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Assessment of nurses' Knowledge and Practice for Patients Undergoing Surgeries for Closed Pelvis Fracture

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Abstract

Background: Closed pelvic fracture or simple fracture is a break to the bone that does not damage the surrounding tissue and does not produce a break in the skin **Aim of the study:** This study aimed to evaluate nurses' Knowledge and Practice for Patients Undergoing Surgeries for Closed Pelvis Fracture. **Research design:** Descriptive research design was used. **Sample:** The fifty nurses who are working in trauma unit at Assiut University Hospital. **Two tools** used for data collection. **Tool (1)** Nurses knowledge assessment questionnaire included two parts**. Part (1):** Nurses' demographic characteristics. **Part (2):** Nurses' knowledge assessment questionnaire regarding care of pelvis fracture. **Tool (2):** Nurses 'practice observation checklist. **Results:** There was unsatisfied level of nurses' knowledge and practice about closed pelvis fracture with percentage (84%, 100%, respectively) and there are some items are not applicable (measure abdominal girth). **Conclusions:** The majority of studied nurses were had unsatisfied level of knowledge about closed pelvis fracture and their level of practice was inadequate. **Recommendation**, more research studies are needed to focus on more training and education for nurses toward management of fracture pelvis to maintain good health and prevent complications.

Keywords: Closed pelvis fracture, Nurses' knowledge & practice.

Introduction

A break in one or more of the pelvic bones is known as a pelvic fracture. A rare kind of fracture that can range in severity from mild to severe is the pelvic fracture. On the other hand, minor fractures typically don't need surgery. Surgery is required to treat severe fractures. A closed fracture, also known as a simple fracture, is a break in the bone that does not result in skin breakage or damage to the surrounding tissue, **(Davis et al., 2021) .** Pelvic fractures can be simple or complex and can be fatal due to hemorrhage, and an unstable pelvis requires immediate management **(Weiling et al., 2023).**

About 3% of adult fractures are pelvic fractures. The prognosis for stable fractures is usually favorable. About 15% of people who have an unstable fracture will die. Conversely, the death risk for patients with low blood pressure is close to 50%. Unstable fractures frequently occur in conjunction with injuries to other body components, **(Walls et al., 2017**). Pelvic fractures are thought to affect 37 out of every 100,000 people in the US each year. The age group between 15 and 28 is the one with the highest incidence. Men are more likely to be impacted than women under the age of 35. when one is older than 35; affected women are more frequently **(Davis et al., 2023)** .

The Tile and Young-Burgess classification systems are the two primary categories used to categorize pelvic fractures. Although hemodynamic stability is not taken into account, the two classifications categorize pelvic fractures based on the anatomic classification of injuries. A classification system based on anatomical classification and the hemodynamic stability of the patient was developed by the World Society of Emergency Surgery (WSES) **(Coccolini et al., 2017& Tullington et al., 2023) .**

Falls, auto accidents, struck by another vehicle, pedestrian strikes, and direct crush injuries are among the frequent causes. Significant trauma is usually necessary for younger people, but less severe trauma can cause a fracture in older persons. Large pelvic injuries typically arise from high-energy trauma, like a car crash or a fall from a height. Pelvic fractures can result from low-energy trauma, such falls, in people who already have pathologies like osteoporosis. **(Weiling et al., 2023)** .

Pelvic fracture symptoms and indicators. The patient may experience crepitus, bruising, swelling, and soreness in the hips, sacrum, iliac bones, or pubis. Disparity in leg length or a rotational malformation in the lower limb. It can indicate a hematoma, a fractured femoral neck, the migration of an unstable

pelvis, limb shortening, and excruciating agony, **(Davis et al., 2021).**

Providing an early, stable fixation is the main objective in cases of pelvic fractures. Avoiding excessive pelvic movement is advised. As quickly as feasible, a large-bore intravenous access should be acquired in order to administer fluids and analgesics, and vital signs should be continuously monitored. In antero posterior pelvic instability, mechanical stabilization with an external compression device, such as a pelvic binder or sheet centered over the greater trochanter, can help stop internal bleeding from the venous plexus and support the pelvis ring. Compression-style pelvic injuries (APCs)**, (Stahel et al., 2017).**

When it comes to the initial evaluation and care of patients, as well as their continued care after the fracture has stabilized and the bleeding has stopped, nurses play a crucial role. The main responsibility of the nurse is to evaluate the patient and recognize any warning signs or symptoms of possible problems, **(Charsley et al., 2023)**.

