

Family Caregiver's Perception and Comprehension toward Pressure Injury Prevention in Bedridden Patients after Discharge from Hospitals

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Abstract

Objectives: Perception and understanding of pressure injury care is an important basis for family caregivers in preventing pressure injuries in stroke paralysis patients. The aims of this study to assess the caregiver family's perceptions and comprehension in preventing pressure injury. **Methods:** The design of this study was cross sectional. The survey was conducted on 357 family caregivers in nursing homes, Indonesia. Potential participants were recruited from Family Caregiver who treated stroke paralysis patients who were bedridden after being discharged from the hospital in a nursing home. Predictor variables (independent) of this study consisted of perception and comprehension and the dependent variable of this study was prevention of pressure injuries. Data were collected using a questionnaire. The analysis used linear regression with a significance level of $p \leq 0.05$. **Results:** Simultaneously, 36.1% of perception and comprehension explained the prevention of pressure injury as evidenced by the value $R^2 = 0.361$; p (F test) = 0.049. Partially, 19.4% perception of the prevention of pressure injury prevention was proven to be p (t-test) = 0.016; $R^2 = 19.4\%$ and 12.2% comprehension explained the prevention of pressure injury as evidenced by the value of p (t-test) = 0.019; $R^2 = 12.2\%$ with a confidence interval of 95%. **Conclusion:** Family caregiver's comprehension of the prevention of pressure toward pressure injury prevention in bedridden patients after discharge from hospitals was low. Perceptions and comprehension factors of family caregivers contribute to the prevention of pressure injury in stroke paralysis patients who are bedridden.

Keywords: Caregivers, Perception, Comprehension, Pressure injury.

Introduction

A pressure injury is a serious health problem that may occur in the community after undergoing post family care from the hospital [1]. Pressure injury happens as a result of continuous external compression that lasts a long time in skin tissue which is common to stroke patients who are in need of a family caregiver for a long time, those who have spinal injuries, decreased consciousness, paralysis, weakness of the limbs, and those in critical family care [2,3]. The European Pressure Injury Advisory Panel reported the forms of caregivers and the average prevalence of pressure injury in Europe: acute care family caregiver (12%), critical family caregiver (13.1%), age-care caregiver (4.1%) and pediatric family caregiver (0.47%). Furthermore, it was explained that the impact of pressure injury on family care is

that it costs up to 1.4% of family care expenses per year from the health budget. In England, pressure injury costs up to 4% of the annual family care budget (750 million pounds per year) at a cost that is estimated to reach 30,000 pounds per individual suffering from pressure injury. Furthermore, in Australia, the cost related to the length of in-hospital stay is estimated at 285 million dollars [4]. The prevalence of pressure injury in France was 8.9%. It was explained that the most common spots of pressure injury were heels (53%) and sacrum (29%). Pressure injury often occurred in patients with obliterative artery disease, and sacral pressure was more common in incontinence patients (urine, feces and double incontinence) [5]. The prevalence of the characteristics of pressure injury patients in

four general hospitals in Indonesia, pressure injury with the category of I-IV was 8.0%, nosocomial pressure injury was 4.5 %, and one-third of patients suffered from pressure injury and moisture lesions by 36.3% and pain by 45.1% [6]. Pressure injury causes pain, damage, discomfort and increases the risk of infection, which can lead to delay in rehabilitation, prolonged illness and when it is associated with the length of hospital stays, it increases morbidity and mortality [7,8].

Prevention efforts against pressure injury are very important rather than treating the complications. The pressure injury prevention steps were carried out at home by family members and family caregivers by preventing external pressure and friction due to repositioning, as well as improving nutritional status, and avoiding skin moisture [9].

A family caregiver at the family level according to their abilities have a highly significant role because it is directly related to the early detection of signs of pressure injury. The most important thing in health care in patients with a pressure injury is by maintaining adequate perfusion in areas that experience excessive external pressure. Family caregivers have insufficient information and are indifferent to the prevention of pressure injury [10].

The success of the family caregiver in the effort of early detection and prevention of pressure injury cannot be separated from the factors that influence it. Some internal factors contributing to the success are the perception and comprehension of prevention and early detection of the occurrence of pressure injury.

In addition, it is also influenced by variables such as demography (age, sex, experience), socio-psychology (personality, social pressure), and variables of previous knowledge and experience. Perception and comprehension of the care of pressure injury are vital bases for the family caregiver in taking action and determining attitudes in early detection to prevent the occurrence of pressure injury. This study aims to assess the caregiver family's perceptions and comprehension in preventing pressure injury in stroke paralysis patients who are bedridden after being discharged from a hospital.

Method

A descriptive cross-sectional survey was used to explore Family Care's perception and comprehension of pressure injury prevention in stroke paralysis patients who were bedridden after being discharged from the hospital. A descriptive cross-sectional survey was used to explore the prevention of pressure injuries in stroke paralysis patients who were bedridden after being discharged from a hospital in an Indonesian nursing home.

