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Research Paper: Factors Associated With Fear of Falling and Functional Independence in Older Adults in Iranian Nursing Homes

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ABSTRACT

Background: Fear of falling is common amongst older adults, especially those who live in nursing homes. This study aimed to determinate factors associated with fear of falling and functional independence in older adults living in nursing homes.

Methods: This was a cross-sectional study using a convenience sampling method to enroll 200 older adults living in nursing homes from 25 senior centers in Tehran (districts 1 and 2) between September 2015 and November 2015. Main outcome measurement instruments were the 16-item falls efficacy scale international (FES-I, Persian version) and 11-item Barthel index (BI) functional independence measure. In this study, variables were analyzed using Student t test and ANOVA. The Pearson coefficient correlation was used to examine the relationship between FES and BBS. A 2-tailed $P < 0.05$ was considered statistically significant.

Results: The participants were mostly female (51.5%) and aged over 70 (mean age 76.89 ± 8.50 y). Of 200 seniors within the study, 60.8% experienced one or more falls during the last year. Statistically significant relationships were found between the fear of falling and functional independence ($r = -0.524$; $P \leq 0.001$). There was a significant relationship between fear of falling and age ($P = 0.039$), history of falling ($P = 0.002$), and chronic disease ($P = 0.009$). In addition, there was a significant relationship between functional independence and some older adults' characteristics, such as gender ($P = 0.048$), education level ($P = 0.028$), duration of living in nursing home ($P = 0.002$), history of falling ($P = 0.006$), and chronic disease ($P = 0.01$).

Conclusion: According to the findings, there was a high level of fear of falling in the older adults. The fear of falling in the older adults living in nursing homes is associated with age, history of falling, and chronic disease. There was a significant association between functional independence and variables of gender, education level, duration of living in nursing home, history of falling, and chronic disease.

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1. Background

Falls are a major health concern in older population and require effective prevention. Falls are the second leading cause of accidental death worldwide with an annual rate of 424000 deaths (Vavilala, Curry, & Ramaiah, 2011). Fear of falling is a complex construct, thought to predominantly affect older adults. However, not everyone who falls develops a fear of falling and people who have not fallen may be fearful even though it is commonly assumed that falls and fear of falling are conflated (Yardley et al. 2002; Painter et al. 2012). Additionally, fall-related injuries are 5 times more likely to occur in older adults aged over 65 years (Orces 2014). Both the incidence of falls and the severity of fall-related complications rise steadily after the age of 60 (Kalula et al. 2016). About a third of community-dwelling people aged 65 years and older fall each year; the rate of falls rises with age (Bertera et al. 2007).

Fear of falling has been suggested to be an important factor in predicting future falls with the major consequence of avoiding activities (Bertera et al. 2007; Soriano et al.2007). With regard to consequences of falling, it is crucial that at risk individuals understand possible causes of falling. Providing fall prevention education for older adults can help them understand falling risk factors (Soriano et al. 2007). Educational level was identified as an independent risk factor for any and multiple falls (Gill, Taylor & Pengelly 2005); higher education and income were both associated with lower falling risk (Tao & McRoy 2015).

Falling risk factors could be categorized as intrinsic or extrinsic (Guthrie et al. 2012). The intrinsic risk factors included health history and biological factors. These factors extend beyond age, health and medical conditions, physical fitness, mobility, function, history of falls, gender, race/ethnicity, and cognitive and psychological issues (Guthrie et al. 2012). According to the annual rates of nonfatal injuries, the health impact from falls may be greater for female older adults than males (Self-Reported Falls, 2006). Similarly, white women also showed significantly higher rates of fall-related fractures such as hip than women of other ethnicities (Hanlon et al. 2002).

Functional disability is common in older adults, which is associated with high risk of subsequent health decline (Soriano et al. 2007). Traditionally functional status is defined as the ability to perform activities such as bathing, dressing, feeding, toileting, having continence, housekeeping, transferring, using telephone, cooking, managing money, and so on. It is a strong predictor of survival, a determinant of caregiving needs and health care costs, and a factor in decisions about medical procedures (Kurella et al., 2009; Tao & McRoy 2015). It is reported that fear of falling may only indirectly influence activity restriction through its impact on balance and functional mobility (Allison et al. 2013). However, there is an association between functional mobility and recurrent falls for community-dwelling older adults (Shumway-Cook, Brauer & Woollacott 2000).

A major goal for societies with elderly population is to create conditions for them to stay healthy and remain active at their homes as long as possible (Kurella et al. 2009). Therefore, studying correlates of fear of falling is an important research avenue as it can provide guidance for identifying elderly people who are at risk of falls, loss of functional independence and quality of life. Therefore, the purpose of this study was to determinate association between demographic characteristics of elderly living in nursing homes and fear of falling and functional independence.

2. Materials and Methods

This was a cross-sectional study, with a sample of older adults recruited in 25 nursing homes in Tehran, Iran between September 2015 and November 2015. To conduct the research study, the researchers obtained approval from the Iran Medical Science University, Tehran Review Board (IR.IUMS.REC:1394.921180202) for the protection of human subjects. All participants provided written informed consents which were approved by the institutional review board before participation.

Sample size

Calculation of the sample size was based on the data collected from previous studies and the following formula:

$$n = \frac{(Z_{1-\alpha/2}+Z_{1-\beta})^2}{\frac{1}{2} In \frac{1+r}{1-r}} +3$$

, where n stands for "sample size", σ^2 for "standard deviation", Z_β for "0.84 for 80% power", $Z_{\alpha/2}$ for "level of statistical difference as 1.96", and r for "according to the previous studies". Using the above formula and similar studies conducted previously, we calculated the sample size as 200.

Two hundred nursing home living older adults, were recruited with convenience sampling method, and participated in this study. Eligibility requirements included aged 65 years or older, able to walk three meters comfortably (with or without aid), and stand for a few min-

utes unsupported (two to three minutes to administer the Functional Reach test). Exclusion criteria included having cognitive impairment confirmed by abbreviated mental states test (AMTs) score < 6, psychiatric disorders, acute conditions such as arthritis, cardiac disease, and stroke, severe hearing and vision deficits, and language impairment.

Assessment tools

Falls-related self-efficacy (FES-1) was designed to assess the degree of perceived efficacy at avoiding fall during each of 10 relatively non-hazardous activities of daily living, including taking a bath or shower, reaching into cabinets or closets, preparing meals that do not require carrying heavy or hot objects, walking around the house, getting in and out of bed, answering the door or telephone, getting in and out of a chair, getting dressed and undressed, light housekeeping, and simple shopping (Mahoney et al. 1965; Tinetti et al. 1990).

The Persian version of FES-I questionnaire was used to evaluate the worry associated with the possibility of falling when performing 16 activities inside and outside home, with scores from 1 to 4 points per each activity (Dadgari et al. 2015). The total score is obtained by the sum of the scores in all activities, ranging from 16 to 64 points, in which the higher value indicates lower self-efficacy. Both reliability and validity of the Persian FES-I were found to be acceptable (Cronbach $\alpha = 0.75$, interclass correlation coefficients = 0.99, $P < 0.001$ and standard errors of measurements = 1.82) (Mosallanezhad et al., 2011).

Activities of daily living were based on the Barthel Index (BI) (Morris et al., 2004). BI is a scale that measures disability or dependence in activities of the elderly. It measures the capacity to perform 10 basic activities of daily living. In particular, items are divided into groups that relate to self-care such as feeding, grooming, bathing, dressing, bowel and bladder care, and toilet use and mobility such as ambulation, transfers, and stairs climbing. In this scale, higher scores reflect greater independence in the participants. In BI original version, a patient with 100 score is continent; independent in feeding, dressing, getting in and out of bed, and bathing; can walk at least one block; and can climb up and down stairs without help. According to the Shah et al., a score of 0–20 suggests total dependence, 21–60, severe dependence; 61–90, moderate dependence; and 91–99 slight, dependence (Shah, Vanclay & Cooper 1989).

In this study, the inter-rater reliability coefficient (Kappa) for every item was more than 0.6; Inter-rater reliability of total BI was 0.998. In addition, the questionnaire reliability coefficient (internal consistency) was measured as 0.96-0.99 and item-total correlation confirmed its reliability, too. In Tagharrobi et al. study, its concurrent validity with Persian original BI was confirmed ($r = 0.993$, $P < 0.0001$) and the known-groups approach revealed its validity ($P < 0.0001$) (Tagharrobi, Sharifi & Sooky 2011).

Statistical Analyses

Statistical analyses were performed by IBM SPSS version 20.0 (IBM Corporation, Armonk, NY, USA). In this study, variables were analyzed using Student t test and ANOVA. Pearson coefficient correlation was used to examine the relationship between FES and BBS. A 2-tailed $P < 0.05$ was considered statistically significant.

3. Results

Demographic characteristics of the participants are presented in Table 1. A total of 200 elderly living in nursing homes with the mean (SD) age of 76.89(8.50) years (age range 60-93) were included in the study and remained until the end of the study. One hundred and three females and 97 male participated in the study. Fifty-nine participants were 70 years of age and 65 participants were 71-80 years of age. Nine percent of the participants were illiterate (84%) and 32% of them were living for more than 2 years in the nursing homes. As for marital status, 50.3% were widowed, 32.7% married, and 14.5% had no children. About 36% had good economic status. The most frequently reported medical condition among participants was cardiovascular (70 %) problems, followed by Type 2 diabetes mellitus (31.5%), and pulmonary diseases (11.5%). Twenty (39.2%) participants reported one fall in the previous 12 months (Table 1).

Sixty-nine percent reported high level of fear of falling. Only 3% were fully independent functionally (Table 2). The Pearson correlation coefficient between the fear of falling and the functional independence were -0.524, which showed a high correlation between them with the significance of $P < 0.001$ (Table 3).

Factors associated with the fear of falling are shown in Table 4. In this study, fear of falling in the elderly living in nursing homes increased significantly with age ($P = 0.039$), history of falls ($P = 0.002$) and chronic diseases ($P = 0.009$). There was a significant association between functional independence and gender ($P = 0.048$), educa-

Table 1. Demographic characteristics of the elderly people living in the nursing homes

Variable		No. (n = 200)	%
Gender	Male	97	51.5
	Female	103	48.5
Age, y	70	59	29.5
	71-80	65	32.5
	81-90	62	31.0
	91	14	7.0
Marital status	Married	65	32.7
	Single	22	11.1
	Widow	100	50.3
	Divorced	12	6.0
Number of children	0	29	14.5
	1-2	81	40.5
	3	90	45.0
Economic status	Good	72	36.0
	Mild	94	47.0
	Bad	34	17.0
Length of stay, y	1	56	28.0
	1-2	80	40.0
	2	64	32.0
Chronic disease	No	25	12.5
	With 1 disease	44	22.0
	With 2 disease	131	65.5
Type of disease	Cardiovascular	140	70.0
	Types 2 diabetes mellitus	63	31.5
	Pulmonary	23	11.5
	Gastrointestinal	22	11.0
	Cancer	6	3.0
	Other	53	26.5
History of falling	Yes	78	39.2
	No	121	60.8

Variable		No. (n = 200)	%
Number of fallings	1	63	52.1
	2	36	29.8
	3	13	10.7
	4	6	5.0
	5	3	2.0
	Total falling	121	100.0

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tion (P = 0.028), duration of stay (P = 0.002), and chronic diseases (P = 0.01).

4. Discussion

Our objective was to study the impact of socio-demographic and health-related variables on fear of falling and functional independence in older persons. We identified two socio-demographic and one health-related factors which were significant correlates of fear of falling.

To date, only one group of risk factors such as gender, age, demographic status, and cognitive status were reported to be robustly associated with fear of falling (Guthrie et al., 2012). However, some new factors such as depression and anxiety, multiple drugs, and psychotropic drugs have been reported in different cohorts (Denkinger et al., 2015). Compared to previous studies, Kumar et al. reported that a wider range of factors are associated with fear of falling among community-dwelling elders. According to them, these variables are relatively easy to assess clinically and could be used to identify older people at a higher risk of fear of falling (Kumar et al., 2013). Choi et al. found characteristics which were independently associated with fear-induced activity restriction such as low socioeconomic status, cognitive impairment, difficulty with activities of daily living, and history of injurious falls (Choi & Ko 2015). Hanlon et al. in a study aimed to identify more socio-demographic falls risk factors. They found that educational level as an independent

Table 2. Fear of falling and functional independence levels in the elderly people living in the nursing home

Variable		No. (n = 200)	%
Fear of falling	Little fear	34	17.0
	Intermediate	28	14.0
	Highest concerns	138	69.0
Functional independence	Dependence	82	41.0
	Moderate dependence	82	41.0
	Slight dependence	30	15.0
	Full independence	6	3.0

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Table 3. Pearson correlation for fear of falling and functional independence

	Correlation Coefficient (Fear of Falling)	P-Value
Functional independence	- 0.524	P < 0.001

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Table 4. Associations between the older adult's socio-demographic variables and fears of falling and functional independence

Variables		Fear of Falling (n = 200)			Functional Independence (n = 200)		
		Mean	SD	P-Value	Mean	SD	P-Value
Gender[a]	Female	35.38	12.17	0.211	64.47	18.75	0.048*
	Male	33.26	11.69		69.74	18.62	
Age[b], y	70	31.32	11.19	0.039*	71.03	20.47	0.254
	71-80	36.34	11.98		65.52	17.00	
	81-90	33.92	12.63		65.76	18.63	
	91	39.36	9.15		62.78	19.81	
Education[b]	Illiterate	31.28	8.45	0.459	62.83	18.72	0.028*
	Primary/Secondary School	34.89	11.86		66.02	18.81	
	Diploma or higher	33.77	14.59		76.64	16.27	
Marital status[a]	Married	34.58	12.35	0.894	67.40	18.42	0.856
	Single	34.34	11.79		66.88	19.16	
Number of children[b]	No children	33.55	12.23	0.771	72.55	17.56	0.169
	1-2	35.07	12.61		67.31	19.57	
	3	33.96	11.36		65.00	18.36	
Economic status[b]	Good	32.21	11.89	0.164	69.62	17.71	0.273
	Average	35.61	12.01		66.25	19.22	
	Bad	35.41	11.66		63.68	19.86	
Duration of stay[b], y	1	36.48	11.80	0.225	60.64	17.28	0.002*
	1-2	34.16	11.66		66.81	18.77	
	2	32.72	12.38		72.89	18.60	
History of falls[a]	Yes	31.26	11.46	0.002*	71.37	18.20	0.006*
	No	36.49	11.82		63.99	18.62	
Chronic disease[a]	Yes	34.64	15.26	0.009*	75.21	17.10	0.01*
	No	35.90	11.24		71.39	18.13	
Drug addiction[a]	Yes	32.52	11.86	0.394	67.63	20.20	0.859
	No	34.46	11.98		66.94	18.66	
Sleep disorders[a]	Yes	34.44	11.86	0.866	66.22	19.09	0.335
	No	34.12	12.32		69.07	18.15	

*Significant results.

[a] t test.

[b] ANOVA.

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risk factor for any and multiple falls, and higher education and income were both associated with lower risk of falling (Hanlon et al., 2002). They have suggested that falls risk may be influenced more by a social determinant such as educational or income level than a biological determinant such as race (Tao & McRoy 2015).

Being a female is a risk factor for fear of falling among adults (Mahoney et al. 1965). The absence of association, in our study between gender and the fear of falling is inconsistent with other studies that have found links between gender and the fear of falling (Friedman et al., 2002; Lach 2005; Mann 2006; Austin et al., 2007; Zijlstra et al., 2007), and in two longitudinal studies, in which women developed this fear more frequently than male adults (Mann 2006; Austin et al., 2007). The association between the history of falling and fear of falling is in agreement with the literature (Murphy, Williams & Gill 2002). However, Filiatrault et al. did not find a significant association between the fall history and the fear of falling (Filiatrault Desrosiers, & Trottier 2009). The association found in our study (after Pearson's correlation coefficient analysis) between age and the fear of falling is inconsistent with other studies (Austin et al., 2007; Scheffer et al., 2008; Da Costa et al. 2012). However, Zijlstra et al., in a study among 504 adults aged 70 and older who reported fear of falling and fear-induced activity avoidance, observed an association between the increase in age and the fear of falling (Zijlstra et al., 2007).

In the literature, different instruments were used to measure fear of falling in the elderly. Firstly, some instruments measure fear of falling directly; these are mostly one-item instruments with a single question, such as how much fear of falling do you have? Secondly, they used instruments focusing on balance and fall-related self-efficacy, such as the falls-efficacy scales, of which several modifications have been developed. Other scales, such as the Activity-specific Balance Confidence (ABC) scale, are used but are less sensitive to change than the FES (Visschedijk et al., 2010; Mattos et al., 2014). Furthermore, FES is more suitable for use in vulnerable older persons than the ABC scale, which includes several more complex activities. Nowadays, the FES-I, which has been validated in Iran, is regarded as the most suitable instrument for community-dwelling older people. In conclusion, our study supports the use of the FES-I as an easy to apply instrument to measure fear of falling in nursing home living people.

In this study, we found that 41% of the nursing home living adults had high level of independence and 41% had moderate dependence. There were different reports about distribution of functional capacity in the older adults. For example, in a study conducted on 760 institutionalized Brazilian elders, Mattos et al., found Activities of Daily Living (ADL) dependence of 50.3% and ADL dependence of 81.2% using the Katz and Lawton scales (Araújo & Ceolim 2007). In another study, Araújo and Ceolim evaluated ADL dependence of elderly residents in long-term care institutions in Taubate, São Paulo, using the Katz and Lawton scales, and found that 63% of elderly people were dependent (Binkin et al. 2007). In addition, it was reported that France would be the European country with 28% dependence in the ADL in contrast to Ireland, with only 8% (Millán-Calenti J et al. 2010). In the United States, 34% of the older adults (≥65 y) were dependent on carrying out activities of daily living. This difference among studies for functional capacity in adults seems to be due to the socio-economic and cultural differences, as well as to the methodology used. Therefore, homogeneous criteria should be established to compare different populations.

With respect to functional independence, we identified 4 socio-demographic factors (gender, education, history of falling, and duration of stay) and one health-related factor (chronic disease), which were significant univariate correlates. This pattern is consistent with fear of falling in history of falling and chronic disease. Comparing with a study performed in the Brazil, which has used different study instruments (Araújo & Ceolim 2007), a high prevalence of functionally dependence was seen among elderly who had stayed at the institution for less than one year. With regard to the age, we did not find any association between age of elderly persons and functional capacity.

However, inconsistence with this result, several studies (Binkin et al. 2007; Millán-Calenti J et al. 2010), mostly Brazilian studies, have pointed out the association between higher dependence with older age among community-residing elderly population (Freitas et al., 2012). The results of this study showed that the probability of dependence was higher in female elderly. Similarly, an American study reported the percentage of independence of 56.1% for women and 77.7% for men.

