Original Research

The Association between Caring Behavior, Self-Efficacy, and Work Engagement among Formal Caregivers Serving Children with Intellectual Disability

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Abstract

Background: Not only caring behavior in caregivers of children with intellectual disability assumes great significance but it also pertains to improved caring quality. On the account that caring behavior can be influenced by self-efficacy and work engagement; consequently, this study was conducted aiming to determine the association between caring behavior, self-efficacy, and work engagement among formal caregivers serving children with intellectual disability in rehabilitation centers of Tehran in 2020.

Method: A descriptive-correlational survey, this study consisted of 203 formal caregivers serving children with intellectual disability from rehabilitation centers. A demographic characteristics questionnaire, the Caring Dimensions Inventory (CDI), the General Self-Efficacy Scale (GSE-10), and Utrecht Work Engagement Scale (UWES) were the tools utilized to collect the data. Data analysis was accomplished using SPSS software version 16 in two descriptive and inferential statistics phases.

Results: The general results indicated that caring behavior significantly and positively correlated with self-efficacy; i.e. as self-efficacy rises, so does the caring behavior (P=0.014). Furthermore, work engagement was found to be significant as shown by the regression model (p = 0.001), considering that the coefficient of the model was 0.42. In other words, enhanced work engagement was tantamount to higher caring behavior by 0.42%.

Conclusion: As self-efficacy and work engagement do increase, so do the caring behaviors in caregivers. These results can offer the knowledge base to healthcare policymakers, particularly managers of rehabilitation centers, to embrace well-written programs, in-service training and enhance the working conditions. As a result, the basis for revising the official caregivers' behaviors would be hopefully provided.

Keywords: Caring Behaviors, Self-Efficacy, Work Engagement, Children with intellectual disability, Official Caregivers

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Introduction

Giving care is actually the most influential and primary obligation in the nursing profession (1). The concept of care occupies a special position in the nursing profession and is regarded as the principal element of nursing by prominent nursing theorists such as Watson and Lininger (2). In actuality, care comprises fulfilling clients' physical, psychological, social, and spiritual needs with both technical and emotional dimensions (3, 4). Caring behavior in nurses correlates with client rehabilitation, high levels of client satisfaction, and improved quality of care (5). Brenner et al (2010) noted nurses' caring behaviors ought to be enhanced and to do so, they should be aware of two things: the kind of caring behavior they should maintain and the reasons why their clients and their families perceive a behavior as caring or non-caring (6). In this regard, Zahroh et al (2020) stated despite huge efforts made to improve caregivers' caring behaviors, they still exhibit many disfavored caring behaviors (7). Clients with intellectual disability require greater amounts of care and treatment compared to their peers. Additionally, given their lack of self-help as well as insufficient connections, improper expression of emotions, and challenging behaviors, do not usually obtain good-quality care (8). According to the World Health Organization (WHO), 10% of the world's population suffers from a mental disability (9). This number in Iran alone is nearly 1200 thousand individuals, with an increasing prevalence (10). Frequently held misconceptions about clients with intellectual disability in the community prompt caregivers to either deny them or only focus on financial issues when offering care with the assumption that clients with intellectual disability are incurable (11, 12). Glasper et al. (2017) conducted a study in rehabilitation centers for children with intellectual disability in the UK, showing that they receive poor-standard care and that their caregivers are more prone to violence, stress, and job exhaustion than caregivers in other units are (13). Regardless of the results obtained by such studies, some researchers have highlighted positive experiences from serving children with intellectual disability, such as caregivers' inner satisfaction with their duties, satisfying the clients, preserving the client's human dignity, client care responsibility, affectionate behaviors, and increased self-esteem. Therefore, the favorable aspects of caring for children with intellectual disability can have a positive impact on caregivers' overall well-being (14). Self-efficacy is among the functional concepts linked to professional behavior and greatly influences the factors concerning nursing performance. The reason is that a high level of self-efficacy raises the quality of care and eventually improves individual and organizational performance (15). Self-efficacy refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments in the organization. It is associated with the degree of one's motivation, and behavior, interacting with them, and functioning as a protective factor in the workplace (1, 16). Nurses' self-efficacy is associated with professional independence and empowerment; i.e. those with high levels of self-efficacy, see barriers as an opportunity to progress and overcome them, rather than escape crises, and see them as threats (17). Research has also exhibited that nurses with higher self-efficacy provide quality care behavior to clients, have a better work commitment, and have more endurance in the face of problems (18). Nurses who provide care to children with intellectual disability undergo more stress, higher level of exhaustion, and burnout than other nurses do, as they are likely prone to violence, aggression, and challenging behaviors that might affect their self-efficacy and their quality of care (19). West et al. (2014) discovered that 83% of nurses, who serve mentally ill people, encountered physical harm from their clients (20). Although the quality of care is very important, in spite of the fact that there are many nurses with adequate scientific knowledge, they lack acceptable self-efficacy in clinical environments. Today, given that the principles of childcare have become well