Predictor variables (independent) of this study consisted of perception and comprehension and the dependent variable of this study was prevention of pressure injuries. Potential participants were recruited from Family Care who treated stroke paralysis patients treated after being discharged from hospitals in nursing homes for seven months.

The total sample of this study was 357 respondents who were randomly selected. This survey is anonymous and is self-administered through questionnaires. The survey was tested among a small sample of Family Caregivers to repeat the procedure and fill out the questionnaire.

Using a questionnaire developed by researchers in accordance with indicators on each variable, we surveyed Family Caregiver in Indonesian nursing homes. The questionnaire consisted of 49 questions using a 5-point likert scale. The reliability, perception and prevention reliability test results show that the overall correlation score between items is 0.12 (perception = 0.880, comprehension = 0.933, prevention = 0.679).

Statistic Tests

The statistic tests used to test and analyze the contribution of perception and comprehension to post-stroke clients who have paralysis in the family caregiver were descriptive statistics, One Way ANOVA Test, t test, and linear regression tests with a confidence interval of 95%.

Ethical Considerations

To meet ethical considerations, respondents were given information that all survey results were kept confidential and were only used for scientific purposes. Sample participation was voluntary and there was no penalty for not participating.

The return of the survey results that filled out directly or via email was considered as an agreement. This study has passed ethical clearance from the Health Research Ethics Committee Dr. Moewardi General Hospital School of Medicine Eleven March University of Surakarta No. 546/ HERC/ 2018.

Results

From 357 subjects who filled out the questionnaire, 357 (84.4%) samples met the sample criteria in this study and 66 samples (15.6%) were eliminated because the questionnaire was incompletely filled out and they did not meet the sample criteria. Table 1 shows that 357 respondents, most family caregivers were female (60.2%) and the rest were male (39.8%), the largest age group was in the age of 25-44 (53.5%), the highest education of caregiver families was university level (54.1%), the major caregiver relation with families was with other people (42.3%), the most a perception of caregivers was in the positive perception category (69.2%), the highest level of caregiver's comprehension was in the high-level category (43.1%), and the most injury prevention effort was in the high category (86%).

Perception and Comprehension based on Demography

The One Way ANOVA Test results presented in table 2 indicate that family relationship factors show a significant difference to the perception of pressure injury prevention, while age, sex, and education do not show differences in perception and comprehension of pressure injury prevention.

Differences in Perception and Comprehension based on Experience

The results of the Independent sample of the t-test displayed in table 3 indicate that family caregiver experiences in caring for family members who experience post-stroke with paralysis show differences incomprehension on the prevention of injury.

The experience of caring for family members does not show any difference in perception of injury prevention. The reliability test results of the perception, comprehension, and effort to prevent pressure injury demonstrated in table 4 show that the overall score of the correlation between items is 0.12 (perception = 0.880, comprehension= 0.933, prevention efforts = 0.679).

Effect of Perception and Comprehension of Prevention of Pressure Injury

Assumption Test

Kolmogorov-Smirnov's statistical test results point out that data are normally distributed ($\rho = 0.111$). Runs Test does not indicate autocorrelation ($\rho = 0.792$). The result of Tolerance Test is 0.241 and the values of variance inflation factor (VIF) values of perception and comprehension are 4,152 each which shows that there is no multicollinearity, and the Spearman's Rank Test ($\rho_{\text{perception}} = 0.083$; $\rho_{\text{comprehension}} = 0.093$; $\rho_{\text{prevention effort}} = 0.068$) does not indicate the presence of heteroscedasticity.

Linear Regression Test

Table 5 shows that the results of the F test calculation obtained a value of 10,185; $p = 0.049$ which means simultaneously that perception and comprehension of pressure ulcer management have an effect on efforts to prevent the occurrence of a pressure ulcer. T-test results obtained by perception factor of 2,820; $p = 0.016$, and a factor comprehension of 2,410; $p = 0.019$ which means partially that perception and comprehension of pressure ulcer management has an effect on efforts to prevent the occurrence of a pressure ulcer.

The results of the total regression test (perception and comprehension) obtained an R^2 value of 0.361 means that 36.1% of the perception and comprehension variables explain efforts to prevent the occurrence of pressure ulcers. The remaining 63.9% is explained by other variables outside the model used. Each increase in perception and comprehension factors by 1% by assuming that other variables are controlled is followed by an increase in prevention effort for pressure injury by 31.6%.

The results of statistical calculation generate total R^2 values from predictors of perception and comprehension of 31.6%, and R^2 from predictors of perception variables = 19.4%. Then, R^2 of each independent variable on effort to prevent the occurrence of pressure ulcer is $R^2_{X_1, Y} = 19.4\%$, and $R^2_{X_2, Y} = 31.6\% - 19.4\% = 12.2\%$. Partially, the perception of the family caregiver contributes to the prevention of the occurrence of pressure injuries by 19.4% and the comprehension by 12.2%.

