

## Awareness on Prevention of Complications Related to Immobility among Caregivers of Immobilized Patients of Pokhara

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### ABSTRACT

Immobility is the state in which individual experiences limitation of physical movement due to critical illness, applications of external devices to body (traction), loss of motor functions etc. Prolonged bedridden and immobilization may lead physiological, psychological, social problems to patient. Pressure sore, deep vein thrombosis, hypostatic pneumonia, constipation, contracture, urinary tract infection, urinary incontinence, muscular weakness, calculi, anxiety, depression etc. are the most common complications occurred due to prolong immobility. The main objective of the study was to assess the awareness level on prevention of complication related to immobility. A descriptive cross-sectional study design was used to conduct the study. Non-probability purposive sampling technique was used to collect data from 172 caregivers of immobilized patients of Pokhara using a semi-structured interview questionnaire. The obtained data was entered on Epi data 3.1 version and transferred into SPSS 20 version for the further analysis. The entered data were interpreted by using descriptive and inferential statistics. The findings revealed that 50.7 % of the caregivers had satisfactory level of awareness, 30.2 % had good level of awareness and only 11 % had poor level of awareness on prevention of complication related to immobility. There were significant association between age ( $p=0.024$ ), relation with patient ( $p=0.002$ ) and duration of total number of days with the patient ( $p=0.001$ ) and awareness level. The study concluded that effective health education programs should be planned and implemented to increase awareness of caregivers regarding preventive measures of complications related to immobility.

**Keywords:** Awareness level, caregivers, Immobilized patient, Prevention of complications of immobility

### INTRODUCTION

Immobility is the state in which individual experiences limitation of physical movement due to different causes like critical illness, applications of external devices to body (traction), loss of motor functions and surgical procedures. Prolonged bedridden or immobilization can lead physiological, psychological as well as social problems such as pressure sore, deep vein thrombosis, hypostatic pneumonia, constipation, contracture, urinary tract infection, urinary incontinence, muscular weakness, calculi, anxiety, depression, isolation from society etc. [1,2].

Family members play important role in providing adequate care to patient. At that time, they also experienced numbers of problems; physical, psychological, behavioral changes as well as economic burden which impact on their daily lifestyle as well their health [3]. All the type of complications of immobility, effects on quality of life. Major and more complex form of complications, decreased more quality of life if adequate care was not provided [4]. Among the complications, pressure ulcer is most common and approximately 1.7 million patients suffer from pressure

ulcers worldwide every year. The incidence of Pressure ulcer is higher in developing countries than developed country due to lack of the knowledge and practices [5]. Preventive measures are better as cost for treating pressure ulcer is 2.5 times higher than preventing pressure ulcer [6].

The descriptive study conducted at Bangalore of orthopedic and trauma ward of St. John medical college to assess knowledge and practices about prevention of complication of immobility showed that inadequate knowledge and practices to prevent complications of immobility [7].

The descriptive cross-sectional study conducted in Chitwan Medical College Teaching Hospital of Nepal to study about

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knowledge of caregivers on preventive measures of complication of immobility concluded that the caregivers had poor knowledge regarding preventive measures [2].

A 3-month prospective multicenter study conducted in China to describe association between major complications of immobility during hospitalization and the patients' health-related quality of life after discharge found that major complications of immobility were significantly associated with reduced health related quality of life [4].

A descriptive study conducted at National Trauma Center (NTC), Bir Hospital Kathmandu Nepal to find out awareness and practice of caregivers regarding prevention of complications in traction patients revealed that caregivers had inadequate knowledge and practice to prevent complications and need of health education to increase awareness of caregivers before and during the application of traction to the patient [8].

## DATA AND METHODS

The research approach used in the study was quantitative approach by using cross sectional research design. The study was conducted in 2019 from 22 January to 5 February among caregivers of immobilized patients from ICU, Ortho and Geriatric ward of Hospitals in Pokhara (Pokhara Academy of Health Sciences, Manipal Teaching Hospital and Gandaki Medical Teaching College and Research Centre. All the caregivers included in this study were 20 years age and above and stayed with patient for at least 6 h per day. Non-Probability purposive sampling technique was used to collect data from caregivers.

