managerial skills and effective communication courses		
Yes	218	77.9
No	62	22.1

SD= standard deviation

Table (2): Mean scores, standard deviation, and ranking of nurse managers' organizational strategic intelligence dimensions (n =280)

Organizational strategic intelligence	Score Range	Total score			Rank
		Min. – Max.	Mean ± SD.	Mean percent	
Prospective of nurse manager	**(5 - 25)**	11.0 –25.0	20.07 ±2.34	80.3%	2
Systemic thinking	**(8 - 40)**	22.0 –40.0	32.17 ±3.14	80.4%	1
Future vision	**(8 - 40)**	19.0 –39.0	31.20 ±3.79	78.00%	4
Partnership	**(7 - 35)**	17.0 –35.0	27.44 ±3.59	78.41%	3
Motivate nurses	**(6 - 30)**	10.0 –29.0	23.32 ±3.23	77.7%	5
Overall	**(34 – 170)**	96.0 – 158.0	134.2 ±11.24	78.94%	-

Table (3): Mean scores, standard deviation, and ranking of nurse managers' decision making dimensions (n =280)

Decision making	Score Range	Total score			Rank
		Min. – Max.	Mean ± SD.	Mean percent	
Strategy of decision	**(15 - 45)**	27.0 – 45.0	40.15 ± 4.48	89.2%	2
Environment of decision process	**(3 - 9)**	3.0 – 9.0	7.82 ± 1.21	86.8%	4
Process of decision making	**(12 - 36)**	22.0 – 36.0	33.30 ± 2.91	92.5%	1
Implementation of making decision	**(5 - 15)**	5.0 – 15.0	13.31 ± 1.82	88.7%	3
Overall	**(35 – 105)**	77.0 – 105.0	94.58 ± 6.64	90.1%	-

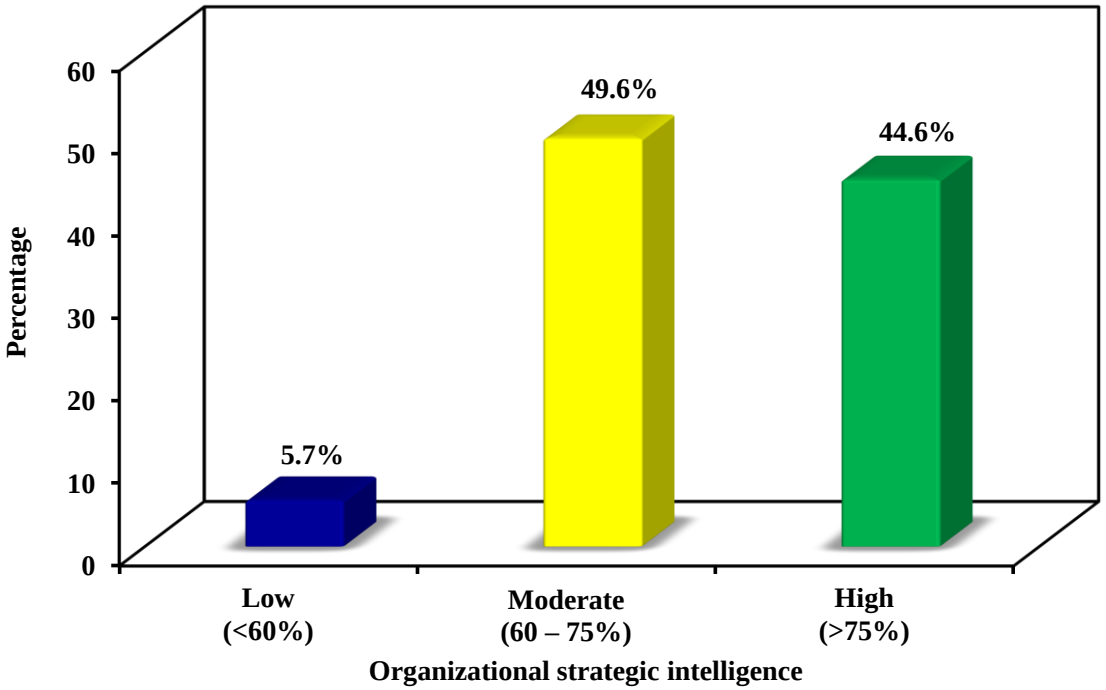

Figure (1): Levels of nurse managers' perception regarding overall organizational strategic intelligence

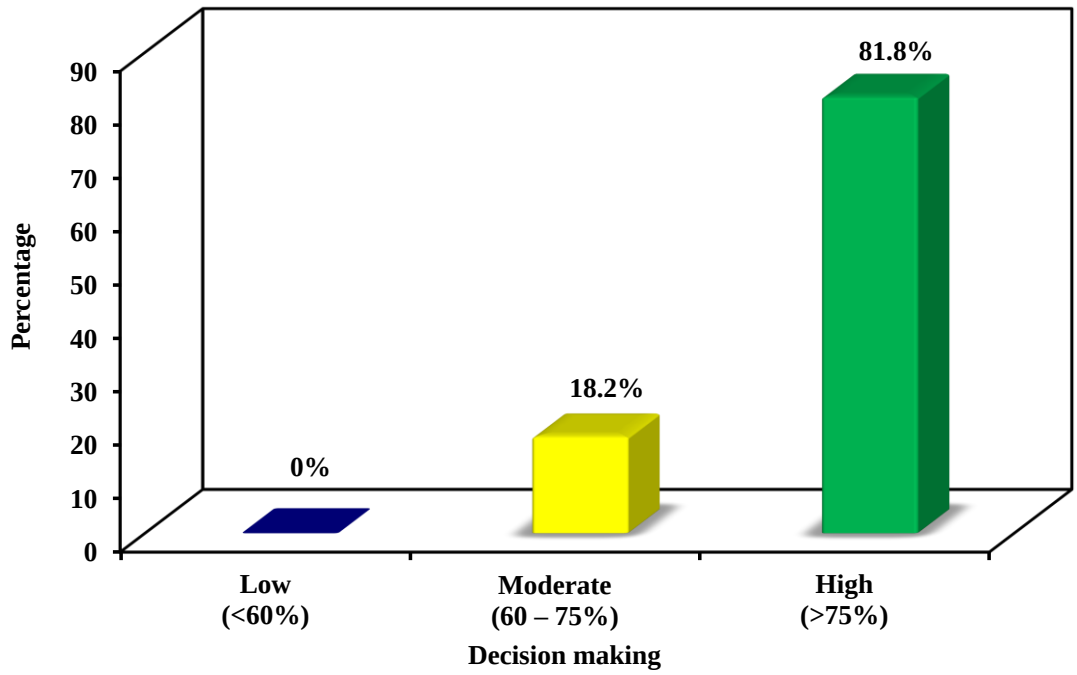

Figure (2): Levels of nurse managers' perception regarding overall decision making.

