Caregivers' Knowledge and Practice Regarding Prevention of Immobilization Complications in El-demerdash Hospital Cairo Egypt

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Abstract

Background: Approximately 50% of hospitalized individuals have impaired mobility. Prolonged bed rest and immobilization inevitably lead to complications. Such complications are much easier to prevent than to treat. Caregivers play a vital role in preventing the complications of immobilization. If the caregivers are knowledgeable about the potential changes of immobility and diligent in implementing preventive interventions, they will avoid lots of discomfort for the patient**.**

Aim of the study: The study aims to assess the knowledge and practice of caregivers of immobilized patients regarding prevention of complications related to immobilization and compare the knowledge and practice with personal characteristics of caregivers of immobilized patients.

Subjects and methods: A descriptive study was used for conducting the study. A purposive sample has been used, and thirty caregivers of immobilized patients from orthopedic wards in El-demerdash Hospital Cairo Egypt were included. Data were collected through**;** a semi structured interview questionnaire to assess patients and their caregivers' personal characteristic**,** knowledge and practice regarding immobility**.**

Results: Study results showed that less than two thirds of the caregivers were from 20 to 30 years. More than half of them were males, while less than half of them had a secondary level of education. Also nearly three quarter of the caregivers had unsatisfactory knowledge and inadequate performance with highly statistically significant difference and statistically significant difference among personal

characteristics and total mean score of knowledge and practice of caregivers regarding prevention of immobility complications.

Conclusion and recommendation: Caregivers had unsatisfactory knowledge and inadequate performance. Therefore; training and educational program to enhance knowledge and practice of caregivers are needed.

Key word: Caregivers, Knowledge, Practice, Immobilization Complications.

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Introduction

Immobility was defined as unable to independently move or change positions or movement is restricted for medical reasons. 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 them *(Potter and Perry, 2008).*

According to the study of *Varghese, 2007*, approximately 50% of hospitalized individuals have impaired mobility. These individuals are most often found in intensive care units, trauma wards, orthopedic ward, neurological ward and geriatric wards of a hospital.

Orthopedic patients will have impairment in mobility results from prescribed restriction of movement in the form of bed rest, physical restriction of movement or impairment of motor skeletal function *(Potter and Perry, 2008).*

Immobility is widely documented in the literature as a cause of increased mortality and complications *(Butcher, 2012).* Immobilized patients are at greater risk for skin breakdown and delayed wound healing. The musculoskeletal system is severely affected by immobility and prolonged bed rest. *(Vollman, 2010)*

Prolonged bed rest and immobilization inevitably lead to complications *(Figure1)*. Such complications are much easier to prevent than to treat *(Stuempfle, 2007)*. Musculoskeletal complications include loss of muscle strength and endurance,

contractures and soft tissue changes, disuse osteoporosis, and degenerative joint disease. Cardiovascular complications include an increased heart rate, decreased cardiac reserve, orthostatic hypotension, and venous thrombo-embolism. Respiratory complications include decreased ventilation, atelectasis, and pneumonia. Further the decreased complications like basal metabolic rate, increased diuresis, natriuresis, and nitrogen and calcium depletion affect metabolism. Genitourinary problems include renal stones and more frequent urinary tract infections. Glucose intolerance, anorexia, constipation, and pressure sores might develop. Central nervous system changes could affect balance and coordination and lead to increasing dependence on caregivers (*Timmerman, 2007, Winkelman, 2009 and Fitzgibbon, 2012).*

Immobility can also be devastating to lung function. Weakened respiratory muscles can hammer chest wall expansion and impede adequate tidal volume for air exchange *(Green and Lorranie, 2003). Kurian, 2005* added that sustained pressure from immobilization is the most important cause of skin breakdown and immobility has been found to be a significant risk factor in the development of pressure areas. Orthopedic wards already contain a higher proportion of beds with pressure sores than those of any other specialty. Reports showed 11.9% - 19.2 incidences in orthopedic wards against 8.8% - 9.2% in all inpatients (*Al-Shadedi, 2012).*