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defined and public awareness of quality care services has improved, institutions not only require nurses that possess greater self-efficacy but they also need to boost their human resources (7). Work engagement among healthcare staff is a strategic instrument to enhance the quality of care, as nurses with higher work engagement tend to influence their job performance more significantly. The reason is the full dedication of their physical, cognitive, and emotional resources to what they do (21). Consequently, work engagement, as another meaningful and consequential factor, determines the caregivers' behavior. Work engagement is a person's emotional and psychological preoccupation with his job, which can satisfy his/her current needs and make him/her proud. Work engagement is the opposite of job stress, tension, and burnout. Nurses, who are highly committed to their job, are self-compassionate, perform their duties to the best of their ability, and are intrigued by their job (22, 23). De Los Santos and Labrague (2021), citing Schaufeli et al. (2006), stated that work engagement is associated with a sense of passion, self-efficacy, professional commitment, and that employees with higher work engagement are more outcome-oriented, productive, and are involved in achieving organizational goals (5). Work engagement leads to better performance in nurses and thus helps the organization achieve its goals (24). Fasoli (2010) reported that the rate of work engagement in nurses is 18% and that it needs to be improved (25). Likewise, Ignatenko (2015) emphasized on the urgent need for improvements in medical centers work engagement (26). Considering nurses' prominent role in safeguarding the rights of the clients with intellectual disability, attending to their needs, and physical, emotional, social, and mental well-being (27), this study was conducted aiming to assess the relationship between caring behavior, self-efficacy and work engagement among official caregivers serving children with intellectual disability in rehabilitation centers of Tehran.

Method

It is a cross-sectional study involving rehabilitation centers located in Tehran (Noyan Rehab. Centre, Bana Charity, Bachehaye Aseman Institute, Farkhonde Rehab. Center, Yavaran Charity, Rofaydeh Rehabilitation Center, Bachehayeh Amal Rehab). The research statistical population included both professional and non-professional nurses serving clients with intellectual disability; educable children aged 6-12 years old. Sampling was conducted continuously and individuals were selected based on inclusion criteria. The inclusion criteria were: at least six months of experience working with children with intellectual disability in Rehab. Centers and lack of any non-chronic or severe illness or mental disorder based on self-reports. In addition, the exclusion criteria were reluctance to participate in the study and having a disabled family member.

To determine the sample size with 95% confidence level and 80% test power and considering that the correlation coefficient between caring behavior, self-efficacy and work engagement among official caregivers is 0.2, and that the relationship between the two variables is also statistically significant, a research population of 200 subjects was established using the following formula:

After the code of ethics was obtained (IR.TUMS.FNM.REC.1400.007), a letter of introduction delivered to the research environments, and the informed written consent acquired, assuring the confidentiality of their data, the sampling procedure was accomplished according to the inclusion criteria. It ended in the selection of 203 children with intellectual disability from different centers (55, 32, 15, 42, 22, and 37 children from Noyan Rehab. Centre, Bana Charity, Bachehaye Aseman Institute, Farkhonde Rehab. Center, Yavaran Charity, Rofaydeh Rehabilitation Center, and Bachehayeh Amal Rehab, respectively). Likewise, there were also 6, 43, and 154 head nurses, official nurses, and practical nurses, respectively. Due to the prevalence of the Covid-19 pandemic, the

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questionnaires were designed as a link and provided to individuals through WhatsApp and Telegram software. After data collection, the data were analyzed using SPSS software version 16 in two descriptive and inferential statistics phases. The former employed the Pearson correlation coefficient to examine the correlation between research variables.