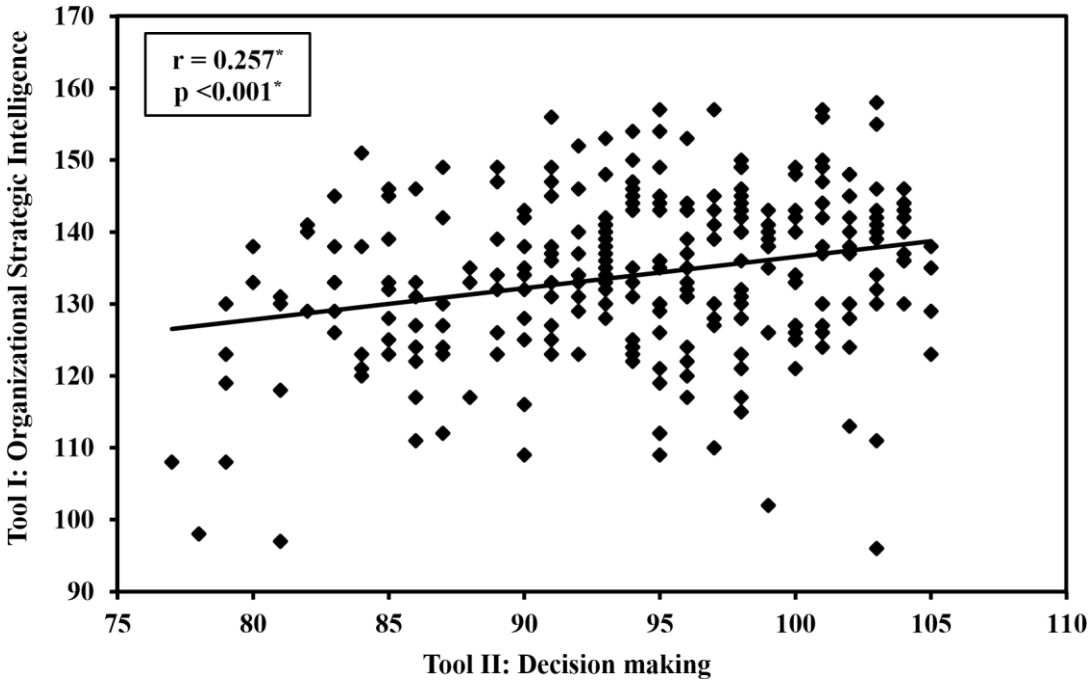

Figure (3): Correlation between nurse managers' overall organizational strategic intelligence and decision making.

Table (4) Relation between nurse mangers' organizational strategic intelligence and their personal and work related characteristics (n=280)

	N	Organizational strategic intelligence Mean ±SD.	Test of Sig.	p
Age (years)				
<30	**42**	135.38 ± 10.65	F= *	0.179
30 – 40	**192**	134.59 ± 11.05	1.728	
>40	**46**	131.46 ± 12.33		
Sex				
Male	**44**	132.82 ± 10.39	t=	0.377
Female	**236**	134.45 ± 11.40	0.886	
Marital status				
Married	**243**	134.70 ± 11.25	t= 1.945	0.053
Un married	**37**	130.86 ± 10.75		
Years of experiences				*
<10	**168**	135.96 ± 10.56	F= *	0.005
10 - 20	**80**	131.66 ± 12.15	5.333	
>20	**32**	131.28 ± 10.84		
Qualification				
Diploma of secondary nursing school	**3**	146.67 ± 6.11	F=	0.055
Associated degree in nursing	**16**	139.31 ± 5.79	2.567	
Bachelor in nursing sciences	**205**	133.60 ± 11.27		
Other post graduate studies	**56**	134.23 ± 11.93		
Position				0.097
Nurse supervisor	**26**	130.35 ± 9.35	F=	
Head nurse	**73**	133.33 ± 11.01	2.349	
Charge nurse	**181**	135.10 ± 11.49		
Hospital				
Blood bank	**35**	131.86 ± 13.06		
Cardiac	**30**	130.37 ± 10.78		
Emergency	**32**	136.94 ± 8.92		
Gynecology	**12**	129.42 ± 16.59		
International Educational	**3**	144.33 ± 1.53		
Neurology	**22**	132.82 ± 9.95		
Obstetrics	**20**	135.45 ± 12.78	F =	
Oncology	**29**	133.69 ± 12.98	1.432	0.151
Ophthalmology	**47**	135.89 ± 9.93		
Pediatric	**9**	135.89 ± 7.69		
Psychiatric	**2**	135.0 ± 1.41		
Student hospital	**37**	135.03 ± 9.79		
Surgical	**2**	148.5 ± 9.19		
Attending tranning on managerial skills and effective communication courses			t= 1.267	
Yes	**218**	133.74 ± 11.25		
No	**62**	135.79 ± 11.14		0 .206

SD=standard deviation

Table (5): Relation between total score of nurses managers' decision making and their personal and work related charactrwristics (n = 280)

	N	Decision making	Test of	p
		Mean ±SD.	Sig.	
Age (years)				
<30	**42**	94.43 ± 6.40	F=	0.569
30 - 40	**192**	94.82 ± 6.53	0 .566	
>40	**46**	93.67 ± 7.33		
Sex				
Male	**44**	95.82 ± 6.38	t=1.355	0 .177
Female	**236**	94.34 ± 6.67		
Marital status				
Married	**243**	94.61 ± 6.69	t=	0 .826
Un married	**37**	94.35 ± 6.41	0 .220	
Years of experiences				
<10	**168**	94.85 ± 6.51	F=	0 .211
10 - 20	**80**	94.79 ± 6.52	1.566	
>20	**32**	92.63 ± 7.46		
Qualification				
Diploma of secondary nursing school	**3**	97.33 ± 4.62	F=	0 .067
Associated degree in nursing	**16**		2.415	
Bachelor in nursing sciences	**205**	95.81 ± 6.83		
Other post graduate studies	**56**	93.94 ± 6.65		
		96.39 ± 6.35		
Position				
Nurse supervisor	**26**	93.62 ± 8.43	F=	0 .126
Head nurse	**73**	93.44 ± 6.60	2.087	
Charge nurse	**181**	95.17 ± 6.33		
Hospital				
Blood bank	**35**	92.66 ± 6.86		
Cardiac	**30**	96.40 ± 5.93		
Emergency	**32**	93.91 ± 6.64		
Gynecology	**12**	93.17 ± 5.86		
International Educational	**3**	103.33 ± 0.58		
Neurology	**22**	95.23 ± 6.19		
Obstetrics	**20**	92.50 ± 7.44		
Oncology	**29**	95.76 ± 6.98	F= 1.999*	
Ophthalmology	**47**	95.09 ± 6.55		0 .025*
Pediatric	**9**	92.67 ± 7.58		
Psychiatric	**2**	103.50 ± 0.71		
Student hospital	**37**	93.89 ± 5.93		
Surgical	**2**	103.50 ± 0.71		
Attending training on managerial skills and effective communication courses				0 .010*
Yes	**218**	94.07 ± 6.81	t=	
No	**62**	96.34 ± 5.73	2.631*	