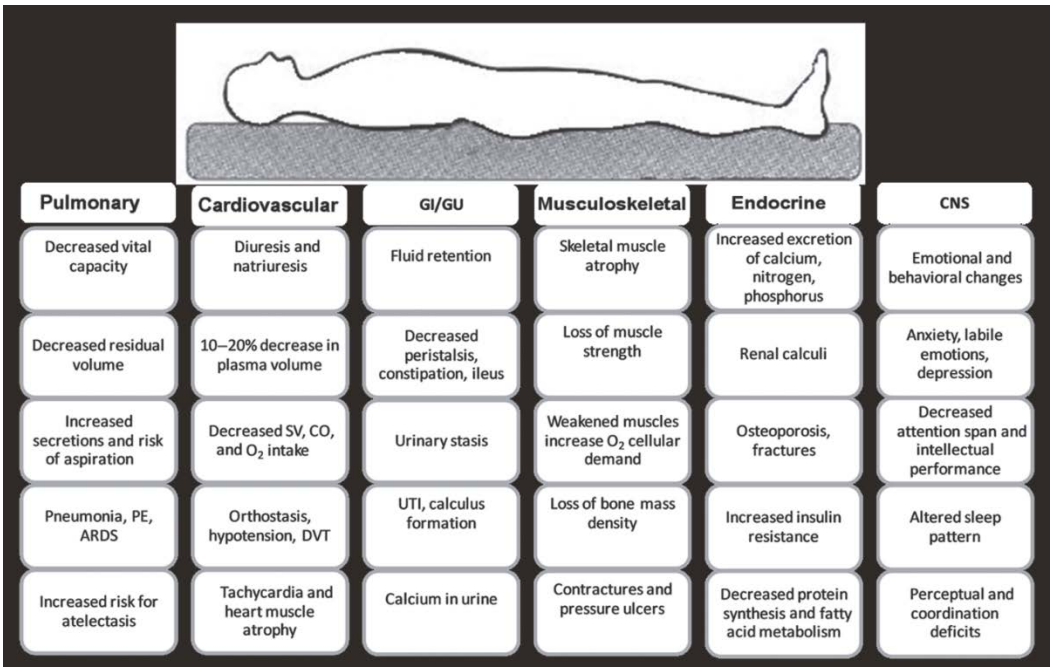

FIGURE 1. Complications of immobility. ARDS _ acute respiratory distress syndrome; CNS _ central nervous system; CO _ cardiac output; DVT _ deep vein thrombosis; PE _ pulmonary embolism; SV _ stroke volume; UTI _ urinary tract infection.

King L. (2012): Developing a Progressive Mobility Activity Protocol, Orthopedic Nursing September/October 2012 • Volume 31 • Number 5, p254.

The terms family caregiver and informal caregiver refer to an unpaid family member, friend, or neighbor who provides care to an individual having an acute or chronic condition and needs assistance to manage a variety of tasks, from simple one like bathing, dressing, and taking medications to tube feeding and ventilator care. Recent surveys estimate there are 44 million caregivers over the age of 18 years (approximately one in every five adults) *(NAC and AARP, 2009).*

Family caregivers are essential partners in the delivery of complex health care services. Unlike professional caregivers such as physicians and nurses, informal caregivers, typically family members or friends, provide care to individuals with a variety of conditions *(Bevans and Sternberg, 2012).* Involvement of family caregivers is essential for optimal treatment of patients in ensuring treatment compliance, continuity of care, and social support *(Glajchen, 2004).* Providing care through caregivers for patients support the patients as well as the health care system where hospital stays are short, physicians are dissatisfied, and nurses are in short supply *(Donelan et al, 2002).* It is an innovative idea to share caregivers as a part of health care system to play a major role in patients' care such as preventing pressure ulcer. Caregivers' readiness for taking on the care giving role is based on an individual's previous experience, and knowledge *(Wu, 2009).*

