

Nurses' Performance Regarding Hygienic Measures for Bedridden Patients: Suggested Guideline

Shimaa Mohamed Badry¹, Manal Hussein Nasr², Dalia Abdallah Abdelatief³ and Arzak Mohamed Khalifa⁴

Clinical Instructor, Faculty of Nursing, Sohag University¹, Professor of Medical Surgical Nursing², Assistant Professor of Medical Surgical Nursing³ and Lecturer of Medical Surgical Nursing⁴, Faculty of Nursing, Ain Shams University.

Abstract

Background: Bedridden patient is liable to serious life-threatening complications that results in a high morbidity and mortality. Hygienic care measures is very important during initial period to achieve best possible outcome and have good prognosis for the bedridden patients. Nursing staff must understand the immediate and long-term management of bedridden patients to provide safe and competent care for these patients. **Aim:** This study aimed to assess nurses' performance regarding hygienic measures for bedridden patients. **Design :** A descriptive exploratory design was utilized for the conduction of this study. **Setting :** the study was carried in internal medical and orthopedic units at Sohag Educational Hospital, which is affiliated to the general organization of the Ministry of Health and Population. **Study sample:** A convenience sample of all the available staff nurses (50) who working in the internal medical and orthopedic units. **Tools:** three tools; ' knowledge administered questionnaire, nurses' practice observational checklist and nurses' attitude questionnaire. **Results:** the results of this study showed that, 76% of the studied nurses had unsatisfactory total level of knowledge, 82% of studied subjects had unsatisfactory total level of practice and 54% had negative attitude regarding hygienic measures for bedridden patients. **Conclusion:** The current study concluded that, the studied nurses had unsatisfactory level of knowledge, practice and attitude among nurses under study. Also, there is statistically significance difference relation between nurses' knowledge, practice, attitude and their demographic characteristics. In addition to, there was a significant strong positive correlation between total knowledge and practice of the study nurses and there was positive correlation between total knowledge and total attitude and also between total practice and total attitude. **Recommendations:** On-going and regular in-service educational programs regarding evidence-based guidelines have to include the care of bedridden patients with the hygienic measures.

Keywords: Bedridden patients, hygienic measures, nurses' performance

Introduction:

Bedridden patients have their inability to independently move or change position or movement is restricted for medical reason. The greater the extent and the longer the duration of immobility, the more pronounced the consequences. It is generally easier to prevent the complications than to treat or cure those (Kirman & Geibel, 2014).

The bedridden patient with limitation in physical activity this results from disease process, trauma or as a therapeutic intervention. For a time the bedridden results from secondary disabilities these disabilities may develop in one or several body system. The severity of the impairment depends on the client's age, overall health and the degree of immobility. Elderly clients with chronic illness developed

pronounced effects of immobility more quickly than younger clients (**Garber & Rintala, 2016**).

Prolonged inactivity and bed rest for a period greater than 48 to 72 hours causes pathological changes in most body organs and systems. Although rest is an integral part to the healing process, early ambulating, good nursing measures and range of motion can prevent many of the complications of inactivity and bed rest (**Wurster, 2013**).

Prevention and control of the immobility complications is crucial responsibilities of nurses caring for bedridden patient. Because prolonged inactivity can result in a serious deterioration in the functional capacities in all organs and body systems. Suffering from its consequences, this can be avoided by providing early rehabilitation nursing care. So these need the nurses to be knowledgeable and skillful to help in prevention of the complications of this disuse syndrome (**Alhosis & Qalawa, 2015**).

The adverse effect of immobility on all the body systems, effects on physical, psychological health, learning, socialization and ability of the patient to cope. The nurses must have important hygienic measures in the prevention and control of bedridden syndrome, and they must be fully acquainted with knowledge and practice regarding the prevention and control of bedridden complications (**Moya & Morison, 2017**).

Hygienic measures are a fundamental nursing care activity and performance improvement the healthcare focused on initiatives of patients' safety. Today's healthcare system dictates that intensive care nurses are primarily focused on the technological aspects of patient care relative to basic care activities. Nurses' accountability for these essential basics of care has been designed out of the current care model. Identifying, implementing and maintaining quality patient hygiene measures have long been at the heart of modern nursing care (**Kerver & Rommes, 2019**).

Interventional patient hygiene is a nursing action plan directly focused on

fortifying patients' host defenses through use of evidence based care and evaluate the client's response to interventions to prevent complications from immobility. It is fully realized in activities including oral care, the bathing process, and incontinence management, which when performed proactively with evidence-based protocols (**James & Davies, 2016**).

Nursing role regarding hygienic measures for bedridden patients includes the implementation of basic care tasks intended to enable patients to perform daily living activities as well as advanced care tasks that support health recovery or the maintenance of clinical conditions. Nursing care includes providing an atmosphere of comfort for physical and mental by promoting factors such as rest, sleep, nutrition, hygiene, and dignity that is a fundamental responsibility of nursing professionals because they have a significant impact on the clinical outcomes and satisfaction of ill patients (**Pugin , et al., 2018**).

Significance of the study:

Prolonged immobility has multiple effects on the major systems of the body. It is generally easier to prevent the complications than to treat or cure them. It is estimated that approximately from 1.2 million people are suffering from immobility it is reported that there are 60,000 deaths annually from complications arising from prolonged bed rest (**Alhajhusain, 2016**).

The studies according to the Agency for Healthcare Research and Quality (AHRQ) reports the prevalence rate of bedridden patients in Egypt increased from 13.3% to 40% from 2014 to 2017 (**Agency for Healthcare Research and Quality, 2014**). The implementation of hygienic procedures in turn prevent pressure sores, muscle atrophy, joint contractures, hypostatic pneumonia and infectious diseases which are among the main areas of care for bedridden patients and ensure compliance with sanitary and hygienic standards.

The nurses' role in patients' care should have essential and updated information regarding hygienic measures. So this study is carried out in an attempt to assess the nurses' performance regarding hygienic measures for bedridden patients and develop a suggested guideline.