SD=standard deviation

Discussion

Organizational strategic intelligence is ability of organizations to create a vision for the future, encourage creative thinking and shaping higher quality and innovative decisions at the strategic level. It serves as a cognitive capability to anticipate, interpret, and strategize future changes, organizations to stay competitive and profitable for a long time, they must always prioritize strategic intelligence in their operations. **(Kurter,.2025)**

Nurse managers' perceptions regarding organizational strategic intelligence

The present study revealed that about half of nurse managers had a moderate perception level regarding to overall organizational strategic intelligence highest and lowest. This may be due to those nurse managers had common vision in their units that determine the direction of work, had the ability to turn their vision into the best possible application within the organization's mission and goals. Also, they can convince nurses and motivate them to believe in their strategic, future vision and were encouraged to act in harmony with organization goals because of the national alignment towards quality and accreditation. Also, this result reflects the nurse managers' awareness about that the success of organizations depends on their strategic and logical decision making in dealing with environmental conditions from their internal factors of 'strengths and weaknesses,' external factors of 'opportunities and threats, and adopting applicable strategic intelligence to guide their decision process.

This study result supported by **Farghaly., & Abd El Rahman,. (2018)** who found that majority of nurse managers had a moderate level of perception toward organizational strategic intelligence and **El sayed,. & Sleem,.(2021)**reported that majorty of nurse managers had a high perception toward using organizational strategic intelligence applications. Also, **Al-Majali,.(2022)** reported that the highest percent of nurse managers had a high level of perception toward organizational strategic intelligence and **Shaqra, ,.(2025),** displayed that all of nurse managers had a high level of perception toward organizational strategic intelligence.

Nurse managers' perceptions about decision making

According The present study denoted that majority of nurse managers had a high perception level regarding to overall decision making highest and lowest. This result may be due to more than two thirds of nurse managers aged ranged between

30-40 years, so they abled to clearly understand and empower various resources and capabilities, solve the challenges, critical thinking and brings them to achieve effectiveness of decision making. In addition, it enables them to manage nursing organizations successfully and make decision in a unique and dynamic manner with innovative policies and enhance patient safety, team efficiency, and economic sustainability while promoting ethical care delivery.

This study in agreement with **Gab Allah,.(2021)** who found the highest percentage of nurse managers reported high perception of organizational support, which bolstered decision-making confidence. **AlAmer,,.(2023)** reported that the nurse managers receiving support and feedback showed significantly higher decision-making involvement, implying positive perceptions in supportive contexts. Also, **Alami, et al,.(2024)** found that the over half of nurse managers had moderate to high perception levels of decision-making effectiveness.

But, **Tazebew,.(2023)** not supported the present finding and reported that over half of nurse managers had poor involvement in decision making. The study highlighted that a lack of managerial support and feedback were major contributors to decision making participation. Also, **Abeje,.(2025)** found about half of nurse managers had poor decision making. Some factors like self confidence and managerial support were significantly associated with better decision making.

Relation between organizational strategic intelligence and decision making

The current findings of this study demonstrated a statistically significant positive correlation between nurse managers' strategic intelligence and their decision making. Specifically, the results showed that nurse managers with higher levels of strategic intelligence tend to make more informed, proactive, and effective decisions. This suggests that strategic intelligence is a critical factor in enhancing decision-making capabilities among nurse managers.

This findings is consistent with **Esmaili.,(2014)** who found that strategic intelligence positively influences decision-making quality and strategic planning effectiveness and showed a meaningful positive effect of strategic intelligence on strategic decisions. **Suri, et al .,(2020)** showed that strategic intelligence dimensions significantly positive impact decision-making styles . Also, **Moser.,&**

Rengarajan,.(2021) reported that the ability of strategic intelligence to analyze complex data, identify trends, and anticipate challenges enables nurse managers to make decisions that improve patient care, optimize resource allocation, and enhance organizational performance. And, **Elshazly, .& El Sayed,.(2021)** reported that nurse managers' organizational strategic intelligence had significant positive correlation with their managers' decisions

Relation between nurse managers' perception about organizational strategic intelligence and personal and work characteristics

The data analysis of the present study clarified that there was no statistically significant difference between nurse managers' perception about organizational strategic intelligence and their personal and work related characteristics except years of experiences. These mean that nurse managers with <10 years had the highest mean scores . This outcome could be linked to their exceptional effort and desire to learn quickly, make them more motivated which is one of the most significant environmental factors. The study's result along with **Vitale,. et al., (2022)** who reported that younger nurse managers perceived stronger empowerment from their leadership styles but may face higher stress in dynamic environments.

Relation between nurse managers' perception about decision making and personal and work characteristics

The present study's findings showed that there was no significant difference between nurse managers' perception about decision making and their personal and work related characteristics except hospital name, and attending training on managerial skills and effective communication courses this finding is evidenced by nurse manager. The This finding aligned with, **Pires, et al.. (2018)** who found hospital type influences structural constraints, nurse managers exhibit higher decisional involvement across unit staffing, and policy implementation. **Elsheikh,. (2023)** found communication-focused training enables nurse managers to delegate effectively, resolve conflicts, and integrate feedback, leading to faster, more informed administrative choices in high-pressure healthcare settings. Also, **Omer.,(2024)** reported these courses emphasize communication skills, which predict better implementation of leadership competencies and correlate with improved job satisfaction and performance among nurses.

Conclusion

Organizational strategic intelligence determine nurse manager's decision making abilities as there was a highly positive statistically significant correlation between organizational strategic intelligence and decision making, specially the present study confirms that about half of nurse managers had a moderate perception level of organizational strategic intelligence, while majority of them had a high perception level of decision making. Moreover.

Recommendations

For nurse directors

-Align strategic intelligence initiatives with organizational goals to improve patient care and operational efficiency, ensure strategic intelligence supports strategic objectives and regulatory compliance.

-Leverage emerging technologies like artificial intelligence (AI) to support strategic decision-making, innovation, and operational improvements, while ensuring ethical use and compliance with privacy regulations.