Data Collection tools:

Demographics Characteristics Questionnaire:

This questionnaire determined participants' age, gender, marital status, education, and clinical work experience.

The Caring Dimensions Inventory (CDI):

Devised and psychoanalyzed by Watson and Lea (1997), CDI is a 25-item scale that evaluates nurses' caring behaviors in various dimensions, i.e. physical-technical behavior (11 items), inappropriate behavior (2 items), psychosocial behavior (10 items), professional behavior (1 item), and unwarranted behavior (1 item). CDI is measured on a 5-point Likert scale (strongly disagree = 1 to strongly agree = 5). For two items regarding the inappropriate behavior (items 3 and 16), the scoring is the opposite of the other items, (strongly disagree = 5, and strongly agree = 1). The scoring ranges from 25 (minimum score) to 125 (maximum score), that is, higher scores are indicative of more important caring behavior and lower scores denote less important caring behavior from the nurses' perspective. The reliability of CDI was measured using Cronbach's alpha method as 0.91 (28). Akansel et al. (2021) reported a Cronbach's alpha of 0.91 (29) and Salimi et al. (2012) confirmed the construct validity of CDI in the Iranian sample through factor analysis (30).

General Self-Efficacy Scale (GSE):

The GSE was first developed by Schwarzer and Jerusalem in 1979 as a 20-item scale with two subscales of general self-efficacy and social self-efficacy. It was later revised in 1981 to a single-factor scale including 10 four-option items called GSE -10. GSE was scored based on a 4-point Likert scale (from 1 to 4) with the minimum and maximum scores being 10 and 40, respectively (31). Scores 10-20, 20-30, and 30-40 denote low self-efficacy, moderate self-efficacy, and high self-efficacy, respectively (32). The reliability of GSE was reported to range from 0.76 to 0.90 (31). Dadipour et al. (2021) calculated the reliability of this questionnaire using Cronbach's alpha and obtained 0.78 (32). Delavar et al. (2013) also examined the validity of GSE in the Iranian population, considering it as good and acceptable and obtained a Cronbach's alpha coefficient of 0.85 (33).

Utrecht Work Engagement Scale (UWES)

Developed in 2003 by Schaufeli and Bakker, UWES is a 17-item scale, which later, as a result of their studies on14.521 people from 10 different countries, it was changed into a 9-item, shortened version of the Utrecht work engagement scale. To calculate the overall score of the scale, the scores for each item are added together. A higher overall score represents greater work engagement, whereas a lower score denotes lower work engagement. The reliability of the scale was 0.813 as obtained by Cronbach's alpha coefficient (34). The content and criteria validity of the scale was confirmed by Ghanbari et al. (2015) as good and acceptable in the Iranian sample. Likewise, the reliability of UWES ranged from 0.63 to 0.70 by Cronbach's alpha coefficient (35).

In the present study, the validity of the instruments was evaluated and approved by ten faculty members of the School of Nursing and Midwifery, Tehran University of medical science. The reliability coefficients for caring behavior, self-efficacy, and work engagement were 0.883, 0.887, and 0.872, respectively.

Results

This study was conducted on 203 official caregivers serving children with intellectual disability. The results indicated that most of the caregivers were female (73.9%), single (42.3%), and held diploma degrees (67.5%), and that the mean age of participants was 32.16 ± 6.42 with a minimum of 23 and a maximum of 51 years. According to their job description, most of them

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worked in rotating shifts (36%), were practical nurses (75.9%), and had (31%) 5 to 10 years of clinical work experience (average 7.3 47± 5.47 years). Likewise, it was found that roughly half of the participants (50.7%) worked on contract, and most had no second job (81.3%) (Table 1).