Aim of the study:

The current study aimed to assess nurses' performance regarding hygienic measures for bedridden patients through the following:

1. Assess nurses' knowledge regarding hygienic measures for bedridden patients
2. Assess nurses' practice regarding hygienic measures for bedridden patients.
3. Assess nurses' attitude regarding hygienic measures for bedridden patients.
4. Develop a guideline regarding hygienic measures for bedridden patients.

Research question:

The current study answered the following question:

- What is the nurses' performance regarding hygienic measures for bedridden patients?

Subjects and methods:

I- Technical design:

Research Design:

A descriptive exploratory research design was used to achieve the aim of this study. **Descriptive research** it is a research method that accurately and systematically describe the characteristics of the population or phenomenon studied (**Shields & Patricia, 2016**).

Research Setting:

This study was conducted in the Internal Medical and Orthopedic Units at Sohag Educational Hospital affiliated to the general organization of the Ministry of Health and Population (MOH). Where the Internal Medical Unit divided into six rooms; each one consists of five beds with total number of thirty beds. The Internal Orthopedic Unit divided into six rooms; each one consists of five beds with total number of thirty beds. Also, the number of staff

nurses in medical and orthopedic units was 50 nurses and 45 patients in each unit.

Subject:

A convenience sample of all the available staff nurses of 50 nurses working in the Internal Medical and Orthopedic Units at Sohag Educational Hospital.

Data for this study was collected by using the following tools:

Tool (I): knowledge questionnaire:

The self-administered questionnaire was used to assess nurses' demographic characteristics and level of knowledge regarding hygienic measures for bedridden patients. It was developed by the researcher in simple Arabic language after reviewing the relevant and recent literatures (**Costa, et al., 2014; Alireza & Azizollah, 2016; Zegelin, et al., 2018**).

Part I: it was concerned with demographic characteristics of the nurses under study such as age, gender, qualification, marital status, years of experience and previous attendance of training courses regarding to care of bedridden patients and composed of 10 closed-ended questions.

Part II: it was concerned with assessing nurses' knowledge regarding hygienic measures for bedridden patients. The questionnaire consisted of 42 multiple choices questions (MCQ) in the form of (41) MCQ and (1) true/false question. It was composed of the following four mean categories:

1- Nurses' basic knowledge regarding bedridden patients (2 MCQ and 1 true/false question) including; definition, reasons and complication of the bedridden patients.

2- Nurses' knowledge regarding hygienic measures (23 MCQ) including; bed bath (2 questions), eye care (2 questions), oral care (2 questions), skin care (2 questions), bed making (2 questions), change position (2 questions) and wound care / drains care (3 questions). Care of patient connection tube including; peripheral venous catheters (cannula) care (2 questions), nasogastric tube care (2 questions), Enema care (2 questions) and urinary catheter care (2 questions).

3- Nurses' knowledge regarding health care providers for bedridden patients (6 MCQ) including; hand washing (2 questions), using personal protective equipment (2 questions) and shifts work handover (2 questions).

4-Nurses' knowledge regarding surrounded environment for bedridden patients (10 MCQ) including; infection control (3 questions), safe disposal of medical waste (2 questions), patients' isolation (2 questions) and safe and secure environment (3 questions).

Scoring system:

Regarding scoring system of the nurses' knowledge questionnaire: it included 42 questions. The response for each question was either by choosing the correct answer. Each correct answer was given one grade and the incorrect answer was given zero. The points were summed and converted into a percentage scoring, the total scoring system was classified as, satisfactory level ($\geq 85\%$) and unsatisfactory level ($< 85\%$) (Eldosoky, 2015). The total score of the nurses' knowledge was 42 grades, and it was categorized as follows:

- $\geq 85\%$ was considered satisfactory level of knowledge which equal ≥ 36 grades.

- $< 85\%$ was considered unsatisfactory level of knowledge which equal < 36 grades.

Tool (II): Nurses' observational checklists:

It was used to assess nurses' practice regarding hygienic measures for bedridden patients. It was developed by the researcher after reviewing the current related lecture (Wolters, et al., 2011, Block & Karmachari, 2013; Costa, et al., 2014). It was written in English language and included 15 procedures related to hygienic measures which divided into four parts as follows:

I-Observation checklists for patients' hygienic measures related procedures divided into:

1-Observational checklist for bed bath (28 steps).

2-Observational checklist for occupied bed making (8 steps).

3-Observational checklist for changing position (11 steps).

4-Observational checklist for wound care (13 steps).

II-Observation checklists for care of patient's connections divided into:

5-Observational checklist for surgical drains' care (12 steps).

6-Observational checklist for peripheral intravenous catheter care (10 steps).

7-Observational checklist for nasogastric tube care (12 steps).

8-Observational checklist for urinary catheter care (19 steps).

III-Observation checklists for nurses' hygienic measures related procedures divided into:

9-Observational checklist for hand washing (7 steps).

10- Observational checklist for using personal protective equipment (10 steps).

IV-Observational checklists for environmental hygienic measures related procedure divided into:

11- Observational checklist for wards care (8 steps).

12-Observational checklist for equipment's care (4 steps).

13- Observational checklist for linens' management (8 steps).

14- Observational checklist for cleaning of medical instruments (disinfection/sterilization/ storage) (9 steps).

15- Observational checklist for waste disposal (6 steps).

Scoring system:

Regarding scoring system of the nurses' practice observational checklists: It consisted of four parts divided into 15 procedures and included 165 steps. Each item that was done correctly was given one grade and each item that was done incorrectly or not done was given zero. The points were summed and converted into a percentage scoring, the total scoring system was classified as, satisfactory level ($\geq 85\%$) and unsatisfactory level ($< 85\%$) (Gholam et al., 2014). The total score of practice was 165 grades. It was classified as the follows:

- $\geq 85\%$ was considered satisfactory level of practice which equal ≥ 140 .

- $< 85\%$ was considered unsatisfactory level of practice which equal < 140 .

Tool (III): Nurses' attitude questionnaire:

It was used to assess nurses' attitude regarding hygienic measures for bedridden patients. It was developed by the researcher in Arabic language after reviewing the related literatures (Moore & Price, 2011; Larson, et al., 2014; Alireza & Azizollah, 2016). It

included 39 statements (30 positive statements e.g. Medical waste must be removed at the end of each shift to prevent infection) & (9 negative statements e.g. I feel disgust when perform the mouth care for the bedridden patients). The questionnaire consisted of 39 statements divided into four parts as follows:

A) Nurses' attitudes regarding bedridden patients (10 statements).

