

THE POTENTIAL EFFECTS OF AN ADAPTED NURSING DISCHARGE PLAN AMONG PATIENTS WITH HIP FRACTURES IN HOSPITAL MELAKA, MALAYSIA

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ABSTRACT:

Background: Patients with hip fractures frequently face the problem of a longer stay in the ward after surgery and being readmitted, falls, and being unable to carry out daily activities after discharge from the hospital. A nursing discharge plan is widely recognised as one of the strategies for addressing these issues. In Malaysia, however, it is unknown for patients with hip fractures. As a result, this study was carried out to investigate the impact of nursing discharge planning on patients with hip fractures in Hospital Melaka, Malaysia.

Methods: A total of 58 patients aged 50 years and above in the orthopaedic ward of Hospital Melaka were randomised using sealed envelopes to the intervention group (n = 29) and the control group (n = 29). The intervention group received an adapted nursing discharge plan with health education activities in the form of pamphlets and oral instructions within 24 hours of ward admission until discharge while the control group received routine discharge practices. Demographic data were taken from the study subjects while clinical data and length of stay in the ward were taken from the subjects' medical records before discharge. After one month discharged, data for ward re-admission rate and drop rate were taken from the subject's medical records while data for the subject's daily life activities were obtained through telephone calls using The Barthel Index survey form.

Results: The results of the study showed that the intervention group had a shorter ward stay (U = 254.00, $p = 0.008$) and a higher level of independence than the control group (U = 205.00, $p = 0.001$). The control group had 100% of subjects who were not able to be independent in daily activities of life compared to 75.9% of the intervention group ($p < 0.05$).

Conclusion: A nursing discharge plan including a health education component starting from the patient's admission to the ward until before the discharge should be considered in the nursing practice. It could facilitate better discharge outcomes for patients with hip fractures.

KEYWORDS: *Nursing, Discharge plan, Hip fracture*

1. INTRODUCTION

Hip fracture is defined as any type of fracture that occurs in the proximal part of the femur at the tip of the femoral head and 5cm below the small trochanter [1]. Incidence of hip fractures is common among the elderly due to osteoporosis and falls [2]. It had been projected that by 2050 there will be a 3.5-fold increase in the prevalence of hip fractures from 6000 fractures to almost 21,000 fractures occurring annually according to the Asian Federation of Osteoporosis Societies, with an expected rate of increase in Malaysia will be the highest among countries in this region [3].

The incidence frequency of these fractures increases by more than 100% every 10 years in line with increasing age after the age of 50 years [4]. However, in Malaysia, the incidence of hip fractures occurred as early as age 50 and above for every 90 per 100,000 population [5]. According to the National Orthopedic Registry Malaysia (NORM), the predominant cause of injury resulting in these fractures was a low-energy injury fall (83.1%) of the hip fractures while 7.8% was due to spontaneous fracture and 7.2% was due to accident fracture [6]. Older persons with hip fractures benefitted more from comprehensive care including interdisciplinary care and nutrition consultation, depression management, and fall prevention than simply interdisciplinary care [7].

A nursing discharge plan is a fundamental key to ongoing patient care and it is an important matter in early preparation for patients discharged from the hospital [8]. Proper and accurate nursing discharge planning is important to ensure that patients and families get an idea of how to continue patient self-care after being allowed to return from the hospital to avoid complications of continued hospital stay and re-hospitalization [9]. The evidence suggests that a discharge plan tailored to the individual patient probably brings about reductions in hospital length of stay and re-admission rates for older people admitted to hospitals with a medical condition [10].

Having to stay in the ward for long periods, frequent re-hospitalization and recurrent falls after discharge from the hospital and inability to perform ADL on their own are synonymous for patients with hip fractures [11]. Therefore, a nursing discharge plan is very necessary for these patients, to plan ongoing care to maintain and improve their health status even after they are discharged from the acute care phase in the hospital [11]. Evidence has shown that standardising discharge goals and implementation of high-reliability interventions focused on buy-in from key team members, pharmacy process redesign, subspecialty consult timeliness and feedback to frontline staff can reduce the length of stay without increasing re-admission rates [12].

Therefore, this study was conducted to examine the effect of nursing discharge plans on patients with hip fractures by identifying differences in length of stay, differences in ward re-admission rates, differences in fall rates and differences in daily living activities between intervention groups and control groups.