The study was carried out after getting approval from IRC, Pokhara University and official permission from Hospitals of Pokhara. Informed verbal and written consent were obtained from each caregiver after explaining the purpose of the study. Time taken for each caregiver for data collection was 15-20 min. Anonymity and confidentiality were maintained throughout the procedure. A Semi structured interview questionnaire was used to collect data which was developed after reviewing related literature and Content validity of the research instrument was established by consultation with research advisor and content expert. The research instrument was translated into Nepali version and retranslated into English language by the bilingual translator to maintain accuracy. The research instrument consisted two parts i.e., socio-demographic data (caregiver and patient) and semi structured questions related to awareness on preventions of complications related to immobility. There was total 28 questions regarding preventions of complications related to immobility with total score 45 in which 6 of them were multiple choice questions.

All collected data was reviewed and checked daily for its completeness, consistency and accuracy. The data was organized, coded, classified and entered in Epi data and transferred in Statistical Package for Social Sciences (SPSS)

version 20 for further analysis. Descriptive statistics (such as frequency, percentage, mean, standard deviation) and inferential statistics (chi-square test/ fisher exact test) were used for data analysis. Each correct response for awareness was given 1 score and total score was 45. The total score was converted to percentage for awareness. On the basis of score percentage obtained by the caregivers, awareness level was categorized as Good ( $\geq 80\%$ ), Satisfactory (60-79%) and Poor ( $< 60\%$ ) [8].

## RESULTS

The following tables show the results from the data collection conducted and tabulated as per the research method adopted for the study:

**Table 1** shows that more than half (54.7%) of the caregivers were female. Nearly two-third (62.2%) of the caregivers were less than 40 years old. More than one third (38.4%) of the caregivers were from upper caste group. Most (94.2%) of the caregivers followed Hinduism. More than half (64.5%) of the caregivers were living in urban areas. Majority (86%) of the caregivers were married. Nearly half (47.1%) of the caregivers were children in relation with the patient.

**Table 2** revealed that the maximum number (69) of caregivers had achieved secondary education. More than one third (39.5%) of the caregivers were housewives. Of the total caregivers, 46.6% belong to the lowest quintile and 11.6 % belong to the highest quintile.

**Table 3** shows that the maximum number (163) of caregivers had stayed in the hospital for less than 15 days and only one caregiver had stayed in the hospital for more than 30 days. Three fourth (74.4%) of the caregivers stayed with patients for more than 12 h per day.

**Table 4** shows that 34.9 % of the patient's age belong to 56-76 years. More than half (62.2%) of the patients were male. Half (51.2%) of the patients had not received any formal education. More than two-third (69.8%) of the patient's had less than 6-month duration of illness.

**Table 5** illustrates that more than half (58.7%) of the caregivers had satisfactory awareness on Prevention of Complications related to Immobility and only 11 % had poor knowledge.

The data depicted in **Table 6** represents the findings of awareness on different components of prevention of complications related to immobility. The highest awareness level was on constipation with 94.5 mean percentage with mean and SD  $3.78 \pm 0.453$  followed by awareness on pneumonia with the mean percentage 87 with mean and SD  $6.13 \pm 1.029$ . The lowest level of awareness was in joint stiffness with mean percentage 67.6 with mean and SD  $4.06 \pm 1.150$ .

**Table 1.** Socio-Demographic Characteristics of Caregivers.

Variables	Frequency	Percentage (%)
<b>Sex</b>		
Male	78	45.3
Female	94	54.7
<b>Age (years)</b>		
19-39	96	55.8
40-59	58	33.7
Above 60 Years	18	10.5
<b>Ethnicity</b>		
Dalit	29	16.9
Disadvantaged <i>Janajati</i>	36	20.9
Disadvantaged Non-Dalit Terai Caste Group	7	4.1
Religious Minorities	2	1.2
Relatively Advantaged <i>Janajati</i>	32	18.6
Upper Caste Group	66	38.4
<b>Religion</b>		
Hinduism	162	94.2
Buddhism	8	4.7
Islam	2	1.2
<b>Residence</b>		
Rural	61	35.5
Urban	111	64.5
<b>Marital status</b>		
Married	24	14.0
Unmarried	148	86.0
<b>Relation with patient</b>		
Parent	21	12.2
Husband	32	18.6
Children	81	47.1
Relatives	38	22.1

