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The Effect of Nurse Navigator program on Activity Daily Living in elderly hospitalized

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Abstract--- *The chronic diseases and increasing the probability of hospitalization are one of the critical consequences of the aging population, which may raise the probability of hospitalization related complications prevention of side effects and disease is one of the nurses duties. This study is designed to determine their influence of nurse navigator on patient activities of daily living (ADL). This experimental study was quasi-experiment intervention that it conducted on 58 elderly patients hospitalized that are divided into two groups of control and experimental. In this paper, the role of the nurse navigator was designed and then implemented by the researcher with a description of its main tasks. Collecting data tools was: patient right charter questionnaire (r=0.84), modified Barthel index (MBI) (r=96-99%) and demographic characteristics. The designed program was implemented only in the intervention group. Then Activities of daily living (ADLs) were measured once a month and then three months after the intervention using the Barthel index. Finally, the experimental results were analyzed using the latest version of SPSS software. The mean ages of participants in experiment and control groups were measured as 69.9 and 72.39 years, respectively. Meanwhile, before implementing the study, the independent t-test indicated that the mean score of ADLs, in the experimental group (73.20±14.02) and the control group (71.57±16.36) before the intervention did not have a significant difference (P>0.05). Nevertheless, analysis of covariance in both groups revealed that the mean score of ADLs one month after intervention in the experimental group was calculated as 90.03±8.03, whereas in the control group, it was 70.21±22.87 three months after the intervention. In the experimental group 91.20±6.77 and in the control group was 71.36±23.40, in the experimental group was significantly higher than the control group (P <0.05). The results of this study shows that the nurse navigator plan is effective to increasing ADL level , due to the study we can say that implementing the nurse navigator plan can be known as an important step in preventing the elderly from overacting as well as empowering them to increase their independence in ADLs.*

Keywords: *Nurse Navigator , Elderly, Activities of Daily Living (ADLs).*

I. INTRODUCTION

The phenomenon of population aging is a critical demographic change that has considerably affected all countries of the world. In this regard, the population aging and the age distribution movement towards aging are one of the major global concerns (1). According to announced statistic of World Health Organization (WHO), the population of people over 60 is estimated to be 962 million in 2017; this is almost twice the population of people over 60 in 1980 (382 million); whereas it is predicted that by 2050 the elderly population , it will be their current population (2).

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Meanwhile, according to the announced results of the Statistical Centre of Iran in 2016, the population over 65 years old was reported to be 6.1%, which has almost doubled compared to the year 1986. Nevertheless, it is important to note that it is currently the highest population group in the age group of 30-64 with an average of 44.8% that are likely to be in the next thirty years, and as the group ages, the elderly will make up about half of Iran's population (3).

These statistics reveal the necessity of the country to cope with this epidemiological transition. Increasing survival and aging are associated with a higher prevalence of chronic diseases that follows several concomitant disorders in the elderly, which in turn, increases the hospitalization of this population. As such, the elderly are potentially vulnerable and the hospitalization process may increase their dependence on this group (4). Here, what is referred to as the ascending trend of the elderly population in the world and Iran and the nature of diseases in old age is not per se important. However, the consequences of this increase on various socio-economic dimensions are strongly important including on health resources and problems for themselves Elderly people (5). In this matter, in Australia and the United States, health care spending is predicted to increase by 0.6% annually as the population ages. Moreover, the European Commission has stated that only due to demographic changes in health care costs, publicity in the European Union between 2013 and 2060 from 6.9% observations will increase to 8% of Gross domestic Product (GDP) (6). In Iran, on the other hand, it is predicted that spending on elderly care will increase six multiple by 2040 (5).

Persons 65 to 79 years old had a rate of hospitalization approximately nine times that of those under 50 years and person 80 years and older were 25 times more likely to be hospitalized(7). Older adults often experience functional status changes secondary hospitalization and altered mobility status (8)Studies show that 35% of the elderly over 70 years and 50% of the elderly over 85 years' experience a decline in performance during hospitalization (9) and the inability to perform their daily activities. Note that inability has been introduced as the most important problem of this population group (10). Besides, the underperformance is defined as the loss of independence in the ADLs such as bathing, dressing, moving from chair or bed, feeding, and using the toilet (11).Hospitalization markedly increases the risk for subsequent functional decline and death. For example, approximately 1/3 of older adults surviving an acute hospitalization on a medicine service die in the year after discharge(12) An effective treatment of disability and underperformance in the elderly are usually multidisciplinary due to the need to recognize several diseases as well as the treatment disorders. A multidimensional treatment requires a multidisciplinary approach. Such treatment mainly needs referral to physical therapists, occupational therapists, nurses, social workers, pharmacists and nutritionists may be appropriate (13). In the focused research on the functional decline, as the science and art of the nurse is very crucial because nursing staff, spend more time the hospital than any more (14), so nurses in this setting are in a key position to assess the older adults function and implement intervention aimed at preventing decline (15). The results of studies show in Iran the nurse performance doesn't match with his/her duties and they cannot be performed completely and the most important reason to this matter is management problem such as excessive written assignment, lack of staff, not being motivation and inadequate learning sources (16)(17).