The linear regression formula used is:

$$\text{Effort} = a + b_1 \text{Comprehension} + b_2 \text{Perception} + e = 50.076 + 0.271 \text{Perception} + 0.389 \text{Comprehension} + e$$

Discussion

Demographic Characteristics

The results of the analysis showed that sex was dominated by women with a prevalence of the age group 25-44 years. This is because women are more caring and intensive in taking care of family members who experience post-stroke with paralysis. These findings contradict previous studies [11] that explained that women were not skilled and committed violations [12]. The caregiver frequency in the prevention of pressure injury is dominated by women with the prevalence of the age group above 30 years, women are considered more intensive in providing care than men [13, 14].

The results of this study indicate that age, sex, and education do not give a difference to the perception and comprehension of prevention of pressure injury. This is in accordance with previous research which explains that intention, sex, family relationships, education, employment, length of care, caregiver health problems, and neurological deficits of stroke in caregiver burden among stroke patients, and only the duration of care affects the caregiver's burden in among stroke patients [15].

Age, education, and gender are confounding factors that can affect self-efficacy [16]. The results of this study contradict with research which explains that age is the dominant factor affecting the level of knowledge and does not prevent patients from participating and understanding self-management [17]. All caregivers participating in this study had experience in caring for post-stroke clients with paralysis. This allows an assumption that experience tends to be used as a way of learning or a good teacher. The longer the caregiver works, the better the workability the caregiver gets, because he/she can adjust to the work description and it is easier for him/her to get certain satisfaction if he/she is able to finish the job well and easily adjust to the environment.

Nevertheless, working experience or length of working time as a caregiver does not affect anything, but only by accidental factors. This is consistent with previous research which

states that experience influences the level of family knowledge in shaping values and beliefs which then influences the attitudes involved in decision making [18]. The caregiver's experience is not a risk factor directly related to the occurrence of pressure injury, because the working experience is not able to stand alone to influence the incidence of pressure injury [19].

Caregiver's Perception and Comprehension

The caregiver's perception of pressure injury prevention in this study belongs to the positive category. The nurses at Nursing Homes have a positive attitude towards the prevention of pressure injury in patients at risk [20,21]. While the caregiver's comprehension of the management of pressure injury is mostly categorized high. It is possible that knowledge is related to understanding the information it has.

The more caregiver understands about the information he has, the higher the behavior of someone. This is consistent with previous research which states that information factors significantly influence family behavior factors in early detection [22]. The level of knowledge of nurses and nurse assistants about pressure injury is low [20].

Effect of Caregiver's Perception and Comprehension on Efforts to Prevent Pressure Injury

The results of the Linear Regression statistical test show that the factors of perception and comprehension of pressure injury management in this study are altogether proven contributing significantly to influence efforts to prevent the occurrence of pressure injury by 31.6%. Each increase in perception and positive comprehension by 1% by assuming that other variables outside the model used are controlled is followed by an increase in prevention efforts for pressure injury by 31.6%.

The success of efforts to prevent the occurrence of pressure injury can be achieved if it is based on the comprehension and supported by positive perceptions of the duties and responsibilities in providing services to family members who experience post-stroke paralysis. If the caregiver's comprehension is supported by a positive assumption of his/her duties and

responsibilities, the prevention of pressure injury can be achieved. The caregiver who has a high level of comprehension but has a negative opinion of their duties and responsibilities has low-pressure injury prevention efforts. Increasing evidence-based nurse knowledge and attitudes can change practice in preventing clinical complications [23].

The degree of the influence of each variable based on the results of the T-statistic test obtained by the perception factor of the caregiver partially gives a significant effect on efforts to prevent the occurrence of pressure injury by 19.4%. Every 1% increase in caregiver perception, assuming the comprehension variable is controlled, is followed by an increase in prevention effort of pressure injury of 19.4%.

Thus, the perception factor about pressure injury management in this study is proven to be able to partially provide a significant effect on an effort to prevent the occurrence of pressure injury. This means that aspects of caregiver perception which include perception of benefits, barriers, vulnerabilities, and seriousness are able to build positive working behavior and have a contribution to the efforts to prevent the occurrence of pressure injury.

The perception factor about the management of pressure injury has a greater contribution to efforts to prevent the occurrence of pressure injury compared to the caregiver's perception factor. This illustrates that the efforts to prevent the occurrence of pressure injuries are more dominantly influenced by caregiver perception on pressure injury management.