2. METHODS

A posttest experimental study design method was applied among patients with hip fractures in the orthopaedic ward of Hospital Melaka, Malaysia between January to May 2018. The study population were all patients admitted to orthopaedics wards. The inclusion criteria were patients aged 50 years and above, Malaysian citizens, able to communicate in Bahasa Malaysia

and undergo total/hemi arthroplasty surgery, dynamic hip screw and have a family who will continue care at home after discharge. Patients were excluded if diagnosed with dementia, stay in the intensive care unit after surgery and were discharged to a daycare or senior citizen care centre.

The sample size calculation for this study was done using the method of two mean formulas the mean difference between the groups was 8 and the standard deviation (SP) was 10.39 between the two interventions [13]. From the calculation, the sample size required for this study was 26 people for each group. A 10% increment rate was applied to reduce the risk of attrition rate, equalling up to 58 samples required.

Patients who met the criteria were described in the study and given a patient information form. If the patient was interested in participating in the study, a consent form was given to the patient. Then patients were divided into a control group and an intervention group according to the number of numbers in the sealed envelope received (29 = intervention, 29 = Control). Patients in the intervention group were then given an adapted discharge plan by Murphy et al. within 24 hours after the patient was admitted to the ward [14]. A leaflet with the contents of pain management, bed rest and toileting, wound and skin care, rest and sleep, rehabilitation and special considerations were explained for approximately 15 minutes. The contents from the English language to Bahasa Malaysia were validated by three content experts in the field of medicine, nursing and literacy. Patients were told to contact the researcher by phone for further health education if still needed as long as the patient was in the ward until discharge to improve the patient's understanding.

Ethical permissions were obtained from UKMREC (Reference No: UKM PPI/111/8/JEP-2017-664) and Medical Research Ethics Committee (Reference No: KKM.NIHSEC/P17-2003 (6)). Patients in the control group received a discharge routine with a supply of a pamphlet containing The Do's and Don'ts to prevent prosthesis dislocation. Patients in the intervention group were then given a study leaflet within 24 hours after the patient was admitted to the ward. The researcher also provided an oral explanation based on the content of the pamphlet. Patients were told to contact the researcher for further health education if still needed as long as the patient was in the ward until before discharge to improve the patient understanding. The patient was given the researcher's phone number to contact for that purpose. Before the patient was discharged, demographic data were obtained from the patient while clinical data and length of stay in the ward were taken from the patient's medical records. One month after the patient was discharged, data for re-entry to the ward and drop rates were taken from the patient's medical records. Meanwhile, data on daily activities of life after a month of discharge were obtained by the researchers through phone calls with patients and family members.

Measurement

Data for the patient's daily living activities were obtained through phone calls after one month of discharge using a survey question entitled The Barthel Index [13]. The reliability of this instrument is 0.89 (test and retest reliability) and 0.95 (reliability between raters). It contains 10 items that use the Likert Scale (5 scales). The total scores for all items ranged from 0-20. The high total score indicates that the patient can live independently. The total score was also categorized as follows i.e., Score 0 to 3: high total dependence, Score 4 to 7: complete dependence, Score 8 to 12: Moderate dependence, Score 13 to 19: Low dependence and 20: completely independent. The reliability of The Barthel Index for this study was α=0.949.

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All data analysis in this study was performed using IBM SPSS version 21. Descriptive analysis such as frequency and percentage were used when describing the demographic and clinical characteristics of patients as well as the data of the main variables namely the category of daily living activities. While continuous data i.e. key variables (length of ward stay, ward re-admission rate, drop rate and daily living activities (total score) of patients after discharge are described using either mean and standard deviation (if data are normally distributed) or median (if data not normally distributed). Mann-Whitney was used to look at differences in ward length of stay, ward re-admission rate, fall rate and daily living activities (total score) between the intervention and control groups. Meanwhile, Chi-square was used to measure the differences in categorical data for daily living activities between the intervention and control groups.

3. RESULTS

The demographic characteristics of the subjects for this study are presented in Table 1. For the intervention group, the majority of subjects were age category between 80 to 89 years (n = 12, 41.4%), male (n = 15, 51.7%), Malay (n = 22, 75.9%), primary education (n = 16, 55.2%), widowed (n = 18, 62.1%), unemployed (n = 27, 93.1%), have income below RM500 per month (n = 12, 41.4%) and live together with family (n = 28, 96.6%). Meanwhile, the majority in the control group aged between 70-79 (n = 37.9%) and 80-89 years (n = 37.9%), female (n = 21, 72.4%), Chinese (n = 17, 58.6%), also primary schooling (n = 22, 75.9%), widowed (n = 19, 65.5%) and unemployed (n = 28, 96.6%), had higher incomes than the intervention group (RM500-1000, n = 18, 62.1%) and living with family (n = 29, 100%). Differences in demographic characteristics between the intervention and control groups are shown in Table 2. The results of this analysis showed that subjects between the two study groups did not differ significantly for all demographic characteristics ($p > 0.05$) except race ($X2 = 14.724$, $p = 0.001$). The size of this difference was large (phi = 0.669) based on Cohen's (1988) table.