One of the new roles of the nurse is the navigator role, and the patient navigation program as an integrated care model is evolving. The nurse navigator emphasizes on a holistic approach to delivering

coordinated care on the physical, social, and emotional aspects. It is worthwhile to mention that Freeman in the United States developed this role for the first time for poor patients, cancer patients, and patients from ethnic minorities to improve their access to health care (18). Indeed, the nurse navigator is a leading step in the evolution of nursing care models. This role embodies the philosophy of primary health care, based on which the nurses cooperate with individuals, families and communities to empower them to access different levels of service, supplying their needs to achieve the highest health outcomes (19). role development is an important way to improve independency in nurse careers(16).

One of the health care method used to handle elderly patient who diagnosed with multiple chronic disease is coordinate care system(20). The National Cancer Institute in the United States supported the development of Patient Navigator Research Programs as a new type of care coordination model(21). Recently, this model has also been considered in the care of the elderly(22).according to studies results nurse navigator could be a useful step in caring better and high health quality in patient.

In this field, several researches have been conducted in terms of nurse navigator, including Swanson and Kuch in a retrospective study of the role of nurse navigator in the management of anxiety in adults suffering from cancer at St. Elizabeth Hospital, London, in 2008. Their results proposed intervention group anxiety was lower than the experimental group at discharge (23). Hunnibell also confirmed that the effect of nurse navigators on the quality of care for those patients suffering from lung cancer might show that the presence of nurse navigators significantly could reduce our interval between 1) suspicion of cancer and initiation of treatment, 2) performing Computerized Tomography (CT) scan, 3) performing a PET procedure and 4) performing lung consultation. This increased patients' satisfaction with the treatment and emotional quality of life in the intervention group (24). Based on the previous studies, this mentioned role of the nurse has not yet been centered on studies in Iran, in which a few researches have been investigated the level of ADLs of the elderly in Iran. Therefore, this study specifically more focused on these mentioned dimensions, which it aims is to determine the impact of the nurse navigator plan on ADLs of the elderly hospitalized at Isabn-e-Maryam Hospital in Isfahan in 2019.

II. Methodology

The current study is conducted as a dual-group, three-stage clinical trial. In this paper, the impact of independent role of nurse navigator on dependent variable i.e. ADLs of elderly hospitalized in the selected hospital at Isfahan was investigated. The study population encompasses all patients over 60 years old admitted to internal ward To do so, the sample size was specified as 25 patients based on Pocac's formula as mention below, and then the results of the Krichbaum study (25), which included 20% reduction reached 31 patients for each experimental and control groups.

$$N = \frac{2S^2(Z_1+Z_2)^2}{d^2}$$

After obtaining permission and coordination with the relevant authorities, utilizing 62 eligible elderly first chose the sampling method and then they are randomly divided into two intervention and control groups.

During the study, four patients were excluded from the study due to death and unwillingness to continue collaborating with the researcher (2 patients have died in the experimental group and one in the intervention group and one in the control group due to unwillingness to cooperate were excluded from the study). At the end, the experiment was completed with 58 patients.

The inclusion criteria were considered as follows:

- ✓ Having age over 60 years
- ✓ Hospitalizing in the internal ward
- ✓ Submitting the written qualifications to participate in the study
- ✓ Residing in Isfahan
- ✓ Being able to communicate to complete the requested scales
- ✓ Do not have mental and physical disability registered in the dossier
- ✓ In contrast, the exclusion criteria were distinguished as follows:
- ✓ Unwilling the elderly to continue to participate in the study
- ✓ Death
- ✓ Changing the residence outside of Isfahan
- ✓ Discharging before the intervention was completed

The required data were gathered using a three-part questionnaire. The first part included the studying demographic information. The second part was related to Barthel Questionnaire of MBI, which included 11 items to evaluate the level of ability to implement ADLs. The score scales are in the range of 0-100, in which a score of less than 20 means complete dependency while score 100 means complete independence. Both the reliability and validity of this instrument have been previously confirmed with internal consistency coefficient of 96% -99% (26). Before starting nurse navigator plan, modified Barthel index & demographic information questionnaire was completed by asking the elderly and finally the plan was implemented. Nurse navigator's plan is designed according to essential nurse navigator's duties(27) and for each duty some practical way is designed that they are according to Diagnostic Tools and Maneuvers to Identify Specific Impairments and Contextual Factors Contributing to Disability in Older Adults(13). For instance bathe technique is considered to emotional support. Due to study, nurse navigator classification has three phases which includes: 1. At diagnosis, 2. Post diagnosis and 3. At discharge (table 1)