-Implement ongoing education and workforce development, enable nurse managers to effectively use strategic intelligence tools and adapt to technological advancements.

For nurse managers

-Foster an atmosphere of trust and professional empowerment to increase nurses' engagement and accountability, which correlates positively with organizational strategic intelligence and work engagement.

-Develop strategic intelligence competencies such as future vision, systems thinking, motivation, and partnership-building to lead effectively and implement strategic decisions.

-Enhance strategic agility by being adaptable and responsive to changing healthcare environments, facilitating continuous adjustment of strategic direction.

-Involve nurses in selting the vision of the hospital.

For educational level

-Involve organizational strategic intelligence and decision making into education curriculum to increase knowledge of nurse student about the benefits, challenges, and problems concerning implementation of them in health care settings.

For further research

-Examine the mediating role of strategic intelligence components (e.g., future vision, systems thinking) in linking nurse managers' self-confidence and feedback mechanisms to rational decision-making outcomes, using longitudinal

designs across diverse hospital settings.

-Assess impact of strategic intelligence programs on risk management with measuring pre\ post changes in strategic decisions.

-Assess impact of strategic intelligence dimensions on nurse managers' self confidence

-Identify factors that affecting utilization of organizational strategic intelligence and decision making in health care organization.

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Effect of Management Intervention Program on Career Planning for Tanta Technical Nursing Institute Students

Alaa Othman Elnabarawy [1,2], Fouada Mohamed Shabaan [3], Rehab Abd-El-moneim Abou Shaheen [4]

[1]Nursing specialist, Educational Link Nurse, Etay El Baroud Hospital, Directorate of Health Affairs, Beheira Governorate, Egypt.

[2]Master student at Nursing Administration, Faculty of Nursing. Tanta University, Egypt.

[3]Professor of Nursing Administration, Faculty of Nursing. Tanta University, Egypt.

[4]Assistant Professor of Nursing Administration Faculty of Nursing. Tanta University, Egypt.

Corresponding author: Alaa Othman Elnabarawy

Email: alaa.osman9292@gmail.com

Abstract

Background: Recently, importance has been placed on enhancing student's career planning competences for Technical Nursing Institute students. Career planning management intervention program is essential to help students for self-assessment, exploring career options, gaining experience and setting achievable goals. Also help them understand interested skills for researching potential careers to provide them with roadmap for their professional development, numerous specialized roles and career paths. **Aim:** Determine the effect of management intervention program on career planning for Tanta Technical Nursing Institute Students. **Methods:** Quasi-experimental research design. **Setting:** Tanta Technical Nursing Institute. **Subjects**: Tanta Technical Nursing students enrolled in the second year (N=244). **Tool:** Structured Questionnaire about Nursing Students 'Career Planning. **Results:** Only 5.3% of students showed high level of overall knowledge about career planning preprogram improved statistically significant to be 90.2% showed high level of overall knowledge about career planning post program. Preprogram majority of students showed either moderate or low level of career planning perception changed post program to be majority of students showed either high or moderate level. **Conclusion:** Implementation of the management intervention program about career planning for Tanta Technical Nursing Institute students significantly improved their career planning knowledge and perception. **Recommendations:** Emphasizes importance to make a career counseling unit in Tanta Technical Nursing Institute to guide students to plan for their suitable career that matches their targets.

***K*eywords:** Career Planning, Intervention Program, Tanta Technical Institute, Nursing students.

Introduction

Career planning is a strategic approach that starts with the selection of a major and requires continuous development during education. Career readiness is a plan for the development of a career and personal beliefs, attitudes, motivation, feelings, abilities, behaviors, and actions that ensure successful career building, that can meet the expectations of the nursing students **Chen, Zhang, & Jin, (2020).** Career planning provide students with the tools they need to make strategic choices that align with their long-term professional goals. Career planning leads to greater clarity, confidence, and success in ensuring that students are intentional about their educational journey and future career path. It helps them stay focused, reduce stress, and ultimately create a fulfilling and successful career. Career planning knowledge dimension include skills in setting career targets and strategies, continuous learning, concentration on relationships and self-presentation. This dimension includes identifying short term and long-term objectives that student want to achieve in professional life **Wei, Zhou, Hu, Zhou, & Chen, (2021).).**

The technical institutes of nursing aimed at helping students to solve the problem of shortage in nursing staff in Egypt as well as in many other countries with similar conditions **Abdel-Samea Hagrass, Mohammed Adam, & Awad Shetawy, (2020).).** Career planning is a crucial aspect of the educational journey for technical nursing institute students. It involves self-assessment, exploring career options, gaining experience and setting achievable goals. It is a dynamic process of understanding interest and skills for researching potential careers to provide them with a roadmap for their professional development and success in the healthcare field. Nursing career is a dynamic and evolving profession that offers numerous specialized roles and career paths **Lent, R. (2021).**

Nursing educators at technical institutes are required to be equipped with information technology skills necessary to fulfil their numerous responsibilities and provide learning opportunities to advance students' knowledge and skills in nursing. As well as they required to have current knowledge of literature and research in their area of expertise. Beside their knowledge in nursing practice to help prepare students for their future role and career planning **Almarwani, A. (2024).** Specially because those students throughout their

comprehensive nursing education are exposed to practice in many healthcare settings from their beginning level **Savickas, M. (2021).**

Really career planning helped students link their academic path with their long-term objectives and chart their professional success **Healy, M. (2023).**

Aim of the Study

Determine the effect of management intervention program on career planning for Tanta Technical Nursing Institute Students.

Research hypothesis

After implementation of management intervention program, the knowledge and perception of nursing students at Tanta Technical Nursing Institute about career planning is expected to be improved.

Subjects and method

Research design

Quasi-experimental research design was operated to achieve the aim of study. Such design fits the nature of the study under investigation **Abou Hashish & Bajbeir. (2022).**

Setting

This study was conducted at Tanta Technical Nursing Institute affiliated to the Ministry of Higher Education and Scientific Research. The nursing institute consists of one floor with six halls and two labs, there are twenty-one staff educators.

Subjects:

The study subjects consist of stratified proportional randomized sample of nursing students (n=244) selected from the total number of nursing students (N=667) enrolled in the second year of Tanta Technical Nursing Institute during the academic year (2024-2025). The sample size and power analysis were calculated using the Epi-Info software statistical package. The criteria used for sample size calculation are as follows: Z=confidence level at 95% (1.96) , d=error proportion (0.05) and p =availability of property and neutral =0.50. The sample was calculated by using equation of

$$n = \frac{N \times P(1-P)}{[N-1(d2/z2] + P(1-P)}$$

Heavey, E. (2022).