Our research survey had some limitations, too. First, its cross-sectional nature does not allow conclusions of causality on the observed associations (e.g. between avoidance of activity and limitations in activity of daily living). Second, we included nursing home living older persons and excluded cognitive impaired persons, which can be considered as a heterogeneous and limited sample. Finally, in this study all measures were self-reported and none were performance-based measures. Therefore,

future studies should measures other variables to enrich our understanding of the complex construct of fear of falling such as balance, gait, muscle strength, vision, etc.

In conclusion, there was a high association between fear of falling and functional independency in older adults. The fear of falling in the nursing home living older adults is associated with age, history of falling, and chronic disease. Moreover, there was a significant association between functional independence and variables of gender, education level, length of living in nursing home, history of falling, and chronic disease. The evaluation of this data contributes to establishing indicators and development of preventive strategies and specific interventions for the elderly with fear of falling.

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Conflict of interest

The authors declared no Conflict of interests.

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Research Paper: Relationship Between Talent Management and Organizational Commitment in Midwives Working in Iran University of Medical Sciences

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ABSTRACT

Background: One of the important challenges to health service policy makers is conservation of human force. Shortage of human forces required for health and treatment services causes harm to quality of services. The present research aimed at determining the relationship between talent management and organizational commitment in midwives working in hospitals affiliated to Iran University of Medical Sciences.

Methods: This research was a descriptive cross-sectional study. Because the sample size was equal with the statistical population, all midwives working in hospitals affiliated to Iran University of Medical Sciences participated in it (177 midwives). The total count sampling method was used and duration of sampling lasted two months (from April 2 to May 31). Information was collected using Arabpour and Nikpour's talent management researcher-made questionnaire and Allen-Meyer's [24-item] Organizational Commitment Questionnaire. The obtained data were analyzed using descriptive statistics, analysis of variance, Pearson's correlation and Independent t test by SPSS (Version 16).

Results: Talent management was in a higher-than-average condition with a mean score of 3.05. Dimensions of talent development (3.37) and talent conservation (2.73) had the highest and lowest mean scores, respectively. The score of organizational commitment of midwives was 101, and the affective commitment dimension had the highest mean value (35) among others. Pearson's correlation coefficient for the correlation between talent management (and its dimensions) and organizational commitment (and its dimensions) revealed a statistically significant relationship ($P < 0.001$, $r = 0.48$).

Conclusion: Considering the correlation between talent management and organizational commitment, hospital managers can improve midwives' commitment using new management methods to encourage growth of human force talents and capabilities.

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1. Background

Conservation of human forces is an important challenge to health service policy makers. Performance and quality of a health system depends on the quality and motivation of its human resources, which are considered the main component of patient care. Lack of concern for human resource management problems prevents improvement of health care services provided to patients (Aliyu et al. 2014). Dissatisfaction and increased turnover in health and treatment service professions harms quality of services and results in a decrease in efficiency and health care quality, imposes overload on other employees, and leads to low spirit and motivation among employees (Al-Hassan 2014).

In today's competitive world, human resources are significantly important to organizations and turnover of talented employees are a threat to organizational growth. Moreover, with the increase in selection and hiring processes, additional costs are imposed on organizations. Through proper management and generation of motivation in employees, it is possible to avoid adverse effects of turnover. Committed employees are considered an organization's valuable assets, whose high levels of commitment bring about increased job satisfaction, motivation, performance and creativity and reduce absence and turnover (Mosadeghrad, Ferlie, & Rosenberg 2008). With higher levels of commitment, employees offer higher levels of performance in an organization (Nehrir et al. 2010).

Considering the special role of human resources in achievement of goals and increased production and effectiveness, employees' commitment to organizational goals can be the key to organizations' success (Mosadeghrad, Ferlie, & Rosenberg 2008). Managers and their leadership styles considerably influence the use of financial and human resources and success of organizations. Few studies have been conducted on the new methods of management and advantages of supporting employees (Lesly Onnis, 2014). Managers' leadership style contributes to the growth of employees' organizational commitment and quality of services (Mosadeghrad & Ferdosi 2013). Organizations all over the world are confronted with numerous problems in hiring and conserving the talents required for attainment of organizational goals, and the number of these challenges is higher for beginners (Amiri et al. 2014). Talent management is one of the most vital challenges of human resources that organizations will face in future decades. Organization managers allocate more than 20% of their time to activities associated with this kind of management (Collings, Mcdonnell & Scullion 2009). Complete implementation of talent management corresponds to the mission, vision, and values of organizations (Tajuddin & Kamaruddin 2014). Talent management is among the new management methods, which have shaped evolution of human capital management and have overcome weaknesses of traditional approaches. This aproach can be used along with human resource management to successfully discover and conserve talents (Taleghani et al. 2014). Talent management is a continuous process, which should be an integral part of organizational culture. This kind of management can improve organizational learning, too (Kheirkhah, Akbarpouran & Haqani 2016).

Because no prior study has been conducted in hospitals and among midwives, the present research aimed to study the relationship between talent management and organizational commitment of midwives in hospitals of Iran University of Medical Sciences in 2016.

2. Materials & Methods

Study type

It was a descriptive cross-sectional study that was conducted on midwives working in the maternity ward, NICU (Neonatal Intensive Care Unit), IVF (In Vitro Fertilization), women surgery ward, and nursing offices of hospitals affiliated to Iran University of Medical Sciences in 2016. Because the study examined the views of midwives in the management and organizational commitment from, all levels of working midwives in the centers of universities were sampled.

Method

AfterobtainingpermitNo.IR.IUMS.REC.1394.9211373210 from the university Ethics Committee and a letter of introduction from the Research Deputy, the researcher referred to hospitals affiliated to Iran University of Medical Sciences and after introducing herself, expressed research objectives, and explained the research significance. Then the questionnaires were provided to the qualified participants.

Research participants

The total count sampling method was used to include all of the midwives with a minimum degree of midwifery associate degree and 6 months of experience. The inclusion criterion for the management section was one year (or more than a year) of experience with management in a related unit. If the existing management lacked the adequate experience, questionnaires would be completed based on the management type by the former manager.

Data instruments

In this research, three questionnaires, namely the demographic characteristics questionnaire, talent management (for assessment of the talent management system of organizations), and Allen-Meyer's Organizational Commitment questionnaire were used. To assess talent management, Arabpour and Nikpor 25-item researcher-made questionnaire was used. Dimensions of the questionnaire consisted of talent absorption, talent conservation, and talent development. Items of this questionnaire were ranked based on a 5-point Likert-type scale from "completely disagreed" to "completely agreed" and the options were scored from 1 to 5. A number of 9, 6, and 10 questions were designed for the talent absorption, talent conservation, and talent development dimensions, respectively. The questionnaire results were interpreted using the mean score values. To this end, a mean talent management score of less than 3 was considered below average and the score of 3 and higher was considered higher than average (Arabpour & Nikpour 2014). Validity of the questionnaire was assessed using the content and face validity assessment tests, and its reliability was confirmed with a Cronbach α coefficient of 0.82. The calculated Cronbach α coefficients for absorption, conservation, and development of talents were 0.70, 0.73, and 0.87, respectively.

Allen-Meyer's 24-item organizational commitment questionnaire was used to measure organizational commitment of employees based on a 7-point Likert-type scale (completely disagreed, disagreed, almost disagreed, no idea, almost agreed, agreed, completely agreed) and items were scored from 1 to 7. The first, second, and third 8 questions tested the affective, continuance, and normative dimensions of commitment, respectively. Questions 4, 5, 6, 8, 9, 18, 19, 21, 24 were ranked in a reverse order (Allen & Meyer 1990). This questionnaire has been translated into Persian and its validity and reliability were tested (Saatchi, Kamkari & Askarian 2010).

Validity of this questionnaire was tested using the content and face validity method. The Cronbach α coefficients obtained in assessing reliability of the organizational commitment and its dimensions (affective, continuance, and normative) of the questionnaire were 0.80, 0.78, 0.81, and 0.70, respectively. The minimum and maximum scores were 24 and 168, respectively. A higher score showed a high level of organizational commitment.

Data analysis

After collecting the questionnaires, the obtained data were analyzed using descriptive statistics, analysis of variance, Pearson's correlation and Independent t test by SPSS version 16.

3. Results

Concerning demographic characteristics, 86(48.6%) participants were below 29 years old, 143(80.8%) had bachelor's degree, 83(46.8%) were temporary employees, and 65(36.7%) were officially employed. Moreover, 101 participants had an experience of less than 6 years. Demographic characteristics information is shown in Table 1.

The numerical indicators of talent management and its dimensions are shown in Table 2.

According to Table 2, 57.6% of participants reported a talent management status of higher than average. The mean (SD) score of talent management was 3.05(0.68). The talent development dimension (with a mean (SD) score of 3.37(0.85) had the highest mean score, whereas the talent conservation dimension with a mean (SD) score of 2.73(0.92) had the lowest mean score.

The mean (SD) score of organizational commitment of working midwives was 101(20.06). The affective commitment dimension with a mean (SD) score of 35 (9.56) had the highest mean, whereas normative commitment with a mean (SD) score of 31 (7.28) had the lowest mean score (Table 3).

Results of the Pearson's correlation test (Table 4) revealed a statistically significant relationship between talent management and organizational commitment ($P < 0.001$, $r = 0.48$). The highest level of relationship between organizational commitment dimensions with talent management was observed between affective, normative, and continuance commitment dimensions ($P < 0.001$). And the highest level of relationship between dimensions of talent management with organizational commitment was observed between talent development, talent conservation and talent absorption dimensions, in the mentioned order ($P < 0.001$).

4. Discussion

Considering the importance of human resources, this study aimed to investigate the relationship between talent management and organizational commitment in midwives working in hospitals affiliated to Iran University of Medical Sciences. Analysis of talent management among midwifery managers suggest that the mean scores of talent absorption and conservation dimensions were lower than average.

Table 1. Demographic characteristics information for the research participants

Variable	Sub Group	No.	%
Age, y	Lower than 29	86	48.6
	30-39	31	17.5
	40-49	36	20.3
	More than 50	24	13.6
Marital status	Single	85	48
	Married	92	52
Educational level	Associate degree	4	2.3
	Bachelor's degree	143	80.8
	Master's degree	30	16.9
Employment	Official employee	65	36.7
	Temporary employee	83	46.8
	Under contract	29	16.5
Organizational position	Midwife	167	94.3
	In-charge midwife	10	5.7
Work experience, y	Lower than 6	101	57.1
	6-12	14	7.9
	13-18	11	6.2
	19-24	26	14.7
	More than 25	25	14.1
Work experience in current workplace	Lower than 6	128	72.3
	6-12	17	9.6
	13-18	15	8.5
	19-24	9	5.1
	More than 25	8	4.5
Total		177	100

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Based on the research by Nopasand Asil et al. (2013), the talent conservation and development had the highest and lowest mean scores, respectively, which does not comply with results of this research. This difference in results can be ascribed to the difference between the research environments, populations, and jobs of participants. In the research by Nopasand Asil et al. (2013), all technical and administrative employees completed the questionnaires. Considering the fields of operation of the participants, the management greatly valued payment of wages and benefits based on competencies of employees and realization of organizational goals, yet it failed to value training courses. Since in hospitals midwives are involved in the health of mothers and neonates, the management has tried to improve knowledge and competency of its employees, but salaries are not paid in accordance with competency

Table 2. Talent management and its dimensions of the research participants (2016)

Talent Management and Dimensions	Below Average (Less Than 3), No. (%)	More Than Average (3 and Higher), No. (%)	Mean Score	SD	Range of Variations
Talent management	75(42.4%)	102(57.6%)	3.05	0.68	1.1-4.6
Talent absorption	85(48%)	92(52%)	2.91	0.66	1-5
Talent conservation	96(54.2%)	81(45.8%)	2.73	0.92	1-5
Talent development	48(27.1%)	129(72.9%)	3.37	0.85	1-5

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Table 3. Organizational commitment and dimensions of study participants (2016)

Organizational Commitment and Dimensions	Minimum	Maximum	Mean Score	SD
Organizational commitment (168–24)	44	149	101	20.06
Affective dimension (56–8)	12	56	35	9.56
Continuance dimension (56–8)	8	55	33	10.20
Normative dimension (56–8)	10	51	31	7.28

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Table 4. The relationship between talent management (and dimensions) with organizational commitment (and dimensions) in the study participants (2016)

Organizational Commitment / Talent Management	Organizational Commitment	Affective Commitment	Continuance Commitment	Normative Commitment
Talent management	r = 0.48 P < 0.001	r = 0.54 P < 0.001	r = 0.16 P < 0.001	r = 0.37 P < 0.001
Talent absorption	r = 0.36 P < 0.001	r = 0.38 P < 0.001	r = 0.13 P < 0.001	r = 0.30 P < 0.001
Talent conservation	r = 0.42 P < 0.001	r = 0.47 P < 0.001	r = 0.14 P < 0.001	r = 0.34 P < 0.001
Talent development	r = 0.43 P < 0.001	r = 0.51 P < 0.001	r = 0.14 P < 0.001	r = 0.31 P < 0.001

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of employees. Moreover, they performed poorly with regard to the talent absorption and conservation dimensions.

In the investigation by Salehi Kurd Abadi et al. (2015), all three dimensions of talent management were in a satisfactory condition. Results of this research only comply with our findings concerning development of talents. The reason for the lack of compliance between the results can be ascribed to the difference between two research settings. Environments such as justice departments try harder to absorb and conserve employees due to their high number of clients, whereas the health and treatment centers employ temporary and K factor forces to meet their needs.

Although this strategy effectively and successfully meets the system's need for human forces, it can adversely affect the organizational commitment of forces due to the short-term and temporary employment procedure, periodic duties assigned to forces in the health and treatment system, and lack of employed and contracted forces.

In Haji Nabi, Reisi & Ojagh (2012) study, the mean scores of talent absorption and conservation dimensions

were lower than average, which complies with our findings. This similarity can be attributed to the similarity between the research populations in both studies. However, the mean score of the talent development dimension was lower than average, which does not comply with our findings. In the research by Haji Nabi et al. the mean score of the choice and use of talents dimensions were higher than average. The lack of compliance between the results can be ascribed to the different questionnaires with more dimensions.

Results of analysis of organizational commitment condition show that the mean score of organizational commitment of working midwives was 101. The affective commitment dimension (with a mean score of 35) had the highest mean, whereas normative commitment (with a mean score of 31) had the lowest mean score.

Results of the study of Saleh, Darawad & Al-Hussami (2014) showed that the organization commitment and affective commitment scores of nurses working in wards were 103.68 ± 24.98 out of 161 and 34.56 ± 8.74 out of 56, respectively. These results comply with the present research results (101 ± 20.06 and 35 ± 9.56). However, levels of organizational commitment in nurses working in ICUs (intensive care units) were lower than ward nurses, which can be attributed to the sensitivity and significance of operations in the intensive care units. Similar to the present study, in the studies by Savaneviciene & Stankeviciute(2011) and Mokhtari, Roodgarnejad & Kiakajori (2014), affective commitment and normative commitment had the highest and lowest mean scores, respectively.

In the investigations by Mandegar et al. (2015), Zarei et al. (2016), and Mosadeghrad & Ferdosi (2013) the normative commitment and continuance commitment dimensions had the highest and lowest scores, respectively, but are not in line with our results. This lack of conformity could be attributed to the level of moral knowledge acquired in families as such knowledge is more valued in smaller cities, while the present research was conducted in Tehran Metropolis.

In general according to the research findings, there was a relationship between talent management and organizational commitment, and this finding is in line with the results reported by Arab Halvaei & Ejlali (2015).

According to our findings, talent management showed statistically significant relationship with organizational commitment of midwives. Talent management status was higher than average. The mean scores of the talent absorption and conservation dimensions were lower than average, and thus measures should be taken to reform the processes of hiring and absorbing midwives, signing contracts with them, and paying salaries and benefits based on their professional competencies and effectiveness. The average score of talent development dimension was higher than average, and thus improvement of talent management status is owed to this dimension. Talent management can be utilized as an effective strategy for improving organizational commitment of midwives.

Finally, hospital managers can use talent management for improving and increasing midwives' organizational commitment. In this regard, it is recommended that the relationship between talent management with organizational commitment be compared in midwives working in public and private hospitals. Also similar study with larger sample in health centers is done and the results be compared with public and private hospitals results.

Considering the relationship between talent management and organizational commitment, these results can be used for increasing midwives' commitment. With increasing commitment, turnover will decrease and performance and quality of services will increase.

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Conflict of Interest

The authors declared no conflict of interests.

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Research Paper: Evaluation of Death Anxiety in Elderly Patients With Cancer Undergoing Chemotherapy

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ABSTRACT

Background: Aging population and prevalence of diseases like cancer among them have affected general health of the elderly, so that one of the influential factors on health components of elderly patients with cancer is death anxiety, which has important consequences in them.

Methods: In this cross-sectional (descriptive correlational) study, 130 elderly patients with cancer undergoing chemotherapy were recruited by convenience sampling method. To collect information, demographic information form and Templer's death anxiety inventory were used. To analyze the data, descriptive statistics, statistical tests were used through SPSS 21.

Results: The results showed that 42.3% of the old people had high death anxiety. The mean (SD) score of death anxiety was found 6.85 (2.7) which was at the desirable level. In this study, death anxiety of old people had significant relationship with variables of age ($P < 0.001$), marital status ($P < 0.012$), education level ($P < 0.001$), cancer type ($P < 0.023$), period of suffering from cancer ($P < 0.018$), and other comorbid diseases ($P < 0.001$). So that old people with lower age, higher level of education, married, lower period of cancer, and without underlying diseases, had lower death anxiety.

Conclusion: The results of this study can be a basis for better understanding of educational, consultation, and supporting needs regarding coping with anxiety and its management (based on the culture of the community) in this group of elderly patients with cancer.

1. Background

The ever-increasing population of elderly people in the world is to the extent that has been described as silent revolution (Azadchehr et al. 2014). According to the report by the World Health Organization in 2014, in the next 40 years, the world's population over 65 years will be doubled and out of them, 52% live in Asian countries and 40% in developing countries (WHO 2014). According to the latest census in 2011, the over 60 years population in Iran was 6159676 (8.2%) people and had an increasing trend in comparison with 2006 census results (Statistics Center of Iran 2012). Because the average age of the population is increasing, it is anticipated that non-communicable diseases, including cancer rises as well (Naghavi 2006). Cancer is one of the major causes of mortality in human societies, and accounts for

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10% of all deaths in the world by 2015. With regard to changes in the population age pyramid, increasing the elderly population, and their prolonged exposure to carcinogens, incidence of cancer in this population has been increased (Schoenberg & Halle 2009). In the last two decades, the number of old people with cancer has increased (Engels et al. 2011) in a way that cancer now is one of the leading cause of death in the older people (Jorgense et al. 2012).