Source: Field Survey 2019

**Table 2.** Socio-Economic Characteristics of Caregivers, n=172.

Variables	Frequency	Percentage (%)
<b>Educational status</b>		
No formal education	33	19.2
Basic education	34	19.8
Secondary education	69	40.1
Bachelor and above	36	20.9
<b>Occupation</b>		
Farmer	29	16.9
Housewife	68	39.5
Business	25	14.5
Service	19	11.0
Labor	12	7.0
Pension	6	3.5
Student	13	7.6
<b>Monthly family income</b>		
Lowest Quintile (<35000)	80	46.5
Second Quintile (35000-40000)	42	24.4
Third Quintile (40000-50000)	30	17.4
Highest Quintile (≥50000)	20	11.6

Source: Field Survey 2019

**Table 3.** Hospital Related Information of Caregivers, n=172.

Variables	Frequency	Percentage (%)
<b>Duration of stay with patient</b>		
Total no. of days		
<15	163	94.8
15-30	8	4.7
>30	1	0.6
<b>Total no. of hours per day</b>		
6-12 h	44	25.6
12-24 h	128	74.4

Source: Field Survey 2019

**Table 4.** Socio-Demographic Characteristics of Patient, n=172.

Variables	Frequency	Percentage (%)
<b>Age of the patient (years)</b>		
16-36	44	25.6
36-56	34	19.8
56-76	60	34.9
Above 76	34	19.8
<b>Sex of the patient</b>		
Male	107	62.2
Female	65	37.8
<b>Educational level</b>		
No formal education	88	51.2
Basic education	34	19.8
Secondary education	41	23.8
Bachelor and above	9	5.2
<b>Duration of illness</b>		
<6 months	120	69.8
≥6 months	52	30.2

Source: Field Survey 2019

**Table 5.** Awareness Level of Caregivers regarding Prevention of Complication related to Immobility, n=172.

Awareness Level	Frequency	Percentage (%)
Good (≥80%)	52	30.2
Satisfactory (60-79%)	101	58.7
Poor (<60%)	19	11.0

Source: Field Survey 2019

**Table 6.** Complications wise mean, standard deviation and mean percentage of Caregivers, n=172.

S No	Variables	Maximum Score	Mean Score ± S.D	Mean Percentage (%)
1	Immobility	14	8.60±2.262	61.4
2	Pressure sore	5	3.90±1.093	78
3	Joint Stiffness	6	4.06±1.150	67.6
4	Constipation	4	3.78±0.453	94.5
5	Pneumonia	7	6.13±1.029	87
6	UTI	9	6.47±1.428	71
7	Overall	45	32.94±7.415	73.2

Source: Field Survey 2019

**MULTIPLE RESPONSE\***

**Table 7** illustrates that almost all (97.1%) of the caregivers answered accident and 84.3 % answered chronic illness as the causes of immobility. Regarding the complications of immobility, 82.6 % of the caregivers answered joint stiffness, 58.1 % osteoporosis, 54.1 % orthostatic hypotension, 47.1 % pneumonia, 45.9 % stasis of respiratory secretion, 42.4 % thrombus formation whereas 38.4 %

answered osteoporosis and only 15.1 % as urinary incontinence. Similarly, most (98.8%) of caregivers responded to frequent changing positions to prevent pressure sore formation. Regarding breathing and coughing exercise, almost (80.2%) caregivers responded on every 4<sup>th</sup> h. Majority (85.5%) of the caregivers responded on massaging, 79.1 % on ankle exercise and only 34.9 % on maintaining body weight to prevent joint stiffness.