Significance of the study:

Based on researcher's observations as a head nurse in trauma unit at Assiut University Hospital's, it has been noted that the trauma unit receives a higher number of patients with pelvic fractures. During the year of 2022. the number of patient admitted trauma unit 588 diagnosed pelvic fracture **(Hospital record, 2022)**.Also there are few studies on pelvic fractures and that nurses in the trauma unite have not enough level of knowledge and skills for dealing with these patents, and because there are limited number of studies on this topic.so, It was necessary to extend the scope of the literature search.

Aim of the study:

The aim of the study was to evaluate nurses' Knowledge and Practice for Patients Undergoing Surgeries for Closed Pelvis Fracture.

Research question:

What are the level of nurses' Knowledge and Practice for Patients Undergoing Surgeries for Closed Pelvis Fracture?

Patients and Methods:

Research design:

To accomplish the goal, a descriptive research design was used.

Setting of the study:

The study was carried out at Assuit University Hospital's trauma unit.

Study subjects:

Fifty nurses, both male and female, who are willing to engage in the study and are currently assigned to care for adult patients with pelvic fractures in the trauma unit at Assuit University Hospital.

Study tools:

The research team created two tools to help gather the information needed to fulfill the study's objectives.

Tool (I): **Nurses knowledge assessment questionnaire**: This tool was developed and translated into Arabic to assess nurses' knowledge regarding closed pelvic fractures, drawing from a review of both national international literatures (**Walker et al., 2011; & Johnson et al., 2018)**. It is divided into two parts.

Part (I): Nurses' demographic characteristics included data on gender, marital status, educational qualifications, years of experience, and the number of professional training courses completed

Part (II): Nurses' knowledge assessment questionnaire regarding care of pelvis fracture encompasses several key areas: this include definition pelvic fracture, associated injury risks and causes, classification types, symptoms and indicators, as well as diagnostic techniques used for confirmation. Additionally, it includes understanding the potential consequences and necessary medical supervision. Surgical management techniques such as skeletal traction and pelvic packing (laparotomy) are covered, along with nonsurgical treatments like pelvic binders and embolization. Furthermore, nursing management in this context involves pain management, promoting optimal healing and mobility, preventing further injury, and providing education and support patients and their families regarding self-care rehabilitation

Scoring system: For assessing nurses' knowledge regarding closed pelvic fractures, a total score of 36 points possible. Each question was assigned a score from to 2 points: 2 points for a correct answer, 1 point an incomplete answer, and 0 points for an incorrect answer. Nurses' knowledge levels were categorized follows: satisfactory knowledge for scores of 70% higher and inadequate knowledge for scores below 70% **(Onianwa et al., 2017**).

Tool (2): Observation checklist for Nursing Practices: This checklist was developed after reviewing relevant literature on nursing care for pelvic fractures. Purpose is to assess the performance of nursing staff in caring for patients with closed pelvic fractures both during the initial hours of admission and prior discharge. The tool aims to observe nursing skills action and includes a focus on monitoring preventing complications of pelvic fractures, ensuring effective gas therapy, promoting pain management and relief, and providing emergency trauma care shock. Additionally, it emphasizes enhancing patients' mobility, initiating patient education, delivering health education.