B) Nurses' attitudes regarding hygienic measures for bedridden patients (13 statements).

C) Nurses' attitudes regarding health care providers for bedridden patients (8 statements).

D) Nurses' attitudes regarding surrounded environment for bedridden patients (8 statements).

Scoring system:

Nurses' attitude questionnaire included 39 statements. The responses for the positive attitude statements were three response classification into 3=agree, 2=natural and 1=disagree. While the response for the negative attitude statements were 1=agree, 2=natural and 3=disagree, the total score was 117 grades. The total score for the whole attitude questionnaire was calculated for every nurse and the mean of the total score for all nurses was calculated. It was considered that a score less than 85% ($100 < \text{grades}$) was negative attitude and a score equal or more than 85% (≥ 100 grades) was considered positive attitude. It classified as follows:

- ≥ 85 % was considered positive nurses' attitude when the total grades ≥ 100 grades.

- < 85 % was considered negative nurses' attitude when the total grades < 100 grades.

II- Operational design:

A-Preparatory phase

It included reviewing of related literatures, and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop tools for data collection.

B-Tools validity

Validity of the proposed tools was tested by using face and content validity. Face validity aimed at inspecting the items to determine whether the tools measure what supposed to measure. Content validity was conducted to determine whether the content of the tools cover

the aim of the study. This stage developed by a jury of seven experts, three professors, three assistant professors and one lecturer from Medical Surgical Nursing department, Faculty of Nursing, Ain Shams University. The experts reviewed the tools for clarity, relevance, comprehensiveness, simplicity and applicability. Based on the opinion of the jury, some modifications of tools were done in self-administered nurses' knowledge assessment questionnaire regarding hygienic measures for bedridden patients' tool as changing in structure of the questions number 4 to 20. Also, in nurses' attitude questionnaire regarding hygienic measures for bedridden patients' tool in the arrangement and classification of items.

C-Testing reliability:

The suitable reliability test was carried out to test tool reliability using internal consistency method. They proved a high degree of reliability with alpha Cronbach test in which ($\alpha = 0.754$ for nurses' knowledge questionnaire & $\alpha = 0.805$ for nurses' observation checklist) and ($\alpha = 0.791$ for nurses' attitude questionnaire).

D-Pilot study:

A pilot study was carried out on 10% of nurses (5 nurses) from the study subjects to test the applicability, clarity, feasibility of the tools used and to determine the time needed for the application of the study tools. Nurses who were included in the pilot study were included into the study sample because no modifications were done after conducting pilot study.

E-Field work:

Data collection of this study was carried out once permission was granted by the Scientific Research Ethical Committee, Ain Shams University and the hospital authoritative personnel, to proceed with the study. The researcher visited the study setting and met with the staff nurses. The aim and nature of the study were explained by the researcher to all nurses who were included in the study and got their approval to participate in the study prior to data collection.

Upon agreement to participate, the researcher started the interview with each nurse individually using the data collection tools. Voluntary participation and confidentiality were assured by the researcher for each nurse through

clarifying to them, that all information was used for scientific research only.

First, the researcher assessed nurses' knowledge regarding hygienic measures for bedridden patients it took about 45 minutes to be filled by the nurses. Then, the researcher filled the observational checklists by observing each nurse while caring for bedridden patients which took from 15-20 minutes for each procedure according to its difficulty and the nurses' attitude questionnaire took 30 minutes to be filled by the nurses.

The researcher visited the study setting three days per week (Saturday, Monday and Wednesday) in the morning and afternoon shifts. The researcher interviewed with 2 nurses for each visit. Data collection lasted for four months, from 1st of January 2020 to 30th of April 2020.

A suggested guideline for improving nurses' performance in internal medical and orthopedic units regarding hygienic measures for bedridden patients was developed by researcher based on needs assessment.

III- Administrative design:

An official permission was issued from the Faculty of Nursing Ain Shams University to the director of Sohag Educational Hospital and director of Internal Medical and Orthopedic Units at which the study was conducted, explaining the purpose of the study and requesting the permission for data collection from the study group. Meeting and discussions were held by the researcher to explain to nurses the aim, the nature and the objectives of the study to the participants.

Ethical considerations:

• The ethical research considerations in this study included the following:

• The research approval was obtained from Ethical Committee in the Faculty of Nursing at Ain Shams University before starting the study.

• The researcher clarified the objective and aims of the study to the nurses included in the study.

• The researcher assured maintaining anonymity and confidentiality of the subjects' data.

• Every subject informed that, they were allowed to choose to participate or not in the

study and they had the right to withdraw from the study at any time.

IV- Statistical design:

All collected data were organized, entered and analyzed using appropriate statistical significance tests. The data were collected, coded and entered to personnel computer, then, the data were analyzed by using Statistical Package for Social Sciences (SPSS) version 25.0. Number and percentage for qualitative variable were done. Mean and standard deviation (SD) were used. For relation between variables, Chi square (χ^2) test was used. Also, alpha Cronbach test was used to test reliability of tools. Test of significance was used and regarding significance of the result, the observed differences associated were considered as follows:

- Non-significant (NS) $P > 0.05$
- Significant (S) $P \leq 0.05$
- Highly significant (HS) $P \leq 0.001$

Chi square (χ^2) test: is a statistic test that measures how expectations compare to actual observed data (or model results). The data used in calculating a chi square statistic must be random, raw, mutually exclusive, drawn from independent variables, and drawn from a large enough sample (**Matters & Grimaldi, 2017**).

Cronbach's alpha test: is a convenient test used to estimate the reliability, or internal consistency (coefficient of reliability) of a composite score (**Fang & Ferric, 2016**).

r-test: is a statistic procedure used to determine whether the mean difference between two sets of observations is zero (**Hassan & Tajalli, 2015**).