Significance of the study

Immobilization is a commonly used practice in orthopedic department as a method of treatment. Immobilized patients have the highest death rate from complications of immobility**.** The orthopedic patients have immobility imposed on them either due to their condition or indirectly due to treatment like cast, tractions, splints, implants and internal fixators *(Shehata & Wehwida, 2008).*

Caregivers play a vital role in preventing the complications of immobilization. If the caregivers are knowledgeable about the potential changes of immobility and diligent in implementing preventive interventions, they will avoid lots of discomfort for the patient *(Kurian, 2005).*

Aim of the study

The study aims to assess caregivers' knowledge and practice regarding prevention of immobilization complications in El-demerdash Hospital Cairo Egypt through the following:

1. Assess the knowledge and practice of immobilized patients' caregivers regarding prevention of complications related to immobilization.

2. Compare the knowledge and practice with personal characteristics of immobilized patients' caregivers.

Research questions

Do caregivers have satisfactory knowledge regarding prevention of immobilization complications?

Do caregivers have adequate practice regarding prevention of immobilization complications?

Is there a relation between personal characteristics, knowledge and practice of immobilized patients' caregivers?

Subject and Methods

Study design:

A descriptive explorative study was utilized to meet the aim of this study.

Settings:

The present study was conducted in orthopedic wards in El-demerdash hospital Cairo, Egypt.

Study Sample:

The sample consisted of thirty immobilized patients' caregivers from the orthopedic wards of the aforementioned hospital. A purposive sampling method has been used to reach the participants sample; however, researchers acknowledge that this type of non-probability sampling method will provide little opportunity to control

for biases. The inclusion criteria set for sample selection were as follows: the caregiver's age of immobilized patient, was more than 19 years. The Orthopedic patients who were admitted to the hospital with impairment in mobility and orthopedic problems such as cast, traction internal and external fixation (need assistance with ADL). The patients were free from chronic diseases and complications.

Study tools:

Tools of data collection:

For data collection a semi structured interview questionnaire was used through three parts:

The first part was used to assess patients and their caregivers' personal characteristic regarding their age, marital status, and educational level, etc. It was written in a simple Arabic language.

The second part was used to assess caregivers' knowledge about concept, complications and prevention of complications of immobilization. It was developed by the researcher based on the related literature (*Taylor et al., 2009*; *Daniels et al., 2010; Ignatavicius & Workman, 2010 Christensen & Kockrow, 2011; Lewis et al., 2011*) and validated by a group of five experts of nursing professors and it was written in a simple Arabic language.

The total score of the questionnaire was 100 degrees which represent 100%. The scores were distributed according to the importance of the items. Below 60% was graded as unsatisfactory and 60% and above was graded as satisfactory.

The third parts was used to the practice of caregivers to prevent complications of immobilization as regards to prevention of (pressure ulcer, joint deformity, deep venous thrombosis, hypostatic pneumonia and constipation) and maintenance of healthy diet were developed and constructed by the researchers based on the related literature *(Taylor et al., 2009 ; Netina, 2010 ; Perry & potter, 2010 ; Potter et al., 2011 ; Taylor et al., 2011)* and validated by a group of five experts of nursing professors and it was written in a simple Arabic language.

The total score of the questionnaire was 100 degrees which represent 100%. The scores were distributed according to the importance of the items. Below 60% was graded as inadequate and 60% and above was graded as adequate.

Pilot study

Pilot study was carried out on 5 caregivers for immobilized patients in El-demerdash Hospital, (whom were not included later in the study sample) to test clarity, simplicity and applicability of the study tool. The test of reliability was carried out by applying testing and retesting method which refers to administering the same test to five caregivers in two times, then comparing the scores obtained. There is no difference found between them.

Data collection and analysis

A semi structured interview questionnaire was used to collect data from was used to collect data from immobilized patients' caregivers in El-demerdash Hospital. The data were collected between January 2012 and April 2012. The statistical analysis was done using appropriate statistical methods. i.e. percentage, range, arithmetic mean ($\overline{X}$), standard deviation (SD), F test to compare mean of study variables. Data were analyzed using the Statistical Package for Social Sciences (SPSS) windows version 16. A *P* value of 0.05 or less was considered as statistically significant.