Scoring system: The nurse observation checklist utilizes a three-point Likert scale, where each item is assigned a score ranging from 0 to 2 points. The scoring criteria are as follows: 0 points for "not done or not applicable," 1 point "done incorrectly," and 2 points for "done correctly." Nurses were classified as exhibiting poor practices their overall score was below 70% and demonstrating excellent practices if their score exceeded 70%

Operational Design:

Design for administration:

Before beginning any data collection, formal approval was obtained from the dean of the faculty of nursing at Assiut University, the head of the traumatology department at Assiut University Hospital, and the director of the faculty of nursing study at Assiut University. An explanation of the study's purpose was provided in order to gain cooperation and permission for data collection.

Method of data collection:

There were two phase to the conduct of this study:

Preparation Phase: This phase involved comprehensive review of both historical contemporary literatures-both domestic international-related to various aspects of the issues at hand. Sources included books, journals, websites. Additionally, the number of nurses in trauma unit at the proposed study site was assessed, and a pilot study was conducted to complete phase.

Validity and reliability:

The content validity of the instrument assessed by 5 professionals with expertise orthopedic traumatology and medical-surgical nursing. Their feedback was sought regarding scoring system, consistency, and layout of the tool. The content of the tool was thoroughly evaluated accuracy, relevance, competency, understanding, ease of administration; ensuring minimal modifications were required in relation to knowledge assessment.to evaluate the feasibility and practicality of study instruments. Reliability of tool was confirmed by Alpha Cronbach test (0.87).

Pilot study: A pilot study was conducted January 2024, involving 10% of the nurses targeted for the main study. This pilot study also provided estimate of the time required to complete the tools. Minor adjustments were made based on the results, and it should be noted that the nurses who participated in the pilot study were excluded from final research.

Ethical consideration

Permission to carry out the study was obtained from the ethical committee of the Faculty of Nursing. Verbal consent was obtained from each patient prior to his/her contribution in the present study, after explaining the nature and purposes of the study. Confidentiality and anonymity assured. The researcher emphasized that the participation was voluntary and the patents had the right to refuse to participate in the study and can withdraw at any time

Implementation phase:

Nurses agreement for voluntary participation was obtained.

Data collection took place at Assiut University Hospital from March 2024 to July 2024. Prior completing the questionnaire, the researcher explained the study's objectives to the nurses involved in the care of patients with pelvic fractures. To gather data, interviews were conducted with participating nurses in the study using (**tool I)**.

An observation checklist was completed during morning and afternoon shifts while the nurses were on duty. The researcher observed each nurse on separate occasions, noting their performance different tasks each time, employing direct observation techniques to assess the nursing care provided to their patients using (**tool II**)

Statistical design:

After the data were collected, they were examined, coded, processed, and tabulated in preparation for computer entry. Excel was used for the figures in the statistical analysis, which was conducted using the statistical software program SPSS VERSION (26). The investigator examined and categorized each tool's contents. Descriptive statistics were used to show the data as frequencies and percentages, with mean and standard deviation for quantitative variables. Utilizing a one-way ANOVA test, the link between practice and knowledge was examined.The interrelationships between the quantitative variables were evaluated using Pearson correlation analysis. A P-value was deemed significant if it was less than 0.05 and highly significant if it was less than 0.01.

Result:

Table (1): Distribution of demographic characteristics for nurses. (n=50)

Variables	Frequency	Percentage %
Age:		
Less than 25 year.	**6**	**12.0**
25-35 year.	**23**	**46.0**
More than 35 year.	**21**	**42.0**
Sex :		
Male.	**30**	**60**
Female.	**20**	**4o**
Marital status :		
Single.	**16**	**32.0**
Married.	**30**	**60.0**
Divorced.	**3**	**6.0**
Widowed.	**1**	**2.0**
Education level :		
Diploma.	**17**	**34.0**
Institute.	**27**	**54.0**
Bachelors.	**6**	**12.0**
Years of experience :		
Less than 5 years.	**13**	**26.0**
5-10 year.	**9**	**18.0**
More than 10 years.	**28**	**56.0**
Total number trained.	**22**	**44.0**
Untrained.	**28**	**56.0**
Benefited of training		
Excellent	**6**	**12.0**
Very good	**11**	**22.0**
Good	**5**	**10.0**