Results

Table (1): Shows that, related to number of studied nurses in medical and orthopedic departments was 50% in each unit. Also, 44% of the studied nurses their age ranged between 20- <30 years with mean 28.6 ± 8.574 years. Regarding gender and marital status of the studied nurses, 100% of them were females and 82% of them were married. Also, regarding the residence, 52% of the studied nurses reveal rural area. Related qualification of the studied nurses, 64% of them studied in technical health institute. Also, 36% of

the studied nurses their years of experience were 5 - <10 years with mean 8.7 ± 5.21 years and shift duration per day of the studied nurses, 80% of them worked 12 hours shift. Moreover, 100% of the studied nurses didn't attend training course about care of bedridden patients.

Table (2): Shows that, 88% of the studied nurses had unsatisfactory level of knowledge about basic knowledge regarding bedridden patients and health care providers for bedridden patients. 74% and 70% of the studied nurses had unsatisfactory level of knowledge regarding patients' hygienic measures and surrounded environment for bedridden patients, respectively. In addition to 76% of the studied nurses had unsatisfactory total knowledge regarding hygienic measures for bedridden patients.

Figure (1): Shows that, 76% of the studied nurses had unsatisfactory level of knowledge regarding hygienic measures for bedridden patients, while, 24% of them had satisfactory level of knowledge regarding hygienic measures for bedridden patients.

Table (3): Shows that, 94%, 86% 92% and 58% of studied nurses had unsatisfactory level of practice regarding patients' hygienic measures, care of patient's connections, health care provider and surrounded environment for the bedridden patients, respectively. As regarding total nurses' practice regarding hygienic measures for bedridden patients, 82% of studied nurses had unsatisfactory level of practice.

Figure (2): Shows that, 82% of the studied nurses had unsatisfactory level of practice regarding hygienic measures for bedridden patients, while, 18% of them had satisfactory level of practice regarding hygienic measures for bedridden patients.

Table (4): Shows that, 38% and 62% of studied nurses' had negative attitudes regarding bedridden patients and hygienic measures for bedridden patients, respectively.

Figure (3): Shows that, 54% of the studied nurses had negative attitude regarding hygienic measures for bedridden patients, while, 46% of them had positive attitude regarding hygienic measures for bedridden patients

Table (5): Shows that, there was highly statistically significant relation between the nurses' level of knowledge and their marital status, residence and qualification regarding hygienic measures for bedridden patients, where P value was at 0.001, 0.000 and 0.000, respectively. Also, there was statistically significant relation between the nurses' level of knowledge and their department, age, years of experience and shift duration per day, where P value was at 0.010, 0.029, 0.026 and 0.025, respectively.

Table (6): Shows that, there is strongly positive correlation between the nurses' level of knowledge and their level of practice regarding hygienic measures for bedridden patients, where r-test 0.720 and P value was at 0.002.

Table (1): Number & percentage distributions of demographic characteristics of nurses under study (n=50).

Demographic characteristics	N	%
Department		
Medical	25	50
Orthopedic	25	50
Age (year)		
20 - <30	22	44
30 - <40	13	26
40 - <50	15	30
Mean ± S.D	28.6 ± 8.574	
Gender		
Female	50	100
Marital Status		
Single	9	15
Married	41	82
Residence		
Urban	24	48
Rural	26	52
Qualification		
Diploma of nursing	18	36
Technical health institute	32	64
Years of Experience (year)		
< 5	14	28
5 -<10	18	36
10 -<15	10	20
≥15	8	16
Shift duration per day		
Shift 6 hours	10	20
Shift 12 hours	40	80
Mean ± S.D	8.7 ± 5.21	
Attending training courses regarding care of bedridden patient.		
No	50	100

Table (2): Frequency and percentage distribution of the total level of nurses' knowledge regarding hygienic measures for bedridden patients (n=50).

Items of knowledge	Satisfactory ≥ 85 %		Unsatisfactory < 85 %	
	N	%	N	%
Nurses' basic knowledge regarding bedridden patients.	6	12	44	88
Nurses' knowledge regarding patients' hygienic measures.	13	26	37	74
Nurses' knowledge regarding health care providers for bedridden patients.	6	12	44	88
Nurses' knowledge regarding surrounded environment for bedridden patients.	15	30	35	70

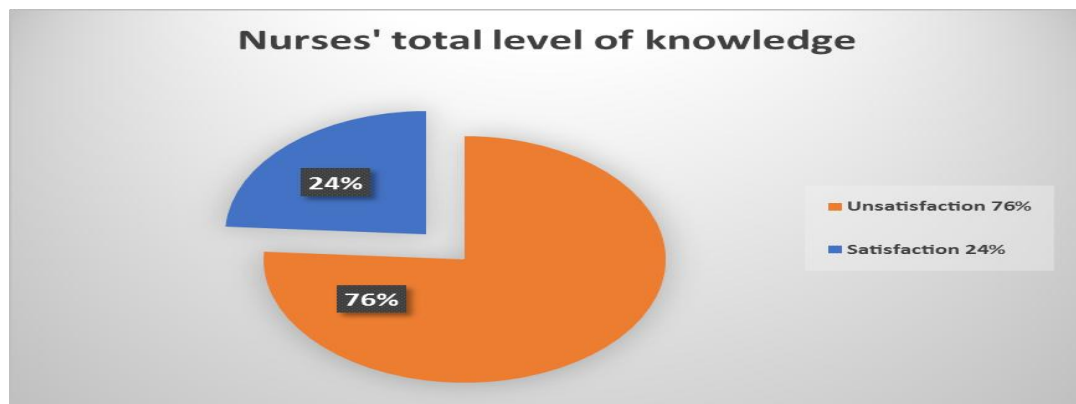


Figure (1): Percentage distribution of the nurses' total level of knowledge regarding hygienic measures for bedridden patients

Table (3): Frequency and percentage distribution of the total level of nurses' practice regarding hygienic measures for bedridden patients (n=50).