Diagnosis of cancer, more than any other disease, is an unpleasant and unbelievable experience, which interrupts the occupation, socioeconomic status, and family life of the patient. One of the factors affecting the mental health of cancer patients is death and its anxiety. Anxiety is a psychological and physiological state which has cognitive, physical, emotional, and behavioral components (Burke, Martens & Faucher 2010). Death anxiety, which is the most basic form of anxiety (Fritsche et al. 2010), is defined as an abnormal and great fear along with emotions such as death panic with anxiety when thinking about the process of dying or things that happen after death. Since the death has not been experienced yet and nobody has clearly touched it, all people are somehow anxious about it and everybody experience varying levels of death anxiety based on certain factors (Naderi & Roushani 2012).

Various studies in the field of death anxiety have been conducted on patients with physical problems and its effects on the disease progression which confirms the central role of this concept in the field of nursing. One study findings indicate that by catching a physical disease, in particular, specific diseases such as cancer, AIDS, epilepsy, and so on, death anxiety becomes a major problem in patients (Mohamadi et al. 2013). In this regard, patients with malignant diseases such as cancer are considered as vulnerable population. In most cases, the treatment is more focused on fixing physical symptoms of patients, while as by disease progression and manifestation of its associated symptoms, patients are afraid of pain, suffering, loneliness, punishment, and loss of control. All of these have been identified as dimensions of death anxiety (Grady, Knebel & Draper 2001).

Death anxiety in this group of patients can affect their quality of lives by distorting their mental and spiritual aspects. Therefore, identifying components which may have an impact on the quality of life of cancer patients is important (Janda et al. 2009). Based on the reports, cancer patients experience high degree of death anxiety so that the prevalence of death anxiety in patients with cancer was 17.9%, compared to the healthy group as 9.13% (Tan et al., 2014). In another study, there was a high degree of death anxiety in cancer patients (Vilhauer 2008).

In Iran, Salehi, Mohsenzade and Arefi (2016) studied the prevalence of death anxiety in young and middle-aged patients with breast cancer and most of the subjects had a high level of death anxiety (72.9%). However, few such reports about the old people have been published, and especially older patients with cancer undergoing chemotherapy. Also, as the aging population and the number and variety of stressors people face in old age have been accelerated in recent years, paying attention to the mental health in old age has become a priority (Beery et al. 2002).

Despite the importance of death anxiety, studies on death anxiety in older patients with cancer have been scarce and decisive conclusion cannot be made because of insufficient knowledge. Therefore, considering the high prevalence of cancer, its destructive impact on mental health in patients, relationship of death anxiety concept to sociocultural and religious factors, and few Iranian studies in this topic, this study was conducted to determine death anxiety and its related factors in elderly patients with cancer undergoing chemotherapy.

2. Materials and Methods

The cross-sectional study is a descriptive and correlational. The study samples comprised old people (60 to 75 years) with different kinds of cancer undergoing chemotherapy in the Oncology Ward of Kosar Medical Education Hospital of Semnan (2015). To determine the sample size, the confidence level was set at 95% and power at 80%. Also, it was assumed that the correlation coefficient between the death anxiety and mental health in older patients with cancer undergoing chemotherapy was at least 0.25 to have a significant relationship between the two variables. Therefore, the sample size was estimated as 130.

Study samples were enrolled by convenient sampling method. The inclusion criteria were as follows: 1) lack of cognitive impairment or depression (with a score of 7 obtained from abbreviated mental test score), 2) experienced at least one round of chemotherapy, 3) be aware of their disease, 4) ability to respond to the questionnaire, and 5) ability to communicate and lack of any specific mental illness (based on medical records). To comply with research ethics issues, after approval by the Ethics Committee (Code of ethics IR.IUMS.REC.1394.9311850008), the researcher referred to the research setting and explained the purpose of research and how to perform it to the person in charge. After

obtaining the approval of the relevant authorities, the researcher began the study. The samples initially filled written consent forms and then the questionnaires were given to them to complete.

The first questionnaire was related to patients' demographic information, which included variables such as age, gender, marital status, occupation, education, housing, economic status, type of cancer, course of chemotherapy, duration of disease, other diseases, and particular recent crisis in the life (e.g. marriage, death of relatives, and retirement). The second questionnaire was Templer's death anxiety scale, which was built in 1970 by Templer and contains 15 questions measuring the attitudes of people toward death.

People specify their response to each question with yes or no. "Yes" indicates the presence of anxiety in person. Thus, the scale score ranges between 0 and 15. High scores (8 and upper) represent high anxiety about death (Templer 1970). Templer's death anxiety scale is a standard questionnaire which has been widely used in various studies worldwide to measure death anxiety. It has also translated, factor analyzed, and validated in Iran. Rajabi and Bahrani investigated this scale on 130 students in the city of Ahvaz and reported its reliability coefficient and internal consistency coefficient as 60% and 73%, respectively (Rajabi & Bohrani 2001). In the present study, the reliability and validity have been investigated and the reliability (r) of the questionnaire was 0.80.

Data analysis was conducted by descriptive statistics (distribution percentage, frequency, mean and standard deviation) and inferential statistics (ANOVA, t-test, Kruskal-Wallis, Pearson correlation, and linear regression), at significance level of $P < 0.05$, using SPSS 21.

3. Results

The results showed that the participants' mean (SD) age was 66.88 ± 4.86 years (age range: 60-75 years). Of 130 samples, 65(50%) patients were female and 59.2% of them were married. Intestine was the most common site for cancer (30.8%). Other demographic information of subjects is presented in Table 1. The mean and standard deviation of death anxiety score in old people undergoing chemotherapy was 6.85 ± 2.79. Seventy-five (57.7%) study patients had low death anxiety and 45 patients (42.3%) had high death anxiety. According to the findings and statistical analysis, there was a significant relationship between death anxiety and variables of age ($P < 0.001$), marital status ($P < 0.012$), education ($P < 0.001$), type of cancer ($P < 0.023$), duration of cancer ($P < 0.018$) and having other diseases ($P < 0.001$). There was not a significant relationship between death anxiety and variables of gender ($P = 0.273$), occupation ($P = 0.173$), financial status ($P = 0.139$), housing ($P = 0.526$), courses of chemotherapy ($P = 0.116$), and the recent crisis in life ($P = 0.775$) (Table 1).

According to Table 1, the ANOVA results showed that the mean score of death anxiety in older patients with cancer had a significant relationship with age ($P < 0.001$). Scheffe test shows that this difference exists between age group over 70 years with the other two age groups ($P < 0.001$) and the average anxiety score is higher in this age group, too.

With regard to marital status, the mean score of death anxiety had a significant difference in at least one of the groups with the other groups ($P = 0.012$). The Scheffe test indicates that the difference exists between married group with the widowed and divorced groups. Based on the results, the average anxiety score was lower in married group ($P = 0.016$). The ANOVA results showed a statistically significant relationship between the level of death anxiety and education of older patients with cancer ($P < 0.001$). Scheffe test showed that this difference was significant between the old people who had higher education with those who had an elementary level of education or illiterate as well as between old people graduated with diploma and those with primary education and illiterates. Based on the results, death anxiety was higher in old people who were illiterate or passed primary school compared to other groups.

Statistical analysis also showed a significant relationship between anxiety and duration of cancer ($P = 0.018$). Scheffe test indicated that the difference was between old people affected by the cancer for less than 12 months and old people with cancer for more than 24 months ($P = 0.022$). This means that old people who suffer from cancer for less than 12 months feel less death anxiety than those with more than 24 months. Also, based on the results, it was found that a significant relationship exists between the mean score of death anxiety and cancer type ($P = 0.023$).

The highest and the lowest mean score of death anxiety belonged to ovarian and breast cancer, respectively. In addition, there is a significant relationship between the mean score of death anxiety and duration of cancer. The results of Scheffe test indicated that this difference was between old people who were affected by cancer for less than a year and old people affected for more than two years ($P = 0.022$).

Table 2 presents death anxiety in old patients with cancer undergoing chemotherapy with respect to separate

Table 1. Demographic and clinical characteristics and death anxiety scores of the participants

Variable		No.	%	Death Anxiety	Test Significance
				Mean ± SD	
Age (year)	60–64	47	36.20	5.34 ± 2.63	P < 0.001
	65–69	42	32.30	6.59 ± 2..48	
	70–75	41	31.50	8.85 ± 1.98	
Marital status	Single	77	59.20	6.00 ± 2.82	P < 0.012
	Married	5	3.80	6.32 ± 2.88	
	Widowed or divorced	48	36.90	7.79 ± 2.42	
Occupation	Employed	22	16.90	5.86 ± 3.37	P = 0.173
	Housewife	49	37.70	7.18 ± 3.05	
	Retired	59	45.40	6.94 ± 2.66	
Education	Illiterate	19	14.60	8.47 ± 2.11	P < 0.001
	Elementary	35	26.90	7.91 ± 2.57	
	Secondary	23	17.70	6.82 ± 2.99	
	Diploma	35	26.90	6.00 ± 2.79	
	Academic	18	13.8	4.77 ± 1.62	
Financial status	Poor	19	14.6	8.00 ± 2.05	P = 0.139
	Average	88	67.7	6.82 ± 2.84	
	Good	23	17.7	6.04 ± 2.95	
Housing status	Owned	70	53.8	6.70 ± 2.76	P = 0.526
	Rental	40	30.8	7.50 ± 3.00	
	Mortgaged	20	15.4	6.80 ± 2.75	
Cancer type	Breast	24	18.5	5.25 ± 2.67	P = 0.023
	Stomach	15	11.5	5.80 ± 3.02	
	Bladder	12	9.2	7.33 ± 3.36	
	Blood	13	10.0	7.84 ± 2.51	
	Intestine	40	30.8	7.30 ± 2.61	
	Lung	7	5.4	6.57 ± 1.90	
	Prostate	10	7.7	7.50 ± 2.17	
	Ovary	9	6.9	8.33 ± 2.64	
Duration of cancer (month)	< 12	53	40.8	6.20 ± 3.01	P = 0.018
	13-24	48	37	6.63 ± 2.74	
	> 24	29	22.2	7.87 ± 2.31	
Duration of chemotherapy	1–3	44	48.5	6.34 ± 2.98	P = 0.116
	4–6	24	20.0	6.50 ± 2.68	
	7–12	30	14.6	6.83 ± 2.57	
	> 13	32	16.9	7.84 ± 2.65	
Other disease than cancer	Yes	60	46.2	8.03 ± 2.62	P < 0.001
	No	70	53.8	5.84 ± 2.53	
Recent crisis	Yes	34	26.2	6.73 ± 2.50	P = 0.775
	No	96	73.8	6.89 ± 2.90	

Table 2. Frequency distribution of answers to questions of death anxiety items in old patients with cancer undergoing chemotherapy

Question About Death Anxiety	Yes		No		Mean ± SD
	%	No.	%	No.	
1. Do you worry about dying?	61.5	80	38.5	50	0.488 ± 0.62
2. Are you worried to die before doing your works?	63.1	82	36.9	48	0.484 ± 0.63
3. Are you worried to suffer from disease for a long time before dying?	73.1	95	26.9	35	0.445 ± 0.730
4. Does it annoy you that others may pay attention to your suffering when you are dying?	37.7	49	62.3	81	0.486 ± 0.38
5. Are you worried that the death may be very painful?	42.3	55	57.7	75	0.496 ± 0.42
6. Do you think that when you are dying, closest people to you worry about you?	43.8	57	56.2	73	0.498 ± 0.44
7. Are you worried about being alone at the time of death?	56.9	74	43.1	56	0.497 ± 0.57
8. Do you think that before death you lose control of your mind?	33.1	43	66.9	87	0.472 ± 0.33
9. Are you worried that your funeral expenses be expensive for others?	30.0	39	70.0	91	0.460 ± 0.30
10. Are you worried that after your death your belongings and wills left unaccomplished?	36.9	48	63.1	82	0.484 ± 0.37
11. Are you afraid that you might be buried before you really die?	8.5	11	91.5	119	0.279 ± 0.08
12. Does it make you upset to leave your loved ones when dying?	85.4	111	14.6	19	0.355 ± 0.85
13. Are you worried that those who are worried about you, do not remember you after your death?	38.5	50	61.5	80	0.488 ± 0.38
14. Do you think that you are worried that you will be destroyed forever with death?	29.2	38	70.8	92	0.457 ± 0.29
15. Are you worried because you do you not know what will happen after death?	45.4	59	54.6	71	0.500 ± 0.45

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Table 3. Linear regression analysis on the effects of demographic variables on death anxiety

	Independent Variables	Coefficient	Statistics	P-Value	R^2
Marital status	Single	-0.410	0.349	0.727	
	Married	-0.668	1.386	0.167	
Level of education	Elementary	0.484	0.693	0.489	
	Secondary	-0.631	0.835	0.406	
	Diploma	-0.784	1.014	0.313	0.345
	Academic	1.437	1.544	0.125	
Age (year)		0.174	3.009	0.003	
Duration of cancer		0.023	0.962	0.338	
Other diseases		0.698	1.356	0.178	

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items. Most "Yes" answers belonged to the question No. 12 of the questionnaire "Does it make you upset to leave your loved ones when dying?" and most "No" answers was related to the question No. 11 of the questionnaire: "Are you afraid of being buried before you really die?"

According to Table 3, age was the only significant variable in the regression model. It can be seen that its coefficient was 0.174, meaning that with an increase of one year, death anxiety increases by 0.174 and obtained coefficients for other variables in the regression model was not significant.

4. Discussion

Our study was conducted on the effects of death anxiety and its related factors in old patients with cancer undergoing chemotherapy. Based on the results, 57.7% of old patients with cancer had low death anxiety and 42% of old patients, a fairly significant number, had high death anxiety. This indicates that one of the factors affecting the mental health in cancer patients is death anxiety (Lehto & Stein 2009). In a study by Sherman et al. cancer patients had moderate to high death anxiety (Sherman et al., 2010). The results of Bahrami et al. study on women with breast cancer shows the moderate to high death anxiety among them (Bahrami et al. 2013). In Henry et al. study, carried out on a different population, death anxiety in samples was low.

This different result (compared to the current study) could be due to the fact that most cancer patients are engaged with death anxiety and cognitive distortions and negative thoughts of their symptoms (Yousofi 2013). Fear of death is natural and in fact, it would seem abnormal if one were not afraid of death. Therefore, it can be said that the fear of death occur only in the old people. However, this kind of fear may increase with age and might reach to maximum amount possible in old age, in a way that in Ghorbanali pour and Ismaili study, death anxiety was high in old patients (Ghorbanalipour & Esmaili 2012).

There was a significant relationship between the mean score of age and death anxiety in older patients with cancer in a way that death anxiety increases by 0.174 with age and this finding is consistent with the results of Bonder et al. study conducted to investigate the effect of aging on death anxiety. The findings showed that aging and aging-related anxiety is positively associated with death anxiety (Bonder et al., 2015). This could be possibly due to the effect of increasing age on variables such as employment, marital status, socioeconomic status, loneliness, and physical disabilities.

In this study, marital status has been recognized as a factor related to death anxiety in old patients with cancer. The results indicated statistically significant correlation between death anxiety in the old patients and marital status in a way that the divorced and widowed groups had higher death anxiety scores compared to the married group. The results of Shojaee et al. study on the mental health and its relationship with social capital of old people in District 9 of Tehran showed that old married people enjoyed better mental health than old single ones (Shoja et al., 2013). Muramatsu also in a study conducted on a group of old Americans found that single, widowed, or divorced old people enjoyed less mental health than their married counterparts (Muramatsu, Yin & Hedeker 2010). Karren et al. also believed that separated people and those who are dissatisfied with their marriage suffered serious health problems of their own. Of course, this effect depends on the age and gender of individuals. Separated individuals have lost a great source of social support i.e. the family, which impose another stress besides their disease (Karren et al., 2002).

With higher educational levels, the average score of the subjects regarding death anxiety reduces. Based on the results of ANOVA, the relationship between death anxiety and level of education was significant and old people with a higher education had less death anxiety compared to those illiterate old people or those with elementary education. Consistent with the above results, a study by Salehi et al. also shows high death anxiety among cancer patients with a poor education and literacy (Salehi, Mohsenzade & Arefi 2016). In this regard, in a study conducted in a city in Colombia, Harpham et al. found that people with higher education enjoy better mental health (Harpham, Grant & Rodriguez 2004). Azaiza et al. also showed that there was a difference between education and death anxiety in a way that illiterate and semi-literate people experience death anxiety more than educated people (Azaiza et al. 2010).

However, in Bahrami et al. study no difference was observed between different levels of education and death anxiety (Bahrami et al. 2013). It can be stated that higher self-confidence of people, as well as increased social interaction can lead to better self-control of the disease, reduction of stress and anxiety in doing personal affairs as well as performing social roles, and ultimately their better mental health. The social and cultural constraints as well as inability in using effective methods of coping with stressors can be the reason of high anxiety in people with lower education degrees. On the other hand, if less anxiety is considered as a sign of stress management in old people (which is mentioned as a healthy and health

promoting behavior), these findings is consistent with the results by Habibi et al. on health promoting behaviors and related factors in old people regarding the fact that healthy behaviors have a significant relationship with the level of education in old people (Habibi et al., 2006).

Also, there is a significant relationship between the mean score of death anxiety and duration of cancer. In other words, with increasing disease duration, death anxiety also increases. This could be justified because by longer duration of cancer, treatment and facing side effects of chemotherapy, along with progression of the disease and its symptoms, patients are gradually exposed to the reality of their serious illness and afraid of pain, suffering, loneliness, punished and reduced control.

The results showed that the mean score of death anxiety in old patients with cancer and other diseases had statistically significant difference; in the other words, old people who were just diagnosed with cancer and no other diseases, had lower death anxiety, which seems to be obvious. Generally, old people are more likely to develop chronic diseases with increasing age (Prakash, Choudhary & Singh 2004). Recent studies show that 80% of old people have at least one chronic disease which expose them more than others to the risk of disability and death (Woo et al. 2007).

In the present study, the death anxiety and gender were significantly related. While in Mansour Nezhad et al. study, which examined the religious orientation and gender with death anxiety, women had higher death anxiety. It can be explained by the fact that women accept irritating feelings regarding death but men mostly avoid it, a justification that matches with the emotional expressiveness of women during life (Mansornezhad et al. 2011). However, Mansourinezhad investigated the young population (unlike our study on old people) and possibly with aging, men might become aware of the risk of death as women and develop similar anxiety.

The study limitations include self-report questionnaires. Thus the psychological conditions of the old people could affect the results with regard to age, illness, and type of the questionnaire at the time of response. Also, because of cultural reasons, participants might evade responding to some questions. Therefore, we tried to establish an intimate relationship with them to overcome this problem. The results also cannot be generalized to the private centers and other religions, given that this study has been conducted in a government center (because of the availability of sampling).

