Nurses' Implementation of Nursing Process and Its Influencing Factors: A Cross-Sectional Study in Jordan

Rana A. Al Awamleh[1,*], Ibrahim R. Ayasreh[1] , Haitham A. Khatatbeh[1], Ahmad S. AlAwamleh[2]

(1) Assistant Professor of Adult Nursing, Faculty of Nursing, Jerash University, Jerash, Jordan
(2) Medical Student, Faculty of Medicine, Caucasus International University, Tbilisi, Georgia
Correspondence: Rana A. Al Awamleh, RN, PhD, Assistant Professor, Department of Adult Nursing, Faculty of Nursing, Jerash University, Jerash, Jordan (ranawamleh@gmail.com , rana@jpu.edu.jo)

Abstract

Aim: to assess the implementation of the nursing process and its associated factors among Jordanian nurses. **Design**: A Descriptive cross-sectional design was used. **Methods**: The Arabic version of Salcedo (2004) tool was used to collect data on the implementation of nursing process from 309 nurse participants selected by consecutive sampling method, from February 2023 to June 2023. The study was conducted in Jordanian health care settings, which were distributed over four governorates including Amman, Irbid, Jerash, and Al-Mafraq including three governmental, two private, and one teaching hospitals. Descriptive statistics and the Chi-square test were used to analyze data. A statistical significance of p < 0.05 was assumed. **Results**: Nearly half of the study participants had implemented the nursing process. Female nurses were significantly more likely to implement nursing process than male nurses [χ2 (1) = 5.403), p =0.020]. Postgraduate nurses were significantly less likely to implement the nursing process than nurses with bachelor's degrees [χ2 (2) = 16.215), p<.000]. Nurses who were working in governmental hospitals were significantly more probably to implement nursing process than those who were working in private hospitals [χ2 (1) = 4.857), p =0.028]. A minority of study participants reported being engaged in workshops addressing the nursing process in their institutions. Accordingly, it is recommended that the administrative body should hold training sessions and conferences that enable nurses to update their knowledge of the nursing process at both theoretical and practical aspects. Furthermore, it is recommended to provide the infrastructure and materials necessary for application of nursing process, particularly the electronic documentation systems. Qualitative research should be conducted to study the contextual factors that might affect the implementation of nursing process, particularly sociocultural factors. **Conclusion:** The level of nursing process implementation among Jordanian nurses was found to be low. Female nurses, who had bachelor's degree, and who were working in governmental hospitals were significantly more likely to implement the nursing process.

Keywords: Nursing process, Implementation, Jordan, Nurses, Factors.

Introduction

Nursing care is viewed as a backbone of health care system and client care. Therefore, global and national nursing organizations seek to achieve the highest quality of care and better clients' outcomes through scientific and systematic approaches. Nursing process is a standardized, patient-centered, and evidence-based framework that guides nursing care based on critical thinking and problem-solving skills **(Bayih et al., 2021)**. The advent of the modern nursing process dates to 1961 by nursing theorist Ida Orlando, and it is still embraced as a professional framework for nursing practice all over the world **(Lotfi et al., 2019)**. Five dynamic and cyclic steps constitute the nursing process, starting from the assessment in

which the nurse collects, organizes, validates, and documents client's data. Moving to the second step, the nurse analyzes client's data to identify health actual or potential health problems and strengths. In the third step, the nurse assigns priorities to the nursing diagnoses, specifies goals and expected outcomes, and identifies nursing independent and interdependent interventions. Using cognitive, interpersonal, and technical skills, the nurse puts the nursing interventions into action, and this represents the fourth step of the nursing process. The last step is the evaluation, in which the nurse determines how well the client has achieved the goals specified in the care plan **(Hants et al., 2023)**.