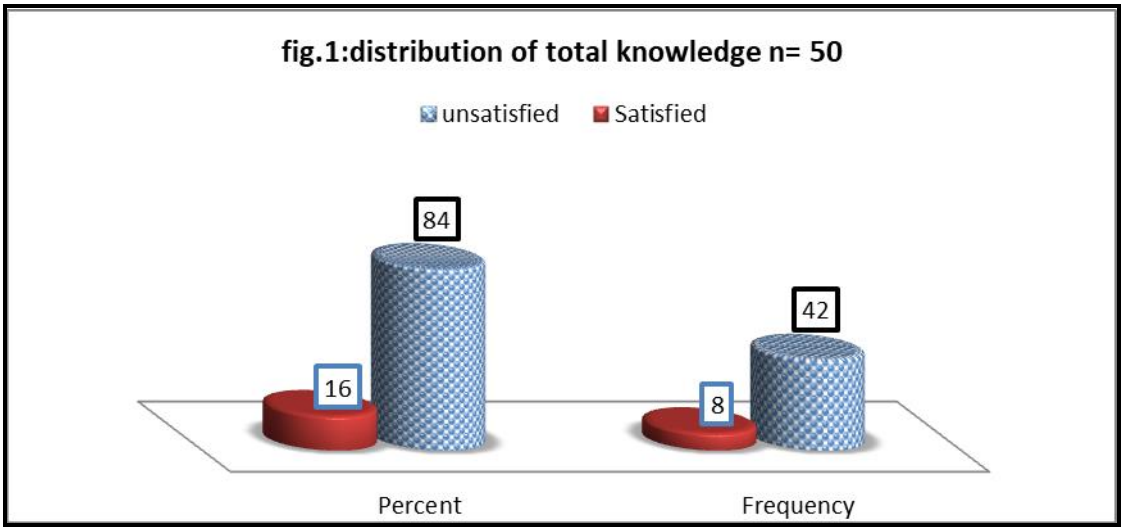

Figure (1): Distribution of total level of knowledge about closed pelvis fracture among nurses n=50

Table (2): Distribution of mean total scores of nurses' practice (n=50)

Nursing practice	Mean	Std. Deviation
Emergency nursing care	10.1200	1.37974
Pain control measures	9.2600	2.01838
stabilization	3.3600	.77618
Gas exchange	2.0400	.63760
Physical mobility	6.1200	1.47966
Patient Education and Health Teachings	9.4200	1.91759
Total practice	**40.3200**	**5.13269**

Table (3): Correlation between knowledge and practice (n=50)

Correlation		knowledge	Practice
knowledge	**Pearson Correlation**		**.396****
	Sig. (2-tailed)		**.004**
Practice	**Pearson Correlation**	**.396****	
	Sig. (2-tailed)	**.004**	

***. Correlation is significant at the 0.01 level (2-tailed).*

Table (1): The distribution of nurses based on demographic variables is displayed in the table. (46%) were between the ages of 25 and 35. About 60% of nurses were men in regarding sex. A little over 60% of nurses got married, and 54% of them went to technical school. About the years of experience, 56% of staff nurses reported having worked for more than ten years. Furthermore, the study's findings show that 56% of nurses lacked pelvic fracture training. 44% had previously received training in pelvic fractures. With respect to the total amount of training completed, 32% of nurses had completed one training session, 8% had completed two, and 4% had completed three. While pertaining to benefits. The lowest percentage (10%) received good benefits, and the greatest number (22%), very good benefits.

This Figure (1): Demonstrates that, when mean value (Mean ±SD=14.90±7.421) is taken into account, the majority of nurses (84.0%) had unsatisfied level of knowledge regarding closed pelvis fracture.