**Table 7.** Distribution of Caregivers based on Awareness regarding Prevention of Complications related to Immobility.

Awareness Aspects	Frequency	Percentage (%)
<b>Causes of immobility*</b>		
Accident	167	97.1
Fever	3	1.7
Chronic illness	145	84.3
Stomach pain	1	0.6
Diarrhea	9	5.2
<b>Type of complication arise due to immobility*</b>		
Osteoporosis	100	58.1
Joint stiffness	142	82.6
Constipation	66	38.4
Thrombus formation	73	42.4
Orthostatic hypotension	93	54.1
Pneumonia	81	47.1
Urinary incontinence	26	15.1
Stasis of respiratory secretion	79	45.9
Urinary tract infection	66	38.4
Frequent position change to reduce pressure sore	170	98.8
Position changes every 2 <sup>nd</sup> h	146	84.9
Frequency of breathing and coughing exercise every 4 <sup>th</sup> h	138	80.2
<b>Preventive measures of joint stiffness*</b>		
Complete bed Rest	47	27.3
Maintaining body weight	60	34.9
Massaging	147	85.5
Cold application	6	3.5
Ankle exercise	136	79.1
<b>Activity which prevents orthostatic pneumonia*</b>		
Changing of position 2 h	132	76.7
Restriction of fluid	50	29.1
Breathing and coughing exercise	146	84.9
Intake of Fatty foods	7	4.1
<b>Activities to maintain regular complete urination*</b>		
Comfortable position	125	72.7
Hydration	131	76.2
Privacy	69	40.1
Availability of water	40	23.3
Presence of water	140	81.4
<b>Preventive measures of constipation*</b>		
Intake plenty of water	142	82.6
Complete bed rest	5	2.9
Regular timing for toileting	165	95.9
Environmental hygiene	15	8.7

Source: Field Survey

Regarding regular and complete urination to immobilized patients, three fourth (81.4%) of the caregivers responded on need of toilet, 76.2 % on maintenance of hydration, 72.7 % on comfortable position during voiding and only 40.1 % responded on need of privacy. Maximum number (165) of the caregivers responded on regular timing for the toilet and 162 on intake of plenty of water for preventing constipation among immobilized patients.

**Table 8** illustrates that the age ( $p=0.024$ ) of caregiver and relation with the patient ( $p=0.002$ ) of the participants were found to be significantly associated with level of awareness.

**Table 9** revealed that there is no any significance association with socio-economic variables.

Data presented in **Table 10** revealed that the total number of days stay with patients was found statistically significant ( $p=0.001$ ) with level of awareness.

**Table 8.** Association of Level of Awareness with the Socio-Demographic Variables of Caregivers.

Variable	Mean knowledge Score		$\chi^2$ value	Df	p-value
	< 32	≥ 32			
<b>Sex</b>					
Male	35	43	0.898	1	0.343
Female	49	45			
<b>Age (years)</b>					
19-39	53	43	7.428	2	0.024*
40-59	20	38			
Above 60	11	7			
<b>Ethnicity</b>					
Non-privileged	50	56	0.307	1	0.579
Privileged	34	32			
<b>Residence</b>					
Rural	31	30	0.149	1	0.700
Urban	53	58			
<b>Marital status</b>					
Un-Married	14	10	1.007	1	0.316
Married	70	78			
<b>Religion</b>					
Hindu	77	85	1.903	1	0.146#
Non-Hindu	7	3			
<b>Relation with the patient</b>					
Parents	13	8	14.498	3	0.002*
Partner	15	17			
Children	29	52			
Relatives	27	11			

Source: Field Survey 2019

\*p-value significant at < 0.05

\*\*p-value highly significant at < 0.001

# Fisher Exact Test

**Table 9.** Association of Awareness Level with Socio-Economic Variables of Caregivers.

Variable	Mean knowledge Score		$\chi^2$ value	Df	p-value
	< 32	$\geq$ 32			
Educational status					
<b>No formal</b>	18	15	6.612	3	0.085
<b>Basic education</b>	22	12			
<b>Secondary</b>	31	38			
<b>Bachelors and above</b>	13	23			
<b>Occupation</b>					
<b>Non-Income generating</b>	56	51	2.813	1	0.094
<b>Income generating</b>	25	37			
<b>Monthly Family income</b>					
<b>Lowest quintile (&lt;35000)</b>	14	66	1.396	3	0.706
<b>Second quintile (35000-40000)</b>	6	36			
<b>Third quintile (40000-50000)</b>	3	27			
<b>Highest quintile (<math>\geq</math>50000)</b>	2	18			