Table 3 shows the clinical data for the subjects of this study. The majority of subjects for both groups had high blood pressure/ heart disease although the number was higher for the intervention group (n = 21, 72.4%) than for the control (n = 24, 82.8%). The type of fracture experienced was almost the same for both groups, namely in the capsule (intervention group: n = 18, 62.1% and control group: n = 20, 69%). The mechanism of injury experienced was the majority reported low impact for both groups where the total percentage of the control group was higher (n = 28, 96.6%) than the intervention group (n = 25, 86.2%). The differences in these clinical data were however not significant ($p > 0.05$).

Table 4 shows the differences in ward stay, ward re-admission rates, fall rate, and daily living activities between the intervention and control groups. The length of stay in the ward for the intervention group was lower (Median = 9.00; mean rank = 23.76) than the control group (Median = 10.00; mean rank = 35.24). This difference was significant ($U = 254$, $p = 0.008$). The effect size of this difference is 0.34, meaning that the size of the difference is moderate based on Cohen's (1988) table. The results of the Mann-Whitney test analysis showed no statistically significant difference in ward admission rate between the two groups in this study (Intervention: Median = 0.00; mean rank = 28.5 and control: Median = 0.00; mean rank = 30.50): $U = 391.5$, $p = 0.154$). The results of the analysis showed that there was no significant difference in the fall rate between the intervention and control groups (Intervention; Median = 0.00, mean rank = 28.50; Control: Median = 0.00; mean rank = 30.50): $U = 391.5$, $p = 0.154$).

Table 1: Demographic characteristics of the subjects

Variables	Overall(n=58) n(%)	Intervention Group (n=29) n(%)	Control Group (n=29) n(%)
Age			
50-59	2 (3.4%)	2 (6.9%)	0 (0%)
60-69	11 (19%)	5 (17.2%)	6 (20.7%)
70-79	20 (34.5%)	9 (31.0%)	11 (37.9%)
80-89	23 (39.7%)	12 (41.4%)	11 (37.9%)
>90	2 (3.4%)	1 (3.4%)	1 (3.4%)
Gender			
Male	23 (39.7%)	15 (51.7%)	8 (27.6%)
Female	35 (60.3%)	14 (48.3%)	21 (72.4%)
Race			
Malay	30 (51.7%)	22 (75.9%)	8 (27.6%)
Indian	6 (10.3%)	2 (6.9%)	4 (13.8%)
Chinese	21 (36.2%)	4(13.8%)	17 (58.6%)
Others	1 (1.7%)	1 (3.4%)	0 (0%)
Educational status			
Illiterate	17 (29.3%)	10 (34.5%)	7 (24.1%)
Primary schools	38 (65.5%)	16 (55.2%)	22 (75.9%)
Secondary school	3 (5.2%)	3 (10.3%)	0 (0%)
Marriage status			
Married	20 (34.5%)	11 (37.9%)	9 (31%)
Divorced	1 (1.7%)	0 (0%)	1 (3.4%)
Widow	37 (63.8%)	18 (62.1%)	19 (65.5%)
Occupation			
Factory	2 (3.4%)	1 (3.4%)	1 (3.4%)
Labor/contract	1 (1.7%)	1 (3.4%)	0 (0%)
Unemployed	55 (94.8%)	27 (93.1%)	28 (96.6%)
Family/own income			
<RM500	18 (31%)	12 (41.4%)	6 (20.7%)
>RM500-RM1000	26 (44.8%)	8 (27.6%)	18 (62.1%)
<RM1000-RM5000	13 (22.4%)	9 (31%)	4 (13.8%)
>RM5000	1 (1.7%)	0 (0%)	1 (3.4%)
Living with:			
Alone	1 (1.7%)	1 (3.4%)	0 (0%)
Family	57 (98.3%)	28 (96.6%)	29 (100%)