The importance of the nursing process derives from being a professional method distinguishing nursing care among health care personnel contributions. It assists nurses in providing holistic multidimensional care that enhances clients' participation in making decisions regarding health status and progress, maximizing patient-centeredness and individualism qualities of nursing care **(Silva et al., 2021).** Furthermore, it was suggested that nursing process eases the communication of care among healthcare professionals and clients through providing a common language that guarantees nurses' commitment to higher quality of documentation and thus the continuity of care **(Lotfi et al., 2019).** Regarding nurse clinicians, it was found that nursing process enhances their confidence, competence, and satisfaction **(Munangatire & Nambuli, 2022),** and reduces indulgence in legal and ethical issues **(Gazari et al., 2021).** On the other hand, it was revealed that abstain from applying nursing process affects the professional identity of nursing, as it discourages efforts toward advancing nursing science and knowledge and exacerbates the dependency of nurses on physicians **(Parvan et al., 2021).**

Despite the valuable benefits of nursing process use, the implementation of it was reported to be low. It was revealed that nursing process implementation rates range from 7% to 81.8% **(Lekenit et al., 2020; Semachew, 2018; Shiferaw et al., 2020).** Many studies were conducted to address the challenges facing nurses in applying the nursing process in their practice. Inadequate knowledge of nurses regarding nursing process was found to be a significant obstacle to applying it **(Gazari et al., 2021; Tadzong-Awasum et al., 2022; Yilak et al., 2022).** It was argued that lack of understanding of nursing process is attributed mainly to the inadequate academic preparedness on nursing process in the nursing schools **(Agyeman-Yeboah et al., 2017),** and to the language barriers **(Munangatire & Nambuli, 2022).** Inadequate resources, lack of administration support, increased workload, and negative attitudes of nurses toward nursing process, were found to be significant challenges to adopting nursing process by nurses **(Gazari et al., 2021; Munangatire & Nambuli, 2022; Mutshatshi et al., 2020; Tadzong-Awasum et al., 2022).**

In Jordan, nursing is considered as one of the most advanced professions in terms of practice, education, and research. However, practicing out of the professional scope and missed nursing care have emerged as great problems facing nurse decision makers in Jordan **(Ayasreh et al., 2022).** Abstain from adopting nursing process led the nurses to intervene based on non-nursing frameworks particularly medical ones, and this might devalue nursing profession and its contributions **(Adraro & Mengistu, 2020).** Therefore, one might say that there is a crucial need for developing appropriate political strategies that guarantee the comprehensive and ideal application of nursing process in health care settings. Up to the best of researchers' knowledge, no research studies were conducted to evaluate the extent to which nursing process was applied by Jordanian nurses. Therefore, this study was conducted to assess the implementation of the nursing process and its associated factors among Jordanian nurses.

Significance of the study

This study will help in improvement of patient care by recognizing how nurses implement nursing process in Jordanian hospitals which in turn could help in identifying areas where patient care can be enhanced. Furthermore, the investigation of this study reveals important factors that either support or impede the efficient utilization of nursing process. Moreover, the findings of the study can provide healthcare policymakers with insights into deficiencies in nursing education, training, and working conditions. Rectifying these deficiencies could result in enhancements to nursing curriculums, ongoing professional development initiatives, and policy changes within healthcare facilities to provide better support for nurses.

Aim of the work

This study was conducted to assess the implementation of the nursing process and its associated factors among Jordanian nurses

Research Question

What is the level of implementation of the nursing process by nurses in Jordan in their daily practice, and what are the factors that affect their capability to do so?

Hypothesis

Jordanian nurses do not consistently implement the nursing process in their daily practice due to various influencing factors such as lack of knowledge, high workload, and insufficient institutional support.

Methods

Design

A Descriptive cross-sectional study was conducted from February 2023 to June 2023. The population of this study included all nurses working in Jordanian health care settings, which were distributed over four governorates including Amman, Irbid, Jerash, and Al-Mafraq.

Sample

A consecutive sampling method was used in this study. The researchers selected eligible emergency nurse participants who were working in three governmental, two private, and one teaching hospitals and met the inclusion criteria from a specified work shift determined by the researchers for each included hospital. For example, the researcher selected nurse participants from hospital (I) at the work shift (B) on a given day. Eligible participants from another hospital were selected at different work shift, and on different day, and so on. Inclusion criteria were Jordanian nurses who had at least one year of clinical experience, and willing to participate in the study. Nurse assistants or unlicensed assistive personnel, and those who refused to participate in this study were excluded.