Items of practice	Satisfactory ≥ 85 %		Unsatisfactory < 85 %	
	N	%	N	%
Nurses' practice regarding patients' hygienic measures	3	6	47	94
Nurses' practice regarding care of patient's connections	7	14	43	86
Nurses' practice regarding health care provider for bedridden patients.	4	8	46	92
Nurses' practice regarding surrounded environment for bedridden patients.	21	42	29	58

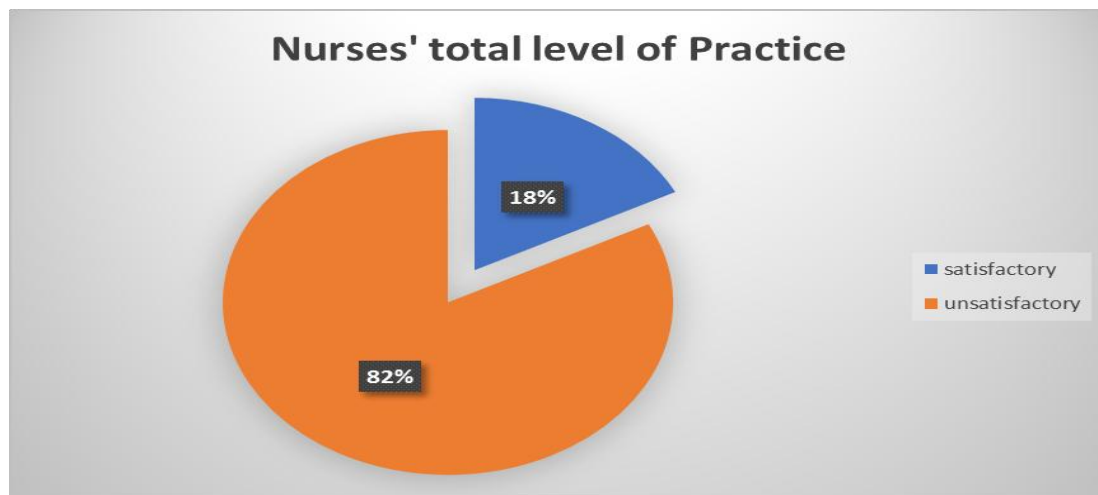
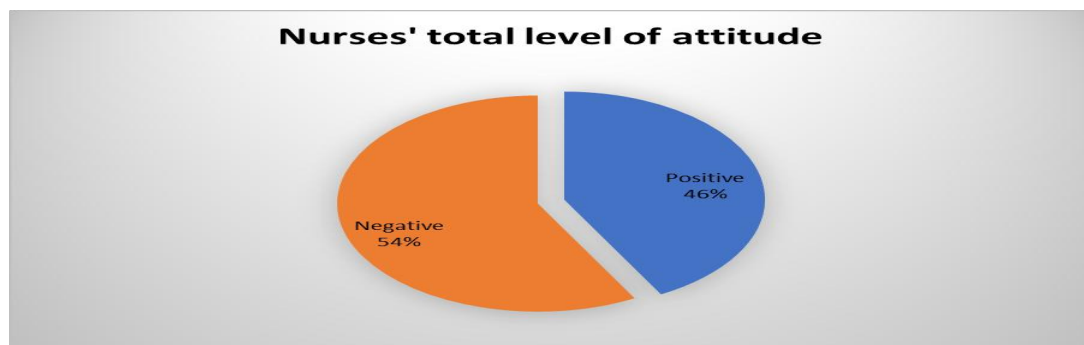


Figure (2): Percentage distribution of the nurses' total level of practice regarding hygienic measures for bedridden patients (n=50).

Table (4): Frequency and percentage distribution of the nurses' attitude regarding hygienic measures for bedridden patients (n= 50).

Items of attitude	Negative		Natural		Positive	
	N	%	N	%	N	%
Nurses' attitudes regarding bedridden patients	19	38	15	30	16	32
Nurses' attitudes regarding hygienic measures for bedridden patients	31	62	10	20	9	18
Nurses' attitudes regarding health care providers for bedridden patients	19	38	11	22	20	40
Nurses' attitudes regarding surrounded environment for bedridden patients	15	30	12	24	23	46

**Figure (3): Percentage distribution of the nurses' attitude regarding hygienic measures for bedridden patients (n=50)****Table (5): Relation between demographic characteristics of the studied nurses and their total level of knowledge regarding hygienic measures for bedridden patients (n=50)**

Items	Nurses total knowledge regarding hygienic measures				X ² calculated	P- Value	
	Satisfactory n=12		Unsatisfactory n=38				
	N	%	N	%			
Department	Medical	7	58	18	47	5.793	0.010*
	Orthopedic	5	41.7	20	52.6		
Age	20 - <30	4	33	18	47	5.235	0.029*
	30 - <40	5	41.7	8	21		
	40 - <50	3	25	12	31.6		
Marital status	Single	3	25	3	7.9	7.331	0.001**
	Married	8	66.7	33	86.8		
	Widow	1	8	2	5		
Residence	Urban	4	33	20	52.6	11.41	0.000**
	Rural	8	66.7	18	47		
	Diploma of nursing	3	25	15	39.5		
Qualification	Technical health institute	9	75	23	60.5	8.254	0.000**
	Years of experience	< 5 years	3	25	11		
Shift duration per day	5 - 10 years	5	41.7	13	34	3.175	0.026*
	10 - 15 years	2	16.7	8	21		
	>15 years	2	16.7	6	15.8		
Shift duration per day	Shift 6 hours	4	33	6	15.8	3.265	0.025*
	Shift 12 hours	8	66.7	32	84		

* P ≤ 0.05 significant

** P ≤ 0.001 highly significant

Table (6): Correlation between overall nurses' level of knowledge regarding hygienic measures for bedridden patients and their practice (n=50).

Knowledge	Practice				P-value	r- test
	Satisfactory (n=9)		Unsatisfactory (n=41)			
	No.	%	No.	%		
Satisfactory (n=12)	3	33	9	22	0.002	0.720
Unsatisfactory (n=38)	6	66.7	32	78		

Discussion

Prolonged immobilization affects almost all body system these complications not only include complex and regional pain syndrome, stiffness, nerve injury, tendon and ligament injuries, but a massive reduction in range of motion, muscular atrophy and loss of movement representation. The quality of nursing care is influenced by the level of knowledge, skills, values and judgment of those participating in providing care for bedridden patients, and the nurses' cognitive to decide on a plan of actions that depends upon other factors as their educational level, experience and training course in caring for those patients. There for, the quality of care that given to the patients and patients outcomes depends on the nurse (Sherry & Waston, 2019).