Table 2: Differences in Demographic Characteristics between Study Groups

Variables	Intervention Group (n=29) n(%)	Control Group (n=29) n(%)	X^2	*p*
Age				
50-69	7(24.1%)	22 (75.9%)	0.099	0.753
70 and above	6(20.7%)	23 (79.3%)		
Gender				
Male	15 (51.7%)	8 (27.6%)	0.2334	0.675
Female	14 (48.3%)	21 (72.4%)		
Ethnicity				
Malay	22 (75.9%)	8 (27.6%)	14.724	0.001*
Chinese	4(13.8%)	17 (58.6%)		
Indian and others	3(10.3%)	4 (13.8%)		
Educational status				
Illiterate	10 (34.5%)	7 (24.1%)	0.749	0.387
Going to school	19 (65.5%)	22 (75.9%)		
Marital status				
Married	11 (37.9%)	9 (31%)	0.305	0.581
Divorced/Widow	18 (62.1%)	20 (69.0%)		
Occupation				
Employed	2 (6.9%)	1 (3.4%)	0.352	0.553
Unemployed	27 (93.1%)	28 (96.6%)		
Family/own income				
Below RM1000	20 (69.0%)	24 (82.8%)	1.506	0.220
Above RM1000	9 (31.0%)	5 (17.2%)		
Stay with:				
Single	1 (3.4%)	0 (0%)	1.018	0.313
Family	28 (96.6%)	29 (100%)		

Note: X^2 = *Chi*-square; *Significant at 0.05.

Meanwhile, the subjects of the intervention group were more independent in performing daily activities (Median = 16; mean rank = 36.93) than the subjects of the control group (Median = 12; mean rank = 22.07). This difference was statistically significant (U = 205, p = 0.001). The effect size of this difference is 0.44, meaning that the size of the difference is moderate based on Cohen's (1988) table.

Table 5 shows the results of a descriptive analysis of the categorical data of daily living activities. The intervention group had more fully independent subjects (n = 7, 24.1%) and low dependence (n = 16, 55%) than the control group. Meanwhile, the control group had more subjects for moderate dependence (n = 13, 44.8%), complete (n = 4, 13.8%) and very high

(n = 1, 3.4%) than the intervention group. To see the differences in these daily living activities between the intervention and control groups, these five categories of daily living activities were reduced to two categories (fully independent=‘independent’ while the other categories were consolidated into ‘dependence’) to meet the assumptions of the Chi-square [16]. The results of the analysis of Table 6 shows that there are significant differences between the two study groups and the category of daily living activities (p = 0.05). The p-value of 0.370 shows a moderate difference based on Cohen's (1988) table.

Table 3 : Clinical Data

Variables	Overall (n=58 n(%)	Intervention Group (n=29) n(%)	Control Group (n=29) n(%)	X^2	p
Chronic Disease					
High blood pressure/heart disease	45 (77.6%)	21 (72.4%)	24 (82.8%)	0.892	0.345
Other diseases	13 (22.4%)	8 (27.6%)	5 (17.2%)		
Type of fracture					
Outside capsule	20 (34.5%)	11 (37.9%)	9 (31%)	0.305	0.581
Inside capsule	38 (65.5%)	18 (62.1%)	20 (69%)		
Mechanism of injury					
High impact	5 (8.6%)	4 (13.8%)	1 (3.4%)	1.970	0.160
Low impact	53 (91.4%)	25 (86.2%)	28 (96.6%)		

Note: X^2=*Chi-square*

Table 4: Differences in Ward Stay, Ward Re-admission Rates, Fall Rate and Daily Living Activities between the Intervention and Control Groups

Variable	Group	N	*Mean Rank*	*Median*	U	p
Ward Stay	Intervention	29	23.76	9.00	254	0.008*
	Control	29	35.24	10.00		
Ward Re-admission Rates	Intervention	29	28.50	0.00	391.5	0.154
	Control	29	30.50	0.00		
Fall Rate	Intervention	29	28.50	0.00	391.5	0.154
	Control	29	30.50	0.00		
Daily Living Activities	Intervention	29	36.93	16.00	205	0.001*
	Control	29	22.07	12.00		

Note: U = *Mann-Whitney U Test* *Significant at 0.05

Table 5 Daily Living Activities between the Intervention and Control Group

Daily Living Activities	Overall(n=58) n (%)	Intervention (n=29) n (%)	Control (n=29) n (%)
Very high dependency	1 (1.7%)	0 (0%)	1 (3.4%)
Complete dependency	7 (12.1%)	3 (10.3%)	4 (13.8%)
Moderate dependency	16 (27.6%)	3 (10.3%)	13(44.8%)
Low dependency	27 (46.6%)	16 (55.2%)	11 (37.9%)
Completely independent	7 (12.1%)	7 (24.1%)	0 (0%)

