Effect of Implementing Guidelines for Nurses Caring for Immobilized Orthopedic Patients on their performance

Ebtsam Saad Soliman Saad (1), Prof. Dr. Marwa Mostafa Ragheb (2), Assist. Prof. Dr. Heba Abd Elkader Ali (3), Dr. Nehal Mahmoud Abo El-fadl (4)

(1) Bsc Nursing, Clinical Instructor of Medical Surgical Nursing. Benha University, Egypt,
(2) Professor of Medical Surgical Nursing. Benha University, Egypt,
(3) Assistant Professor of Medical Surgical Nursing. Benha University, Egypt.
(4) Lecturer of Medical Surgical Nursing. Benha University, Egypt,

Abstract

Background: Immobility refers to a reduction in the amount and control of movement. Immobility can adversely affect all physiological bodily systems. The nurse’s interventional actions for immobilized patient should support the normal functions of the body and maintaining the strength and flexibility of the musculoskeletal system. Aim of this study was: To assess the effect of implementing guidelines for nurses caring for immobilized orthopedic patients on their performance. Hypothesis: Was formulated that Nurses' performance related to caring for immobilized orthopedic patients will be improve after application of developing guidelines & Significant correlation between knowledge and practice post guidelines implementation. Design: A quasi-experimental design was used. Setting: This study was conducted in the orthopedic department at Benha University Hospital. Subject: (convenience sample).consist of all available nurses (n=100) working at orthopedic department Tools: Two tools were used, I nurses' knowledge questionnaire & II Nurses Practice Observational checklist regarding caring for immobilized orthopedic patients Results: This study showed that the majority of the nurses had unsatisfactory knowledge and practice regarding caring of immobilized orthopedic patients pre guidelines implementation (88% and 86%) which improved significantly immediately post guidelines implementation where the majority of the nurses had satisfactory knowledge and practice (87% and 85%). Conclusion The majority of the studied nurses had unsatisfactory level of performance (knowledge and practice) regarding caring of immobilized orthopedic patients pre guidelines implementation. Meanwhile, the majority of the studied nurses had statistically significant
improvement in their performance post guidelines implementation, which supported the study hypothesis. The study recommended an educational program, continuous in-service training programs and establishing booklet guideline should be prepared to help the orthopedic nurses to revise, acquire and develop their knowledge and practice regarding caring of immobilized patients.

**Key words:** Guidelines- Nurse performance – immobilized orthopedic - patients.

---

1. **INTRODUCTION**

Mobility refers to the ability to engage in activities and move freely. Mobility is often considered an indicator of health status because it influences the correct functioning of many body systems, especially the respiratory, gastrointestinal, urinary, and skeletal system (Potter & Perry, 2015). It depends on a sense of independence and feeling of usefulness. (Course, 2018).

Immobility refers to a reduction in the amount and control of movement. It is the inability to move the whole body or one of its parts. Immobility and complete bed rest can lead to life threatening physical and psychological complications and consequences. Immobility can adversely affect all physiological bodily systems (Curtin et al., 2018).

There are many hazards or complications of immobility which should be prevented whenever possible, such as skin breakdown, pressure ulcers, contractures, muscular weakness, muscular atrophy, disuse osteoporosis, renal calculi, urinary stasis, urinary retention, urinary incontinence, urinary tract infections, atelectasis, pneumonia, decreased respiratory vital capacity, venous stasis, and venous insufficiency. (Guedes et al., 2018).

The prevention and management of immobility complications is generally easier than to treat or cure them. These complications can be substantially reduced by identifying risk factors and applying preventive measures (Lee et al., 2018). Nurses are the main group of healthcare personnel across all healthcare settings. Accurate assessment, prompt intervention and adequate evaluation by nurses is necessary to better manage immobility complications and improve clinical outcomes for bedridden patients (Smith et al., 2018).