Table (2): This table shows that, the majority of nurses had a practice level that was inadequate, with a mean value of 40.32± 5.132. Minority of nurses mean score (Mean ±S D== 2.04±.637 and 3.360± .776) as regarding gas exchange and stabilization.

This table (3): Revealed that: Correlation between nurses' knowledge and nurses' practice is highly significant and positive correlation with P value (.004).

Discussion:

A break in one or more of the pelvic bones is known as a pelvic fracture. A rare kind of fracture that can range in severity from mild to severe is the pelvic fracture. On the other hand, minor fractures typically don't need surgery. Surgery is required to treat severe fractures.

Closed fracture or simple fracture is a break to the bone that does not damage the surrounding tissue and does not produce a break in the skin. **(Davis et al., 2021)**

One notable socio demographic characteristic nurses is that the majority, aged between 25 to 35yrs ,are married and hold nursing degrees from technical institutes, as indicated by the study's results. These findings align with those reported by **Sathiya et al., (2015) & Bashar, (2019)**, which noted 75% of nurses were married and aged between 21 -30yrs, with 55% possessing technical institute qualifications.

Regarding years of experience and gender, the current study contrasts with **Bashar, (2019)** findings, which revealed that 65% of participants were women, and 80% of nurses had less than a year of experience. In contrast, the current investigation found that the majority of nurses are men with over ten years of experience

Regarding training programs, almost half of nurses have not participated in any. In line with the current survey, **Bashar (2019)** found that more than half of nurses had not attended any training sessions. Two aspects of staff development are education and training, which come about following an employee-guided transition to the company while they are employed. The expertise and skills of the personnel are a key element in deciding how many employees need to accomplish unit objectives. The most skilled and knowledgeable individuals. The organization saves money and can increase reproduction when fewer staff members are needed.

Knowledge of nurses regarding closed pelvic fractures;

The current study found that majority of nurses had unsatisfied knowledge on closed pelvic fractures. These findings corroborated those of **Sathiya et al. (2015),** who revealed that evidence-based findings indicated nurses' awareness of fractures is inadequate. According to the study's findings, which were in line with those of **Bashar (2019),** reported that, the majority of nurses had low overall mean scores for fracture management expertise.(1.45). as well as concurred with **(Abd, et al 2022**).According to their study, 56.7% of the nurses had an inadequate level of overall expertise when it came to caring for patients who had fractured their pelvis.

More importantly, nursing schools should teach more about pelvic fractures to aspiring nurses and through ongoing education offered by hospitals.

Nursing care of patients with fractured pelvis:

When performing procedures and providing care for patients with closed pelvic fractures, the majority of nurses exhibited an unsatisfactory level of overall practice, either done incorrectly or not at all. These findings concurred with those of **Abd, et al. (2022).**A statistically significant positive correlation was seen between the practice and knowledge levels of the

nurses under study.
The nurses, in my opinion, wait for orders from the doctors to provide care to patients in the trauma unite when it comes to patients who have suffered a pelvic fracture. As well as a deficiency of pelvic fracture training programs. This is in line with both, **(Abd, et al. 2022 & Bashar 2019)**.
Ultimately, it may be told that nurses' practice and degree of understanding regarding closed pelvic fractures were lacking. For nurses to advance in knowledge and practice, they require ongoing training.

Conclusion

The current study's findings support the following conclusions: nurses' performances regarding patients undergoing surgery for closed pelvic fractures were both inadequate and unsatisfactory. A statistically significant positive association was seen between the nurses under study's level of knowledge and their practice in managing patients with closed pelvic fractures.

Recommendations

In light of the current study's findings, the researcher makes the following recommendations:

- Nurses should be encouraged to attend specialized training workshops and seminars offered for pelvic fractures.
- Regular evaluation of a nurse's expertise and evaluate the skill of the nurses who worked at trauma unit, and updated the knowledge of experienced nurses.
- More research studies are needed to focus on more training and education for nurses toward management of fracture pelvis to maintain good health and prevent complications

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