Ethical consideration

Approval from hospital administration was obtained from intended hospital, patients and caregivers. Several strategies were utilized to protect the rights of patients and caregivers who agreed to participate in this study. At first, an oral verbal consent of the patients and caregivers was obtained prior to the administration of the questionnaire. The patients and caregivers were informed of the purpose of the study, and that they had the right to refuse to participate. Also the voluntary nature of participation was stressed as well as confidentiality. Furthermore, the patients and caregivers were told that they can refrain from answering any questions and they can terminate at any time. Anonymity of the patients and caregivers was maintained all times.

Table 1. Number and Percentage Distribution of Immobilized Patient Regarding Personal Characteristics

Items	patients (n=30)	
	No.	%
Age (years)		
20-	1	3.3
30 -	2	6.6
40-	9	30
50-	18	60
Gender		
Female	12	40
Male	18	60
Education		
illiterate	6	20
Read/write	3	10
Basic	11	36.6
secondary	8	26.6
High	2	6.6
Job		
No job	14	46.6
Governmental job	6	20
Free job	10	33.3
Marital status		
Single	14	46.6
Married	16	53.3
Immobility duration		
<5 days	9	30%
5-10 days	21	70%

Table 1. shows that more than half (60%) of immobilized patients their age were more than 50 years. Also more than half (60%) of them were males, and less than half (40%) had a basic level of education, while less than half (46.6%) had no job. Regarding the marital status more than half (53.3%) of the immobilized patients were married. Regarding the immobility duration it was obvious that less than three quarters (70%) the immobility duration were 5-10 days.

Table 2. Number and Percentage Distribution of Caregivers Regarding Personal Characteristics

Items	caregivers (n=30)	
	No.	%
Age (years)		
20-	19	63.3
30 -	10	33.3
40-	0	0
50-	1	3.3
Gender		
Female	12	40
Male	18	60
Education		
Illiterate	6	20
Read/write	2	6.6
Basic	2	6.6
Secondary	12	40
High	8	26.6
Job		
No job	13	43.3
Governmental job	5	16.6
Free job	12	40
Marital status		
Single	13	43.3
Married	17	56.6
Kin relationship		
Son	12	40
Daughter	9	30
Father	1	3.3
Mother	0	0
Sister	3	10
Brother	5	16.6

Table 2. illustrates that less than two thirds (63.3%) of the caregivers' age were from 20 to 30 years. More than half (60%) of them were males, while less than half (40%) of them had a secondary level of education. Also less than half (43.3%) of them had no job. Regarding marital status it showed that more than half of the caregivers were married (56.6%). Regarding kin relationship, it found that less than (40%) of caregivers were son.

Table 3. Number and Percentage Distribution of Caregivers Regarding Knowledge Related to Concept of Immobility

Item	N=(30)	%
Definition		
Satisfactory	14	46.6
Unsatisfactory	16	53.3
Purpose of mobility		
Satisfactory	20	66.6
Unsatisfactory	10	33.3
Causes of immobility		
Satisfactory	14	46.6
Unsatisfactory	16	53.3
Factors affecting immobility		
Satisfactory	11	36.6
Unsatisfactory	19	63.3

Table 3. reveals that nearly two thirds (66.6%) of the caregivers knowledge was satisfactory regarding the purpose of mobility, and (53.3%) of them their knowledge were unsatisfactory regarding the definition and causes of immobility, while in (63.3%) of them, their knowledge were unsatisfactory regarding factors affecting immobility.