As shown in Table 2, the mean scores of caring behavior, self-efficacy, and work engagement were 100.01-± 11.66, 29.69 ± 5.63, and 33.37 ± 6.78, respectively. Caring behaviors had the highest and lowest mean scores, i.e. 4.44 ± 0.83 and 2.78 ± 0.85, with regard to professional behaviors and inappropriate behaviors variables, respectively. The self-efficacy in 75.4% of caregivers was high; the work engagement had the highest, and the lowest mean scores, i.e. 11.38 ± 2.61 and 10.68± 2.45 with regard to dedication and absorption variables, respectively.

Regarding items analysis, the highest and lowest mean scores in caring behavior belonged to item 23, i.e. "patient privacy" (4.48 ± 0.76), and item 3, i.e. "intimacy" (2.01±0.89), respectively (Table 3). The highest and lowest mean scores in self-efficacy were related to item 1, "I can always manage to solve difficult problems if I work hard." (3.11± 0.81), and item 3 "My skills help me manage unpredictable situations." (2.96 ± 0.76), respectively, (Table 4). Additionally, as regards the work engagement, the highest and the lowest mean scores belonged to item 3, i.e. "I am very interested in my job." (3.95 ± 0.98), and item 9, i.e. "When I work, I act beyond imagination" (3.11 ± 0.81), respectively (Table 5).

Table 6 illustrates the correlations between caring behavior, self-efficacy, and work engagement. Findings indicate that caring behavior has a statistically significant and positive correlation with self-efficacy in terms of physical-technical behaviors ($p = 0.002$) and psychosocial behaviors ($p = 0.003$). Thus, as caring behaviors increases in these two components, so does self-efficacy. Furthermore, it was discovered that inappropriate nursing behaviors and self-efficacy correlate significantly and negatively ($p < 0.001$), i.e. increases in inappropriate nursing behaviors lead to reduced self-efficacy. Work engagement and all its components had a statistically significant and positive correlation with physical-technical, psychosocial, and unnecessary behaviors (except vigor) ($P < 0.001$). Furthermore, work engagement had a statistically significant and negative correlation with inappropriate nursing behaviors ($P < 0.001$), suggesting that increased work engagement leads to lower inappropriate behaviors.

The results obtained from multiple linear regression on self-efficacy, work engagement, and caring behavior in official caregivers serving children with intellectual disability revealed that work engagement was significant in the regression model ($p = 0.001$) with a coefficient of 0.42; in other words, for each unit of increase in work engagement, caring behavior also improved by 0.42 (Table 7).

According to Table 8, caring behavior and self-efficacy had no statistically significant relationship with any of the personal attributes while work engagement had a statistically significant relationship only with marital status ($p = 0.023$), i.e. work engagement was significantly higher in married nurses than the widow nurses ($p = 0.02$). Caring behavior had also a statistically significant relationship with clinical work experience ($p < 0.001$) and rehabilitation work experience ($p = 0.002$). For nurses with more than ten years of experience, it was significantly less than those with one to three years of work experience ($p < 0.001$), three to five years ($p = 0.009$), and five to ten years ($p < 0.001$) of working experience. However, the difference was not significant in other cases. Self-efficacy was significantly associated with working shifts ($p < 0.001$), employment status ($p = 0.004$), second job ($p = 0.004$), and clinical work experience ($p = 0.001$). For nurses working the evening shift, it was significantly higher than those working on irregular shifts ($p < 0.001$) and regular rotation ($p = 0.006$). Likewise, self-efficacy was higher in nurses working the morning shift than in irregular rotation ($p = 0.001$). It was also found that self-

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efficacy was significantly higher in nurses with contract employment than in those passing compulsory service (p = 0.012). Meanwhile, this difference was not significant in other cases. For people with no second job, self-efficacy was higher, and for people with 5 to 10 years of work experience, it was significantly higher than for people with more than ten years of work experience (p = 0.007) and 1 to 3 years (0.001).