2-1- The First Phase of Intervention: Diagnosis Phase

In the diagnosis phase, the researcher used Background, Affect, Trouble, Handling and Empathy (BATHE) technique after receiving demographic information and evaluating ADLs first time to provide emotional support. This model is a psychotherapy technique applicable to health care professionals, including nurses, which is a five-word abbreviation of BATHE, which consists of five main questions (28):

1) Background: You can tell me a little bit about what's happened in your life
2) Affect: These events have affected your life
3) Trouble: What is causing you the most trouble
4) Handling: How to handle this problem
5) Empathy: I understand that this is difficult for you

This technique was implemented over the navigation program. To support the patient and find resources

according to the conditions in the hospital, a checklist of Patient Rights Charter(29) was used to refer the patient to the clinician if the patient needed financial support. To do so, five patients from intervention group were presented to the worker, whose hospital cost was calculated using a discounted charity unit. Afterwards, the specialized steps were identified using maneuvers to distinguish the physical disorders that may lead to disability. These maneuvers (13) include :

Clasp hands behind head and behind back

- Place ankle on opposite knee
- Chair stand test (stand from a chair without using arms; assess qualitatively or time five consecutive attempts)
- Rise on toes (test single heel rise in healthy adults, bilateral heel rise in frail adults)
- Gentle nudge to the sternum
- Timed up and go

After implementing this phase, the members of the treatment team determined that the necessary requirements were written in the patient's dossier, and in the physician's instructions as prescribed by the physician.

2-2-The second phase of intervention: At diagnosis Phase

During the second phase (treatment phase), some consultations and other measures were implemented. In this study, theses following requirements occurred:

- 15 patients needed physiotherapy services
- 4 patients needed orthopedic consultation
- 3 patients needed neurosurgical consultation
- 2 patients were referred to a neurosurgeon during the evaluation by a physiotherapist. Both patients probably were suffered from spinal canal stenosis
- 2 patients were referred to an ophthalmologist for visual impairment
- 2 patients were requested psychiatric consultation

The nurse was required to follow-up on these requirements mandatorily due to the recording of the request for these consultations in the dossier. In this stage, after investigating the patient's health literacy, he/she was instructed to use the pamphlets available at the hospital; the focus was on educating patients about previous illnesses and enhancing patient safety. To better memorize the corrective exercises taught by the physiotherapist during the patient's visit, a physiotherapist produced a concurrent video and provided the patient with the corrective exercises as instructed. In this study, 2 elderly people needed glasses, and 25 people needed toilets, 7 elderly people needed a cane. Among them, 5 people were referred to the Diabetes Charity and the Nooro-al-Mahdi Rehabilitation Center.

2-3- The third Phase of intervention: Discharge and Follow up Phase

Now, in the third phase that is related to the post-discharge phase, 24 to 48 hours after discharge, the patient was contacted to follow-up and persuades the patient to contact the patient weekly. During the study, the researcher's Phone number was provided to the researcher so that the researcher could easily reach the researcher if needed. Afterwards, in July and September, ADLs were again investigated in the second and third time. In the control group of the elderly patient their ADL level measured on three occasions, exactly as

intervention group. They haven't got any special services relating to ADL , just what they need for their diagnosis and treatment process in fact They received routine treatment. in order to moral value a license(to number: IR.MUI.RESEARCH.REC.1398.001) got from Medical University Isfahan, and all patients signed written consent.

Table 1: classification of nurse navigator plan

Phase	Duty	Operational Action
At diagnosis	Identify patients	1. Complete the demographic questionnaire 2. ADL Level Assessment
	Emotional support	BATHE technique implementation
	Advocate on behalf of the patient throughout	1. Implementation of the Patient Rights Charter 2. Completion of the Patient Rights Support Questionnaire
	Identifies and maintains materials and resources	1. Social workers 2. patient family
	Develops a collaborative relationship	According to Diagnostic Tools and Maneuvers to Identify Specific Impairments and Contextual Factors Contributing to Disability in Older Adults Screening
Diagnosis	Coordinates patient education and care	
	Consultation with patients to answer pertinent questions	
Post discharge	Follow up phone	Follow up phone call within 24-48 hours after discharge to review information related to post discharge needs
	Re-evaluation of ADL level	Re-evaluation of ADL level one and three months after intervention

III. RESULTS

The experimental results revealed the mean age of the elderly in the experimental group was calculated to 69.90±7.89 and in the control group, whereas it was 72.39 ± 8.55. The independent t-test showed that there was no significant difference between the mean ages of the two groups (P> 0.05).