Nurses play an important role in providing care to their patients and they should be aware about the complications and its preventive measures. The
initial step in managing the actual or potential health hazards caused by immobility is to make an accurate assessment of patient's mobility status (Marth et al., 2012). These assessment data are a necessary baseline for establishment of patient care goals. The nurse's interventional actions should support the normal functions of the body and maintaining the strength and flexibility of the musculoskeletal system. All nursing actions are directed at providing a safe environment and preventing injury and complications (Calder et al., 2012).

Most of those complications can be very easily prevented using simple exercises and teaching the patient or the caretaker. Therefore, adapted exercises have to be done to prevent the complications from appearing (Samuel, Brown & Frank, 2012). There is a need for preparing an educational package to increase the knowledge and awareness of nurses caring for bedridden patients during hospitalization. Initiating an educational program is now a top priority to increase awareness of nurses about prevention, control, and treatment of pressure ulcer (Eljedi & Dukhan, 2012).

Significance of the study

According to increased periods for immobilization the researcher noticed that there is an increase immobility complications among these patients as at Benha university hospital. The number of the patients admitted to orthopedic department at the last three years (2016, 2017, 2018) were approximately , 2,714, 2,672 & 2,714 patients respectively (Statistical Office in Benha University Hospital, 2018).

A number of studies have investigated nurses' knowledge and attitudes regarding different immobility complications. These studies suggested that nurses may not be prepared to assume a critical role in management of immobility complications because of a lack of knowledge and individual attitudes towards these complications (Zheu et al., 2018).

Immobilization is a commonly used practice in orthopedic department as a method of treatment. The orthopedic patients have immobility either due to their condition or indirectly due to treatment like cast, tractions, splints, implants and internal fixations (Shehata & Wehida, 2013). The major complications associated with long immobilization periods ranging from 6 to 8% of patients and have been associated with poor functional outcomes (Schott & Korbus, 2014).
Aim of the Study:
Assess the effect of implementing guidelines for nurses caring for immobilized orthopedic patients on their performance.

Research hypothesis
To fulfill the aim of the study the following hypothesis was formulated:

H₀: Nurses exposed to educational/nursing guidelines will exhibit better performance in caring immobilized orthopedic patient compared to pre-application level.

H₁: Significant correlation between knowledge and practice post guidelines implementation.

Research design: A quasi-experimental (pre/post test) design was utilized to achieve the aim of the study.

Setting: The study was conducted in orthopedic department at Benha university hospital; the orthopedic department has 12 rooms, include 62 beds.

Sampling:
Sample type: A convenient sample of all available nurses worked at orthopedic department at Benha University Hospital.

Sample size: They were 55 nurses, 5 nurses excluded from the mainstream sample for pilot study.

Tools of data collection
Two tools were used to collect data for this study; nurses' knowledge questionnaire & Nurses' Practice Observational checklist. These tools were developed by the researchers, it consisted of:

Tool I - nurses' knowledge questionnaire:
It involved the following two parts:

(A) Nurses’ demographic characteristics: This part concerned with assessment of nurses' demographic characteristics related to their age, marital status, and educational level, residence, years of experience, years of work in the care of orthopedic patients and training courses in the care of Immobilized orthopedic patients.

(B) Assessment nurses knowledge It was aimed to assess nurse’s knowledge, adapted from Mersal.et al. (2012) & it consisted of the following questions:-

-Concepts and benefits of mobility (4 questions).
-Concepts and causes of immobility (4 questions).
-Complications of immobility on body systems (4 questions).
-Nurses’ knowledge related to caring for immobilized orthopedic patient. It consisted of four parts:
  I- Knowledge related to skin assessment (4 questions).
  II-Knowledge related to Breathing & coughing exercise (4 questions).
III- Knowledge related to turning patients (4 questions).
IV- Knowledge related to range of motion exercises (3 questions) (3 grades).
It was filled two times pre and post implementing guidelines.

**Scoring system:** All knowledge variables were multiple choice questions. The total numbers were 31 questions; they were scored as the following.
• Each correct answer was given one score.
• Each incorrect answer was given zero. With total knowledge score ranged from 0 to 31

The knowledge score converted into percentage and categorized into:
• ≥ 78.75% was considered satisfactory level of knowledge.
• < 78.75% was considered unsatisfactory level of knowledge.