Discussion

This study was carried out aiming to investigate the relationship between caring behavior, self-efficacy, and work engagement in official caregivers serving children with intellectual disability. The findings indicated that the mean score of caring behavior is 100.01 ± 11.66, suggesting a high level of caring behavior among the caregivers. Barzajhe et al. (2015) reported a moderate level of caring behavior for family-based caregivers serving children with intellectual disability using the researcher's self-made questionnaire. The level of caring behavior improved upon educational intervention (36), implying that caring behavior enhances if training or education is provided. The preliminary results obtained by Barzajhe et al. (2015) disagree with ours, which can be explained by mothers' dissimilar attitudes and behaviors (as non-professional caregivers) towards nurses (as official caregivers). Hossainzadeh et al. (2019) also reported that nurses' caring behaviors were optimal and that the physical aspects of care are more important to nurses than the psychosocial dimension (37). The results of this study comply with the current study. Nevertheless, as regards caring behavior aspects, the results are inconsistent because they showed that caring behavior in professional nursing behavior is more important than other components and that the psychosocial aspects of caring behavior were slightly more significant than the physical-technical aspect.

Salmani et al. (2014) aimed to examine how mothers of hospitalized children perceive nurses' caring behaviors, then suggesting that multiple factors determine parents' perceptions of nurses' caring behaviors, including accountability, commitment, prioritization, punctuality, skills, and expertise (38). It was also found that nurses' comforting presence, attentive behavior, responsiveness, and prioritizing child care needs during caring behaviors are very important for mothers, collectively referred to as "assurance behavior" (39). In general, various studies conducted in this field indicate acceptable levels of caring behavior among nurses, yet it is important to pay more attention to the psychological dimension of caring behaviors, on which the educational authorities of universities and hospitals as well as rehabilitation centers should focus more. Thus, nurses should not rely solely on physical aspects in providing their care to these people.

The self-efficacy of most caregivers (75.4%) was at a high level (29.69± 5.63) in our study. Bahrami et al. (2016) conducted a study on pediatric nurses, reporting a high level of caring self-efficacy (40). Barani et al. (2019) stated that self-efficacy was acceptable (high) in more than half of the studied units (41). Ravanipour et al. (2015) showed that nurses enjoyed satisfactory levels of self-efficacy (42). Handiyani et al (2019) also reported that the participants' level of self-efficacy was acceptable (43), whereas Salimi et al. (2017) showed that the level of self-efficacy in the studied samples was moderate (44), which is disagreeing with our results that can be explained by the differences between the studied samples. Self-efficacy, directly and indirectly, affects people's behaviors; in fact, studying self-efficacy in many areas of health promotion shows that the perception of self-efficacy is effective in disease management and behavior control (15).

The mean score for work engagement (33.37 ± 6.78) was at a medium to a high level. De Los Santos et al (2021) (45), Mehrizi et al. (2019) (46), Keshtkaran et al. (2012) (47), and Haghighi et al. (2012) (48) reported a moderate level of work engagement among their participants, that were in line with the results of this study. However,

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Soodani et al. (2016) (49) and Lee et al (2019) (50) stated low levels of work engagement that are inconsistent with the results of our study. In this regard, it can be pointed out that there are diverse factors that generate motivation and work engagement in employees like job independence, job opportunities, and social support (46). According to studies, the dimension of organizational justice is able to predict changes in work engagement among nurses, so it can be said that injustices and pressures in the workplace can lead to decreased organizational and work engagement (49).

Findings showed a statistically significant, positive correlation between caring behavior and self-efficacy; that is, as self-efficacy increases, so do caring behaviors ($p = 0.014$). Work engagement was also shown to be significant in the regression model ($p = 0.001$), and the model's coefficient was 0.42. In this regard, Zahroh et al (2020) found a statistically significant relationship between self-efficacy and nursing care behavior (7), and Yimsai et al (2016) also reported a positive and significant relationship between self-efficacy and caring behaviors (51). Barani et al. (2019) discovered a positive and significant correlation between mothers' self-efficacy and caring behavior (41). The results of all these studies were consistent with the result of the present study. Yet, with regard to inconsistent studies, we can refer to Dharmanegara et al (2015) who showed that self-efficacy does not have a significant effect on caring behavior. This finding can be explained by the fact that care and caring behaviors are not always influenced by attitudes and behavioral mechanisms such as self-efficacy (52).