Source: Field Survey 2019

\*p-value significant at < 0.05

\*\*p-value highly significant at < 0.001

**Table 10.** Association of Awareness Level with Hospital related Variables.

Variable	Mean knowledge Score		$\chi^2$ value	Df	p-value
	< 32	$\geq$ 32			
Duration of stay with the patient					
Total no. of days					
<b>&lt;7 days</b>	66	48	11.100	1	0.001*
<b>&gt;7 days</b>	18	40			
<b>Total no. of hour per day</b>					
<b>6-12 h</b>	26	17	3.102	1	0.078
<b>12-24 h</b>	58	71			
<b>Duration of illness</b>					
<b>&lt;6 months</b>	62	58	1.272	1	0.259
<b>&gt;6 months</b>	22	30			

Source: Field Survey 2019

## DISCUSSION

The primary aim of this study was to assess Awareness on Prevention of Complications related to Immobility among Caregivers of Immobilized Patients. The study further assessed factors associated with level of awareness on

prevention of complications of immobility which includes socio-demographic, socio-economic and Hospital stay related information of the caregivers. The major findings of the study are as follows:

Concerning demographic characteristics, in the present study more than half (55.8%) of the caregivers were between age group 19-39 years and 10.5 % were above 60 years. The mean age of the caregivers was 38.73 years. Regarding sex of caregivers more than half (54.7%) were female and only 45.3 % were male. As regards to the marital status of the respondents, the majority (86%) of caregivers were unmarried whereas only 14 % were married. Maximum number (163) of caregivers had stayed in the hospital for less than 15 days and only one caregiver had stayed in the hospital for more than 30 days. Three fourth (74.4%) of the caregivers stayed with patient for more than 12 h per day. Similar finding was found in the study carried at Bangalore [7] and Chitwan [2].

The present study shows that most (94.5%) of the caregivers knew preventive measures of constipation and most (98.8%) of the caregivers responded on frequent changing position to prevent pressure sore formation. This finding was supported by studies carried at Bir Hospital, Kathmandu [8].

#### Awareness Related Information

The present study revealed that 30.2 % had a high level of awareness, more than half (58.7%) of the caregivers had satisfactory level of awareness and only 11 % had poor level of Awareness on Prevention of Complication Related to Immobility. The finding of present study was supported by the study carried in Bir Hospital [8].

#### Awareness on Prevention of Each Complications Related to Immobility

The present study revealed that the highest awareness level was on constipation with 94.5 mean percentage with mean and SD  $3.78 \pm 0.453$  followed by awareness on pneumonia with the mean percentage 87 with mean and SD  $6.13 \pm 1.029$ . The lowest level of awareness was in joint stiffness with mean percentage 67.6 with mean and SD  $4.06 \pm 1.150$ . These findings are contradictory to the study conducted at Chitwan [2], Egypt [9] and Bangalore [7]. It may be due to the small sample size and different setting.

#### Association related information

The association of knowledge and baseline variables was done by computing chi-square test. The finding of the study revealed that the association of awareness on prevention of complication related to immobility among caregivers was significantly associated with respondents' age ( $p=0.024$ ), relation with patient ( $p=0.002$ ) and duration of total no. of days with the patient ( $p=0.001$ ) with awareness level. There is no significant association between Sex, ethnicity, residence, education, marital status, monthly family income, duration of illness and occupation with awareness level.

The present study reveals association on factors age and relation with the patient which is also found in the study carried at Egypt [9] and Kathmandu [8]. The present study also shows association of number of days stays with the

patient in hospital with awareness level which was not found in any other studies.

#### CONCLUSION

The findings of the study concluded that more than half of the caregivers had satisfactory knowledge regarding preventive measures of complications related to immobility. The awareness level of caregivers regarding prevention of complications of immobility is significantly associated with age, relation with patient and total number of days stay with the patient. Therefore, close relatives should be encouraged to give proper care to immobilized patient. Further, effective health education programs should be planned and implemented to increase awareness of caregivers.

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