**Tool II- Nurses Practice Observational checklist**
It was aimed to assess nurses’ practice during caring for immobilized orthopedic patients it was adapted from Ostendorf et al., (2018), Linton et al, (2018) & Patricia et al., (2018), it was consisted of items regarding skin assessment, deep breathing & coughing exercises, turning patient and range of motion exercises. This tool was filled two times; the first time before the guidelines implementation, the second time immediately after guidelines implementation. The total score was distributed as the following:
• Skin assessment procedure (11 steps).
• Deep breathing and coughing exercises (21 steps).
• Turning procedure (22 steps).
• Range of motion exercises (12 steps).

**Scoring system**
• Done correctly was scored as (2)
• Done incorrectly was scored as (1)
• Not done was scored as (0)

Total score of nurses’ practice was classified into:
• ≥ 87.5% was considered satisfactory level of practice.
• < 87.5% was considered unsatisfactory level of practice.

**Pilot study:**
Pilot study was conducted on 5 nurses (11.8) of all nurses at orthopedic department in order to test the clarity and applicability of the study tools and the guidelines, to estimate time needed for filling the questionnaire & checklists as well as to identify any possible obstacles that may hinder data collection and the feasibility of the study process. There were some modifications done to the developed tools. Nurses involved in the pilot study were excluded from the main study. The pilot study was done two weeks before starting the study

**Content validity:**

---

© | Page
The content validity was done through 5 panels of expertise in medical and nursing specialty for face and content validity, and their opinions were requested via an assessment form. The experts were asked to grade each item as “essential,” “useful but inadequate” or “unnecessary”. Modification was carried out according to the panel’s judgment on the clarity of sentences and appropriateness of content. The percentage of consensus among experts regarding structured interviewing questionnaire was 97% & observational checklist was 98%. Also, the developed guidelines which covered all items related to (caring for immobilized orthopedic patients) based on the current literature was revised by the same experts and all recommended modifications were done. Accordingly, the reliability of the tools was tested using the internal consistency method. It proved to be high with Cronbach's alpha reliability coefficient .99.

. Results
Table (1) demonstrates the studied nurses according to their demographic characteristics. As regard age, that less than half of the studied nurses (47.4%) their age ranged between (45-61) with a mean age of (34.26±2.52) years, most of nurses (74.18%) were married. Regarding educational qualification the majority of the studied nurses (97.4%) had secondary nursing education, more than half (52.18%) lived in urban area. As regard the nurse’s years of experience more than two third of the studied nurses (64.18%) had (more than 11 years) of working with a mean years of experience was (1.56±5.32) years. Regarding the nurses’ years of the work related to the care of orthopedic patients ,more than half of them (56.18%) had (more than 11 years) with a mean years of work in the care of orthopedic patients was (2.51±4.22) years. As regard the training courses in the care of Immobilized orthopedic patients nearly all of them (11.18%) didn’t attend training courses.

Figure (1) Illustrates that (77.4%) of the studied nurses had unsatisfactory knowledge pre guidelines implementation which improved post guidelines (97.4%) of the studied nurses had satisfactory knowledge regarding caring for immobilized orthopedic patient.

Figure (1) Illustrates that (56.18%) of the studied nurses had unsatisfactory practice pre guideline implementation which improved post guideline where (77.4%) of the studied nurses had satisfactory practice regarding caring for immobilized orthopedic patient.
There were statistical significant positive correlation between nurses’ total knowledge score and total practice score post guidelines implementation, ($p < 0.01$).

Table (1): Frequency & percentage distribution of the studied nurses regarding to their demographic characteristics ($n=50$).