The sample size was estimated using G*Power (version 3.1.9.4). The minimum sample size required for this study is 252, assuming a significance level of 0.05, an effect size of 0.25, and a power of 0.95. To overcome the anticipated low response rate, a total of 400 questionnaires were distributed to eligible potential nurse participants.

Data Collection

Nurses self – administered Questionnaire: The questionnaire which was distributed to the potential nurse participants included two parts: the first part was developed by the researcher and associated with participants' characteristics and experiences, including gender, age, type of institution from where educational award is obtained, kind of hospital they work in, working unit, number of patients to whom service is given per day, monthly salary of respondents, if attended any talk or seminar related to nursing process recently, and if the nursing process was adequately taught during studying at the nursing school.

The second part of the questionnaire was the Arabic version of the tool which was originally developed by Salcedo (2004) to assess the implementation of nursing process. This tool consists of 29 items distributed as following: assessment and diagnosis (7 items), planning (8 items), implementation (9 items), and evaluation (5 items). Each participant was asked to determine the frequency with which each activity (item) is performed based on a Likert scale (Never=1, Sometimes=2, Usually=3, Always=4). For each item, participants' responses of "usually" and "always" were considered as "implemented", whereas "sometimes" and "never" were considered as "not implemented".

After getting the approval of the Institutional Review Boards (IRBs) from Jerash University and the targeted hospitals, the researchers contacted the head nurse in each participating hospital to assist in identifying potential nurse participants. After that, the researchers approached eligible participants as they joined their assigned shifts, asking them to participate in the current study. Nurses who approved to participate were given an envelope containing the consent form and the questionnaires. This data collection procedure was repeated until the required sample size was achieved. It takes about 38 days for gathering data.

The researchers obtained the approval of the Institutional Review Boards (IRBs) of Jerash University (Code Number: DJR 122284, Date: 28-1-2023), and the targeted Hospitals.

Validity and reliability

The tool is translated from English language to Arabic by bilingual experts familiar with both the content and cultural context. Another independent set of bilingual experts translates the Arabic version back into the original language. This ensures that the translated version accurately reflects the meaning and intent of the original tool. After that, a panel of experts, including healthcare

professionals and language specialists, reviews both versions to ensure that the content is culturally appropriate, relevant, and retains the original meaning. A pilot study was conducted on 31 potential participants to evaluate the appropriateness and the psychometric properties of the research instrument for the population of the study. The pilot study revealed that the tool is easy to read and understand. Furthermore, it was estimated that participants required about 9 minutes to fill the tool. Regarding psychrometric properties, the results showed adequate test-retest reliability of 0.812.

Field work

A thorough review of existing literature was conducted to be familiar with the research problem and to help develop data collection tools. The data was collected during four months from February 2023 to June 2023. The researcher visited the chosen settings four days a week, covering both morning and afternoon shifts and with the assistance of a number of nurse administrators in the targeted hospitals, the researcher identified the potential nurse participants. After that, the researcher approached the eligible nurses, explained the study purposes, and invited them to participate in the study. Eligible nurses who agreed to participate in this study were asked to sign the consent form. Then, they were given a copy of the questionnaire along with an envelope. All study participants were not asked to express or write their names or any other identifying information on the questionnaires. Furthermore, participants were informed that all completed questionnaires will be placed in a locked file cabinet in the researcher's office over the study period, to maintain confidentiality.

Study limitations

The main limitation of this study was the use of convenience sampling technique. This indicates that the findings might not be truly representative to all nurses in Jordanian hospitals due to differences in their contexts. To address the issue of convenience sampling, it is important to utilize probability-based sampling methods such as random or stratified sampling, expand the sample size, and ensure diversity within the sample.

Data Analysis

Data analysis was performed using SPSS Statistics 22.0 (IBM Corp., Armonk, N.Y., USA). Means, standard deviations (SD), frequencies, and percentages were computed to describe data related to participants' characteristics and their score on the "implementation on nursing process" tool. The Chi-square test was used to detect if there are any significant differences in implementing nursing process based on participants' characteristics.

