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

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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. One research hypothesis: Was formulated that Nurses’ performance related to caring for immobilized orthopedic patients will be improve after application of developing guidelines. 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=5) working at orthopedic department Tools: Two tools were used, I a nurses’ assessment sheet to assess nurse knowledge & II Observational check list for assess nurses’ practice 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 (ΔΔΔ/°°°/) and improved significantly immediately post guidelines implementation (ΔΓΓ/°°°/). 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 That an educational program and continuous in-service training programs should be prepared to help the nurses to revise, acquire and develop their knowledge and practice regarding caring of immobilized patients.

Key words: Guidelines- Immobility -Nurse – orthopedic- Patients- Performance.

I. 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 Hero, 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).

The hazards or complications of immobility, 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, venous insufficiency, orthostatic hypotension, decreased cardiac reserve, edema, embolism, thrombophlebitis, constipation and the loss of calcium from the bones. Many of complications of immobility should be, prevented whenever possible (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, Moseley, Deborah & Sole, 2018). These assessment data are a necessary baseline for establishment of patient care goals. The nurse' 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, Freeman, Domeij-Arverud&Dijk, 2018).

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, 2013) 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, 2016)

**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: Nurses' performance related to caring for immobilized orthopedic patients will improve after application of developing guidelines.

**Subjects & Methods**

**Research design:** A quasi-experimental 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 11 room, include 66 beds.

A convenience sample of 51 nurses was recruited in the present study.

**Sampling type:**
All available nurses included in this study were 51 nurses (Convenience sample) worked at orthopedic department at Benha university hospital during the time of the study and agree to participate in this study. The total number of available nurses were 51 nurses, 5 nurses were excluded from the study for the pilot study.

**Tools of data collection**
Two tools were used to collect data for this study; nurses’ assessment sheet & Observational check list for nurses' practice. They were developed by the researcher, these tools are

**Tool 1 - nurses' assessment sheet**
Nurses' assessment sheet it involved the following two parts:

(A) **Nurses’ demographic characteristics:** This part was concerned with assessment of nurse 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., 2016, 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 (2 questions).

II-Knowledge related to Breathing & coughing exercise (5 questions).

III- Knowledge related to turning patients (4 questions).

IV- Knowledge related to range of motion exercises (3 questions).

It was filled two times pre and post implementing guidelines. (3 grades).

**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 1 to 31.

The knowledge score converted into percentage and categorized into:

- \( \geq 117 \) was considered satisfactory level of knowledge.
- \(< 117 \) was considered unsatisfactory level of knowledge.

**Tool II-Observational check list for nurses’ practice**

It was aimed to assess nurses’ practice during caring for immobilized orthopedic patients. It was adapted from Ostendorf et al., Linton et al., & Patricia et al., 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 (26 steps).
- Range of motion exercises (11 steps).

**Scoring system**

- Done correctly was scored as (2)
- Done incorrectly was scored as (1)
- Not done was assigned a score of (1)

Total score of nurses’ practice was classified into:

- \( \geq 617 \) was considered satisfactory level of practice.
- \(< 617 \) was considered unsatisfactory level of practice.

**Pilot study:**

Pilot study was conducted on nurses (117) 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 sheets as well as to identify any possible obstacles that may hinder data collection. 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:
was established for testing content of tools for comprehensiveness, relevance, simplicity, clarity and ambiguity through a jury of five experts in the field of nursing including one assistant professors and one lecturer in medical surgical nursing, Ain-Shams University, as well as three assistant professors of medical surgical nursing, Benha University.
- Also a prepared developed guidelines which covered all items related to (caring for immobilized orthopedic patients) based on newest current literature was revised by the same experts and all recommended modifications were done.

Tool reliability:
- Tool reliability for Assessment nurses knowledge
  Test was repeated to the same sample group of studied nurses on two occasions and the scores were compared The Cronbach's coefficient alpha was 0.84.
- Tool reliability for Observational check list to assess nurses’ practice Test was repeated to the same sample of studied nurses on two occasions and the scores were compared. The Cronbach's coefficient alpha was 0.98.

Results
Table (1) Demonstrates the studied nurses’ distribution according to their demographic characteristics. As regard age, that less than half of the studied nurses (42.17%) their age ranged between (45-61) with a mean age of (34.16 ± 1.56) years, most of nurses (64.17%) were married. Regarding educational qualification the majority of the studied nurses (12.17%) had secondary nursing education, more than half (52.17%) lived in urban area. As regard the nurse’s years of experience more than two third of the studied nurses (11.17%) had (more than 11 years) of working with a mean years of experience was (1.56 ± 5.36) years. Regarding the nurses’ years of the work related to the care of orthopedic patients, more than half of them (56.17%) had (more than 11 years) with a mean years of work in the care of orthopedic patients was (1.51 ± 4.61) years. As regard the training courses in the care of Immobilized orthopedic patients nearly all of them (89.17%) didn’t attend training courses.