<table>
<thead>
<tr>
<th>Personnel characteristics</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age in years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$18-&lt;30$</td>
<td>14</td>
<td>28.0</td>
</tr>
<tr>
<td>$30-&lt;40$</td>
<td>15</td>
<td>30.0</td>
</tr>
<tr>
<td>$40-&lt;60$</td>
<td>21</td>
<td>42.0</td>
</tr>
<tr>
<td>Mean ±SD</td>
<td>34.77±5.88</td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>32</td>
<td>64.0</td>
</tr>
<tr>
<td>Unmarried</td>
<td>18</td>
<td>36.0</td>
</tr>
<tr>
<td><strong>Educational qualification</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary nursing education</td>
<td>46</td>
<td>92.0</td>
</tr>
<tr>
<td>Technical nursing education</td>
<td>4</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Residence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>24</td>
<td>48.0</td>
</tr>
<tr>
<td>Urban</td>
<td>26</td>
<td>52.0</td>
</tr>
<tr>
<td><strong>Years of experience in nursing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one year</td>
<td>0</td>
<td>10.0</td>
</tr>
<tr>
<td>$1-&lt;5$</td>
<td>8</td>
<td>16.0</td>
</tr>
<tr>
<td>$5-&lt;11$</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>$&gt;11$</td>
<td>30</td>
<td>60.0</td>
</tr>
<tr>
<td>Mean ±SD</td>
<td>9.06±0.38</td>
<td></td>
</tr>
<tr>
<td><strong>Years of work in the care of orthopedic patients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one year</td>
<td>10</td>
<td>20.0</td>
</tr>
<tr>
<td>$1-&lt;5$</td>
<td>10</td>
<td>20.0</td>
</tr>
<tr>
<td>$5-&lt;11$</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>$&gt;11$</td>
<td>28</td>
<td>56.0</td>
</tr>
<tr>
<td>Mean ±SD</td>
<td>7.09±4.87</td>
<td></td>
</tr>
<tr>
<td><strong>Training courses in the care of Immobilized orthopedic patients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>10.0</td>
</tr>
<tr>
<td>No</td>
<td>45</td>
<td>90.0</td>
</tr>
</tbody>
</table>
Figure (1): Frequency & percentage Distribution of the total nurses’ knowledge regarding caring for immobilized orthopedic patients through pre and post guidelines implementation (n=21).
Figure (8): Frequency & percentage Distribution of the total nurses’ practice regarding caring for immobilized orthopedic patient through pre and post guidelines implementation (n=21).

<table>
<thead>
<tr>
<th>Total practice score</th>
<th>Total knowledge score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-intervention</td>
</tr>
<tr>
<td>R</td>
<td>P value</td>
</tr>
<tr>
<td>Practice pre-intervention</td>
<td>.170</td>
</tr>
<tr>
<td>Practice post-intervention</td>
<td>-</td>
</tr>
</tbody>
</table>

(* = Statistical significant at P < .05)

(**= Highly statistical significant at P ≤ .01)
II. DISCUSSION

The function of the musculo-skeletal system is fundamental to optimal health in the normal active human being. Injury or disease involving this system can have a profound effect on an individual ability to perform the activities of daily living and can result in either temporary or permanent disability, one of the main problems usually being the degree of decreased mobility. Nurses are in a unique position to identify the amount of knowledge about the complication of immobility and to help the patient to develop positive practices. (Matier, \(8108\)) Prolonged immobility has multiple effects on the major systems of the body and can result in a negative physiologic response in hospitalized patients on bed rest (Pashikanti & Von Ah, \(8109\)). So, this study aimed to assess the effect of implementing guidelines for nurses caring for immobilized orthopedic patients on their performance.

Regarding the socio-demographic characteristics, the present study revealed that less than half of the studied nurses’ age ranged between \(\varepsilon-\varpi\) years old. This results disagree with Mohsin & Atiyah, \(8112\) whose results revealed that most of the nurses at age group \(\uparrow\varpi\) years of old, that present most of them young age group. Also, Sathiya et al., \(8110\) study showed that the highest rate of the nurses were in the age group of \(\uparrow\) years old. Also, these results disagree with Mohamed & Weheida, \(8116\) whose results revealed that the majority of nurses were less than \(\lambda\) years old.

As regard to marital status, the current study revealed that about two thirds of nurses were married. These results agree with Islam, \(8117\) whose study found that all of the study sample was married. Also, these results agree with Haleema & Thair, \(8114\) who showed that the majority of the sample were married also, Sathiya et al, \(8110\) study viewed that \(\psi\%\) of the involved nurses were married finally Mohsin & Atiyah, \(8112\) whose results revealed that the majority of nurses were married. The mentioned study results supported the current study.