Table 4.Number and Percentage Distribution of Caregivers Regarding Knowledge Related to Complications of Immobility

Item	N=(30)	%
musculoskeletal system (Contracture)		
Satisfactory	6	20
Unsatisfactory	24	80
Skin (Pressure ulcer)		
Satisfactory	11	36.6
Unsatisfactory	19	63.3
Cardiovascular system(Deep venous Thrombosis)		
Satisfactory	9	30
Unsatisfactory	21	70
Respiratory system (Hypostatic pneumonia)		
Satisfactory	7	23.3
Unsatisfactory	23	76.6
GIT (Constipation)		
Satisfactory	12	40
Unsatisfactory	18	60

Table 4. shows that nearly three quarters of caregivers' knowledge was unsatisfactory regarding musculoskeletal system, respiratory system and cardiovascular system (80% ,76.6% and 70%) respectively, while in less than two thirds of them their knowledge were unsatisfactory regarding skin and GIT (63.3% and 60%) respectively.

Table 5. Number and Percentage Distribution of Caregivers Regarding Practice Related to Prevention of Immobilization Complications

Item	N=(30)	%
Prevention of pressure ulcer		
Adequate	6	20
Inadequate	24	80
Prevention of joint deformity		
Adequate	10	43.3
Inadequate	20	56.6
Maintenance of healthy diet		
Adequate	14	46.6
Inadequate	16	53.3
Prevention of Deep venous Thrombosis		
Adequate	10	43.3
Inadequate	20	56.6
Prevention of Hypostatic pneumonia		
Adequate	9	30
Inadequate	21	70
Prevention of Constipation		
Adequate	11	36.6
Inadequate	19	63.3

Table 5. shows that the practice of the majority of the caregivers (80%) was inadequate regarding the prevention of pressure ulcer and in more than half of them (56.6%,56.6% and 53.3%) their practice was inadequate regarding prevention of joint deformity, prevention of deep venous thrombosis and maintenance of healthy diet respectively.

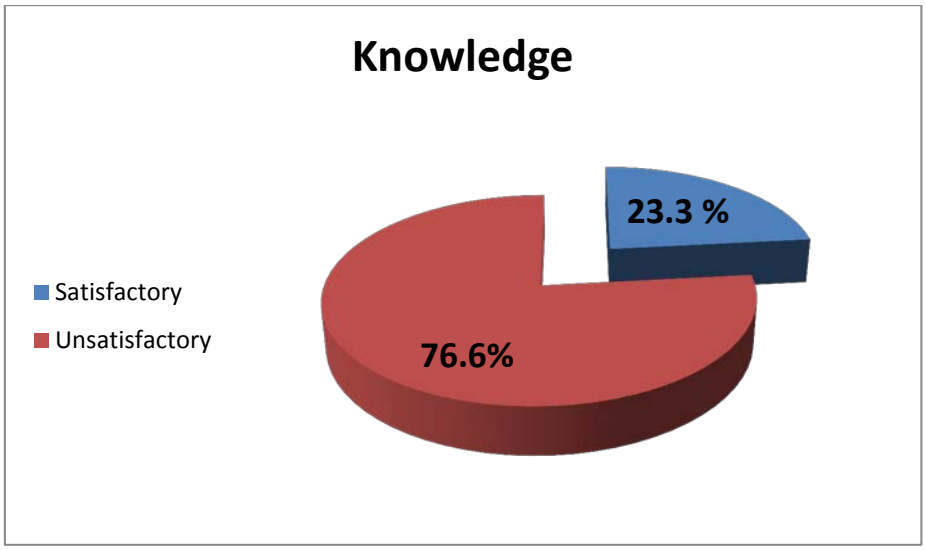

Figure 2. Percent Distribution of Caregivers Regarding Total Knowledge of Immobility.

Figure 2. shows that nearly three quarters of the caregivers (76.6%) had unsatisfactory knowledge regarding immobility.