The knowledge of prevention and treatment and positive perceptions is related to the practice of prevention of pressure injury [24]. However, these results contradict the results of previous studies which explained that there was no relationship between knowledge and preventative behavior [25]. The caregiver's comprehension factor in this study was proven, partially, to have a significant effect on the effort to prevent pressure injury by 12.2%. Every 1% increase in caregiver comprehension, by assuming the perception variable is controlled, is followed by an increase in the effort to prevent the occurrence of pressure injury by 12.2%. The caregiver's comprehension factor in this study is proven to be able to partially provide a significant contribution to efforts to prevent the occurrence of pressure injury.

This means that aspects of the caregiver's comprehension of treating pressure injury that include comprehension, risk factors, factors influencing the occurrence of pressure injury, the formation process of pressure injury, the degree of pressure injury, early detection of care giver's comprehension, the use of pressure injury scale, and the prevention of pressure injury are proven to be able to build the positive working behavior and contribute to efforts to prevent the occurrence of pressure injury.

Lack of staff and lack of training were the most commonly cited perceived barriers to practice pressure ulcer prevention [26]. The results of previous studies also explained that with understanding and good practice contributed significantly in reducing the prevalence of pressure ulcers [10].

Table 1: Demographic Characteristics (n=357)

Characteristics	n	%
Sex		
a. Male	142	39.8
b. Female	215	60.2
Age		
a. 18-24 years (Young Adulthood)	19	5.3
b. 25-44 years (Middle Adulthood)	191	53.5
c. 45-65 years (Late Adulthood)	147	41.2
d. 65 tahun (Elderly)	0	0
Education		
a. Elementary School	12	3.4
b. Junior High School	50	14
c. Senior High School	102	28.6
d. Higher Education (diploma, bachelor, or master degree)	193	54.1
Family Relations		
a. Husband/Wife	90	25.2
b. Others	151	42.3
c. Child	89	24.9
d. Relatives	27	7.6

Experience		
a. Yes	22	6.2
b. No	335	93.8
Perception		
a. Positive	247	69.2
b. Negative	110	30.8
Comprehension		
a. Low	115	32.2
b. Medium	88	24.6
c. High	154	43.1
Prevention Efforts		
a. Low	22	6.2
b. Medium	28	7.8
c. High	307	86

Table.2: Differences in family caregiver perception and comprehension of pressure injury prevention based on age, sex, education and family relations

Field	Sum of Squares	df	Mean Square	F	Sig.
Age * Perception					
Between Groups	150.794	2	75.397	1.453	0.235
Within Groups	18373.850	354	51.904		
Total	18524.644	356			
* Comprehension					
Between Groups	61.588	2	30.794	1.333	0.265
Within Groups	8178.720	354	23.104		
Total	8240.308	356			
Sex * Perception					
Between Groups	23.541	1	23.541	0.452	0.502
Within Groups	18501.103	355	52.116		
Total	18524.644	356			
* Comprehension					
Between Groups	17.914	1	17.914	0.773	0.380
Within Groups	8222.394	355	23.162		
Total	8240.308	356			
Education* Perception					
Between Groups	161.731	3	53.910	1.036	0.376
Within Groups	18362.914	353	52.020		
Total	18524.644	356			
* Comprehension					
Between Groups	40.732	3	13.577	0.585	0.626
Within Groups	8199.576	353	23.228		
Total	8240.308	356			
Family Relations* Perception					
Between Groups	687.082	3	229.027	4.532	0.004
Within Groups	17837.562	353	50.531		
Total	18524.644	356			
* Comprehension					
Between Groups	270.702	3	90.234	3.997	0.008
Within Groups	7969.606	353	22.577		
Total	8240.308	356			

Table.3: The results of the independent sample of t test on the difference in the perception and comprehension of the family caregiver based on experience

Field	F	SD	t	p
Perception	6.153	4.667	1.338	0.182
Comprehension	7.210	3.065	1.936	0.054

SD, standard deviation

Table 4: Reliability test results for perception, comprehension and prevention effort of pressure injury (Likert scale ranging 1-5)

Field	Mean	Variance	SD	Item (n)	Score
Perception	77.60	180.78	6.723	19	0.880
Comprehension	58.68	92.58	4.811	14	0.933
Prevention	60.89	69.49	4.168	14	0.679

SD, standard deviation

Table 5: Results of regression test

Variable	Regression Coefficient	t _{count}	Significance
Regression X ₁ (perception) Coefficient	0.271	2.820	0.016
Regression X ₂ (comprehension) Coefficient	0.389	2.410	0.019

Constants	50.076	6.680	0.000
F	10.185		0.049
R	0.325		
R ²	0.316		
R ² X ₁ *Y	0.194		

Conclusion

Perceptions and comprehension factors of family caregivers contribute to the prevention of pressure ulcers which are very

important in improving the quality at the family level. In the future, it is very important in improving the quality of evidence-based care at the family level in preventing pressure injuries in stroke paralysis patients who are bedridden.

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