Results

Participants' Demographics and Characteristics

A total of 309 Jordanian nurses participated in this study. About (60%) of them were female, (52.8%) were working in governmental hospitals. About (62.8%) had a bachelor's degree in nursing as the highest academic qualification. Most participants (61.2%) had five years of experience or less. Approximately (40.1%) of the participating nurses were working in medical surgical units, and (8.1%) were working in obstetric areas. Regarding attending courses addressing nursing process in their hospitals, it was found that only (29.1%) were involved in educational sessions on nursing process. On the other hand, (83.2%) stated that nursing process was adequately addressed in the curriculum during their undergraduate study. Detailed results on demographic characteristics are shown in table 1.

Nursing Process Implementation

Assessment and diagnosis

About 60% of nurse participants reported that assessment was performed as a prior step to planning when a new client is admitted. This was performed using a specialized form (61.8%), and within 24 hours of client's admission (62.1%). About (50%) of the participants acknowledged that they were going through diagnosis step through identification of the problem. However, about (35.6%) of the nurses considered patients' and relative's opinions during problem identification (Table 2).

Planning

Approximately (55.3%) of nurse participants claimed that they develop care plan that includes goals and outcomes based on assessment data and identified potential or actual client's problems. Over (60%) of nurses stated that nursing interventions are identified and documented in care plans. However, only about (56%) reported these interventions in enough detail. On the other hand (47.2%) claimed that care plans are discussed on the ward (Table 2).

Implementation

About (51.2%) performed reassessment of the client's condition as the first step of implementation. (57.6%) reported that they explain interventions to the clients and relatives prior to implementing them. Approximately (60%) of participants claimed that they take part in medical rounds for their patients. About (53.8%) stated that adopting nursing process as a framework is obligatory in their institutions (Table 2).

Evaluation

Around (53%) of study participants stated that the evaluation of the implemented interventions was systematically performed in their institutions. Roughly the same percentage (52.4%) of participants reported that the evaluation process is documented and recorded in care plans and progress notes (Table 2)

Summary of Nursing Process Implementation

The overall findings revealed that "assessment and diagnosis" part of the nursing process is performed by (55.8%) of participants, followed by evaluation (55.1%), whereas planning and implementation parts were the least applied ones in the study areas (53.8% and 52.8% respectively). Generally, the degree of implementation of nursing process was (54.4%) (Table 3)

Factors Affecting the Implementation of Nursing Process

Chi-square analysis revealed that female nurses were significantly more likely to implement nursing process than male nurses [$\chi2$ (1) = 5.403), p =0.020]. Furthermore, it was revealed that postgraduate nurses were significantly less likely to implement the nursing process than nurses with bachelor's degrees [$\chi2$ (2) = 16.215), p<.000]. Nurses who were working in governmental hospitals were significantly more probably to implement nursing process than those who were working in private hospitals [$\chi2$ (1) = 4.857), p =0.028]. No significant differences were found based on other participants' demographics and characteristics (Table 4).

Table 1: Participants' demographics and experiences (N=309)

Variable	N (%)
Age (years)	
20-25	47 (15.2)
26-30	158 (51.1)
>30	104 (33.7)
Gender	
Male	124 (40.1)
Female	185 (59.9)
Years of experience	
1-4 years	189 (61.2)
5-10 years	58 (18.8)
>10 years	62 (20)
Highest educational qualification	
Master or Doctoral degree	33 (10.7)
Bachelor's degree	194 (62.8)
Diploma degree	82 (26.5)
University of graduation	
Governmental	167 (54)
Private	142 (46)
Type of hospital	
Governmental	163 (52.8)
Private	146 (47.2)
Working unit/department	
Medical and surgical	124 (40.1)
Pediatrics	28 (90.1)
Obstetrics	25 (8.1)
Emergency	80 (25.9)
Critical care units	52 (16.8)
Shift pattern	
8-hours shift	175 (56.6)
12-hours shift	134 (43.4)
Number of clients receiving care per shift	
less than 5	66 (21.4)
5 -10	158 (51.1)
11 -15	85 (27.5)
Monthly salary (US dollar)	
<300	117 (37.9)
300-750	152 (49.2)
>750	40 (12.9)
Attending any talk or seminar about nursing process recently in the Hospital	
Yes	90 (29.1)
No	219 (70.9)
Taught adequately about nursing process during your study at the nursing school	
Yes	257 (83.2)
No	52 (16.8)