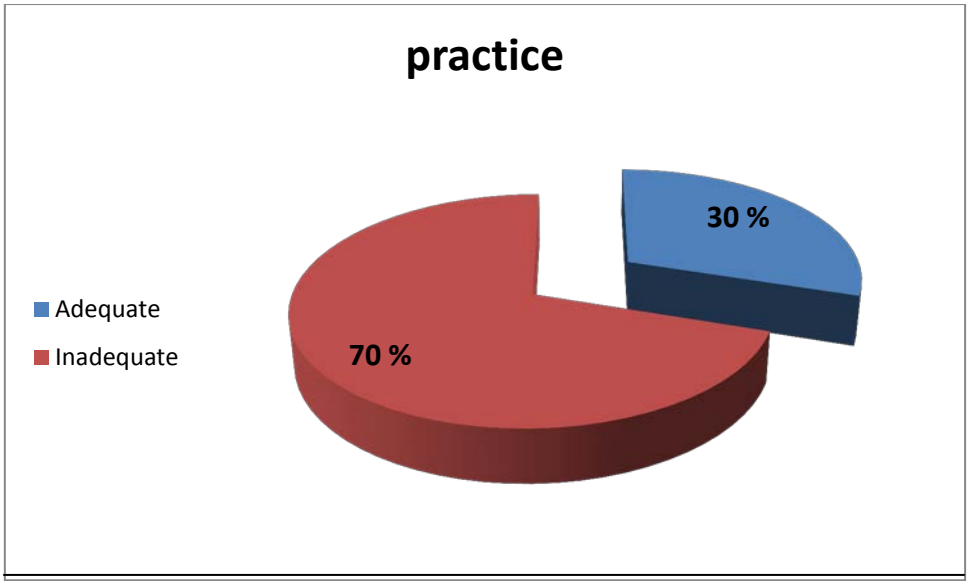

Figure 3. Percent Distribution of Caregivers Regarding Total practice of Immobility Care.

Figure 3. shows that nearly three quarters of the caregivers (70%) had inadequate practice regarding immobility care.

Table 6. Relation between mean of total knowledge and personal characteristics of caregivers

Items	Mean of knowledge	N	%	Std. Deviation	F	sig
Age (years)						
20-	51.2105	19	63.3	6.80342	6.887	0.004
30 -	61.4000	10	33.3	8.82169		
40-	0	0	0	0		
50-	65.0000	1	3.3	0		
Sex						
Male	58.94	18	60	8.23	11.55	0.002
Female	49.25	12	40	6.64		
Education						
Illiterate	48.5000	6	20	3.88587	30.76	0.000
Read/write	45.0000	2	6.6	8.48528		
Basic	42.0000	2	6.6	4.24264		
Secondary	54.3333	12	40	2.60536		
High	66.8750	8	26.6	4.64258		
Job						
No job	48.1538	13	43.3	5.45964	23.387	0.000
Governmental job	67.6000	5	16.6	5.63915		
Free job	57.3333	12	40	5.74192		
Marital status						
Single	49.4615	13	43.3	6.19967	12.652	0.001
Married	59.3529	17	56.6	8.41829		
Kin relationship						
Son	57.5833	12	40	8.15150	3.692	0.017
Daughter	47.5556	9	30	6.59756		
Father	65.0000	1	3.3	0.0		
Sister	54.3333	3	10	4.16333		
Brother	61.0000	5	16.6	9.24662		

Table 6. illustrates that there is a highly statistically significant relation ($p>0.000$) between total mean of knowledge and level of education. Caregivers having higher school education, had higher mean score of knowledge than those having other levels of education.

Regarding type of job for caregivers it can be shown from the table that there is a highly statistically significant relation ($p>0.000$), between the job and care given. Caregivers work in governmental job had higher mean score of knowledge than those

working in nongovernmental places. Also the table shows that a statistically significant relation is present between total mean of knowledge, age, sex, marital status and kin relationship (p >0.004, 0.002, 0.001, 0.017) respectively. Also older age, male, married, father and brother caregivers had higher mean score of knowledge.