In conclusion, a significant number of old people with cancer had high death anxiety. Furthermore, widowed and divorced old people with low level of education (illiterate and elementary level) or old people who are affected with diseases other than cancer have high death anxiety. Therefore, more social and psychological support for this group of frail old people should be provided. With regard to holistic approach and paying attention to all aspects of human existence, the health team and especially nurses should be aware of the importance of the fear of death in old people.

In addition, comprehensive care program can play an important role in reduction of the psychological problems of the old people. It is also recommended that this study be conducted for patients with chronic diseases (such as heart, AIDS, asthma, etc.) or caregivers, as they have a close relationship with their health status. Also in this study, no significant relationship was found between gender and death anxiety in old patients with cancer. Therefore it is suggested that a study be conducted to investigate more this relationship.

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Conflict of Interest

The authors declared no conflict of interests.

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Research Paper: Kurdish Maternity Nurse's Perspectives About Human Dignity

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ABSTRACT

Background: Ethical standards of nursing profession emphasize that taking care of patients, showing respectful behavior, and preserving patients' human dignity are important nursing priorities. Furthermore, since time immemorial, humanistic thinkers have always paid close attention to the issues of humanity and human dignity. Despite the emphasis of nursing texts on the importance of preserving the patients' human dignity, this concept has seldom been considered by nursing scholars, and very few clinical studies have focused on it. To explore the nurses' perspectives about human dignity in Hawler Maternity Hospital, Kurdistan, Iran.

Methods: A qualitative content analysis design was used to analyze the study data. After using a purposive sampling method, 10 Kurdish nurses who worked in Hawler Maternity Hospital were recruited for the study. Then, semi-structured interviews were carried out to collect data. Data analysis was done through conventional content analysis. This research was approved by the Ethics Committee of College of Nursing, Hawler Medical University.

Results: Through the data analysis, three main themes emerged: 1) mothers' deprivation of basic health care services, 2) women's right to have sympathetic care, and 3) negligence of the mothers' human rights from different aspects.

Conclusion: Based on participants' opinions, respecting mothers' human dignity means establishing a sympathetic relationship with them. Furthermore, institutionalization of human dignity and value in humans' nature is one of the crucial care factors.

1. Background

International nursing organizations and societies have always highlighted issues such as taking care of patients, showing respectful behavior, and preserving human dignity as nursing priorities. Moreover, the inseparable part of nursing is to respect human rights, including cultural rights; right to live and choose; human dignity; and respectful behavior. These rights are not influenced by nationality, race, religion, culture, skin color, age, gender, disease, disability, or political, social, and economic situations (Nursing & Midwifery Council 2008). In this regard, in nursing ethics of some countries, it is stipulated that "All human beings deserve human dignity and it is necessary to respect them in any condition." Some

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scholars believe that the most specialized part of nursing function is to deliver care service in a way that the patient does it for himself or herself in the same way, if the patient had the ability, willing, and knowledge (Baillie & Gallagher 2011). According to them, care is a nursing ethical ideal and obligation because the essence of nursing is to preserve human dignity (Williams 2011).

According to some scholars, nurses should value human dignity to preserve the artistic nature of nursing (Olshansky 2007; Kalb & O'Conner-Von 2007). Many relevant studies report that the most important components of preserving human dignity (according to the participants' view) are receiving respectful treatment, establishing effective communication, maintaining privacy, keeping confidentiality, and giving patients the right to choose (Matiti & Trorey 2008).

In this regard, mothers should receive special attention because while being hospitalized, they enter an unfamiliar environment, are surrounded by strange individuals, force to leave their motherly or marital duties, and take up new activities that are determined by the medical team. Moreover, after delivery, they face with a series of new needs, fears, and expectations.

According to some scholars, in unfamiliar and anxiety-provoking environment such as maternity unit, mothers feel unsafe and scare as their personal information is known to others or their bodies are examined and showed for the childbirth (Baillie, Gallagher & Wainwright 2008). For instance, reported by participants in a study, the human dignity means refusal of nakedness of the patient's body and receiving appropriate and enough care from the nurses (Lin, Tsai, & Chen 2011). In such conditions, response to mother's needs and respect her human personality are considered as a step to reduce her anxiety and increase her satisfaction with the care delivered to her during or after childbirth.

Moreover, patients are among the most vulnerable social groups, because they have not only lost their normal physical abilities but also suffer from certain psychological, social, and economic pressures related to their illnesses (Joolaee, Nikbakht-Nasrabadi & Parsa-Yekta, 2009). Since human dignity, especially among mothers, has not received proper attention by nursing pioneers and researchers, there are few provisions and instructions on this issue in countries like Iraq and the Kurdistan Region. Therefore, thanks to the researcher's activities in instructing nursing and midwifery students in different gynecology and obstetrics wards and encountering with situations where the mothers' human dignity was ignored, I aimed to conduct the present qualitative study to explore the concept of mothers' human dignity from the perspective of gynecological nurses.

The nurses' lived experience of preserving human dignity among mothers refers to discovering the meaning and concept of human dignity according to the maternity nurses' views and experiences. We hoped that providing clinical care be lined up with their discovered experiences, views, and beliefs about respecting patients, the mothers' satisfaction be met, and their human values be preserved by making use of their opinions.

Purpose of the study

The aim is to explore and describe nurses' views and perceptions about human dignity according to their lived experiences of working in maternity care unit in Kurdistan, Iraq.

Research question

What are the views and ideas of maternity nurses regarding human dignity?

2. Materials and Methods

This study adopted an inductive content analysis approach to explore the participants' views regarding the human dignity of mothers according to their experiences. Content analysis is a systematic coding and categorizing approach, which can be used to explore a large amount of textual data to identify the patterns of communication (Gbrich 2007).

Data collection and participants' characteristics

The study participants were 10 Kurdish nurses who worked in delivery room of maternity hospital with a variety of work experiences from 1 to 37 years. Data were collected by semi-structure interviews. The sample included female nurses who met the inclusion criteria of the study. The participants were Kurdish registered nurses currently working in the delivery room. All of them had maternity nursing experience and were willing to participate in the study. Interviews lasted 30 to 80 minutes and conducted in Kurdish and then translated into English.

They were tape recorded and transcribed verbatim. The interviews' questions focused on the nurse's experiences of human dignity and the meaning of human dignity from their perspective. These questions were open ended such as "what do you think about aspects of

human dignity according to your experience of working here." Interviews continued with exploratory questions such as how and what questions. Different themes and subthemes were identified through content analysis.

Data analysis

Drawing on work by Graneheim & Lundman (2004), the following steps were taken to analyze the collected data:

- Transcribing the interviews verbatim and reading them several times to obtain a sense of the whole,
- Dividing the text into meaning units that were condensed,
- Abstracting the condensed meaning units and labeling them with codes,
- Sorting codes into subthemes and themes based on their similarities and differences,
- Formulating themes as the expression of the latent content of the text.

Finally, 11 subthemes and 3 main themes were explored. According to the method described by Graneheim and Lundman, on the day of each interview, the recorded voices were transcribed in Kurdish language (Dyer 2005). The transcriptions were then meticulously translated into English. The texts were then read several times and divided into condensed meaning units related to women's human dignity which were further abstracted and labeled with primary codes such as "insufficient facility for patient care," "crowdedness of the wards," "poor husband support," and so on. Following these steps, the comments of the researcher were applied to modify the subsequent interviews to obtain codes. The codes were sorted as several subthemes (e.g. insufficient health services, poor man power, and war situation) and themes (e.g. providing sympathetic care for women as a human need) based on their similarities and differences with respect to nurses' opinions about human dignity. Finally, a thematic structure of the latent content of the text was developed (Dyer 2005) and (Gbrich 2007) based on the above-mentioned analysis, 9 subthemes and 3 main themes emerged.

Trustworthiness and study limitation

Trustworthiness was established through member checking, peer checking, and prolonged engagement. Member checking was done by asking the respondents to verify the preliminary findings from the earlier interviews (Graneheim & Lundman 2004). Prolonged engagement was done by the author in the research field to attract the participants' trust and gather in-depth data.

No particular limitations were faced during the research. However, since the participating nurses did not want hospital managers to be informed of their ideas, the researcher tried to win their trust and ensure them about the confidentiality and anonymity of data both before and during the interviews.

Ethical considerations

The research protocol was approved by Ethics Committee of Hawler Medical University/College of Nursing. A detailed description of the study, the risks and benefits, data confidentiality, and informed consent procedure were given during the initial contact with prospective participants and before their participation. Upon their recruitment, the participants were explained about their rights to withdraw from the study at any time and asked to sign informed consent forms. After receiving the subjects' permission for recording the interviews, the interviews were audiotaped. The digitally recorded interviews and transcripts were stored on the researcher's password-protected laptop and were deleted as the study finished.

Since the participants' distrust would make impossible further interviews in a small environment like Hawler Hospital, the researcher made every effort to conduct the interviews in comfortable conditions, establish close relationships with the subjects, and win their trust to encourage them to share their experiences.

3. Results

Based on nurses' responses to the interview questions, the study findings identified 3 main themes of "mothers' deprivation of basic health care services," "women's right to have sympathetic care," and "negligence of the mothers' human rights from different aspects."

Mothers' deprivation of basic health care services

According to the participants' statements, "mothers' deprivation of basic health care services and facilities" was an important theme. The participants' lived experiences, in regard to the meaning of this theme, frequently referred to the subtheme of taking care with insufficient facility and services. They also stated that these problems could be tackled by commitment acquired during

their work and having a maternal sense which made them life-saving people. To explain this theme more clearly, in study nurses' views, human dignity refers to the ability to take care of mothers and provide health facility for them. The participants' talks implied crowdedness of the wards, lack of human resources, ineffective control of infectious diseases, and war zone situation. In this regard, participant No.1 said:

"*In the hospital, we do not have facilities (clothes and bed sheet) and the patients need to bring them with themselves. Well, this weakness that we do not have anything for the patients is related to the internal system of the hospital. We do not have clothes or bed sheets for the patients and infants, and this is a weakness of our health care system that we cannot fulfill our patients' needs.*"

One of the issues that the participants had mentioned several times was lack of facilities to control infectious diseases in maternity ward, as referred to it in the following statements.

"Most mothers refer to here while they suffer from hepatitis, and they are unaware of it. I don't know the reason, but most of them have this disease. We have an isolation room, and we send hepatitis patients there, but most of the time the results of their examinations are not ready until two days. Previously, there was a method through which the examination results would be prepared within 20 minutes, but now they are not announced until two days and we don't know if the results are positive or negative. The quick method of hepatitis examination is only carried out for elective cesarean sections but not for emergency situation. It is not done for everyone. That is, those who need an emergent cesarean section or childbirth are not examined. We even required that this examination should be carried out for Syrians, and it's ok if it is not done for our patients, but they didn't accept, and now we don't know who has this disease and who doesn't."

Another participant mentioned:

"*If one of my family members asks me to accompany her to the maternity ward and help them with the delivery, for example, if my sister or my brother's wife asks me to accompany her, I'll tell her to bring things like bed sheet and 10 meter clean white cloth, then I'll go with her. I told them that these things would be used to clean you and then discarded. Because there are no such clean facilities, and there are unclean and inappropriate cloth to do the cleaning with. We don't have a well-cultured society or a well-organized system. We don't have the rights of a nurse, that is neither nurse rights nor patient rights are observed.*"

Lack of enough time to communicate with the patient is another issue that one of the nurses referred to as a factor to neglect human dignity of patients.

"We really have so much to do that we cannot talk to the patients even some few words. I'm a friendly person but I don't have time to spend greeting with the patients, support them, and this gives me a bad feeling. In this crowded situation, what should I do first…".

In this regard, the participants stated

"*We just have one women's hospital, so if a nurse does not have time to provide the patients with health care and take care of them mentally and emotionally, you need to give her the due because there's a heavy burden on the nurses' shoulders and the patients are outnumbered. Half of the Iraqi mothers have their childbirth in this hospital. I dare to say half of Iraq refer to this hospital, because other places are either at war or occupied by ISIS or the people are displaced, so the circumstances are really terrible here.*"

At the same time, another participant referred to the failure of administration of such trainings by the members of other health care team.

"Here we just have a name list and nothing else, so just out of my own interest I teach mothers about how to wash their vaginal area with tepid salty water and adhere to health and nutrition hints. I also teach them about appropriate methods of birth control; however, others do not do these and ignore them. We do not even have posters to teach mothers properly."

All of these statements imply poor women's care and inappropriate facilities while having shortages and problems. These situations are quite influential. According to the nurses' comments, these circumstances impede provision of health care to patients as human right and it is necessary to save their human dignity.

Women's right to have sympathetic care

Another theme deduced from the meaning of human dignity was the "right of sympathetic care for women." This theme consists of some subthemes and refers to

helping mothers by nurses with remarkable eager because of having a maternal feeling toward them and their infants, making friendly communication with them, and taking advantage of their own maternal experiences. Here, mothers take advantage of another human's utmost help to give birth to another human. In their experiences, nurses frequently referred to subthemes of sympathy and comfort with mother, providing the possibility of communication between mother and infant, recognizing the patient's needs as a human, reducing pain and suffering, and supporting mothers mentally and emotionally. Then the researcher used their ideas and experiences to extract the theme of "sympathetic care of mother."

One participant considered being a woman and having maternal or humanistic feeling and experience as sympathy and main human factor regarding the women. In other words, this feeling revealed her understanding with regard to emotional needs of mother.

> "*As a nurse, I'm both a woman and a mother, and I sympathize with infants, I take care of infants and I don't get satisfied even if I become unaware of my infant for some minutes, I think if something goes wrong.*"

In this regard, one of the nurses considered such emotional supports as the cause of the mother's comfort and survival who was crying for losing her infant. She described it as follows.

> "*I started talking to that sorrowful mother and told her God would give you a great reward if you tolerate. I told her you were young and had enough time to have children again, you need to be tolerant; this infant would go to the Heaven and open one of the Heaven's gates for you. So I condoled her a lot, I told her God had taken this infant for Himself and you need to accept that it would be in a great place. When she heard what I had told her, she accepted to take her infant out, so we handed it to its dad to see to the procedure. What I did was physically and mentally useful for the patient because if you leave a mother alone in such a situation, her deep sorrow causes severe bleeding, which is highly hazardous, so what I did set her free from these problems*."

The nurses' mental support of mothers and maternal feeling toward them and also spotting the women's needs as humans are clearly referred to in the following statements.

> "*Looking at patients, I can see if they have mental problems, and I help them because I feel they need emotional help, they're more in need of emotional help. When I look at them, I can easily read their states in their face and see if they have mental problems. These states occur a lot here. When I see this state, and as for sympathy, I go and talk to and condole the patient.*"

The nurses' attempt to mother's human dignity without any expectations in order to reduce mother's pain and suffering are presented in the following statements.

> "*I need to help mothers get rid of their pain and problems because to me my work means to set mothers free from their agony and disease and reach the safe state or peace. This is my responsibility because I've studied and know that I need to get the patient out of pain, like a human who has referred to for abortion or one who has undergone surgery and is bleeding and the place of her surgery is infected and painful, I teach her how to use the medicine and how to take care of her ulcer so it can heal sooner*."

In other words, the nurse's focus on mental support of mother and her attempts to establish an emotional relationship with the mother and her infant is defined by the researcher as "right of sympathetic care," which is another deduced theme that can reflect the nurse's endeavor to maintain human dignity.

Negligence of the mothers' human rights from different aspects

This theme includes subthemes like irresponsibility of hospital personnel with regard to the mothers, getting money for service delivery, and lack of supporting mothers by their family. Based on the study participant's comments, the researcher extracted such subthemes with regard to the mother's human dignity. Regarding the first subtheme, for instance, one of the nurses stated:

> "*They (nurses and physicians) don't clean the patient before delivery. They use gloves for deliveries, but don't change them. They don't use sterile cloth and set when a child is delivered, and put the baby on mother's tummy and on her clothes, which is bad for infection.*"

Another participant talked about her experience about human dignity as follows:

"*Rapture of membrane should be carried out by doctors. But when I tell the doctor that a patient has meconium and you need to conduct the procedure, she tells me to do it because she may get dirty. This is not so good. There's even guideline that stipulates that rapture of membrane is the doctors' duty not the nurses, but they don't follow, so we have to do it. After all, we need to help the patients, and it is blessing*."

On another occasion, another participant mentioned nurses' taking bribes to perform necessary care of mothers.

"*After performing a delivery, nurses take money off the patient, and patients are happy to pay. This meant that nurses focused all attention on those patients and ignored others*."

In such an atmosphere, taking bribes to look after certain patients and neglect others was mentioned as another issue associated with patient's safety. The experiences told by some of the participants helped with extraction of the women's limited family support. For example, one of the nurses said:

"*There were cases that the husband had not let his wife to rest sufficiently, so her baby had been aborted. In such cases, we meddle, we need to do so, and we should guide the woman. If necessary, we talk to her husband. However, not everyone does such things, but I think it's a part of our humanity*".

The meaning unit of limited support of mothers by Kurdish men is also the interpretation and essence of the following statements which refer to women's deprivation of human rights.

"*Women used to have childbirth at home because their husbands did not let them go to hospitals. They would think that there would be male doctors or nurses in the hospitals also they like to have childbirth at home because they're scared. They think no one takes care of them in hospitals*."

Based on participants' words, the nurse's views and experiences toward women's human dignity and even patient's right identified many facts regarding poor human dignity and rights in nursing care. In fact, it is likely that understanding the expectations of people and knowledge about human dignity may be nursing is a task that is full of goodness and a sign for the nurses kind behavior to provide dignity and respect for women.

4. Discussion

According to the results of the present study, i.e. the main themes of the "mother's deprivation from basic health services," "women's right to have sympathetic care," and "negligence of the mothers' human rights in different ways," the researcher concluded that from the participants' opinion, respecting mothers' human dignity means establishing a sympathetic relationship with mothers. Because nurses referred to the mothers' deprivation from human rights by their family and companions, creating grounds for mothers as important members of the society (who play an important role in educating and maintaining the family) to have such rights can pave the way to value human dignity of the mothers as human beings.

In this regard, a team of Taiwanese researchers carried out an investigation on Taiwanese patients' opinion about preserving patient's human dignity. Based on the results, they reported that paying attention and respect to humanity of a patient is among significant semantic aspects of patients' respect. Moreover, according to the results of a study carried out in Sweden regarding the nurses' view about preserving patient's human dignity, it was concluded that "considering the patient as a sibling" is similar to her need to be provided with compassionate care service (Lin, Tsai, & Chen 2011; Heijkenskjöld, Ekstedt & Lindwall 2010).

Furthermore, one of the study results was the mothers' deprivation from human rights and in the participants' view, the nurses' respect for patient's human rights was regarded as a spiritual value. Unconditioned respect for individuals is not only a religious responsibility but also the foundation for concepts in nursing profession. Nursing pioneers like Florence Nightingale and Mother Teresa have focused on the lack of respect for patients with respect to their age, materials, education, and disease state. The basis for their mental belief is that all patients have equal essence in the presence of the divine absolute perfection (Williams 2011).