Meanwhile, the Chi-square test indicated that there was no significant difference between gender and marital status between two groups (P <0.05) and Mann-Whitney test showed no significant difference between two groups in economic situation (P> 0.05) (see Table 2).

Table 2: comparison of sex distribution, marital status in both groups

variable	gender	Experimental		Control		Chi-square test		
		n	%	n	%	X^2	df	P
gender	Female	18	60	19	67.9	0.39	1	0.53
	male	12	40	9	32.1			
Marital status	widow	9	30	11	39.3	1.23	3	0.74
	divorced	6	20	5	17.9			
	Married	14	46.7	10	35.7			
	single	1	3.3	2	7.1			

In terms of history of previous illnesses in the experimental and intervention groups, Chi-square and Fisher's exact tests showed that the frequency of cardiovascular, neurological, anemia, musculoskeletal,

endocrine disease was not significantly different between the two groups (see Table 3). The results also showed that the mean and standard deviation of the total score of ADLs in the control and experimental groups before intervention were equals to 16.36± 71.57 and 14.02±73.20, respectively. This difference was not statistically significant (p <0.05), based on independent t-test. In terms of repeated measurements Analysis of Variance (ANOVA) test, in the control group the mean score of ADLs was not significantly different between the three times (p> 0.05).

Table 3: Comparison of the frequency of disease records in study groups

Disease	Experimental		Control		Chi-square test		
	n	%	n	%	X^2	df	p
musculoskeletal	15	50	15	53.6	0.07	1	0.79
Cardiopulmonary	26	86.7	25	89.3	-	-	0.54
neurologic	5	16.7	5	17.9	-	-	0.59
Endocrine	15	50	13	46.4	0.07	1	0.79
Anemia	3	10	5	17.9	-	-	0.31

The mean and standard deviation of total scores of ADLs in the experimental group one and three months after the intervention were measured to 8.03± 91.3 and 6.77±91.20, respectively, in which the repeated measurements ANOVA test showed the mean score of ADLs was significantly different between the three times (P <0.05). The Least Significant Difference (LSD) test showed that in the experimental group the mean score of ADLs one month and three months after the intervention was significantly higher than before the intervention (P <0.05), but there was not observed a significant difference between one and three months after the intervention (P> 0.05). Finally, the independent t-test showed that the mean changing ADLs score of one month and three months after the intervention were significantly higher than the control group (P <0.05) (see Table 4).

Table 4: comparison of the mean ADL of the two group at three time

Time	Experimental		Control		t-test independent			ANCOVA		
	mean	SD	Mean	SD	t	df	p	F	df	P
Before intervention	73.20	14.02	71.57	16.36	0.41	56	0.68	-	-	-
One month after intervention	91.03	8.03	70.21	22.87	-	-	-	31.15	1	<0.001
3 month after intervention	91.20	6.77	71.36	23.40	-	-	-	25.29	-	<0.001

IV. DISCUSSION

This study is going to define the impact of nurse navigator plan on ADL in elderly patient. The result of study show there was no significant difference in ADL level between the two groups before the intervention. The results of this study showed ADL level in elderly patient who participate in research is on medium dependency range. And it is aligned with Joker's study(30). Also result show the average score of ADL between three time have significant difference (p<0.05). the following LSD test showed in experimental group average ADL score, one and three month after intervention is more than before study(p<0.05). but between one and three month after intervention there were no significant difference (p>0.05). These statistical results could reflect the influence of the nurse navigator on the

level ADL in elderly patient. This study result is aligned with Rahimi (31), Ko(32), Velilla(33), Bagery(34) All the above mentioned studies are in the area of specialized rehabilitation that performed at ADL level so our conclusion is that nurse navigator program can be effective on level of ADL.

The average score of ADL in control group before and one, three month after discharge was on medium range which this result are aligned with Jokar (30) and Diaz (35) results. Elderly patient have the potential to decrease the ability to perform their ADL a without some special services their ADL level will remain on a lower range.

V. CONCLUSIONS

The results of the current research confirmed the positive impact of the nurse navigator on the ADLs preventing disease progression, screening, encouraging patient follow-up, increasing elderly empowerment, reducing the medical costs, and avoiding excessive costs to the family and government. However, one of the limitations of the current research was access to the hospitalized elderly only, having a relevant and study background. Therefore, it is suggested that in addition to caution in generalizing results in future research, more samples and different age groups will be used for community and non-hospital research.

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