Figure (1) Illustrates that (66.7%) of the studied nurses had unsatisfactory knowledge pre guideline implementation which improved post guideline (62.7%) of the studied nurses had satisfactory knowledge regarding caring for immobilized orthopedic patient.

Figure (8) Illustrates that (56.17%) of the studied nurses had unsatisfactory practice pre guideline implementation which improved post guideline where (16.17%) of the studied nurses had satisfactory practice regarding caring for immobilized orthopedic patient.
Table (7) There were statistical significant positive correlation between nurses’ total knowledge score and total practice score post guidelines implementation, (p <····).  

Table (7): percentage distribution of the studied nurses regarding to their demographic characteristics (n=51).  

<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>18-30</td>
<td>14</td>
<td>28.0</td>
</tr>
<tr>
<td>30-45</td>
<td>10</td>
<td>30.0</td>
</tr>
<tr>
<td>45-61</td>
<td>21</td>
<td>42.0</td>
</tr>
<tr>
<td>Mean ±SD</td>
<td>34.76±5.68</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</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one year</td>
<td>5</td>
<td>10.0</td>
</tr>
<tr>
<td>1-5</td>
<td>8</td>
<td>16.0</td>
</tr>
<tr>
<td>5-10</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>&gt;10</td>
<td>30</td>
<td>60.0</td>
</tr>
<tr>
<td>Mean ±SD</td>
<td>9.06±3.83</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>1-5</td>
<td>10</td>
<td>20.0</td>
</tr>
<tr>
<td>5-10</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>&gt;10</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): percentage Distribution of the total nurses’ knowledge regarding caring for immobilized orthopedic patients through pre and post guidelines implementation (n=\(\cdot\)).
**Figure (8)**: percentage Distribution of the total nurses’ practice regarding caring for immobilized orthopedic patient through pre and post guidelines implementation (n=51).

**Table (8)**: Correlation between studied nurses’ total knowledge and practice score caring for immobilized orthopedic patient through pre and post guidelines implementation (n=51).

<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></td>
<td>r</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 ≤ .110)

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, 8117).

Regarding the age, the results of the present study revealed that less than half of the studied nurses’ age ranged between (45-61) years old. From the
researcher's point of view this result may be due to the studied nurses who were working in orthopedic department not critical care units or emergency department and their characteristics suitable to deal with patients with orthopedic patients. This results disagree with Mohsin & Atiyah, (2012) whose results revealed that most of the nurses at age group (26-77) years of old , that present most of them young age group. Also, Sathiya .et al, (2012) study shows that the highest rate of the nurses were in the age group of (18-30) years old. Also This results disagree with Mohamed & Weheida, (2012) whose results revealed that the majority of nurses were less than 30 years old.

As regard to marital status, the current study revealed that most of nurses were married. This results agree with Islam, (2012) study finds that all of the study sample were married Also, this results agree with Haleema & Thair, (2014) who showed that the majority of the sample were married also, Sathiya .et al, (2012) study view that 157 of the involved nurses were married finally Mohsin & Atiyah, (2012) whose results revealed that the majority of nurses were married. mentioned study results support the current study.Finding and are in agreement with it. Regarding educational qualification

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 bacaloruce in nursing at Benha university started since few years. This result is in agreement with Mohamed & Weheida, (2012) whose results revealed that the majority of nurses were secondary graduated. Also, Al-Barwari, (2012) study findings share the same results with the previous and 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, (2012) 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 11 years) of work this result is disagree with Mohsin & Atiyah, (2012) whos results shows 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) this results is disagree with Al-Barwari,(8111) study results who indicated that more than half of nurses have 1-5 years of experience in the care of orthopedic patients. Also, Bader,(8114) Study results who indicates that nearly half of the study sample having 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 this results may be due to that training courses specific to care of Immobilized orthopedic patients were not held at the hospital. This result is agree with Al-Barwari,(8111) study who shows 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 there was lowest percentage of total knowledge pre guidelines implementation. but there was improved post guidelines implementation. This finding supported by. Paquay.et al,(8119) 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,(8117) 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 on prevention of complications of immobilized orthopedic patients was effective in terms of Practice among the samples.

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,(8119) whose study showed

\[\text{\textsuperscript{8117}}\] Page\[\text{\textsuperscript{8119}}\]
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 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 and continuous in-service training programs should be prepared to help the nurses to revise, acquire and develop their knowledge and practice regarding caring of immobilized patients.

2. The importance of establishing booklet guideline for orthopedic nurses regarding caring of immobilized patients.

3. 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.

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