Regarding the demographic characteristics of the nurses under the present study, the results revealed that, equal percentage of the studied nurses in medical and orthopedic departments 50% in each unit. This explains that, those patients are required complex assessment, high intensity, therapies interventions and continuous nursing vigilance. This finding is inconsistent with Huis (2016), in the study about " Impact of a team and leaders-directed strategy to improve nurses' adherence to hand hygiene " and mentioned that most of their study group were working in medical department.

Concerning age, more than two fifths of the studied nurses' their age was ranged between 20 to 30 years old. This explains that they are newly graduated to tolerate the nature of the work. This finding is consistent with Amer, et al. (2015), in a study entitled "Nurses knowledge and practice regarding gastrointestinal endoscopy and suggested nursing guidelines " and reported that, about half of the study subjects' age was

between 20-30 years. While, this finding is inconsistent with Marold (2015) in study entitled "Improving the effectiveness of group decision making" who mentioned that most of nurses who working in intensive care unit and anesthesia was age between 30 and 40 years old.

Related to gender, the results showed that, all the studied nurses were females. This is may be due to the greater fraction of the nurses in Egypt were females and may also related to the studying of nursing in Egypt were exclusive for females only till few years ago. This finding is inconsistent with Sleem and Shehab (2017), in a study entitled "Assessment of the nurses performance in providing care to patients undergoing nasogastric tube" and reported that, most of the studied nurses were females that may be due to elevated number of nurses among females.

As regards nurses' marital status, the majority of the studied nurses were married. This finding was contradicted with Mohamed (2016), who conducted a study about "Assessment performance of nurses caring for patients with kidney transplantation" and found that, the majority of the studied nurses were single.

Also, the result of the present study revealed that, about half of the studied nurses' resided rural areas. This is contradicted with Rezaei, (2017), in a study entitled "Cardiac wards' nursing staff performance in caring of temporary and permanent pacemakers" and found that, the majority of the studied nurses resided urban areas.

Concerning educational level, the present study results indicated that, about

two thirds of the studied nurses were studied in technical health institute of nursing. This might elaborate the current condition of nursing qualifications in Egypt. This result is contradicted with **Abdullah et al., (2014)**, in a study entitled about "Nurses knowledge and practice about administration of medications via nasogastric tube among critically ill patients" and reported that the majority of the study subjects were studied bachelor degree in nursing.

Also, this finding is in accordance with **Yelverton et al., (2015)**, in a study "Effectiveness of a standardized education process for immobility care" who mentioned that, the number of diploma schools had declined in the recent years due to trend moving nursing education into the academic setting.

Regarding nurses' years of experience in the internal medical and orthopedic units, the current study showed that, more than one third of the studied nurses had years of experience from five to less than ten years. This result may explains that, the nurses under study were recently graduated, and due to explosive to occupational hazards. So, they lead to discontinue working in the internal medical and orthopedic units. This finding is contradicted with **Amer et al., (2015)**, who reported that, more than two thirds of the study subjects' years of experience in ICU ranged between 1-5 years.

In relation to shift duration per day, the majority of the studied nurses worked 12 hours shift. The finding is consistent with **Nelson (2018)**, in a study entitled "Recent advances in epidemiology and prevention of gastrointestinal related infections" and reported that, most of their study sample worked 12 hours per shift in critical care unit.

As regard previous training courses, the present results showed that, all nurses under the study didn't had previous training courses regarding caring of bedridden patients. This may be due to shortage of staff, work overload, lack of time for attendance training courses and lack of in-service training programs regarding

caring of bedridden patients. This result is similar to **Sathiya and Mohan (2017)** in a study entitled "A study to assess the effectiveness of assisted nursing strategies on knowledge and practice regarding prevention of complications of immobility" and reported that, the majority of the study subjects had no previous training courses.

Concerning nurses' total level of knowledge, the present result showed that, more than three quarters of nurses under study had unsatisfactory level of knowledge regarding hygienic measures for bedridden patients. This result may be due to all of nurses under study had no previous training courses and unavailability of booklets and posters regarding hygienic measures for bedridden patients. This finding goes in the same line with **Abd El-Moneem (2019)**, in a study to "Effect of designed prevention program on caregivers' knowledge of immobilized patients" and reported that, most of the study subjects had inadequate knowledge regarding hygienic measures for bedridden patients.

As regards to the total nurses' practice, the present study showed that, the majority of the studied nurses had unsatisfactory level of practice regarding hygienic measures for bedridden patients. This may be due to absence of continuous supervision and evaluation. Also, it might be due to lack of hospital policy, no standard guidelines, and increase in number of patients and not attended training courses and also may be due to lack of job description, motivation, interest and unavailability of procedures book about nurses' role in medical and orthopedic units. This result is consistent with **Mouzopoulos and Tsutseos (2016)**, who stated that, all health professionals must continually update their theoretical knowledge and clinical skills; those working in wards can do this by developing their ability to combine the use of the assessment tools with good observational skills and closely observing their patients.

Regarding nurses' attitude, the present study revealed that more than half of the nurses under study had negative attitude regarding hygienic measures for bedridden

patient . As it is obvious from the study result that, more than half of nurses under study had unsatisfactory level of practice regarding hygienic measures for bedridden patient which might affect to develop negative attitude toward hygienic measures for bedridden patients among nurses under study. This result is consistent with **El-Gawad (2017)**, in a study entitled "Quality of nursing care on patients with immobility" who stated that, nurses were disempowered, their workload were too high, their contribution is not recognized by managers or their medical colleagues and they were forced to work in an environment that prevents them from delivering safe quality care.

The finding of the present study revealed that there was highly statistically significant relation between the nurses' level of knowledge and their demographic characteristics (marital status, residence and qualification) regarding hygienic measures for bedridden patients. Also, there was statistically significant relation between the nurses' level of knowledge and their demographic characteristics (department, age, years of experience and shift duration per day). This finding is incongruent with **Prozek and Keys (2018)**, who reported that, there was a significant statistical relation between age and knowledge of nurses' staff (increase knowledge with increase age of nurses) in their study "Effects of bed rest on cardiovascular function and work performance".