Tools of data collection

One Structured Questionnaire about Nursing Students' Career Planning.

It was included three parts :-

Part one: Nursing students' characteristics include question about

-Personal data as age, gender, marital status, training courses.

- Previous scholastic achievement.

-Preference, interest and satisfaction with studding nursing.

-Family opinion about nursing career as they accept or not accept nursing career

Part two: Nursing Student Knowledge Questionnaire about Career Planning. This part developed by the investigator to assess nursing students' knowledge about career planning definition, importance, factors affecting, elements and stages. As well as career planning skills. It includes 15 questions true and false and 15 questions MCQ

Scoring system

Nursing students' answers were measured according to correct answer (1) score and wrong answer (0). The total score was categorized according to cut-off points and summing scores of all categories.

Levels of nursing students' knowledge

-High knowledge > 75 %
-Moderate knowledge 60-75 %
-Low knowledge < 60%

Part three: Perception of Nursing Students about Career Planning

This part was developed by the investigator guided by **Wei, et al. (2021).** It was included 32question under four dimensions as follows

- Setting career targets and strategies.
- Continuous learning.
- Concentration.
- Self-presentation.

Scoring system

Nursing students 'responses were measured on five points Likert Scale ranging from (1 to 5) where strongly agree =5, agree =4, little agree =3, disagree =2, strongly disagree =1. The total score was categorized according to statistical cut-off points and summing scores of all categories

Levels of nursing students' career planning perception

-High perception > 80%
-Moderate perception 60-80 %
-Low perception < 60%

Method

Official permission was obtained from the Dean of Faculty of Nursing and the authoritative personnel of Tanta University International Teaching Hospital.

Ethical considerations

-Approval was obtained from the Scientific Research Ethical Committee at faculty of nursing to conduct the study by code 406-3-2024

-Nature of the study didn't cause harm to the entire participants

-Informed consent was obtained from nursing students after explanation of the study's aim.

-Confidentiality and privacy were maintained regarding data.

-The participants have right to withdrawal from the study at any time.

The tool was developed by investigators and translated to Arabic and presented to a jury of five experts in the area of specialty to check their content validity. The face validity was 94.47%.

Pilot study was carried out on 10% of nursing students (N=25) to test the clarity, reliability, identify obstacles and problems that may be encountered during data collection and modification was done (they were out of study sample). According to feedback from pilot study some questions were rearranged by researcher to be easily understood.

Reliability of tools were tested using Cronbach's Alpha test. The value of part II was 0.648, the value of part III was 0.746.

Data collection phases:

-Assessment of nursing students' knowledge and perceptions before implementation of program using tool (1) which distributed by researcher pre and post implementation of program.

-The program was 3 sessions (every session 45minute). The program was conducted for nursing students at Tanta Technical Nursing Institute

-The intervention program for nursing students was prepared by the investigator based on result preprogram for the tool and review of relevant related literature.

-Nursing students were divided into 10 groups.

-Data collection and program took about 3 months from 8-10-2024 and end at 30-12-2024

Results

Table (1): Shows nursing students characteristics. Nursing students 55.7 % aged <20 years, with range 18-20 and mean age 19.43 ± 0.51. Nursing students 51.2% were females. Majority 99.2% of nursing students were unmarried. Students, 42.6 % obtain very good and 35.7% obtain excellent in scholastic achievement. Only 16.0% of students attend training courses, as 9% attend first aid and 5.7% attend surgical nursing courses. Nursing students 51.6% and 32.4% were interested in training at hospitals in summer and reading books about nursing respectively. Nursing students 82.4% were satisfied with studying nursing and 80.7% of their family were convinced with nursing as career.

Table (2): Represents nursing students' levels and means of overall knowledge about career planning pre and post program. Preprogram their overall knowledge mean was 17.99 ± 3.02 increased to be 25.55 ± 2.18 post program with statistically significant improvement at p <0.001. While nursing students 5.3% showed

high level of overall knowledge preprogram improved significantly at p <0.001 to be 90.2% showed high level of overall knowledge about career planning post programs.

Table (3): Shows levels of nursing students' knowledge about each dimension of career planning pre and post program. Preprogram 51.6%, 48.4%, 42.6% of nursing students respectively had moderate knowledge about elements, definition and factors affecting career planning dimensions. Also 68.9%, 42.2%, 36.5% and 34.0% of nursing students had low level at stages, factors, importance and definition dimensions of career planning respectively. But post program 87.7%, 83.6%, 68.4% ,61.5% of students respectively had high level of knowledge about purpose, skills and stages of career planning dimensions with statistically significant improvement at p <0.001.

Table (4): Shows nursing students levels and means of overall perception about career planning pre and post program. Preprogram their total perception mean was 113.30 ± 15.84 increased to be 122.09 ± 11.64 post program with statistically significant improvement at p <0.001. While nursing students 6.6%, 56%.1 had high and moderate level respectively of total perception preprogram, which significantly improved at p <0.001 to be 13.1% and 75.4% had high level and moderate level post program respectively.

Table (5): **Shows levels of nursing students 'perception about career planning dimensions pre and post program.** Preprogram the students 50.8% ,40.2%, 31.6% and 30.7% respectively showed low level for self-presentation, concentration on relationships, setting career targets and continuous learning. But post program the students improved significantly at<0.001 and 30.3%, 29.1% ,18.9% and 8.2% respectively showed low level for the same items.

Figure (1): Shows students overall levels of knowledge about career planning pre and post programs. Preprograms most of students were either at moderate or low level of overall knowledge about career planning, compared to most of students were at high level post program.

Figure (2): **Shows students overall perception about career planning.** Majority of students showed either moderate or low level ofperception about career planning preprogram. But changed post program to be majority of students showed either moderate or high level of perception about career planning.

Figure (3) Shows that there is positive significant correlation between nursing student knowledge and perception about career planning (P<0.001) at preprogram. As preprogram nursing students did not have much knowledge about career planning, therefore, they lack sufficient perception about career planning.

Figure (4): Shows that there is positive significant correlation at (P<0.001) between nursing student knowledge and perception about career planning post program. As post program nursing students had sufficient knowledge about career planning to develop their perception about career planning.