On the other hand, in their qualitative study, Gustafsson, Wigerbland, and Lindwall (2012) explored human dignity from the perspective of the nurses who were taking care of patients with criminal records. They found that paying attention to the patient and trying to preserve her human value are among moral obligations to fulfill human responsibility based on respect for equality, brotherhood, and similarities. The nurses who took care of the patients with criminal records tried to instill them a sense of value as a human, in other words, protect their internal and absolute dignity.

Therefore, according to the results of the present study and their study, an aspect of relative human dignity, which depends on human moral virtues according to Nordenfelt's views, is in agreement with values of the nursing profession. Also, providing the patients with unconditioned care services is a manifestation of patient's respect. Nordenfelt described human internal dignity as the man's unique and imperishable feature and stated that all individuals equally possess these features due to their human nature. Among human capacities and features, he also highlighted common sense, reasoning ability, and self-planning capacity. Some of our study participants, according to their experience-based understanding, mentioned that preserving patient's human dignity is fulfilled through delivery of basic medical care by the qualified and responsible human resources. One of the semantic aspects related to this issue, which was more emphasized, was "irresponsibility among the staff of the wards."

Moreover, it was revealed that medical and nursing mistakes might occur due to lack of patient's valuation. In other words, patient's safety is a concept intermingled with human dignity, and all measures to maintain the patient's safety are actually taken to preserve and promote the patient's dignity (Eriksen et al. 2012). To put it in a nutshell, observing patient's safety is a moral value which is based on high human values and protecting them. A group of researchers believe that a professional nurse is not permitted to blame others for her negligence and mistakes, but she is responsible for her own actions (Slettebø et al. 2009; Sensen 2011; Lundqvist & Nilstun 2007).

Moreover, lack of sufficient opportunity to communicate with patients was another concept found in the study out of the participants' opinions and beliefs about respect for patients, which was frequently heard in their talks. According to other studies, spending enough time with patients and listening to them are among the basic components of care in nursing profession, which will bring about positive medical outcomes for the patient (Tirgari et al. 2013). Furthermore, poor interpersonal communication skills among the medical personnel is one of the most important cause of dissatisfaction of the patients with medical services delivered by the hospitals.

In general, the findings of the present study indicate that institutionalization of human dignity and values in the nature of all humans is among medical care components. Respect for patients means fulfilling medical responsibilities and providing and delivering care services and facilities.

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Conflict of Interest

The author declared no competing interest.

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Research Paper: Effect of Aerobic Exercise on Blood Pressure of Patients With Type 2 Diabetes: A Randomized Controlled Trial

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ABSTRACT

Background: Hypertension is one of the prevalent and dangerous complications of diabetes mellitus. As it is difficult to control hypertension, the necessity of using new techniques such as non-pharmaceutical methods and complementary therapy increased. This study aimed to determine the effect of aerobic exercise on the blood pressure of patients with type 2 diabetes.

Methods: This study was a quasi-experimental randomized trial conducted on 67 volunteered patients with type 2 diabetes. The participants were randomly assigned to aerobic exercise (n = 33) and control (n = 34) groups. The exercise group walked 30 minutes, 3 days a week for 8 consecutive weeks. Systolic and diastolic blood pressure of the samples were measured before and after the intervention. The data were analyzed by descriptive statistics, the Kolmogorov-Smirnov test, paired t test, Independent t test, and Chi-square test using SPSS (v. 16). P value less than 0.05 was considered significant.

Results: The difference between the systolic and diastolic blood pressure of the groups before the intervention was not significant (P > 0.05). After the intervention, there was no significant difference in terms of systolic and diastolic blood pressure of the exercise group compared with the baseline (P > 0.05). No significant difference was determined between groups in terms of systolic and diastolic blood pressure after the intervention (P > 0.05).

Conclusion: According to the findings, 8 weeks of aerobic exercise (walking) did not reduce systolic and diastolic blood pressure in patients with type 2 diabetes.

1. Background

Diabetes mellitus (DM), a metabolic disorder of carbohydrate, fat, and protein, is characterized by the lack of insulin secretion or reduced sensitivity of tissues to insulin (Gayton 2008). DM is referred to as "silent epidemic" and also considered as a public health problem worldwide, including Iran.

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The disease incurs direct costs to the amount of 5.2% to 15% of the total health budget and indirect costs for many times as direct ones. It may also cause other problems such as ischemic heart disease, high blood pressure, and retinopathy. Moreover, it is also responsible for many deaths in the world (Ahmann 2007; Wild et al. 2004).

The most common type of diabetes is type 2 diabetes, and its prevalence is increasing globally (Hu 2011). The World Health Organization has termed DM as a "hidden epidemic," based on the increasing trend of diabetes globally. In 2010, the prevalence of DM among adults (age range, 20-79 years) was 6.4%, which is equivalent to 285 million, and this prevalence is expected to increase to 7.7% in 2030, which is equivalent to 439 million people. The prevalence of the disease will increase to 69% in developing countries and 20% in developed countries between 2010 and 2030 (Shaw et al. 2010). In addition, the Iranian Health Ministry has reported 7.7% increase in the prevalence of diabetes type 2 in people aged 25 to 64 years, and the total number of people with diabetes has been reported to be 2 million (Ghorbani et al. 2008).

In a study conducted in 2008, it was found that 5.8% of Iranian women and 5.1% of Iranian men suffered from diabetics (Ghorbani et al. 2008). A common complication of diabetes is high blood pressure, which affects about 20% to 60% of patients with diabetes (American Diabetes Association 2003). In a study in Isfahan, it was reported that the prevalence of complications of diabetes such as high blood pressure is about 50% (Azizi et al. 2010).

In Iran, the prevalence of high blood pressure has increased significantly during the past few years. In the latest studies, a 23.3% increase in the prevalence of the disease has been reported. Due to lack of appropriate treatment, 50% of the patients die because of stroke, heart attack, or kidney failure (Azizi et al. 2010). High blood pressure is a silent killer and is often neglected by the patient. In 2000, despite having advanced and extensive education, only one-third of the patients with high blood pressure could control their blood pressure and keep it within the normal range (Yeh et al. 2009).

Nowadays, experts believe that diet and medications are not sufficient for the treatment and control of DM, but changing lifestyle and balancing known risk factors for diabetes should be done to control blood pressure. In other words, monitoring and controlling blood sugar and blood pressure and supporting health education and providing professional nursing care are necessary for preventing complications of this chronic and complex disease (Borhani et al. 2013; Nahin et al. 2012). Preventing the worsening of the patient's condition is a very important nursing intervention (Fetherston & Wei 2011).

With an emphasis on self-care and utilization of new relevant therapies such as non-pharmacological methods, nurses could have a significant contribution in improving the physical and mental conditions of diabetic patients (Delavari et al. 2005; Pena et al. 2009). Physical activity and exercise are among the non-pharmacological methods and can be considered as the most important changes in the lifestyle of people with diabetes (American Diabetes Association 2013). A research in 2006, showed that the mean systolic and diastolic blood pressures were significantly reduced after 8 weeks of exercise (Macfarlane et al. 2006).

Weight loss due to exercise leads to the reduction of triglycerides and low-density lipoproteins, loss of excess body fat, and regulation of blood pressure (Yosefi poor et al. 2015). The American Diabetes Association recommends 150 minutes of moderate-intensity aerobic exercise or 90 minutes of vigorous aerobic activity per week for patients with type 2 diabetes (Praet & Loon 2007). These exercises will also improve the maximum oxygen uptake in diabetic patients by 10% (due to the improvement in the cardiovascular and respiratory system), and at this rate, it is expected that the risk of cardiovascular disease reduces significantly (Boule et al. 2003). The best time to exercise is usually 1-3 hours after meals in patients with diabetes (Khaliqi 2009).

Aerobic exercise is the common type of exercise for people with diabetes (Bello et al. 2011). Many studies have confirmed the positive impact of aerobic exercise in lowering blood pressure (Macfarlane et al. 2006; Collier et al. 2008). A research, conducted in 2008, showed that 4 weeks of aerobic and power exercise has markedly decreased systolic and diastolic blood pressure (Macfarlane et al. 2006); however, some other studies have not verified the effect of aerobic exercise on the reduction of blood pressure (Andersson et al. 2008; Lin et al. 2009; Alizadeh et al. 2011).

Walking is also an excellent way to control type 2 diabetes and improve the health of patients with diabetes (Loretod et al. 2005). Walking or doing any aerobic exercise for 38 minutes (4400 steps) per day will significantly decrease hemoglobin A1C value in patients with diabetes. Moreover, walking 5 km a day that takes approximately 90 minutes can improve up to 1.1% he-

moglobin A1C (Karstoft et al. 2012). Reduction in glycosylated hemoglobin A1C has lots of benefits in reducing cardiovascular complications (Rizos & Mikhailidis 2001); each 1% increase in glycosylated hemoglobin is associated with 18% increase in cardiovascular disease risk. Therefore, aerobic exercise can be an ideal exercise for people with diabetes (Sigal et al. 2007).

Due to the increasing incidence and prevalence of DM and its impact on all aspects of life in these patients, it is important to further study the different aspects of DM. There is an increasing prevalence of high blood pressure in Iran, especially in people with type 2 diabetes (about 71%), which is two times more than that in the general population. Furthermore, 35% to 75% of cardiac complications such as cardiovascular and renal hypertension have been attributed to high blood pressure in patients with diabetes (Azizi et al. 2010; Farvid et al. 2010). Given this background, conducting multiple studies in this area seems necessary. Therefore, the aim of this study is to examine the effect of walking exercise on the blood pressure of patients with type 2 diabetes.

2. Materials and Methods

This randomized clinical trial was approved by the Ethics Committee of Iran University of Medical Sciences (Code No. IR.IUMS.REC.2015.9311686019), and the proposal was registered in Iran Clinical Trials (Code No. IRCT 201511197101N3). Permission was obtained to enter the research settings, i.e. hospitals affiliated to Iran University of Medical Sciences (Hazrat-e Rasool and Firouzgar), by explaining the aim of the study to the hospital authorities.

The inclusion criteria were as follows: having type 2 diabetes according to physician's diagnosis, lack of musculoskeletal disorders and cardiovascular problems, lack of limits on physical exercise, aged 20-60 years, and having blood pressure less than 220/120 mm Hg. Exclusion criteria were as follows: hospitalizations during the study, exercise intolerance (expressing discomfort, lethargy, imbalance, sweating, tachycardia, and severe dizziness), irregular participation in exercise, and developing any complications in the foot. According to the previous studies, the sample size was calculated.

In this study, 67 males and females (20-60 years old) with type 2 diabetes, were randomly assigned to walking (n = 33) and control (n = 34) groups. Both groups signed the consent form. The control group received no intervention and continued their normal life. The walking exercise group was asked to walk with moderate intensity for 30 minutes one to two hours after eating breakfast in the morning, 3 days a week, for 8 consecutive weeks. The experimental group was told to report the researcher in the case of severe and unbearable palpitations. In such a case, the patient's pulse rate was measured; if it was 60-70% of the maximum initial pulse rate, the patient would break up walking till the pulse rate returned to baseline. After returning pulse to baseline, they began walking the prescribed distance (2 km) over time prescribed (30 minutes) till the walking task was finished. Exercises were done in the gym and supervised by the researcher or research assistant and a coach. Blood pressure was measured by a reliable needle bounce manometer the day before and one day after the end of the intervention. The data was analyzed by descriptive statistics (the frequency, mean and standard deviation), the Kolmogorov – Smirnov test, t-test, and Chi-square test using SPSS (version 16). The significance level was considered as less than 0.05.

3. Results

The results showed that the mean age of the patients in the walking and control groups was 53.18 ± 4.99 years and 51.88 ± 7.83 years, respectively. There was no significant difference between the average age of the groups (P = 0.412) (Table 1).

There was no significant difference between groups with regard to sex (P = 0.729) (Table 2). Most participants were high school graduates, and there was no significant difference between the two groups in terms of educational level (P = 0.690) (Table 3). Most participants

Table 1. Comparing ages between two groups

Variable	Group	Mean ± SD	95% Confidence Interval		P Value
			Lower Limit	Higher Limit	
Age, y	Walking	53.18 ± 4.99	51.4123	54.9513	0.412
	Control	51.85 ± 7.83	49.1189	54.5870	

Table 2. Comparing gender between two groups

Group	Gender	
	Male, No. (%)	Female, No. (%)
Walking	15(45%)	18(55%)
Control	14(41%)	20(58%)
P value	0.729	

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Table 3. Comparing education degree between two groups

Group		Education Degree					P Value
		Elementary	Guidance	Diploma	Associate	Bachelor	
Walking	No.	7	5	10	7	4	0.690
	%	21.2	15.2	30.3	21.2	12.1	
Control	No.	4	7	11	9	3	
	%	11.8	20.6	32.4	26.5	8.8	

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Table 4. Comparing type and dosage of diabetes pills between two groups

Group		Diabetes Pill			P Value
		Metformin	Glibenclamide	Both	
Walking	No.	9	8	16	0.574
	%	27.3	24.2	48.5	
Control	No.	13	5	16	
	%	38.2	14.7	47.1	

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Table 5. Mean values of diastolic and systolic pressures in two groups before and after intervention

Group	Variable	Mean ± SD Before the Intervention	Mean ± SD After the Intervention	P Value
Walking	Systolic pressure	122.42 ± 14.79	122.36 ± 20.29	0.986
	Diastolic pressure	76.06 ± 12.48	80.00 ± 9.35	0.119
Control	Systolic pressure	125.29 ± 16.55	125.88 ± 16.16	0.815
	Diastolic pressure	78.82 ± 10.94	82.64 ± 12.38	0.062

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Table 6. Comparing mean difference values of systolic and diastolic pressures between two groups before and after the intervention

Variable	Group		Mean Difference	P Value	95% Confidence Interval	
					Lower Limit	Upper Limit
Systolic pressure (before the intervention)	Walking	Control	-3.5187	0.435	-12.4569	5.4195
Systolic pressure (after the intervention)	Walking	Control	-2.8698	0.458	-10.5394	4.7997
Diastolic pressure (before the intervention)	Walking	Control	-2.7629	0.339	-8.4866	2.9608
Diastolic pressure (after the intervention)	Walking	Control	-2.6470	0.328	-8.0143	2.7209

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in the walking group (48%) used Metformin, and about 47% in the control group used Metformin and Glibenclamide. There was no significant difference between the groups in terms of the type of taking oral diabetes tablets (P = 0.574) (Table 4).

Before the intervention, the mean systolic and diastolic pressure of the groups was not significantly different. There was no statistically significant difference between walking and control group in terms of the mean systolic and diastolic pressure before and after the intervention (P > 0.05) (Table 5). The difference between mean systolic and diastolic pressure of experimental and control groups was not statistically significant (P > 0.05) (Table 6).

4. Discussion

Based on the results of this study, 8 weeks of walking exercise had no effect on reducing systolic and diastolic blood pressure of the patients with type 2 diabetes.

The results of this research are congruent with the findings of other related studies (Modeste et al. 2007; Lin et al. 2009; Alizadeh et al. 2011; Yosefipoor et al. 2015). In a research conducted by Alizadeh, 45 women were randomly assigned into 3 groups including intermittent exercise, continuous exercise, and control groups. The first group practiced 40 minutes of walking with the intensity of 64% to 76% of the maximum heart rate, 3 sessions a day for 5 days; the second group practiced 40 minutes of walking with moderate intensity 1 session a day, for five days, and the control group did not engage in any exercise.

No significant changes occurred in the systolic and diastolic blood pressure of the groups (Alizadeh et al.2011). In another research, 8 weeks of aerobic exercise, 3 times a week by 60% to 80% of maximum heart rate had no significant effect on blood pressure (Yosefipoor et al. 2015). However, other studies have shown that aerobic exercises have reduced participants' systolic and diastolic blood pressure. In Macfarlane's study and Collier's study, significant changes were seen in systolic and diastolic blood pressure after 8 weeks and 4 weeks of aerobic exercise, respectively (Macfarlane et al. 2006; Collier et al. 2008).

In Murphy's study, there was also a reduction in diastolic blood pressure over the 6-week intermittent and continuous exercise with moderate intensity (Murphy et al. 2002). Whelton has confirmed the positive impact of aerobic exercise on the reduction of blood pressure (Whelton et al. 2002). It seems that aerobic exercise reduces blood pressure by reducing the levels of triglycerides and low-density lipoprotein and loss of excess body fat (Yosefipoor et al. 2015). It also increases oxidation of total body fat and activates lipoprotein lipase (Mokhtari et al. 2014), which can play an important role in lowering blood pressure.

The different results of the above-mentioned studies could be due to the failure of interventions to reduce blood pressure (Lin et al. 2009; Alizadeh et al. 2011; Yosefipoor et al. 2015), lack of relationship between exercise and blood pressure (Modeste et al. 2007), increasing systolic or diastolic blood pressure after a period of aerobic exercise (Andersson et al. 2008; Fargad 2005), and failure of our intervention to reduce blood pressure. Other factors such as the type of exercise, intensity and frequency of daily exercise, diet, and body mass index could also be involved. Therefore, some researchers recommend and emphasize the concurrent use of exercise,

appropriate diet, and certain drugs to control blood pressure (Jorgea et al 2011).

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Forough Rafii was responsible for the intervention program, the scientific content of the paper, and the overall design. Daryadokht Masroor was in charge of the control and proper implementation of the study. Hamid Haghani was responsible for data analysis. Hamideh Azimi provided the study design and was responsible for sampling the participants and preparing the article draft.

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Conflicts of Interest

The authors of this study declared no conflict of interests.

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Family-Centered Education and Self-care Behaviors of Patients With Chronic Heart Failure

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ABSTRACT

Background: As for high prevalence and incidence of heart failure, it can impose huge health, economic, and social burden on society. Education and self-care are important aspects of management in patients with heart failure, which can control the disease complications. This study aimed to investigate the effect of family-centered education approach on self-care behaviors of the patients with heart failure.

Methods: This research is a randomized clinical trial. The study has been conducted on 72 patients with heart failure hospitalized in Shahid Rajai cardiovascular, medical, and research center, Tehran, Iran, in 2015. Patients were randomly assigned into the intervention (family-centered) and control groups. The self-care behaviors were measured before and two months after intervention using questionnaires of the self-care behaviors. Data analysis was done using paired t test and independent t test by SPSS.

Results: Before intervention, mean (SD) values of self-care scores were 23.88 (4.71) and 21.50 (3.30) in the control and family-centered groups, respectively, with no statistically significant difference between two groups (P = 0.064). Two months after the intervention, mean (SD) values of self-care scores in control and intervention groups were 22.94 (4.71) and 42.31 (4.60), respectively. Statistical analysis showed that self-care behaviors in the family-centered group had a significant increase compared to the control group (P < 0.001).