There was significant strong positive correlation between total knowledge and practice of studied nurses, as nurses had unsatisfactory level of knowledge and unsatisfactory level of practice where the nurses who have unsatisfactory total knowledge are incompetent in their total practice. This means that the level of nurses' practice affected by the nurses' knowledge, this finding was conducted previously by **Babiker (2016)**, in a study entitled "Assessment of nurses knowledge and practice regarding tracheostomy care in Almak Nimer University Hospital" who conducted that, there were significant direct correlation

between knowledge and practice of the study nurses.

Conclusion:

The results of this study concluded that:

Regarding total nurses' knowledge more than three quarters of the studied nurses had unsatisfactory level of total knowledge and the majority of them had unsatisfactory level of total practice regarding hygienic measures for bedridden patients. Meanwhile, more than half of the studied nurses had a negative attitude regarding hygienic measures for bedridden patients. Also there was statistically significance difference between nurses' knowledge, practice, attitude and their demographic characteristics. In addition to, there was a statistically significant strong positive correlation between total knowledge and practice of the study nurses. So, based on the previous factors the suggested guideline was developed

Recommendations:

Based on the results of the present study, the following recommendations were suggested:

Recommendation related to nurses

◆ On-going and regular in-service educational programs regarding evidence-based guidelines have to include care of bedridden patients with the hygienic measures.

◆ Nursing educators and clinical facilitators must incorporate strategies regarding hygienic measures for bedridden patients and use learning opportunities to raise awareness of nursing staff.

◆ A simplified and comprehensive booklet and procedure manual have to designed including guidelines about basic information and skills regarding hygienic measures for bedridden patients.

◆ Learning resources such as articles, journals and electronic resources such as computers and internet have to made accessible

in the units for nursing staff members. Continuing professional development programs should include skills updates.

◆ Increase the number of nurses in internal medical and orthopedic units based on international nurse patient ratio to improve quality of care.

Recommendation related to patients

◆ Establish a simplified and illustrated educational booklet for the bedridden patients about basic information regarding immobility and hygienic measures.

Recommendation related to environment

◆ Internal medical and orthopedic units should be containing all supplies related hygienic measures for managing bedridden patients.

◆ Provide internal medical and orthopedic units with isolation rooms for patients with infectious diseases.

◆ Provide sterilization system includes cleaning, disinfection, sterilization and storing for instruments and equipment.

Recommendation related to research:

◆ Replication of the current study on large sample and different hospitals setting to be able to generalize the results.

◆ Further study is recommended to evaluate the effect of educational training program regarding nurses' perception, managing of bedridden patients and consequently their effect on the patients' outcome.

References:

Abd El-Moneem M.K. (2019). Effect of designed prevention program on caregivers' knowledge of immobilized patients, Unpublished, Master

Thesis in Medical Surgical Nursing, Faculty of Nursing, Benha University, p.p. 25-43

Abdullah, D.G., Mohamed, B.K. and Ismail, J.O. (2014). Nurses knowledge and practice about administration of medications via nasogastric tube among critically ill patients, Unpublished, Master Thesis in Critical Care Nursing, Faculty of Nursing, Cairo University, p.p. 397-405.

Agency for Healthcare Research and Quality [AHRQ], (2014). Effect of an educational program on a family caregiver's prevention and management of bedridden patients. 4, (9): 601. Available at: <http://www.ahrq.gov>, accessed on 10 /11/2018 at 6 am.

Alhajhusain, A. (2016). Adult health medical surgical nursing, 1st ed., Wolters Kluwer Health and Lippincott Williams publisher, China, chapter 5, p.p. 689-693.

Alhosis, U. & Qalawa, A. (2015). Brunner and suddarth textbook of medical-surgical nursing, 12th ed., Wolters Kluwer Health and Lippincott Williams publisher, China, chapter 5, p.p. 1128-1133.

Alireza, S. & Azizollah, A. (2016). Knowledge, attitude and performance of nurses toward hygienic measures in hospitals. Global Journal of Health Science. 8, (8): 40. Available at: <https://www.ncbi/html>, accessed on 14 /11/2018 at 9 am.

Amer, A.D., Taha, S.G and Zaton, A.E. (2015). Nurses knowledge and practice regarding gastrointestinal endoscopy and suggested nursing guidelines, Unpublished, Master Thesis in Medical Surgical Nursing , Faculty of Nursing, Ain Shams University, p.p. 116-119.

Babiker, S.J. (2016). Assessment of nurses knowledge and practice regarding tracheostomy care in Almak Nimer University, Unpublished, Master Thesis in Nursing Science, Graduate School of Alcon State University, p.p.66-78

Block, B. & Karmachari, S. (2013). Fundamental of nursing procedure manual checklist. Japan International Cooperation Agency (JICA). 7,