Table (1): Nursing students characteristics (n = 244)

	No.	%
Age (years)		
<20	136	55.7
≥20	108	44.3
Min. – Max.	18.0 – 20.0	
Mean ± SD.	19.43 ± 0.51	
Median	19.0	
Sex		
Male	119	48.8
Female	125	51.2
Marital status		
Married	2	0.8
Unmarried	242	99.2
Training course		
No	205	84.0
Yes	39	16.0
First Aid	22	9.0
Surgical nursing	14	5.7
Another training	3	1.2
Scholastic achievement		
Excellent	87	35.7
Very good	104	42.6
Good	43	17.6
Satisfactory	10	4.1
Preference with nursing Profession		
Reading books about nursing	79	32.4
Summer training in hospitals	126	51.6
Satisfaction with studying Nursing		
Yes	201	82.4
No	43	17.6
Family opinion on nursing Career		
Accept	197	80.7
Not accept	47	19.3

SD: **Standard deviation**

Table (2): Nursing students' levels and means of overall knowledge about career planning pre and post program (n = 244)

Nursing Student Overall Knowledge	Pre		Post		Test of Sig.	P
	No.	%	No.	%		
Low (<60%)	107	43.9	-	-		
Moderate (60% – 75%)	124	50.8	24	9.8	MH=	
High (>75%)	13	5.3	220	90.2	508.00*	<0.001*
Total Score (0 – 30)						
Min. – Max.	7.0 – 26.0		19.0 – 30.0			
Mean ± SD.	17.99 ± 3.02		25.55 ± 2.18		t= 38.781*	<0.001*
Average Score (Mean ± SD.)	0.60 ± 0.10		0.85 ± 0.07			

SD:Standard deviation t: Paired t-test MH: Marginal Homogeneity Test

p: p value for comparing between **Pre** and **Post**

*: Statistically significant at $p \leq 0.05$

Table (3): Levels of nursing student knowledge about each dimension of career planning pre and post program (n = 244)

Dimensions	Pre						Post						p
	High (>75%)		Moderate (60%-75%)		Low (<60%)		High (>75%)		Moderate (60%-75%)		Low (<60%)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Definition	43	17.6	118	48.4	83	34.0	144	59.0	86	35.2	14	5.7	<0.001*
Importance	59	24.2	96	39.3	89	36.5	143	58.6	83	34.0	18	7.4	<0.001*
Factors affection career planning	37	15.2	104	42.6	103	42.2	150	61.5	63	25.8	31	12.7	<0.001*
Career planning elements	46	18.9	126	51.6	72	29.5	141	57.8	93	38.1	10	4.1	<0.001*
Stages of Career planning	28	11.5	48	19.7	168	68.9	167	68.4	56	23.0	21	8.6	<0.001*
Purpose of career planning	82	33.6	88	36.1	74	30.3	214	87.7	25	10.2	5	2.0	<0.001*
Career planning skills	78	32.0	94	38.5	72	29.5	204	83.6	32	13.1	8	3.3	<0.001*

MH: Marginal Homogeneity Test

p: p value for comparing between **Pre** and **Post**

*: Statistically significant at $p \leq 0.05$

Table (4): Nursing students' levels and means of overall perception about career planning pre and post program (n = 244).

Perception of Nursing Students	Pre		Post		Test of Sig.	p
	No.	%	No.	%		
Low <60%	91	37.3	28	11.5		
Moderate 60% – 80%	137	56.1	184	75.4	MH= 134.50*	<0.001*
High >80%	16	6.6	32	13.1		
Total Score (32 – 160)						
Min. – Max.	32.0 – 148.0		84.0 – 150.0			
Mean ± SD.	113.30 ± 15.84		122.09 ± 11.64		t= 17.457*	<0.001*
Average Score (Mean ± SD.)	3.54 ± 0.49		3.82 ± 0.36			

SD: Standard deviation t: Paired t-test
MH: Marginal Homogeneity Test
p: p value for comparing between **Pre** and **Post**
*: Statistically significant at $p \leq 0.05$

Table (5): Levels of nursing students' perception of career planning dimensions pre and post program (n = 244).

Dimensions	Pre						Post						p
	High (>80%)		Moderate (60%-80%)		Low (<60%)		High (>80%)		Moderate (60%-80%)		Low (<60%)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Setting career targets	58	23.8	109	44.7	77	31.6	114	46.7	110	45.1	20	8.2	<0.001*
Continuous learning	53	21.7	116	47.5	75	30.7	69	28.3	129	52.9	46	18.9	<0.001*
Concentration on relationships	38	15.6	108	44.3	98	40.2	44	18	129	52.9	71	29.1	<0.001*
Self-presentation	19	7.8	101	41.4	124	50.8	34	13.9	136	55.7	74	30.3	<0.001*

MH: Marginal Homogeneity Test
p: p value for comparing between **Pre** and **Post**
*: Statistically significant at $p \leq 0.05$

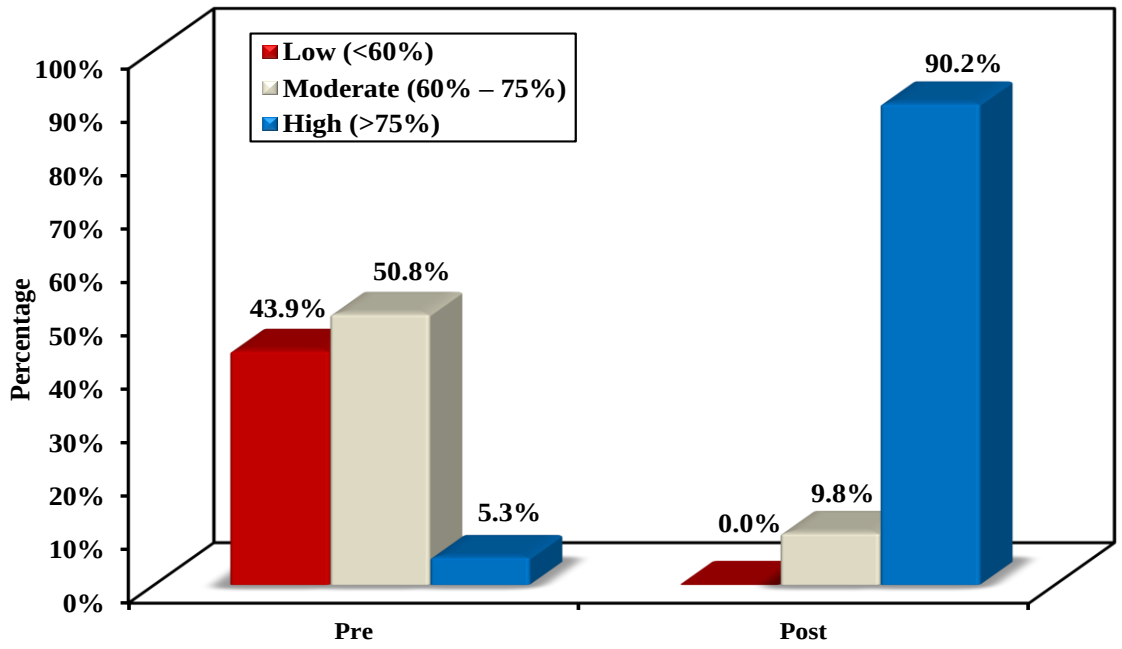

Figure (1): Distribution of the studied students according to Overall Part two: Nursing Student Knowledge about Career Planning (n = 244)