Conclusion: Education with family-centered approach has a positive impact on the self-care behavior of patients with heart failure. With regard to our culture and the importance of family, it is suggested that this approach be used in addition to other training methods to improve self-care behaviors in patients with chronic diseases such as heart failure.

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1. Background

In the 20th century, cardiovascular diseases accounted for less than 10% of all deaths around the world. But by the 21st century, cardiovascular diseases are responsible for almost half of all deaths in developed countries and 25% of deaths in developing countries. It is anticipated that by 2020, cardiovascular diseases will result in the death of 25 million people (Azizi et al. 2012). One of the common cardiovascular diseases is chronic heart failure (CHF) where cardiac output cannot provide needed oxygen to the body tissues (Seraji et al. 2013). According to the World Health Organization, CHF is one of the most common heart diseases, affected 2% to 4% of the world's population. Its prevalence increases annually and associates with social and psychological burden and high rate of hospitalization (Albno et al. 2014). Moreover, CHF is the first cause of death in Iran which has the economic and social consequences as well (Seraji et al. 2013). This illness has poor prognosis and high mortality rate so that 40% of people hospitalized with CHF would die or re-hospitalized within one year (Löfvenmark et al. 2011). This unfortunate outcome could be due to patients' poor self-care (Piamjariyakul et al. 2012).

Self-care is a series of activities that purposefully engages person's life in order to promote his or her physical, mental, and emotional health; preserve life; and prevent disease. Patient's participation in self-care is necessary to achieve a positive outcome in health activities (Buck et al. 2014). Learning self-care behaviors can help patients maintain good health and well-being, increase their compatibility with disease and capabilities for self-care. Self-care is also an important component of managing chronic diseases (Khosh Tarash et al. 2013). Follow-up and implementation of self-care behaviors in patients with chronic diseases is of great importance. Patients who are aware of self-care skills can promote their health functional abilities and reduce their complications.

Because of disease complications and treatment processes, patients with CHF experience many changes and challenges in their care plan. These people require appropriate self-care to cope with their condition. In recent years, more emphasis has been upon support and education of patients with CHF with regard to their care (Albno et al. 2014). The offered training can be provided for two target groups of patients and their families. Moreover, training in both groups can play a positive role in reducing stress (of family members and the patient), rising awareness of the disease and its control, and increasing family performance (Löfvenmark 2011).

The nature of heart failure as a chronic disease engages family members, too. Family members can contribute in the responsibility for patient care; therefore, training family members can be among logical and effective components in caring patients with CHF (Dunbar et al. 2013). Family members usually are informally involved in providing care and services for their patients and are considered a resource for patient care (Strömberg 2013). Strömberg reported that cooperation among patient, his/her family, and health care team has outstanding positive effect on the goals of these three groups and can improve patient care plans, reduce the hospitalization rate, and increase patients' quality of life (Strömberg 2013). Family-centered care is a way to expand health care which shows importance of family in patient care program (Festini 2014). Regarding the role of nurses in health improvement and self-care training and also considering the time nurses spend with family members of patients, they can take a positive step in family-centered education in order to empower patients and improve patients care.

Regarding that most studies are now based on education to patients and less attention has been paid to the role of the patient's family as a valuable source in achieving therapeutic goals, it seems that family-centered education along with patient education could be effective in recognition of the patient's needs.

2. Materials and Methods

This research is a clinical trial with a control group. Prior to conducting the study, it was registered by Ethics Committee of Iran University of Medical Sciences (No. 632/105/D/94). Research setting was Shahid Rajai Educational and Therapeutic Research Center of Cardiovascular Diseases. The study population were inpatients with CHF in the center and their active family members. The study sample were recruited from internal and post CCU wards (women and men).

Inclusion criteria for the patients were as follows: being 18 years or older, confirmation of the heart failure diagnosis by a physician (in their medical records), having heart failure with 35% ejection fraction or less, not being in acute condition, no sensory-perceptual problem and visual, hearing, and communication disturbances, willingness to participate in the study, having a caregiver (an active family member) who met the inclusion criteria, and lack of participation in the similar study. Inclusion criteria for active family member were as follows: being

illiterate, willingness to participate in the study, and at least three months responsibility for patient care. Exclusion criteria were as follows: absence from the training sessions for more than one session for the intervention group, unwillingness to participate in the study for both groups, patient's death, worsening the patient's condition, transferring to another department, prolonged hospitalization (more than 1 month), and getting high scores on self-care questionnaire before the intervention.

Data collection instruments comprised demographic form of the patients and their active family members. Demographic form of the patients included questions about age, gender, education level, marital status, history of underlying disease, body mass index, ejection fraction of heart, duration of heart failure, underlying disease, disease severity, cause of heart failure, family history of the disease, number of children, income status, medications and the frequency of drug use. Part of this form was completed by the patient and part of it by the researcher according to their medical records.

Demographic form of the active family members included questions about age, gender, education level, marital status, and duration of patient care and was completed by the active member of family. To investigate self-care behaviors, a questionnaire measuring self-care behaviors was administered to patients with CHF. The questionnaire was designed by Shojaei et al. in 2008 and its content validity was confirmed by a panel of experts and the Cronbach α coefficient of the questionnaire was calculated as 0.8. It included 15 questions about self-care which were scored based on Likert-type scale. In this study, the reliability and validity of these two instruments was revised by expert opinions.

With regard to face and content validity of the questionnaire and according to the opinion of the professors in School of Nursing and Midwifery of Iran University of Medical Sciences, one question about exercise with the title of "I regularly do exercise at least three times a week" added to this questionnaire to be investigated by necessary measures before and after the intervention. Eventually, total score of this questionnaire ranged between 0 and 64; 0-21 scores means poor care, 22-43 scores means average care, and 44-64 scores shows good care. The Cronbach α coefficient of the questionnaire was 0.75.

The sample size was determined with 95% of confidence, power of 80%, and assuming that family-based education approaches affects self-care behavior score with a significant difference of d = 4 (compared with the control group). The obtained number in each group was 32 and considering 25% samples drop, 40 patients in each group were recruited.

Before sampling, all patients who met the inclusion criteria and would like to participate in the study, completed informed consent forms. The patients were randomly put in the family-centered group and control group. Demographic questionnaire and a questionnaire measuring self-care behaviors of patients with CHF were completed by subjects before the intervention. The family-centered group involving patients and family members were asked to participate in three sessions about topics related to self-care held by the study researcher at the hospital. Each session was scheduled for 45 minutes and according to the needs of the patients and family members, continued up to 60 minutes.

This training was conducted in lecture form and in a group (if possible) with a maximum number of 10 people along with questions, answers, and images. Educational content included the introduction of disease, CHF, risk factors, symptoms, diet, proper exercise, medication, proper care principles and disease management. Control group just received the routine common care training in the hospital. Phone numbers of both groups were taken for follow-up and communication with the researcher. Groups received 2 phone calls of approximately 5 minutes after discharge from the hospital. Its content was based on the needs of patients or educational content provided to them. Also, number of the researcher was given to both groups to contact with the researcher in case of having questions or problems.

Two months after the educational program, the researcher after coordination with both groups and when they referred to the hospital to control the treatment process, asked them to complete the questionnaire of measuring self-care behaviors. The data, then, were entered into SPSS version 21 and were analyzed using descriptive (mean, standard deviation, frequency) and inferential statistics (paired t-test and independent t-test).

3. Results

The study results showed that the mean (SD) participants' ages in the family-centered groups were 49.50 (9.74) years and in the control group 55.53(13.67) years (Table 1). In terms of gender, control and family-centered groups were homogenous. In both groups, most participants were married and housewives. However in terms of education level, two groups were heterogeneous. According to the statistical tests determining the effect of education on self-care

Table 1. Demographic characteristics of study samples.

Variable		Control (n = 36)		Family-Centered (n = 36)		Sig.
		Mean or No.	SD or %	Mean or No.	SD or %	
Age (y)		55.53	13.67	49.50	9.74	*P = 0.0055
Gender	Female	18	50	18	50	**P = 0.99
	Male	18	50	18	50	
Marital status	Single	1	2.8	1	2.8	P = 0.99
	Married	33	91.7	34	94.4	
	Divorced	1	2.8	0	0	
	Widow	1	2.8	1	2.8	
Job	Unemployed	2	5.6	1	2.8	***P = 0.075
	Housewife	18	50	15	41.7	
	Employee	2	5.6	3	8.3	
	Freelance	3	8.3	11	30.6	
	Retired	7	19.4	6	16.7	
	Other	4	11.1	0	0	
Education level	Elementary	21	58.3	8	22.2	**P = 0.015
	High school	7	19.4	17	47.2	
	Diploma	6	16.7	8	22.2	
	Undergraduate	2	5.6	3	8.3	
Income sufficiency	Sufficient	5	13.9	3	8.3	***P = 0.596
	Almost sufficient	15	41.7	19	52.8	
	Is not sufficient	16	44.4	14	38.9	
Smoking	Yes	8	22.2	8	22.2	**P = 0.99
	No	22	61.1	23	63.9	
	Quitted	6	16.7	5	13.9	
Exercise program	Yes	15	41.7	3	8.3	**P = 0.002
	No	21	85.3	33	91.7	
History of heart failure in family	Yes	15	41.7	21	58.3	**P = 0.23
	No	21	58.3	15	41.7	
Cause of heart failure	Ischemic	13	1.36	8	22.2	**P = 0.3
	Non-ischemic	23	9.63	28	77.8	
Ejection fraction of heart	Mean (SD)	26.39	6.29	26.94	5.64	*P = 0.875
BMI (kg/m^2)	Mean (SD)	25.26	5.11	25.53	5.49	*P = 0.754

* ANOVA. ** Chi-square. ***Fischer Exact Test.

Table 2. Self-care score results in two study groups before and after the intervention.

Group	Control				Family-Centered				Independent Sample T-Test
	Before Intervention		Two months After Intervention		Before Intervention		Two Months After Intervention		
	%	No.	%	No.	%	No.	%	No.	
Weak self-care score (0-21)	36.1	13	41.7	15	44.4	16	0	0	
Average self-care score (22-43)	63.9	23	58.3	21	55.6	20	58.3	21	
Good self-care score (22-43)	0	0	0	0	0	0	41.7	15	P < 0.001
Mean ± SD	23.88 ± 4.71		22.94 ± 4.71		21.50 ± 3.30		42.31 ± 4.60		
Paired sample t-test	t = 2.7 df = 35 P = 0.01				t = -27.07 df = 347 P < 0.001				

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behaviors, this variable had no interfering effect in the study and is not an extraneous variable (P = 0.168).

In terms of income level, the most frequency statement in the control group was "which is not enough" and in family-centered group, "is partially sufficient." The results indicated that smoking habit was similar in both groups and most participants in the control group and family-centered were non-smokers. In terms of regular exercise program, significant difference was observed between the two groups. According to statistical tests to determine the effect of the interaction of these variables on self-care behaviors, this variable had no interfering effect in this study and it was not an extraneous variable (P = 0.168).

Investigations also revealed that the majority of patients in both groups had a family history of heart disease and non-ischemic reasons were the most frequent cause of heart failure in patients. Also the ejection fraction of the heart in both groups were mostly around 24% to 30%. Both groups were also homogenous in terms of body mass index. In family-centered group, it was mostly around 25 to 30 kg/m^2 in the control group around 18.5 to 25 kg/m^2.

Before intervention, the mean (SD) self-care scores in family-centered and control groups were 23.88(4.71) and 21.50(3.30), respectively. No statistically significant difference observed between self-care scores of two groups (P = 0.064). Two months after the intervention, the mean (SD) self-care scores in control and family-centered groups were 22.94 (4.71) and 42.31 (4.60), respectively. Statistical analysis showed that self-care behaviors in family-centered group had a significant increase compared to the control group (P < 0.001).

Paired sample t-test showed a significant difference between the means of self-care score in the control group before and two months after intervention (P = 0.01) which this change was negative. There was a significant difference between self-care scores of the family-centered group before and two months after intervention (P < 0.001). Also, a significant difference was observed between the control group and family-centered groups after the intervention (P < 0.001) (Table 2).

4. Discussion

The purpose of this study was to investigate the effect of self-care education with the family-centered approach on self-care behavior of patients with CHF. In this study, 72 patients with heart failure and active members of their families attended.

This study showed that before the intervention, in the family-centered group 55.6% of participants had average score of self-care (score 22-43) and 44.4% had poor self-care score (0-21). The mean (SD) of self-care behaviors score in this group was 21.50 (3.30) before the intervention. But two months after educational intervention in this group, 21 (58.3%) participants had average self-care score and 15 (41.7%) subjects had good self-care score. Statistical analysis revealed that the difference was statistically significant between self-care behaviors in the family-centered group (P < 0.001) before and two months after intervention. Likewise, Srisuk et al. in their study reported that after holding training sessions for 50 patients and an active caring member of their family in the intervention group, family member's knowledge and self-care of patients with CHF increased, compared to the control group who received routine care and education (Srisuk et al. 2014).

Similarly, Shahriyari et al. reported that the self-care behaviors of the family-centered group, which involved patients and their active caring family members, increased significantly after intervention, compared to the

control group in which only the patients were present (P < 0.001). In their study, mean (SD) scores of the self-care behaviors in the family-centered and in the control group were 26.9(4.9) and 27.2(4.3), respectively before the intervention (Shahriari et al. 2013).

These scores were similar to the results of our study in terms of obtaining average self-care score in family-centered and control groups before the intervention. However, the mean (SD) of self-care behaviors after educational intervention for the family-centered group and the control group were 47.2(6.3) and 28.4(3.9), respectively. Therefore their study results were similar to the current study in terms of obtaining good self-care score in family-centered group and average self-care score in the control group.

Bahramnezhad et al. in a quasi-experimental study with the aim of comparing the effect of individual- and family-centered education on controlling blood pressure reported that education in the family-centered group can have a positive impact on patients' blood pressure (P = 0.0005) (Bahramnezhad et al. 2008). Furthermore, Ghavidel et al. reported that family-centered education can improve the quality of life in patients undergoing coronary artery bypass surgery (P < 0.0001) (Ghavidel et al. 2015).

Dunbar et al. reported that self-care behaviors such as reducing sodium intake in diet in groups of "patient and family participation" and "educating patients and families" significantly increased compared to control group (P = 0.018). Also the control group was less likely to follow a low-sodium diet compared to the other groups. The urinary sodium in the group of "patient and family participation" and "educating patients and families" significantly decreased compared to the control group (P = 0.016). Their study introduced family members as a supportive element in promoting self-care behaviors (Dunbar et al. 2013). To verify these results, studies have been conducted on other chronic diseases such as diabetes.

Sadeghi et al. reported that there was a statistically significant difference between family-centered educational intervention compared to patient-centered and the control group with regard to knowledge (P < 0.001) and indicators of metabolic control (HBA1C) (P > 0.05) (Razi et al. 2013).

In conclusion, family-centered education approach can positively impact self-care behaviors of patients with CHF. Although education has positive effects, such educational approaches as family-centered can increase several folds the impact of education on the patients. With regard to the significance of family in disease control and complications of chronic diseases on one hand, and the importance of family in Iranian culture on the other hand, this educational approach can be used to improve self-care process in patients with chronic diseases such as heart failure.

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Conflict of Interest

The authors declared no conflict of interests.

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Review Paper: The Bed Incline and Prevention of Ventilator-Associated Pneumonia

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ABSTRACT

Background: Ventilator-Associated Pneumonia (VAP) is the most common nosocomial (hospital acquired) infection among patients undergoing mechanical ventilation. It increases mortality rate, duration of mechanical intubated ventilation, and hospitalization in the Intensive Care Units (ICUs). This review study aims to determine the proper gradient of a hospital bed in preventing VAP in patients hospitalized in ICUs.

Methods: In this study, research articles published from 1999 to 2016 were searched in PubMed, Science Direct, SID, and library sources, using keywords of "ventilator-associated pneumonia" and "elevated bed incline" and their corresponding terms in the Persian language.

Results: Results of the review showed that limited studies have been conducted on comparing the different inclines of bed and their effects on preventing VAP. Also, the available studies had methodological limitations or hospital staff failed to keep the patient in the same bed incline which was under the study for prolonged duration. Based on 19 reviewed studies, the incidence of VAP, hospital costs, mortality rate, and duration of mechanical ventilation in patients whose beds were inclined at 45 degrees or 30-45 degrees were significantly lower compared to patients reclining in the supine position. Although, in most conducted studies there were no consensus over a suitable bed incline in prevention of VAP and bedsore.

Conclusion: Raising the incline of bed can play a role in lowering the incidence of VAP, mortality rate, hospital costs and duration of mechanical ventilation. However, the proper gradient is not definite and requires studies with proper methodology in this regard.

1. Introduction

Ventilator-Associated Pneumonia (VAP) is the most common hospital acquired infection and its incidence varies between 9% and 67% (Akin Korhan et al. 2014). VAP is an acquired pneumonia that develops in patients who have been undergoing mechanical ventilation for more than 48 hours

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(Taraghi et al. 2011). In other words, VAP and duration of mechanical ventilation increase mortality rate, and hospital costs, the stay at Intensive Care Units (ICUs) (Metheny et al. 2010). VAP is diagnosed with infiltration and the systemic symptoms of infection (including fever and elevated white blood cells and changes in sputum characteristics) (Niel-Weise et al. 2011).

Seven principal factors that can lower the incidence of VAP include elevating the head of the bed, rinsing the mouth with chlorhexidine, prophylaxis to prevent thrombosis, washing hands and preventing aspiration, reducing use of sedative drugs, and early weaning from mechanical ventilation. Therefore, one of the interventions that are normally carried out regarding patients undergoing mechanical intervention is to elevate head of bed relative to the flat surface and positioning the patient at a 30-degree angle or more relative to the supine position (Palmer et al. 2001). Because of VAP risk, it is recommended that the bed incline be set at 45 degrees. Others recommend that the head of bed should be elevated at 30 to 45 degrees (Bankhead et al. 2009). European Assembly of Experts has recommended that head of bed should be raised 20 to 45 degrees and preferably more than 30 degrees (Niel-Weise et al. 2011).

Based on Kollef et al. study (1997), the supine position (equal to or less than 30-degree incline) is a risk factor and may lead to VAP and even death in patients undergoing mechanical ventilation. They reported a significant correlation between the bed incline and incidence of VAP (Grap et al. 2005). A clinical trial study on comparing two bed inclines of 0 and 45 degrees showed a significant difference between them with regard to VAP incidence. Based on these study results, clinical guidelines recommended to use an incline of 30 degrees and more for prevention of VAP in patients on mechanical ventilation, and observing this instruction became a common instruction of nursing cares (Drakulovic et al. 1999).