Table 7. Relation between mean of total practice and personal characteristics of caregivers

Items	Mean of practice	N	%	Std. Deviation	F	sig
Age (years)						
20-	51.7895	19	63.3	4.74434	4.106	0.028
30 -	58.8000	10	33.3	11.03328		
40-	0	0	0	0		
50-	66.0000	1	3.3	0		
Sex						
Male	57.8889	18	60	8.34470	9.269	0.005
Female	49.6667	12	40	5.10496		
Education						
Illiterate	46.8333	6	20	2.48328	42.228	0.000
Read/write	43.5000	2	6.6	2.12132		
Basic	50.0000	2	6.6	0		
Secondary	53.5000	12	40	2.61116		
High	66.0000	8	26.6	4.50397		
Job						
No job	48.7692	13	43.3	3.67772	25.105	0.000
Governmental job	67.4000	5	16.6	5.17687		
Free job	55.5833	12	40	6.14164		
Marital status						
Single	49.9231	13	43.3	4.68084	9.654	0.004
Married	58.1765	17	56.6	8.63304		
Kin relationship						
Son	55.8333	12	40	7.44475	3.169	0.031
Daughter	49.7778	9	30	5.04425		
Father	66.0000	1	3.3	0		
Sister	49.3333	3	10	6.42910		
Brother	61.2000	5	16.6	10.03494		

Table 7. illustrates that there is a highly statistically significant relation is present between total mean of practice, level of education and type of job of caregivers (p>0.000). Caregivers having higher school education, have higher mean score of practice than those having other levels of education. Also caregivers working in governmental jobs had higher mean score of practice than those working in nongovernmental jobs. A statistically significant relation was present between total mean of practice, age, sex, marital status and kin relationship (p >0.028, 0.005, 0.004, 0.031) respectively. Also older age, male, married, father and brother had higher mean score of practice.

Discussion

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, 2012).Prevention of complications of immobilization may be more cost effective and less demanding on the resources of developing countries than a solely therapeutic approach. Caregivers need to be knowledgeable regarding the importance of preventing complications of immobilization such as deep vein thrombosis, pneumonia, and pressure ulcers (Kurian, 2005).

The purpose of this study is to assess the knowledge and practice of caregivers of immobilized patients regarding prevention of complications related to immobilization and compare the knowledge and practice with personal characteristics of caregivers of immobilized patients.

Regarding the personal characteristics of caregivers, the present study results showed that less than two thirds of caregivers were from 20 to 30 years. More than half of them were males, while less than half of them had a secondary level of education. Also less than half of them did not work. Regarding marital status more than half of the caregivers were married. Concerning kin relationship, less than half of caregivers were son.

Results of the current study are supported by Alhosis et al, 2012 who studied the effect of pressure ulcer prevention program on caregivers' knowledge of immobilized patients, they found that near two thirds of the caregivers had an age

range between 30-50 years with equal percent of males and females. Also more than two thirds of the studied sample had secondary and higher educational level while below one quarter were illiterate. In addition, about three quarters of the caregivers had significant relation to the patients.

Reinhard et al, 2012 who studied population-based online survey of 1,677 family caregivers to determine what medical/nursing tasks they perform, found that (55 percent) of family caregivers were females. There is a broad range of age distribution, with one-third younger than age 50, (40 percent) age 50–64, and more than a quarter having the age 65 and older. Two-thirds of them were married, almost half (47 percent) of them were working, and more than half (61 percent) had attended or graduated from college.

The present study showed that nearly three quarters of caregivers' knowledge was unsatisfactory regarding musculoskeletal system, respiratory system and cardiovascular system, while in less than two thirds of them the knowledge was unsatisfactory regarding skin and GIT.

Our findings were in accordance with Kapucu eta al, 2009 who stated that family caregivers caring for bedridden stroke patients had knowledge deficits regarding physical care, diet, medications, disease, exercise, pressure ulcer care, and excretory system function and its regulation. Also Hayashi and Tai, 2013 added that Hospital care should include educating patients and their caregivers in how to provide them with information on hospitals in the patients' hometowns, and teaching them rehabilitation exercises and the components of a healthful diet.

Family caregivers play a central role in managing all aspects of the patient's care (Turkoglu and Kılıc, 2012). They are the one who will be with the patient every time than physicians and nurses .Hence the caregivers' knowledge regarding general measures such as positioning, exercise, skin care, nutrition and support will enhance the quality of outcome and prevent complications. Caregiving is a difficult job and many caregivers show psychological stress and declaim in physical and mental health, especially when care giving is continuous for more than a year .If adequate knowledge is provided to care givers it will assist them to cope with the stressors and enhance the quality of their life and their patients (Crist, 2005) .