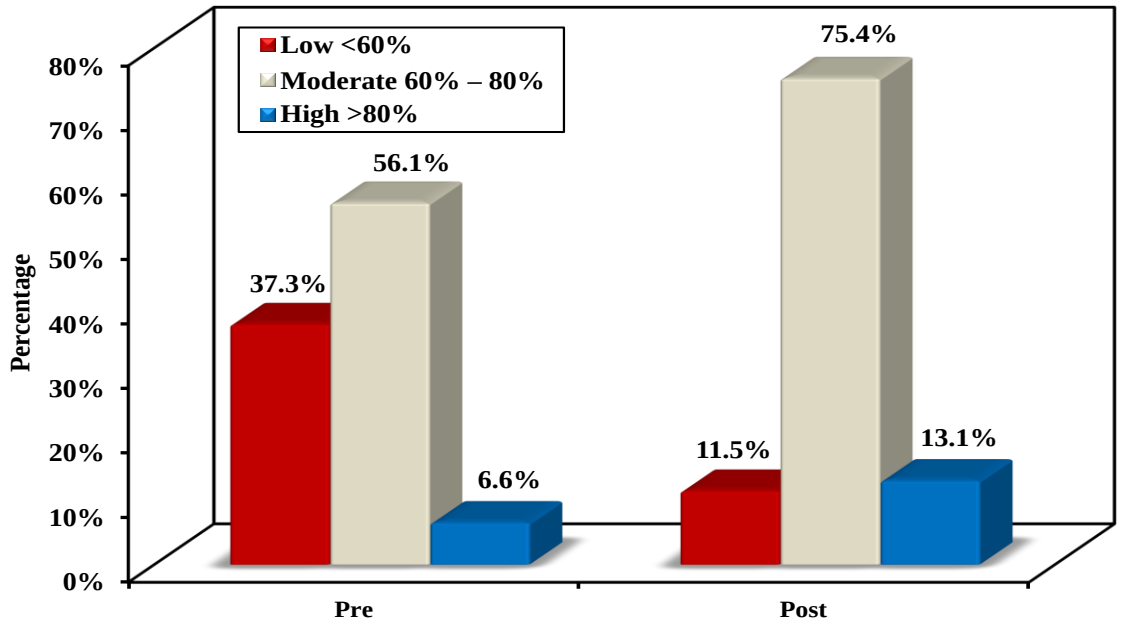

Figure (2): Distribution of the studied students according to Overall Part three: Perception of Nursing Students about Career Planning (n = 244

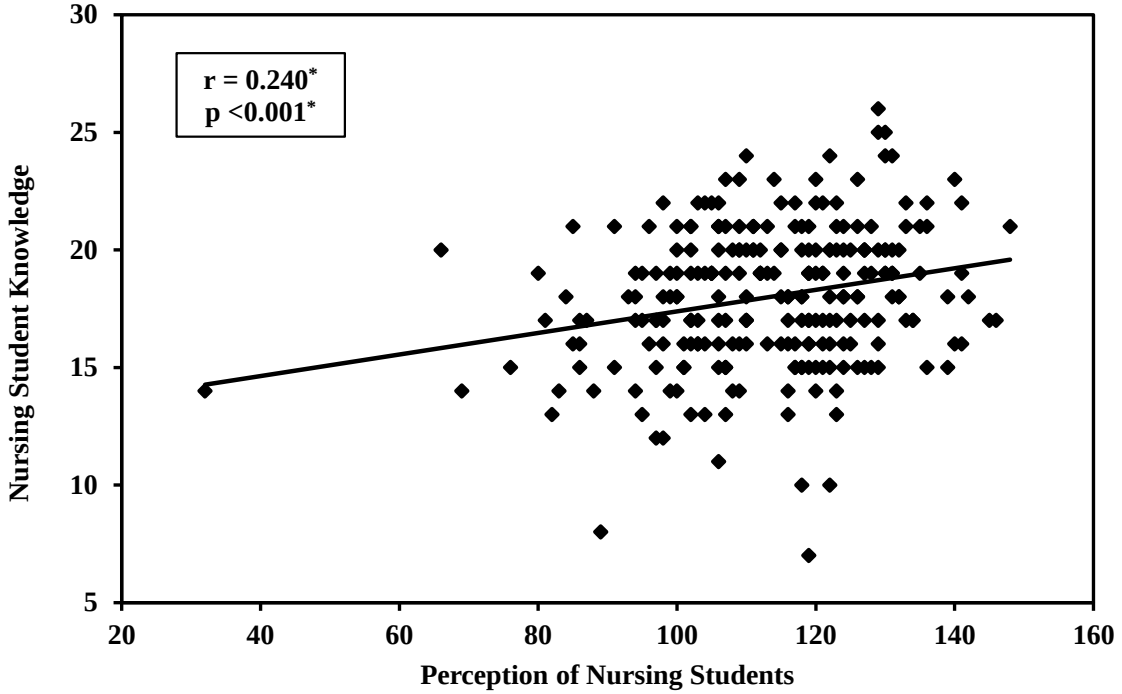

Figure (3): Correlation between nursing student knowledge and perception of nursing students in pre (n = 244)