- (3): 7-49. Available at: <https://www.jica.go.jp>, accessed on 31/10/2018 at 11 am.
- Costa, R., Salvetti, M. and Azevedo, I. (2014).** Validity of instruments used in nursing care for people with skin lesions. 27, (5): 454-457. Available at: <http://www.redalyc.org/html>, accessed on 28/10/2018 at 12 pm.
- Eldosoky, E. (2015).** Some methods for strengthening the common X2 test. Journal of the American Statistical Association. 8, (21). p.p. 1096–1121. Available at: <https://www.scirp.org/journal/ojs>
- El-Gawad, K.F. (2017).** Quality of nursing care on patients with immobility in Intensive Care Unit, Unpublished, Master thesis in Critical Care Nursing, Faculty of Nursing, Benha University, p. 85.
- Fang, S. & Ferric, T. (2016).** Analysis of Repeated Measures. Journal of the American Statistical Association. 6, (44). p.p. 93, 451–462. Available at: <https://www.scirp.org/journal/ojs>
- Garber, W. & Rintala, T. (2016).** Understanding Medical Surgical Nursing, 5th ed., F.A Davis Company publisher, United States of America, chapter 2, p.p. 165-167.
- Gholam, A., Baig, B. and Connolly, H. (2014).** Practical nonparametric statistics. Journal of the American Statistical Association. 6, (11): 81. Available at: <https://www.scirp.org/journal/ojs>
- Hassan, O. & Tajalli, X. (2015).** Quality, productivity and competitive position. Journal of the American Statistical Association. 5, (3). P.p. 93, 451–462. Available at: <https://www.scirp.org/journal/ojs>, accessed on 3/7/2020.
- Huis, W. S. (2016).** Impact of a team and leaders-directed strategy to improve nurses' adherence to hand hygiene, unpublished, Master Thesis in Science of Caring, University of Science California San Francisco, p.p. 54-66.
- James, W. & Davies, S. (2016).** Introduction to Critical Care Nursing, 6th ed., Lippincott Williams publisher, China, chapter 4, p.p. 520-521.
- Kerver, N. & Rommes, I. (2019).** Critical care nursing diagnosis and management, 7th ed., Mosby publisher, Canada, p.p. 763-767.
- Kirman, F. & Geibel, A. (2014).** Medical surgical nursing (an integrated approach), 3rd ed., Delmar publisher, United States of America, chapter 3 p.p. 696-698.
- Larson, E., Aiello, A. and Cimiotti, A. (2014).** Assessing nurses' hand hygiene practices by direct observation or self-report. Journal of Nursing Measurement. 12, (1): 77-85. Available at: <https://www.researchgate.net>, accessed on 11/10/2018 at 10 am.
- Marold, G. A. (2015).** Improving the effectiveness of group decision making, Doctoral dissertation in Nursing Administration Management, Faculty of Nursing, Shendi University, p.p. 23-25
- Matters, R. & Grimaldi, A. (2017).** Statistics for Spatial Data. Journal of the American Statistical Association. 6, (33). p.p. 253–263. Available at: <https://www.scirp.org/journal/ojs>, accessed on 28/10/2020 at 5 pm.
- Mohamed, A. N. (2016).** Assessment performance of nurses caring for patients with kidney transplantation. Unpublished, Master Thesis in Critical Care Nursing, Faculty of Nursing, Ain Shams University, p.p. 88-95
- Mohamed, H. J. & Wahid, T. V. (2016).** Effects of implementing educational program about pressure ulcer control on nurses' knowledge and safety of immobilized patients. Unpublished, Master Thesis in Medical Surgical Nursing, Faculty of Nursing, Ain Shams University, p.p. 88-94
- Moore, Z. & Price, P., (2011).** Nurses' attitudes, behaviors, and perceived barriers toward bedridden. A toolkit for improving quality of care – section 7 tools and resources. Agency for Healthcare Research and Quality. 0053, (11): 4-5. Available at: <https://books.google.com.eg>, accessed on 2/10/2020 at 1 pm.

- Mouzopoulos, L. B. & Tsutseos, O. Z. (2016).** Impact of early mobilization protocol on the medical-surgical inpatient population, Unpublished, Master Thesis in Medical Surgical Nursing, Faculty of Nursing, California University, p.p. 89-100.
- Moya, E. & Morison, M. (2017).** Nursing care planning resources, 4th ed., Mosby publisher, Canada, chapter 8, p.p. 32-38, 462-463.
- Nelson, B. H. (2018).** Recent advances in epidemiology and prevention of gastrointestinal related infections, Unpublished, Master Thesis in Medical Surgical Nursing, Faculty of Nursing, London University, p.p. 76-88.
- Prozek, N. X. & Keys, H. B. (2018).** Effects of bed rest on cardiovascular function and work performance, Unpublished, Master Thesis in Medical Surgical Nursing, Faculty of Post graduate and scientific research, Shendi university, p.p. 54–62.
- Pugin, H., Lew, H. and Suter, F. (2018).** Clinical nursing skills (basic to advances skills), 8th ed., Williams publisher, United States of America, chapter 4, p.p. 20-22.
- Rezaei, S. G. (2017).** Cardiac wards' nursing staff performance in caring of temporary and permanent pacemakers, unpublished master thesis in Medical Surgical Nursing Science, Faculty of Post graduate and scientific research, Shendi University, p.p. 55–62.
- Sathiya, S. O. & Mohan, G. F. (2017).** A study to assess the effectiveness of assisted nursing strategies on knowledge and practice regarding prevention of complications of immobility, Unpublished, Master Thesis in Science of Caring, India University of Science, p.p. 76-88.
- Sherry, T. R. & Waston, R. D. (2019).** Medical surgical nursing (an integrated approach), 3rd ed., Delmar publisher, United Status of America, chapter 2, p.p. 696-698, accessed on 20/7/2020 at 6 pm .
- Shields, D. & Patricia, H. (2016).** An evaluation of ten pairwise multiple comparison procedures by Monte Carlo methods. *Journal of the American Statistical Association.* 6, (87). p.p. 92, 392–415. Available at: <https://www.scirp.org/journal/ojs>, accessed on 12/6/2020.
- Sleem, C. D. & Shehab, F. U. (2017).** Assessment of the nurses performance in providing care to patients undergoing nasogastric tube, Unpublished, Master Thesis in Medical Surgical Nursing, Faculty of Nursing, Assuit University, p. 74.
- Wolters, K., Williams, W. and Carol, T. (2011).** Skill checklists of fundamentals of nursing in medical surgical skills. 3rd ed., Wilkins publisher, Philadelphia, p.p. 44,129, 134, 140, 144, 222. Available at: <https://books.google.com.eg>, accessed on 24/10/2018 at 11 am.
- Wurster, S. (2013).** Critical care nursing, incredibly easy, 4th ed., Wolters Kluwer Health and Lippincott Williams & Wilkins publisher, China, chapter 6, p.p. 432-444.
- Yelverton, F.H., Nguyen, B.K. and Wan, T.L. (2015).** Effectiveness of a standardized education process for immobility care, Unpublished, Master Thesis in Medical Surgical Nursing, Faculty of Nursing, Australia University, p.p. 76-88.
- Zegelin, A., Zhou, X. and Cao, J. (2018).** Knowledge and attitudes regarding major immobility complications among bedridden patients. *Journal of Clinical Nursing.* 27, (10): 1969. Available at: <https://doi.org>, accessed on 28/10/2018 at 10 am.