In another study, a negative correlation was observed between incline of bed head and indexes of acute physiology and chronic health evaluation (APACHE II, a severity-of-disease classification system, Knaus et al., 1985, one of several ICU scoring systems. It is applied within 24 hours of admission of a patient to an intensive care unit: an integer score from 0 to 71 is computed based on several measurements; higher scores correspond to more severe disease and higher risk of death. The first APACHE model was presented by Knaus et al. in 1981). It was also reported that the incline of bed head of patients undergoing mechanical ventilation was lower than those having spontaneous breathing (Hanneman & Gusick, 2005). In this regard, Grap et al. (2003) reported that the mean elevation of head of bed of 170 patients in ICUs was 19.2 degrees and its observation and follow up were poor. A study on 66 patients in critical condition showed that in 72% of occasions elevating the bed incline of less than 30 degrees was kept just for one day.

On the other hand, the clinical guidelines regarding preventing pressure ulcers have recommended that the bed incline should not be more than 30 degrees because elevating more than 30 degrees leads to an increase in shear force (Shearing forces are unaligned forces pushing one part of a body in one direction, and another part of the body in the opposite direction. When the forces are aligned into each other, they are called compression forces) and accordingly development of pressure ulcer. To limit this effect, especially in the sacral region, clinical guidelines have recommended that the bed incline should be less than 30 degrees (Schallom et al. 2014).

Although there are few studies available regarding the effect of bed incline on development of pressure ulcer as compared with VAP (Metheny et al. 2010), in a study on 20 healthy volunteers it was found that the maximum pressure in the sacral region was at the 45-degree incline ($P < 0.001$). However, the low-air-loss mattresses significantly reduce the pressure in all inclines (Lippoldt, Pernicka & Staudinger, 2014) ($P < 0.001$). Pressure ulcer is often a complication of bed rest and patients hospitalized in ICUs are more prone to develop these types of injuries (Hyun et al. 2014). Considering the high incidence of bedsore in patients hospitalized in the intensive care units, paying attention to both issues and the proper bed incline seems necessary for their prevention.

Differences in clinical guidelines on the issue of VAP and pressure ulcer challenge health care staff regarding how to prevent both these costly hospital-acquired complications. Therefore, considering the conducted studies, the proper gradient of the bed for lowering the incidence of VAP and pressure ulcer in a patient hospitalized in ICU undergoing mechanical ventilation is not conclusive (Jackson et al. 2011). As a result, more studies should be conducted to examine the incidence of pneumonia and pressure ulcer at different inclines of the patient's bed, especially in patients hospitalized in ICUs undergoing mechanical ventilation and or having NG-tubes (Metheny et al. 2010).

However, most studies on the effect of semi-upright position in prevention of VAP and aspiration were done

in previous decades with small sample sizes and did not compare different bed inclines which would help determine the proper bed incline (Metheny et al. 2010, Niel-Weise et al. 2011). In this regard, it seems that a review study needs to be conducted for identifying the process of studies on proper bed incline and prevention of VAP and pressure ulcer, their methodologies, limitations and eventually arriving at a decision regarding the proper incline of bed to prevent VAP and pressure ulcers (systematic review - a type of literature review that collects and critically analyzes multiple research studies or papers).

Likewise, a meta-analysis study was conducted to determine the impact of patient's reclining position on the incidence of pneumonia. In this analysis, 7 randomized clinical trial studies with a control group were examined. Results of the review study showed that the incidence of pneumonia among patients who were at 45-degree incline position was significantly lower than patients who were in the supine position (Alexiou et al. 2009).

Another systematic review compared 3 randomized clinical trial studies with the control group and reported that the impact of 45-degree incline on the incidence of VAP was not conclusive and further investigations were needed in this regard. In addition, the researchers stated that there was insufficient information on the advantages and disadvantages of the using 45-degree bed incline for the patients undergoing mechanical ventilation was dependent on many factors (Niel-Weise et al. 2011).

Based on the latest review by Leng et al. (2012), the incidence of VPA among patients at 45-degree incline was significantly lower than patients with lower incline of their beds. However, whether this incline could have priority over other inclines, required more extensive

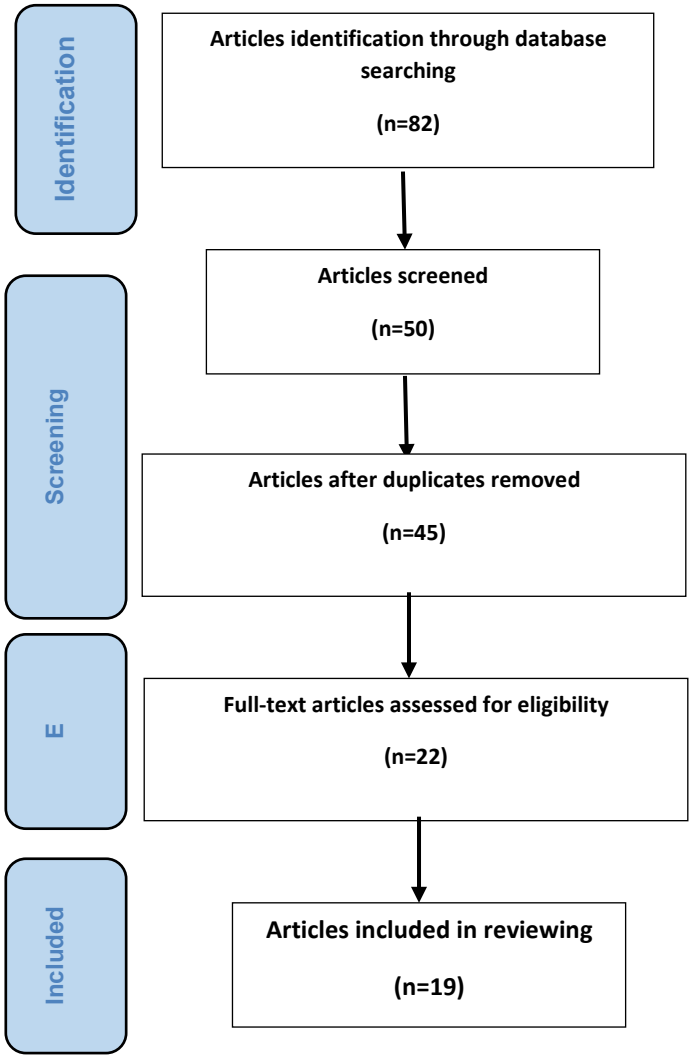

Figure 1. Search flowchart selection and articles' review

studies. The following questions were considered in this review study:

1. In the studies, what bed inclines were examined for prevention of VAP and pressure ulcer, and what were the results?

2. How do health care workers observe proper bed incline for prevention of VAP and pressure ulcer and what factors were associated with it?

2. Methods

Data source and search method

This study examined and reviewed the studies conducted from 1999 to 2016 regarding the proper bed incline to prevent VAP through search and extraction from SID, PubMed, and Science Direct. Furthermore, library catalogue search, the reference control method, and also inquiries from experts on the research topic were sought and used. In this review, the keywords were "ventilator-associated pneumonia," "elevation," "head of bed," "pressure ulcer," "intensive care units," and their Persian equivalents which were searched in the titles and abstracts.

These keywords were chosen by two experts in Nursery, and one of them searched the phrases related to proper bed incline in preventing VAP in databases. Then, another colleague re-examined and searched the sources and databases to be ensured of the adequacy of searched information and articles. This colleague who searched and extracted the articles were blind regarding the authors, the institutes, and the magazines that were subject to search.

Criteria for selecting the articles

Research articles were selected in both Persian and English articles on the prevention of VAP and pressure ulcer in ICUs that were published between 1999 and 2016. Articles that did not refer to the role of bed incline on the prevention of VAP, or referred to patients who were not undergoing mechanical ventilation were excluded from the review process.

Results of the search included 82 articles, out of which 45 articles covered the study subject, and by eliminating duplicate materials in different websites, 19 articles were found qualified for the review. Inclusion criteria comprised topics in connection with the bed incline in preventing VAP and pressure ulcer and articles referring to clinical guidelines on bed incline in preventing VAP and pressure ulcer. Figure 1 shows the search flowchart of selection and review of articles.

Method for selecting the articles

To determine the suitability of articles, first the title and the abstract of the articles were examined along with the time of study, then for further examination, all articles texts were studied by one of the researchers.

Thereupon, the following information was extracted by another researcher from the selected articles: type of the study, the hospital ward at which the study was carried out, and the year the study was conducted, sample size and method, statistical analysis and results of the study. The resulting information was evaluated by researchers and approved by resolving disputes through negotiations. A summary of the articles features are given in Table 1.

Features of reviewed studies

Type of study

Assessment of knowledge in 2 studies, performance of nurses in 1 study, comparing different bed inclines in prevention of VAP in 14 studies, investigating the feasibility of elevating the bed incline in 1 study, and the programs for combining the bed incline with other methods in prevention of VAP in 5 studies were examined. Study methods comprised randomized control, prospective, descriptive, and retrospective.

Study population and sample

Four studies concentrated on the performance and knowledge of nurses working in ICUs, and other studies were conducted on patients hospitalized in ICUs undergoing mechanical ventilation. With regard to sample size, most studies had a sample size of less than 100 persons.

Data collection method and tools

Out of the articles, 3 studies had used the checklist for registering the mortality rate and duration of hospitalization. Most studies used the clinical pulmonary infection scoring (CPIS) for investigating the incidence of VAP. Scoring system of this tool is presented in Table 2. Other studies have used bacterial cultures, Hunter diagnostic criteria (similar to CPIS) and pepsin reagent strips, for identifying aspiration.

CPIS tool (Table 2) was discussed for the first time by Pugin et al. It includes six parameters: 1) temperature, 2) white blood cell count, 3) presence or absence of pulmonary secretions, 4) PaO_2/FiO_2 ratio, 5) chest X-ray, and 6) results of smear and sputum culture with the semi-quantitative method. Each parameter has the score

Table 1. List of the studies conducted on the bed incline and VAP in patients hospitalized in ICUs between 1999 and 2016

No.	Study Title	Author	The Study Type	Sample Size	Instrument	Results
1	Supine position, a risk factor for ventilator-associated pneumonia: a randomized study	Drakulovic et al. 1999	Randomized clinical trial with control group	86 patients in 2 groups of supine position and 45 degrees (semi upright position)	Clinical pulmonary infection score and Braden scale	Pneumonia was significantly lower in the semi-upright position. The highest incidence of pneumonia was reported in patients in supine position and having NG-tube. No incidence of pressure ulcer was reported.
2	Nursing care in prevention of ventilator-associated pneumonia	Elorza Mateos et al. 2011	Descriptive	26 patients	Clinical pulmonary infection score	Oral hygiene was observed in 23 patients. In 20 patients, mean elevation of bed was more than 30 degrees. In 19 patients, the endotracheal tube cuff pressure was greater than 20 mmHg. As a result of these measures and also elevating head of bed by approximately 30 to 45 degrees, the incidence of pneumonia significantly reduced.
3	The impact of a protocol to reduce the level of aspiration	Metheney et al. 2010	Quasi- experimental	474 patients: 145 patients in 30 degrees incline, 329 patients in the control group	Clinical pulmonary infection score	The combination of elevating the bed more than 30 degrees and use of feeding tube in the small intestine significantly reduced the incidence of pneumonia.
4	Using multiple cares to prevent VAP	Narang 2008	Retrospective	240 patients	Clinical pulmonary infection score	Using multiple cares such as elevating the bed incline by about 30 to 40 degrees, and prophylaxis for preventing stomach ulcer and deep vein thrombosis, significantly reduced pneumonia. Duration of ventilation also reduced.
5	Aspiration of stomach contents in critically ill patients with NG-tubes	Metheny et al. 2006	Prospective	360 patients: 124 patients with the bed incline more than 30 degrees, and 226 patients with the bed incline less than 30 degrees	Pepsin reagent strips	In less than 30 degrees incline, patients had a higher percentage of aspiration, and this difference was not significant. Also, in these patients, the incidence of pneumonia was significantly higher. The percentage of pepsin-positive trachea tube secretions was also higher in these patients. As a result, the bed incline of less than 30 degrees is a risk factor for developing aspiration and pneumonia.
6	Predictors of elevating the bed	Grap et al. 2003	Descriptive	160 patients	Clinical pulmonary infection score	Most patients were in the supine position (71%) and a few were lying face down (1%). There was a significant association between elevating the bed and the systolic and diastolic blood pressure. Regarding elevating the bed, there was no association between patients with NG-tubes with patients without NG-tubes. The difference regarding elevating the bed was associated with mechanical ventilation. In patients under mechanical ventilation, the bed incline was lower than the other patients.

No.	Study Title	Author	The Study Type	Sample Size	Instrument	Results
7	Possibility and the impact of 45-degree incline (semi-upright position) in preventing ventilator-associated pneumonia	van Nieuwenhoven et al. 2006	Prospective	109 patients in the supine position and 112 patients in the semi-upright position (45 degrees)	Cultures obtained by bronchoscopy	Ventilator-associated pneumonia was reported in 8 patients in the supine position, and in 13 patients in the semi-upright position. The mean of elevating the head of bed was 9.8 degrees and 16.1 degrees on the first day and seventh day in the group in the supine position, respectively and 28.1 degrees and 22.6 degrees in the first and seventh day for the group in the semi-upright position, respectively ($P < 0.001$). The 45-degree bed incline was not achieved in 85% of study duration and these patients had much more change of positions than patients in the supine position.
8	Elevating the bed and its impact on stomach reflux, aspiration, pressure ulcer	Schallom et al. 2014	Crossover	15 patients, 8 patients in the intervention group (45 degrees) 7 patients in the control group (30 degrees)	Pepsin reagent strips for oral and tracheal secretions, the Braden Scale	188 samples of oral secretions were obtained, of them 44% were pepsin-positive (pepsin-positive secretions indicate reflux). 174 samples of tracheal tube secretions were also obtained, of which 62% were pepsin-positive (pepsin-positive secretions are signs of aspiration). In the 30 degrees incline, pepsin positive oral secretions were 48.8% as compared with 32.3% in the 45 degrees incline, and statistically, this difference was not significant ($P = 0.11$). At 30-degree incline, pepsin-positive tracheal tube secretions was 69.4% as compared with 62.5% at 45-degree incline, and this difference was not statistically significant ($P = 0.37$). No incidence of pressure ulcer was observed. Therefore, patients by using wavy mattresses at 30 degrees or more inclines, can stay in bed for 12 to 24 hours without suffering from pressure ulcer.
9	Lowering the incidence of ventilator-associated pneumonia through elevating the head of bed	Keeley 2007	Randomized clinical trial with the control group	30 patients entered into this study, of them 17 patients were placed in the 45-degree incline and 13 patients in the 25-degree incline	Microbiological testing of clinical symptoms	Statistical results showed that 5 patients out of the 45-degree group and 7 patients out of the 25-degree group became affected by ventilator-associated pneumonia, and there was a tendency of mitigation of pneumonia in patients positioned in the 45-degree incline, although the difference was not statistically significant.
10	The semi-upright position in patients connected to mechanical ventilation	Rose et al. 2010	Prospective	371 patients	Clinical symptoms, Criteria of Center for Disease Control, Microbiological tests, 1SOFA (Sequential (or Sepsis) Organ Failure Assessment score)	Pneumonia was reported in 12 patients (3.2%). During 7 days of study, 2112 observations were made. The 45-degree incline position or more was seen in 112 observations (3.5%). In 22.3% of the occasions, the bed incline was kept between 30 to 45 degrees. The 15-degres incline or less was seen in 353 instances (16.7%). The head of bed was elevated mostly when the patient was being weaned from the mechanical ventilation and was fed. Also, the bed incline was mostly lowered in connection with using inotrope agents and the lowering of the mean arterial pressure. The bed incline was also lower in patients who were in critical conditions.

No.	Study Title	Author	The Study Type	Sample Size	Instrument	Results
11	Effective factors on the bed incline in the cardiac surgery intensive care units	Ballew et al. 2011	Descriptive	100 patients	SOFA	The head of bed was mostly lowered when using vasopressor agents and hemodynamic supportive factors. Patients whose mean arterial pressure was 64 mmHg, their head of bed was lower.
12	The combination of subglottic secretions drainage and semi-upright position for prevention of VAP	Chen et al. 2016	Prospective	124 patients: 40 patients in the semi-upright position, 39 patients in the subglottic secretions drainage group, 43 patients in the semi-upright position and subglottic secretions drainage group, and 42 patients in the control group	Hunter diagnostic criteria	The incidence of ventilator-associated pneumonia has been reduced in three intervention groups. Also in the intervention group, there were fewer instances of ventilator-associated pneumonia; however, there were no significant difference between the groups regarding the mortality rate resulting from ventilator-associated pneumonia.
13	The effect of elevating bed on the prevention of ventilator-associated pneumonia	Grap et al. 2005	Descriptive	Examining 66 patients under mechanical ventilation for 7 days, a total of 276 observations	Clinical pulmonary infection score	The mean elevation of head of bed in the entire study was 21.7 degrees. Elevating the head of bed did not have a direct effect on clinical pulmonary infection score. Incidence of pneumonia was higher among patients who were in critical condition and were positioned in an incline of 30 degrees on the first day of mechanical ventilation.
14	Impact of care plan on the prevention of ventilator-associated pneumonia	Ferreira et al. 2016	Prospective	188 patients	Checklist	After implementing the checklist items, the incidence of ventilator-associated pneumonia, hospital costs, and mortality significantly reduced (P < 0.01).
16	Education alone is not sufficient to prevent ventilator-associated pneumonia. Multiple cares are required.	Hamishehkar et al. 2014	Observational	552 checklists, including 294 observations prior to training and 258 observations after training	Checklist	Mean instances of ventilator-associated pneumonia before training was 36.5% and after training was 41.2%. The bed incline of half of the patients in both groups was less than 30 degrees prior and after training. Half of nurses in the wards did not know that the bed incline between 30 and 45 degrees was important in prevention of pneumonia.
16	The effect of care programs for upper respiratory system in prevention of VAP in patients hospitalized in the intensive care units	Bakhtiari et al. 2015	Randomized clinical trial with the control group	62 patients: 35 patients in the intervention group and 37 patients in the control group	Clinical pulmonary infection score	On the fifth day, the incidence of ventilator-associated pneumonia significantly reduced in the intervention group (elevating head of bed by about 45 degrees, drainage of subglottal secretions, rinsing the mouth with chlorhexidine 2%, and measuring the cuff pressure up to 25 cm of water).