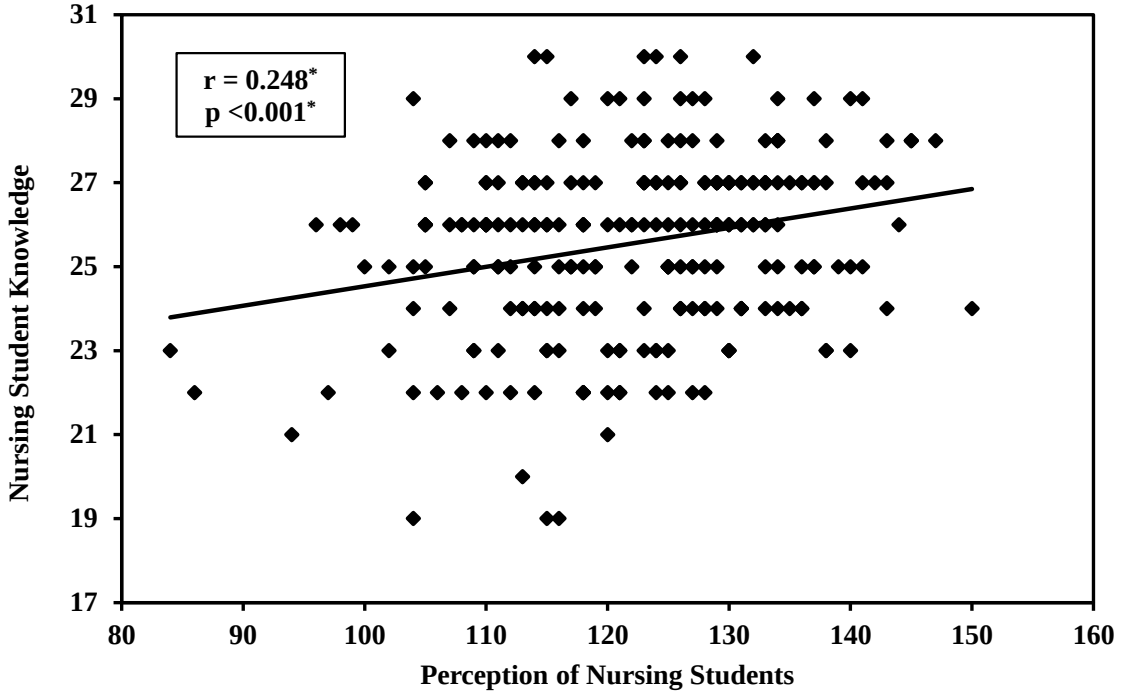

Figure (4): Correlation between nursing student knowledge and perception of nursing students in post (n = 244)

Discussion

Career planning is an ongoing process through which nursing student's sets career goals to achieve them. Systematically matching their career goals and capabilities with opportunities for their fulfillment. Considering their values, interests, needs, goals, desires, and perceptions of different nursing specializations **El-Bahnasawy, Al Hadid, & Fayed (2021).**

Technical Nursing Institute curriculum includes a balance of nursing, general studies, and support courses. Their curriculum gave them opportunity to apply nursing theory and skills either in the simulation laboratories or in clinical setting **Ali, Abd-ElAal, & AboSrea. (2021).** So the intervention education program on career planninng could be important to offer them with required knowledge and field significant for shaping their future goals. Fields such as health, education, management, finance and technical professions are examples of career paths that students aspire to pursue after graduation **Kaya, Kaya, Özkan, & Çakmak. (2025).** Present study career planning program was designed to technical nursing students after completion of their two-year curriculum.

Findings of present study provide important insights into nursing students characteristics. More than one half of students were female, aged<20 year, reflecting that young female were the predominant of Technical Nursing Institute which aligns with the gender trends commonly observed in nursing profession. While presence of male students sugests interst among male for nursing profession. Howerer this gender patten typically seen in the global nursing field ,where number of women exceed men, **Elmorshedy, AlAmrani, Hassan, Fayed, & Albrecht. (2020).** While traditional stereotypes are still dominant in the media and the public, for example nursing was often portrayed in the media as feminine and caring, but these images can have negative impact on the recruitment of male nurses. Such biases may discourage male potential students.

High percent of nursing students have no experience of the journy of career planning. which was necessary for nursing students at college. Best appropriate timeframe of educating, training and construct students' conceptual cognition of various nursing specialty at the end of their internship. **Damodar, Shetty, Dsouza, Prakash, & Gudi. (2024).** study about crafting careers through

theory-driven interventions: a scoping review of the utility of social cognitive career theory and career maturity inventory, illustrated that early career interventions demonstrate the potential to increase career skills among students. Effective career intervention must be holistically designed to stimulate career readiness.

Majority of nursing students were unmarried due to their young age which focus on nursing study time without family-related responsibility. Actually they are paying attention to their cademice performaance. As more than two third of them obtained either excellent or very good at scholastic achievement. While some of the students were interested to train at hospital in summer because they prefer practical exposure more than theoretical engagement. these agree with **Ahmed, et al. (2023)** study about satisfaction and anxiety level during clinical training among nursing students, showed that the undergraduate nursing students had high level of satisfaction with clinical training at the hospitals and laboratories.

Present study results showed substantial improvement in students'responses about dimensions of career planning knowledge post program. For example, preprogram less than half of nursing students consider goals and interests most important when select specialty. Most probably this due to student mistakenly believed that salary and working hour are priority factors in choosing job. But post program majority of the students gave correct answer because they understand that the compatibility of goals and interests is important factors in choosing a career specialization.

These findings agreed with **Tiliander, Olsson, Kalèn, Ponzer, & Fagerdahl. (2024)**. study about exploring career choices of specialist nursing students, who demonstrated the significance of the work-life balance for nursing students when making career decisions. They found that some students specifically chose career fields that allow them to escape physically and mentally demanding work conditions, enabling them to prioritize quality time with their loved ones. Contrary to **Levaillant, Levaillant, Lerolle, Vallet, & Hamel-Broza. (2020).** study about factors influencing medical students' choice of specialization, which illustrated that gender can modify factors associated with the choice of several specialties. Men are more interested by technical challenges, salary, career and prestige while

women prefer time related aspects and societal orientation.

Really the present study management intervention program effectively enhanced students foundational understanding of improvement of nursing students career planning perception for professional future. Actually, the program enables them to face the challenges of a changing labor market and improved their perception about their nursing career. Preprogram majority of student showed either low or moderate level of perception about career planning. Changed post implementation of lecture and explanation of needed skills so that majority of them post program showed either moderate or high level of perception. **Şen, Özdilek, & Öz, . (2021).** study the relationship between career future and image perception of nursing profession in nursing students and showed positive correlation between student perceptions about their career future and perceptions of nursing image.

The present management intervention program revealed that there was positive significant correlation between nursing student low knowledge and low perception at preprogram intervention, as will as between high knowledge and high perception post program. According to **Kotp, Aly, Ismail, Elmoaty, E. & Basyouny, H. A. A. (2025).** study about nursing graduates perceived future career pathway and career shift tendency in Egypt, showed that there was a significant relationship between nursing graduates' education level and their career perceptions. The study recommend that future research should focus on evaluating the effectiveness of interventions like mentorship programs, work-life balance initiatives, and career development opportunities in enhancing nurse retention and job satisfaction.

Indeed, carful implementation of the management intervention program on career planning for nursing students at technical nursing institute, not only improved their career planning knowledge and perception, but also improved their engagement in career planning activities. Produce statistically significant improvements in career preparation behavior and develop nursing students career decision making and self -efficacy. Beside the increased nursing students' skills about career planning which keep them up to date with the latest developments in the nursing career. Similar finding was reported by **Alnajjar and Abou Hashish. (2024)** study about exploring the

effectiveness of the career guidance and counseling program on the perceived readiness for the job market. They found that program positively affected students' lives by providing them support and guidance. As well as provide them with resources for informed career decision-making and developing essential career-related skills.

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