Concerning to educational qualification, the study revealed that most of the studied nurses had Secondary nursing education. From the researcher's points of view this results may be due to the study of Bachelor degree in nursing at Benha university started since few years. This result is in agreement with Mohamed & Weheida, \(8116\) whose results revealed that the majority of nurses were secondary graduated. Also, Al-Barwari, \(8117\) study findings
shared the same results with the previous and whose study showed that most of the study subjects were secondary nursing graduates.

Concerning to residence, the present study shows that more than half of the studied nurses’ lived in urban areas and this result is Supported by Atiyah & Mohammed, (2014) who indicates the majority of nurses living in urban area.

Regarding to years of experience, this current study shows that the majority of the studied nurses were having (more than 10 years) of work in nursing this result is disagree with Mohsin & Atiyah (2014) whose results showed that the majority of the nurses years employed in nursing ranged from (1-5) years.

According to nurse’s years of work in the care of orthopedic patients more than half of them were having (more than 10 years) these results disagreed with Al-Barwari, (2014) study results who indicated that more than half of nurses had 1-5 years of experience in the care of orthopedic patients. Also, Bader, (2014) disagreed with Study results who indicated that nearly half of the study sample had 1-5 years of experience in the care of orthopedic patients.

Finally regard the training courses in the care of Immobilized orthopedic patients nearly all of them hadn’t training courses. From the researcher's points of view these results may be due to those training courses specific to care of Immobilized orthopedic patients were not held at the hospital. This result is agree with Al-Barwari, (2014) study who showed that nearly all of study nurses were not participating in the training sessions related to care of fractures.

Regarding total score of knowledge study revealed that the studied nurses have lowest percentage of total knowledge pre guidelines implementation. But there was improved post guidelines implementation. This finding supported by Paquay et al., (2015) whose result revealed that the studied sample had poor total knowledge score prior attending the educational program, while most of them had good knowledge scores after implementation of the program. Additionally, there was a statistical significant improvement in the total mean knowledge score in posttest comparing to pretest.

Regarding nurses total practice study revealed that there was highly statistical significant difference between nurses' practice score pre and post guidelines implementation. This finding supported by Parmar, (2017) whose result revealed that the mean post test practice was higher than mean pretest practice.
score with the mean difference of. The mean post test practice score is significantly higher than the mean pretest practice score which was statistically proved. Also, it revealed that the planned teaching guidelines were effective on prevention of complications of immobilized orthopedic patients in terms of Practice among the samples. This supporting the research hypothesis.

The current study revealed that there were a positive correlation between total nurses' knowledge and practice at post guidelines implementation. This might due to the implementation of teaching guidelines improved the nurses' knowledge and practice regarding caring for immobilized orthopedic patients. This results agreed with Mohamed & Weheida, (2010) whose study showed that a statistically significant correlation between level of knowledge and practice for the study group post implementation of program.

III. CONCLUSION

Based on the findings of the current study, it can be concluded that the majority of the studied nurses had unsatisfactory level of performance (knowledge and practice) regarding caring of immobilized orthopedic patients pre guidelines implementation. Meanwhile, the majority of the studied nurses had statistically significant improvement in their performance post guidelines implementation, which supported the study hypothesis.

IV. RECOMMENDATIONS

In the light of the results of this study, the following points are recommended:

1. An educational program, continuous in-service training programs and establishing booklet guidelines should be prepared to help the orthopedic nurses to revise, acquire and develop their knowledge and practice regarding caring of immobilized patients

2. Further researchers are proposed to investigate the effect of implementation of guidelines on preventing and decreasing complication of immobilization on larger sample selected from different geographical areas of Egypt to raise the efficiency of nurses’ performance in caring for immobilized patients also to generalize the findings.
V. REFERENCES


Statistical office of Benha university hospital. (2012): Number of patients admitted to orthopedic department.