No.	Study Title	Author	The Study Type	Sample Size	Instrument	Results
17	Knowledge of ICU nurses on prevention of ventilator-associated pneumonia	Korhan et al. 2013	Cross-sectional	138 ICU nurses in Turkey	The form of nurses' knowledge regarding clinical guidelines in prevention of VAP	The nurses' knowledge was very poor. About 29.7% of them stated that the semi-upright position was effective in prevention of ventilator-associated pneumonia.
18	Pressure exerted on body under different bed inclines with different kinds of wavy mattresses	Lippoldt et al. 2014	Prospective	20 healthy volunteers	Xsensor technology	The maximum pressure in the sacral area was in the 45-degree incline ($P < 0.001$); however, the low air-loss mattresses significantly lowered the pressure under all inclines ($P < 0.001$).
19	Comparing the effect of bed incline at 30 and 45 degrees in prevention of ventilator-associated pneumonia in patients hospitalized in the intensive care units	Najafi Ghezeljeh T et al. 2016	Randomized clinical trial with the control group	120 patients	Clinical pulmonary infection scoring	At the conclusion of the third day of intervention, the incidence of ventilator associated pneumonia was significantly lower among patients who were in the 30- and 45-degree bed incline ($P < 0.001$). Also at 45-degree incline, the incidence of ventilator-associated pneumonia was less than that in 30-degree incline. The three groups did not have any statistically significant difference with regard to being affected by bedsore.

of 0, 1, and 2, except the PaO_2/FiO_2 ratio which has the score of 0 and 2. Pugin and colleagues reported the sensitivity of tools as 93% and its specificity as 100% (Pugin et al. 1991). In most studies, digital or manual goniometer was used to measure the bed incline.

In a few studies, the simultaneous examination of pressure ulcer was also conducted. In these studies, Braden scale was used to anticipate pressure ulcer.

Only, in one study, the evaluation method of research tool has been reported with regard to its validity, reliability, sensitivity, and specificity (Akin Korhan et al. 2014). The Braden scale is used for anticipating pressure ulcer, and has been mentioned with 95% confidence interval in a study (Serpa et al. 2011).

Braden scale includes 6 parameters and each parameter has 4 sections. If total score of a patient is 16-18, it indicates low risk, 13-15 medium risk, 10-12 high risk, and less than 9 very high risk.

Every day, total scores for the patient should be computed and the patient' skin in pressure regions should be evaluated at each time his or her position changes, so that those patients at risk can be identified (Table 3).

3. Results

Knowledge and performance of ICU nurses and its related factors

A study conducted in Turkey with the aim of examining the level of knowledge of ICU nurses in prevention of VAP reported that the nurses' knowledge was very poor in a way that only 29.7% knew that 45 degrees incline of bed was effective in the prevention of VAP. They also reported that 68.80% of nurses were aware of the advantages of using closed suction system in prevention of VAP.

About 16.7% of nurses were aware of the time for changing the closed suction system in every patient and 23.90% of them were aware of the subglottic secretion drainage in prevention of VAP (Akin Korhan et al. 2014). Hamishekar et al. reported that training the nurses would not alone suffice to prevent VAP and multiple cares should be taken for patients undergoing mechanical ventilation to prevent VAP.

Therefore, the mean use of multiple cares to prevent VAP was 36.50% before training and 41.20% after training ($P > 0.05$). The bed incline for half of patients in both groups, before and after training, was less than 30 degrees. About 50% of nurses of ICUs did not know that the incline of 30-

Table 2. CPIS tool

Parameter	Value	Score
Temperature, °C	36.5 - 38.4	0
	38.5 – 38.9	1
	39 < , 36 >	2
White blood cell count	4000 - 11000	0
	11000 < ، 4000 >	1
	500 < Band white blood cell	2
Pulmonary secretions	No pulmonary secretions	0
	Nonsuppurative pulmonary secretions	1
	Suppurative pulmonary secretions	2
Oxygenation: PaO_2/FiO_2 ratio, mmHg	240 > or presence of ARDS (acute respiratory distress syndrome) symptoms	0
	240 < and absence of ARDS symptoms	2
Chest radiography	No infiltration	0
	Diffused infiltration	1
	Local infiltration	2
Smear and sputum culture by semi-quantitative method	No pathogenic bacteria in sputum culture (+ / 0)	0
	Pathogenic bacteria in sputum culture (+++ / ++ / +)	1
	Some pathogenic bacteria are seen in the smear	2

Client-Centered Nursing Care

Table 3. Braden Scale

Friction and Shear	Nutrition	Mobility	Activity	Moisture	Sensory Perception	Score
Without difficulty	Excellent	Without restriction	Often walks	Rarely moist	No impairment	4
Without apparent difficulty	Sufficient	Partial restriction	Occasionally walks	Occasionally moist	Partial limitation	3
Potential problem	Probably insufficient	Very restricted	Dependent on chair	Very moist	Very limited	2
Difficult	Very weak	Completely immobile	Dependent to bed	Consistently moist	Completely limited	1

Client-Centered Nursing Care

45 degrees was important and vital to prevent pneumonia. Most nurses reported that they did not have sufficient time to perform preventive cares of VAP and the treatment system had not sufficiently provided them with necessary training in this regard (Hamishehkar et al. 2014).

The effect of multiple cares in prevention of VAP has been examined in 5 studies. In these studies, a combination of different interventions were used to prevent VAP. In one study it has been reported that combined elevation of bed incline more than 30 degrees and use of nasogastric feeding tube significantly reduced VAP incidence. Results of the study showed that using combination programs such as elevating the bed incline about 30-45 degrees, subglottic secretion drainage, rinsing the mouth with chlorhexidine 2%, and measuring the cuff pressure within 25 cm water, significantly

reduced the incidence of VAP (Elorza Mateos et al. 2011; Bakhtiari et al. 2015).

Although in a study, the mortality rate among the group receiving multiple cares did not have significant difference with the control group (Chen Guihua et al. 2016), a significant reduction in mortality rate and hospital costs was reported in another study (Ferreira et al. 2016). Furthermore, in another study, the effect of combined intervention was demonstrated on lowering the incidence of VAP, duration of mechanical ventilation, and upper gastrointestinal bleeding (Narang 2008). Based on another study, the target of 45 degrees incline was not achieved in 85% of study duration and the reclining position of these patients have been changed far more than in patients in the supine position (van Nieuwenhoven et al. 2006).

In one study, the mean level of bed incline was 19.2 degrees and 70% of patients were in the supine position. No difference was found with regard to the elevation of the bed incline for starting the feeding among patients with tracheal intubation as compared with patients without endotracheal tube (Grap et al. 2003). In two other studies, it was also reported that patients under mechanical ventilation and in critical condition had a lower bed incline as compared with other patients (Grap et al. 2003; Rose et al. 2010).

Also, another study results showed that the bed incline of patients receiving vasopressor drugs (P = 0.001), patients under treatment with hemodynamic status supportive drugs (19 degrees vs. 26 degrees P = 0.01), and patients with median arterial pressure of 64 mmHg or less (17 degrees vs. 24 degrees P = 0.01) was lower than that of other patients. They demonstrated that the bed incline did not have any association with the nurses' working shifts, and lowering the patients' bed incline had no connection with the night shift. Grap et al. and Rose et al. in their studies came to this conclusion that the highest elevation of the bed incline was at the time of weaning the patient from mechanical ventilation and being fed.

Also, the greatest decrease in the bed incline was in association with the use of inotrope agents and lowering the mean arterial pressure. The reasons for not keeping patients at 45-degree incline included the nurses' inconvenience in carrying out cares, especially for critically ill patients at that incline, and also the difficulty in keeping the patients lying on their side (Grap et al. 2003; Rose et al. 2010). Other reasons for nurses' not observing the 45-degree bed incline included patients' inconvenience, fear of making pressure ulcers, lacking sufficient information about clinical guidelines about elevating the bed incline to prevent VAP (Ballew et al. 2011). In another study, the nurses reported that the health system did not provide them with sufficient training, and due to shortage of health staff, nurses did not have sufficient time to carry out the required cares for the patients (Hamishehkar et al. 2014).

Comparing different bed inclines in prevention of VAP

Four studies reported that the incidence of VAP among patients at 45-degree bed incline was significantly lower than that in patients at lower inclines. Furthermore in several other studies, the inconclusive effect of 45-degrees incline on VAP incidence and the need for further investigation in this regard were mentioned. Another study reported that in patients who were in lower than 30 degrees incline, the incidence of pneumonia was significantly higher (Metheny et al. 2006).

In another study, the highest incidence of pneumonia was reported in patients in the supine position as compared with patients at 45-degree incline and with NG-tube. It was also reported that there was an association between semi-upright position and reduction of VAP incidence in patients hospitalized in ICUs undergoing mechanical ventilation (Drakulovic et al. 1999).

In a study, 30 patients hospitalized in ICU under mechanical ventilation were randomly divided into two groups of intervention (45-degree incline) and control group (25-degree incline). The study result showed that 29% of patients in the intervention group and 54% of patients in the control group were affected by VAP, although the difference was not statistically significant (Akin Korhan et al. 2014). Bakhriari et al. placed the patients in the intervention group under upper respiratory system care program, including keeping the patient at 45 degrees of incline. Endotracheal tube cuff pressure was also kept within the limit of 25 cm water, and prior to each position change, the tracheal tube secretions were suctioned off.

Until the fourth day, the incidence of VAP pneumonia did not show significant difference between the two groups; however, on the fifth day, the incidence of VAP in patients in the intervention group significantly reduced as compared with the control group (Bakhtiari et al. 2015). In Schallom et al. study, no statistically significant differences were observed between the 30- and 45- degree bed incline regarding the incidence of aspiration and bedsore.

Therefore, patients can be kept at 30 degrees or more incline by using low-air-loss mattresses, without occurrence of pressure ulcer. This study also suggested that keeping the patients at 30 degrees or more incline was feasible and easily tolerated by the patients and made no interference with performance of nursing cares. Prior to positioning the patients in the supine position or in the Trendelenburg position, nurses should examine and suction off the secretions of the mouth and trachea of the patients. Furthermore, patients receiving sedative drugs, should be positioned at least at 30 degrees of incline to reduce reflux and aspiration (Schallom et al. 2014).

In Najafi et al. study (2016), patients in the intervention group were positioned at 30-degree and 45-degree bed incline for three days but patients in the control group were positioned in the regular bed incline required by that hospital ward, and adjusted by nurses. Furthermore, all upper respiratory system and bedsore cares were carried out equally for all patients. Based on the results, the incidence of VAP significantly reduced among patients in the intervention group of 30- and 45-degree inclines ($P < 001$) and the incidence of VAP at 45-degree incline was less than that in the 30-degree incline group. At the end of the third day, none of the patients in the intervention group (30- and 45-degree incline) contracted pressure ulcer (Najafi Ghezeljeh, Kalhor & Haghani 2016).

Drakulovic et al. also investigated comorbidity of pressure ulcer with VAP incidence and concluded that patients at 45-degree incline had lower incidence of VAP and also no cases of pressure ulcer was reported in these patients (Drakulovic et al. 1999). However in Lippoldt et al. study on 20 healthy volunteers, the pressure exerted on various areas of the skin and sacrum and buttocks was measured at 0, 10, 30, and 45 degrees on 4 types of wavy mattresses and in 6 positions of the supine, lying on the side, lying face down, the Trendelenburg position, reverse Trendelenburg position, and semi-upright position. The bed incline was measured by electronic goniometer. Pressure exerted on the sacrum region increased only at 45-degree incline ($P < 0.001$). The reverse Trendelenburg position led to the lowest pressure exerted on the sacrum region under all inclines ($P < 0.01$) (In the Trendelenburg position, the body is laid flat on the back with the feet higher than the head by 15-30 degrees, in contrast to the reverse Trendelenburg position, where the body is tilted in the opposite direction.) . Heavier weight causes more pressure and more widespread contact of the body with mattresses and the use of low-air-loss mattresses also leads to distinct reduction of pressure. As a result, using low-air-loss mattresses accompanied with reverse Trendelenburg position and elevating the bed head by about 30 to 45 degrees are very appropriate for preventing skin damage in the sacral area (Lippoldt, Pernicka & Staudinger 2014).

4. Discussion

In this review study, 19 articles were reviewed regarding elevating the bed incline in prevention of VAP and pressure ulcer. Our review shows the limitation of studies on examining the impact of bed incline elevation in prevention of VAP and pressure ulcer. The studies that had compared different inclines in prevention of VAP recommended a bed incline of 45 degrees. However in most studies, the method of operation and modality of examining the variables, data collection tools and the method of assessing the reliability and validity of tools were not fully explained. Some studies briefly mentioned CPIS (Clinical Pulmonary Infection Score) tools and the Braden scale, however, they made no attempt to explain these tools.

In line with this review, Alexiou et al. in a review of 7 clinical trial studies showed that the incidence of pneumonia among patients at 45-degree incline was significantly lower than patients in the supine position (27% vs. 47%) and the 15- to 30-degree incline was insufficient to prevent VAP in patients undergoing mechanical ventilation. Also, patients in 45-degree incline had a lower mortality rate compared with patients lying face down or in the supine position. However, the difference was not statistically significant (86% vs. 92%). Therefore, the 45-degree incline is one of the simplest and least costly methods for preventing VAP.

However, keeping the patients at 45-degree incline was difficult with regard to changing the patients' reclining position, and necessary training should be given to nurses about keeping the patients in this incline (Alexiou et al. 2009). Nevertheless, in Niel-Weise et al. review on 3 randomized clinical trial studies with the control group, the researchers did not have sufficient confidence in the advantages and disadvantages of the 45-degree incline and suggested further investigations in this regard. Also, the impact of elevating the bed incline to 45 degrees for 24 hours on the incidence of thromboembolism and hemodynamic instability is not clear (Niel-Weise et al. 2011).

Leng et al. in a meta-analysis showed that the incidence of VAP in patients at 45-degree incline was significantly lower than the control group (patients at a lower bed incline) ($P = 0.001$). However, there were no significant differences regarding the mortality rate and

length of hospitalization in ICU and treatment with antibiotics (Leng et al. 2012). Some studies also showed no significant differences between 30-degree and 45-degree inclines. Other studies referred to the point that patients hospitalized in ICUs, by using low-air-loss mattresses, can be positioned at 45-degree incline without being affected by pneumonia and pressure ulcer (Lippoldt, Pernicka & Staudinger 2014).

The semi-upright position causes interference with nursing cares. Position change of patients to lying on their side was difficult for patients. Also nurses feared that patients could be affected by pressure ulcers. Whereas some studies have concluded that the semi-upright position was comfortably feasible by patients and had no interference with nursing cares. Some studies have also reported that the 15- to 30-degree incline was not sufficient to prevent VAP, and patients undergoing mechanical ventilation should be positioned at 45-degree incline.

The awareness of nurses of preventing VAP by elevating the bed incline was poor. However, the result was positive after performing multiple cares. Review of studies related to the impact of multiple care programs in prevention of VAP confirms the better effectiveness of these cares in VAP prevention. Using combined applications such as elevating the bed about 30-45 degrees, draining subglottic secretions, rinsing the mouth with chlorhexidine 2%, and measuring cuff pressure to within 25 cm water significantly reduces the incidence of VAP. In general, the following recommendations are offered for prevention of VAP:

- Keeping the bed incline at 30 to 45 degrees in patients undergoing mechanical ventilation and having NG-tube,
- Using wavy mattresses,
- Using noninvasive mechanical ventilation with positive pressure but with adequate precautions for patients with acute lung injury, acute respiratory failure, severe hypoxia, or severe acidemia,
- Using sedatives in low dosage,
- Daily examination of the patients to remove the endotracheal tube as soon as possible,
- Drainage of secretions above the endotracheal tube cuff,
- Maintaining the mechanical ventilation circuit and quickly changing it when fluid is seen in the circuit,
- Oral hygiene by using chlorhexidine and toothbrush twice a day,
- Peptic ulcer prophylaxis, and
- Continuous education and training of hospital staff on prevention and control of infection (Klompas et al. 2014).

Therefore, combination of these interventions in patients undergoing mechanical intervention should be emphasized and all nurses and physicians should be asked to carry out these cares. As such, more studies should be conducted in this field with larger sample sizes. Also, in many studies the feasibility and independent effect of 45-degree incline (semi-upright position) in prevention of VAP has not been examined yet. Some studies have reported that critically ill patients had lower inclined beds. Also, the patients' beds were mostly lowered at the time of weaning from the mechanical ventilator.

Regarding methodology, the conducted studies had some limitations. Some studies had small sample sizes. Also, in most studies blinding was not carried out (A blind — or blinded — experiment is an experiment in which information about the test is masked (kept) from the participant, to reduce or eliminate bias, until after a trial outcome is known. It is understood that bias may be intentional or unconscious, thus no dishonesty is implied by blinding. If both tester and subject are blinded, the trial is called a double – blind experiment) that could result in the Hawthorne effect (The Hawthorne effect, also referred to as the observer effect, is a type of reactivity in which individuals modify or improve an aspect of their behavior in response to their awareness of being observed.).

To prevent bedsore, the position of patients hospitalized in ICUs should be changed every two hours and as a result they may not be returned to the required bed incline. Resolving this issue needs exact measurement and recording of the bed incline. In some studies the bed incline was measured only three times a day and this can affect the accuracy of measuring the bed inclines and confidence in keeping the patients in those inclines. It is recommended that proper studies be conducted on continuous measuring the bed incline with digital tools, or using beds with incline marker. Also, in some studies that patients' beds incline was more than 30 degrees, a proper evaluation of patients' skin damage was not reported.

An exact method was not used for pneumonia diagnosis in most studies (such as bronchoscopy and preparation of sample for microbial culture). Since, in patients

undergoing mechanical ventilation, the VAP does not develop until after 48-72 hours, the VAP diagnosis criteria such as fever, leukopenia or leukocytosis, infiltration in chest X-ray and microbial cultures should be performed routinely that usually cost little. On the other hand, in most studies, investigating pneumonia incidence was conducted after 72 hours to 5 days. It is recommended that studies be conducted on the long-term effects of keeping patients in various inclines on the incidence of VAP and clinical implications.

Meanwhile, the performance of nurses in compliance with elevating the bed incline for patients undergoing mechanical ventilation depends on general policies of the hospital (Grap et al. 2003). In order to prevent VAP, it is suggested that training programs be prepared for nurses working in the ICUs, and risks of lowering the patients' bed incline be taught to ICU nurses. Furthermore, studies should be conducted with the aim of identifying problems in keeping elevated the bed incline for patients undergoing mechanical ventilation, and measures should be adopted to reduce or remove these problems.

5. Conclusion

Based on reviewing the relevant articles, bed inclines of 30 to 45 degrees are appropriate for patients undergoing mechanical ventilation with NG-tube, and significantly reduce the incidence of VAP and aspiration as compared with patients in the supine position.

According to this review, the more is the bed incline, the less is the probability of pneumonia, and the 45-degree incline is preferable. Thus, the supine position is a risk factor for VAP, and nurses should consider this issue when changing the patient's position, although the studies that have been conducted in this regard are limited and have several methodological difficulties. On the other hand, in most studies, the effect of the bed incline on both VAP and bedsore was not investigated. Therefore, more randomized clinical trial studies with the control group should be conducted to examine the effects of different bed inclines on prevention of VAP and pressure ulcer, especially in patients who are in critical condition and undergoing mechanical ventilation with NG-tube.

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Conflicts of Interest

The authors of this study declared no conflict of interests.

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