Table 2 Level of implementation of nursing process among Jordanian nurses (N=309)

Question	Never (%)	Sometimes (%)	Usually (%)	Always (%)
Assessment and diagnosis				
1. Is an assessment made of new patients prior to planning?	20 (6.5)	107 (34.6)	80 (25.9)	102 (33)
2. Is written nursing history taken using a specific form?	24 (7.8)	94 (30.4)	86 (27.8)	105 (34)
3. Does the nursing assessment begin within 24 hours?	23 (7.4)	94 (30.4)	95 (30.7)	97 (31.4)
4. Does the assessment of the patient conclude with identification of problems?	22 (7.1)	124 (40.1)	78 (25.2)	85 (27.5)
5. Is an attempt made to find the cause of the problems?	15 (4.9)	112 (36.2)	97 (31.4)	85 (27.5)
6. Are problem statements arranging in order of priority?	22 (7.1)	100 (32.4)	83 (26.9)	104 (33.7)
7. Are patients'/or relatives' opinions systematically takes into account?	29 (9.4)	138 (44.7)	87 (17.8)	55 (17.8)
Planning				
1. Is a written care plan made before carrying out nursing interventions on the patient?	27 (8.7)	111 (35.9)	78 (25.2)	93 (30.1)
2. Does the nursing care plan incorporate the nursing problems identified?	25 (8.1)	118 (38.2)	88 (28.5)	78 (25.2)
3. Do the goals provide enough detail (i. e. time to be accomplished, who will accomplish what and how?	27 (8.7)	109 (35.3)	109 (35.3)	64 (20.7)
4. Are nursing interventions identified and documented in the care plan?	6 (1.9)	108 (35)	80 (25.9)	115 (37.2)
5. Are planned nursing interventions written with enough detail?	17 (5.5)	118 (38.2)	83 (26.9)	91 (29.4)
6. Is there any systematization on the ward to take into account patient/relatives' opinions regarding the goals and planned activities?	22 (7.1)	130 (42.1)	98 (31.7)	59 (19.1)
7. Are nursing care planning discussions held on the ward?	25 (8.1)	138 (44.7)	78 (25.2)	68 (22)
8. Do you periodically read professional journals, or do you take part in research projects in order to update your practice accordingly?	26 (8.4)	134 (43.4)	96 (31.1)	53 (17.2)
Implementation				
1. Is the patient's condition reassessed before implementing any planned nursing intervention in order to be sure of its appropriateness?	18 (5.8)	133 (43)	75 (24.3)	83 (26.9)
2. Are nursing interventions explained to patients and/or relatives and their opinions taken into account?	12 (3.9)	119 (38.5)	97 (31.4)	81 (26.2)
3. Is the way patient and /relatives should participate in their care systematized?	23 (7.4)	128 (41.4)	96 (31.1)	62 (20.1)
4. Is patient allocation or primary nursing used throughout the ward all times?	21 (6.8)	142 (46)	81 (26.2)	65 (21)
5. Are nurses allocated to the same patients for several days?	33 (10.7)	145 (46.9)	88 (28.5)	43 (13.9)
6. Do nurses take part in medical round for their patients?	8 (2.6)	113 (36.6)	86 (27.8)	102 (33)
7. Are nurses in this hospital responsible for the planning of patient care? That is, the nurse and not the supervisor	27 (8.7)	134 (43.4)	87 (28.2)	61 (19.7)
8. Is it compulsory on this ward to work with the nursing process approach?	17 (5.5)	126 (40.8)	100 (32.4)	66 (21.4)
9. Is nursing documentation kept once the patient has been discharged?	20 (6.5)	93 (30.1)	74 (23.9)	122 (39.5)
Evaluation				
1. Is a systematic evaluation made of the effectiveness of care given to solve patient nursing problems?	20 (6.5)	124 (40.1)	78 (25.2)	87 (28.2)
2. Is the evaluation recorded in the care plans or progress notes?	15 (4.9)	132 (42.7)	84 (27.2)	78 (25.2)
3. Are objective measures of patient progress towards the identified goals used on the ward?	13 (4.2)	125 (40.5)	96 (31.1)	75 (24.3)
4. Are care plans modified according to the results of evaluation? (example: to add new ones, stop others,)	22 (7.1)	108 (35)	108 (35)	71 (23)
5. Is there a systematic way in which patient/relatives participate in the evaluation of care on the ward?	36 (11.7)	99 (32)	90 (29.1)	84 (27.2)