Table 6 Differences in Daily Living Activities (Dependence and Non-dependence) between the Intervention and Control Group

Variables		Daily Living Activities			*p*
		N	Dependency n(%)	Non-dependency n(%)	
Group	Intervention	29	22(75.9%)	7(24.1%)	0.05*
	Control	29	29(100%)	0(0%)	-

Note: X^2 = *Chi-square*;; *=Significant; (*Phi*)

4. DISCUSSION

The results of this study show that there is a significant difference in the length of stay in the ward between the intervention group and the control group in which the length of the intervention group stays in the ward is less than the control group and this difference is at a moderate size. However, the difference between the two groups did not occur for the rate of re-admission to the ward and the rate of falls. As for the activities of daily living, there is a significant difference between these two groups, in which the intervention group has a higher level of independence than the control group. The size of this difference is modest. When the level of independence was categorized into dependence and non-dependence, the results of the study found that all subjects of the control group could not be independent and required some dependence on others to perform daily activities of life, while the intervention group had 24.1% (n = 7) subjects who can be independent. These differences were significant and the size of the differences was moderate.

In this study, patients who had received a nursing discharge plan found that the length of stay in the ward was less than patients who received a routine discharge practice. These findings are in line with other studies [17], [18]. This study also supplied pamphlets on hip fractures, types of surgery and self-care after hip bone surgery to study subjects after they were admitted to the ward. According to Aasa et al., the provision of written information about surgery and expectations of what will happen after surgery along with self-care can encourage patient

involvement in postoperative self–care [19]. However, another study reported a positive effect of using music therapy after musculoskeletal surgery [20], [21]

Evidence has shown that discharge planning can reduce the rate of re-admission to the ward, where the length of stay in the ward for patients who receive a discharge plan is shorter than the group that does not receive a discharge plan [22]. In contrast to the study of Goldman et al., the discharge planning intervention in this study did not affect the rate of re-admission to the ward because the results of the study showed no significant difference between the intervention group and the control group [23]. In this study, the total ward re-admission rate for the control group was only twice while the total rate for the intervention group was zero (0). Although there were differences in terms of these rates, this study was unable to detect statistically significant differences. This may be due to such small differences and a small sample size. In this study, two subjects reported falling after discharge, which is once for each subject. Both were from the control group. For the intervention group, none of the subjects experienced a fall incident after discharge. However, statistically, this difference is not significant. A previous study showed that older people are at significant risk of falling post-discharge, with 50% of these incidents resulting in injury and 40% of them falling within six months of discharge [24].

Providing health education is an important component of discharge planning because it allows patients to continue self-care from the hospital and after discharge. The results of the nursing discharge plan in this study showed that the subjects of the intervention group had a higher level of independence than the control group. Other studies have also shown similar effects [27], [25]. The number of subjects who reported self-reliance was also high for the intervention group from the control group. These findings are also similar to previous studies [11]. Meanwhile, another study reported that the readiness of patients treated in hospitals before going home can be improved by applying a discharge planning model that used the METHOD (Medication, Environment, Treatment, Health teaching, Outpatient referral, Diet) approach [26]. Furthermore, a multidisciplinary approach using prescribed order entry and medication reconciliation is a low-cost, safe, and effective way to increase early morning discharges and improve patient flow for large hospitals with high volumes of scheduled patient admissions [27]. Moreover, a unit-based discharge coordinator can play an important part in enhancing the overall discharge experience for the patient and families by providing an effective and efficient approach to discharge and providing the patients and families with a feeling of preparedness [28].

This study was unable to detect small differences in ward re-admission findings and drop rates. This is likely due to the small sample size which causes the power to detect significant differences to be weak [29]. The components of discharge planning theory support health care continuity that can be described as a critical link between the treatment received by patients in the hospital with current post-discharge care in the community [30]. The strength of this study is also because the intervention of this study was conducted by only one intervener and thus it can reduce the bias that can occur due to different interveners during the intervention [31].

5. CONCLUSION

This study found that the use of an adapted nursing discharge plan at Hospital Melaka for patients with hip fractures has been shown to be effective by shortening the length of stay in the ward and increasing self-reliance among the intervention group. For patients with hip fractures, a nursing discharge plan with a comprehensive health education component should be considered from the time the patient is admitted to the ward until the time of discharge.

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