Regarding caregivers' practice to prevent complications of immobilization our study illustrated that in the majority of the caregivers, the practice was inadequate regarding the prevention of pressure ulcer, also in more than half of them it was

inadequate regarding prevention of joint deformity, prevention of deep venous thrombosis and maintenance of healthy diet.

There are few studies done to assess the knowledge and practice of caregivers regarding complications of immobilization. A study done by (Kurian, 2005) illustrated that the highest mean % knowledge score of caregivers was in the area of immobilization (57.5%) and the least mean percent of knowledge score was in the area of constipation (38%). It also showed that the highest mean percent practice score of patients was in the area of constipation (63.25%) and the least mean percent of practice score was in the area of DVT (30.75%).

Also in another study done by Sharma, 2013 on caregivers' bedsore care practices it was found that 12% of the caregivers had no idea as to how a patient on bed for long time should be dealt with. They left their patients lying in uncomfortable positions that lead to worsening of bedsore status. Also exercises were performed in 16 cases only. Out of those 16, principles of exercises were being followed in 11 cases only. There was a practice of gentle massage among few cases.

Our study showed that nearly three quarters of the caregivers had unsatisfactory knowledge and inadequate practice.

These findings were in congruence with Reinhard, 2008 who stated that family caregivers often feel unprepared to provide care, have inadequate knowledge to deliver proper care, and receive little guidance from the formal health care providers. Due to inadequate knowledge and skill, family caregivers may be unfamiliar with the type of care they must provide or the amount of care needed.

Joseph, 2007 confirmed that, the family caregivers have a tremendous role in meeting the physical needs as well as the emotional needs of the patient. To provide such care they requires a high level of knowledge and ability based on scientific principles. If the caregiver does not have proper knowledge regarding the provision of care, it may hamper the health of the patient instead of speedy recovery. The involvement of family members in rendering care will help to generate a positive attitude in patient and to perform the self care activities to regain his/ her normal functioning.

Concerning total knowledge score about immobility, the present study illustrated that there is a highly statistically significant relation ($p>0.000$) between the total mean knowledge and level of education, whereas, the caregivers who had higher school education had higher mean score of knowledge than those having other levels

of education. Regarding the type of job for caregivers a highly statistically significant relation (p>0.000), is present regarding the given care. Caregivers work in governmental job had higher mean score of knowledge than those working in nongovernmental jobs. Also the table shows that a statistically significant relationship was found between total mean of knowledge, age, sex, marital status and kin relationship (p >0.004, 0.002, 0.001, 0.017) respectively. Also older age, male, married, father and brother had higher mean score of knowledge regarding prevention of immobilization complications.

Also Alhosis et al, 2012 found a significant relationships between caregivers' socio-demographic characteristics and their total mean knowledge score, also there was a statistical significant difference regarding level of education of caregivers and their total mean knowledge score in pre-test and post-test, whereas, the caregivers who had higher school education had higher mean score of knowledge than the other levels of education.

In contradiction to our results, El-Daharja, 2009 reported that there was a relation between a caregiver's gender and acquisition of program knowledge as the female caregivers were positively affected and fostered education program and its results than men.

Conclusion

The present study results showed that less than two thirds of the caregivers' age were from 20 to 30 years. More than half of them were males, while less than half of them had a secondary level of education. Also nearly three quarter of the caregivers had unsatisfactory knowledge and inadequate practice. A highly and statistically significant difference was found between the personal characteristics and total mean score of knowledge and practice of caregivers regarding prevention of immobility complications.

Recommendations

Medical professionals should be aware that caregiver education is an integral part of care for immobilized patients**.**

A shift of care philosophy from a patient-centered approach to a patient and caregiver approach may be necessary.

Training and educational program to enhance knowledge and practice of caregivers regarding care of immobilized patient is highly needed.

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