Table 3 Total nursing process implementation among nurses (N=309)

Nursing Process Stage	Percentage (%) of Participants
Assessment and Diagnosis	55.8%
Evaluation	55.1%
Planning	53.8%
Implementation	52.8%
Overall Implementation	54.4%

Table (4): Chi-square analysis on implementation of nursing process by selected variable (N=309)

Variable	Implementation of nursing process		
	Yes (%	No (%)	P value
Age (years)			
20-25	42 (13.6)	5 (1.6)	0.215
26-30	123 (39.8)	35 (11.3)	
>30	84 (27.2)	20 (6.5)	
Gender			
Male	92 (29.8)	32 (10.4)	0.020*
Female	157 (50.8)	28 (9.1)	
Years of experience			
1-4 years	146 (47.2)	43 (13.9)	0.152
5-10 years	51 (16.5)	7 (2.3)	
>10 years	52 (16.8)	10 (3.2)	
Highest educational qualification			
Master or Doctoral degree	70 (22.7)	12 (3.9)	0.000*
Bachelor's degree	161 (52.1)	33 (10.7)	
Diploma degree	18 (5.8)	15 (4.9)	
University of graduation			
Governmental	139 (45)	110 (35.6)	0.201
Private	28 (9.1)	32 (10.4)	
Type of hospital			
Governmental	139 (45%)	110 (35.6)	0.028*
Private	24 (7.8)	36 (11.7)	
Working unit/department			
Medical and surgical	112 (36.2)	12 (3.9)	0.091
Pediatrics	27 (8.7)	1 (0.3)	
Obstetrics	18 (5.8)	7 (2.3)	
Emergency	71 (23)	9 (2.9)	
Critical care units	44 (14.2)	8 (2.6)	
Shift pattern			
8-hours shift	138 (44.7)	37 (12)	0.381
12-hours shift	111 (35.9)	23 (7.4)	
Number of clients receiving care per shift			
less than 5	53 (17.2)	13 (4.2)	0.180
5 -10	122 (39.5)	36 (11.7)	
11 -15	74 (23.9)	11 (3.6)	
Monthly salary (US dollar)			
<300	97 (31.4)	20 (6.5)	0.691
300-750	121 (39.2)	31 (10)	
>750	31 (10)	9 (2.9)	
Attending any talk or seminar about nursing process recently in the Hospital			
Yes	73 (23.6)	176(57)	0.880
No	17 (5.5)	43 (13.9)	
Taught adequately about nursing process during your study at the nursing school			
Yes	207 (67)	50 (16.2)	0.970
No	42 (13.6)	10 (3.2)	

* P value <0.05

Discussion

The current study was conducted to assess the implementation of the nursing process and its associated factors among Jordanian nurses. The results revealed that the implementation of the nursing process among study participants was inadequate, as nearly half of the study sample have put nursing process into action. This is in line with the findings of many previous studies **(Bayih et al., 2021; Miskir & Emishaw, 2018; Shiferaw et al., 2020).** The low level of nursing process implementation might be attributed to lack of organizational support and inadequate in-organization training on the nursing process, and this was obvious in the findings of the current study as only about one third of the participants were enrolled in workshops addressing nursing process in their institutes. Furthermore, it was found that lack of time, shortage of nursing staff, lack of motivation and inadequate knowledge were among the most common obstacles to the implementation of nursing process **(Zeleke et al., 2021).**

Nearly more than half of study participants reported performance of initial assessment using standardized forms. This finding is higher than previously reported in a recent study conducted by Miskir & Emishaw (2018). However, performance of initial assessment among current study participants is considered inadequate and might be associated with nurses' failure to address early warning signs and symptoms particularly among clients with acute conditions **(Purnamasari & Aryani, 2020).** Regarding nursing diagnosis, the current study revealed that clients' problems identification and documentation don't reach the adequate levels. This result is lower than previously revealed in a previous study (Adraro & Mengistu, 2020). Many factors were shown to make nurses turn away from developing nursing diagnoses including difficulty in comprehending the diagnosis process **(Seçer & Karaca, 2021),** and nurses' perception of it as unimportant, fruitless, and something that doesn't fit their culture or health system **(Cachón-Pérez et al., 2021).**

The current study highlighted one of the most common communication shortfalls that arises when the nurses fail to adequately explain nursing interventions prior to implementing them. This was congruent with Mutshatshi et al. (2020) emphasized by who claimed that application of nursing process, particularly implementation step, is simplified when the clients understand the proposed interventions, and this had a significant contribution to enhancing clients' responses to these interventions. Furthermore, the current study showed that nurses inadequately participate in interdisciplinary patient rounds, and this might violate the concept of patient centeredness which is the essence of nursing process. Ineffective engagement of nurses in interdisciplinary patient rounds was found to be attributed to lack of time, lack of shared goals, and coordination issues **(Heip et al., 2020).**

The current study pointed out the gender differences in implementation of nursing process, as the findings revealed that female nurses were significantly more likely to implement nursing process than male nurses. This might be attributed to the females' nature of caution and meticulousness that make them more compliant with policies and regulations, and more enthusiastic about nursing career development **(Xue et al, 2022).**

In terms of educational qualification, nurses with postgraduate degrees were less likely to implement the nursing process. This is incongruent with Adraro and Mengistu (2020) who found that implementation of nursing process is proportional with the level of education due to the advanced knowledge and skills that postgraduate nurses have. However, the current study suggested the opposite, and this might be attributed to that most of nurses with postgraduate degrees in Jordan are working in supervisory positions, and they seldom engage directly in client's care and thus in all steps of nursing process.

Working in governmental hospitals was found to be a significant predisposing factor to the implementation of nursing process. This could be justified based on the availability of electronic documentation system in all governmental hospital in Jordan compared to a minority of private hospital had a such systems. According to Shafiee et al. (2022), following an electronic clinical documentation system for documenting nursing actions promoted nurses'

compliance with global standards of nursing care through utilizing nursing process as a clinical framework. Furthermore, it was found that electronic nursing documentation, that was developed based on the nursing process, reflected positively in reducing time and efforts constraints associated with paper-based documentation and minimizing legal issues and documentation errors **(Alrasheeday et al.,2023; Shafiee et al, 2022).**

Conclusion

The level of nursing process implementation among Jordanian nurses was found to be low. Female nurses, who had bachelor's degree, and who were working in governmental hospitals were significantly more likely to implement the nursing process.

Recommendations

The current study's findings suggest the following recommendations:

A minority of study participants reported being engaged in workshops addressing the nursing process in their institutions. Accordingly, it is recommended that the administrative body should hold training sessions and conferences that enable nurses to update their knowledge of the nursing process at both theoretical and practical aspects.

Furthermore, it is recommended to provide the infrastructure and materials necessary for application of nursing process, particularly the electronic documentation systems. Qualitative research should be conducted to study the contextual factors that might affect the implementation of nursing process, particularly sociocultural factors.

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Ethical statement

This study conforms to the principles outlined in the Declaration of Helsinki

Declaration of Competing Interest (conflict of interest)

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Authors' Contributions

Conception and design (RA, IA, HK), data analysis and interpretation (RA,HK, AA), manuscript draft (AA), critical revision of the manuscript (RA,IA, HK), final approval of the manuscript (RA, IA).

ORCID

1. Rana A. Al Awamleh: https://orcid.org/0009-0005-7775-9466
2. Ibrahim R. Ayasreh: https://orcid.org/0000-0002-2612-9318
3. Haitham Khatatbeh: https://orcid.org/0000-0003-2019-6621
4. Ahmad S. AlAwamleh