Work engagement and all its dimensions (except absorption) had a statistically significant and positive correlation with caring behavior. De Los Santos et al (2021) also showed a statistically significant relationship between work absorption, job satisfaction, work engagement, and caring behaviors in nurses (45). The results by Mokodongan et al (2021) showed that work engagement has a significant positive effect on nurses' caring behavior (53); moreover, Van Bogaert et al (2014) displayed that work absorption and other aspects of nurses' work environment such as workload and social capital are predictors of job outcome and the quality of nursing care. They can predict 60% of job outcomes and 47% of the quality of nursing care (54). Although these studies were performed in different research communities and environments, their results were almost consistent with those of this study.

According to the findings, self-efficacy and caring behavior were not significantly related to any of the demographic characteristics. Additionally, work engagement had a statistically significant relationship only with marital status ($p = 0.023$). regarding the relationship between demographic variables and nurses' caring behavior, Hosseinzadeh et al. (2019) showed that there was a statistically significant relationship between nurses' caring behaviors and gender such that the mean score of caring behavior in women was reported to be higher than that in men ($p = 0.001$) (37). Ghazawy et al (2021) indicated that work engagement had no statistically significant connection with any of the demographic variables in nurses (21). These results are inconsistent with the results of our study; however, Bahrami et al. (2016) reported that self-efficacy was not statistically significant in any of the demographic variables (40), which was consistent with this study.

Nursing care consists of professional understanding, knowledge, nursing practice expertise, and nurse-patient interaction (29). It has been regarded as the heart of nursing practices (55). Delivering high-quality care will not be achieved unless a preventive approach is taken by all parties, including the clients with intellectual disability, families, caregivers, and primary health care and specialist services. If all these parties, their plans, and services are smoothly integrated, the provision of high-quality primary care is facilitated (56).

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One of the factors determining how well nurses perform is the perception of self-efficacy as it is positively correlated to nurses' performance. People with high levels of self-efficacy, a sense of control, and power believe they can address potential environmental hazards, while those with low self-efficacy are worried, anxious, and upset, often expecting failure in their job, and believe that potential environmental hazards cannot be managed (15). Self-efficacy can strengthen a person's belief in the course of action or behavior being performed and plays an important role in determining what actions will be initiated and performed (52).

Health organizations should execute strategies aimed at increasing job motivation to improve nurses' caring behaviors and ensure client safety (45). Work engagement is also one of the variables, if maintained, delivers positive results for the organization since it improves the individuals' performance (49). There are several factors involved in inducing work engagement in nurses, such as job characteristics, reward, recognition, and support from the organization and supervisors (47).

Limitations: One of the limitations of this study is the self-report nature of the questionnaires as it might have affected the accuracy of the information obtained and could not be solved by the researcher. Consequently, it is recommended that other methods of data collection, e.g. interviews, be employed in forthcoming studies. It is also suggested that comparable studies be conducted in other socio-cultural contexts while including higher sample sizes and care centers. Their results are recommended to be compared with those of this study. Because the results obtained may be distinct in other environments and even ethnicities. Given that the limitations of the Covid-19 epidemic may affect the results, it is recommended that similar studies be performed in post-epidemic conditions.

Conclusion:

Parallel studies conducted in various societies, cultures, and research settings produce consistent and inconsistent results. Meanwhile, most of the aforementioned studies yielded results that were consistent with our study. To justify the consistent and inconsistent results, the role of factors such as different cultural-social contexts, use of dissimilar tools, demographic characteristics and the impact of the Covid-19 epidemic on the occupational, caring, and psychological dimensions of caregivers should not be overlooked. Considering the significant correlation between caring behavior, self-efficacy, and work engagement in caregivers serving children with intellectual disability, more attention should be focused on their self-efficacy and work engagement, even on family caregivers or practical nurses. It can help achieve the goal of improving care behaviors and the quality of care for children with intellectual disability. To do so, policymakers as well as educational managers of rehabilitation centers and hospitals can enforce educational programs in the form of in-service and virtual classes, books, multimedia training, pamphlets, etc. Likewise, focusing on the findings of this study as basic science allows us to take measures to enhance the care provided to children with intellectual disability.

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Table & Figure:

Table 1: Demographic characteristics of caregivers

Personal profile		**Mean + standard deviation**	**Minimum-maximum**
Age (years)		**32.16±6.42**	**23-51**
Duration of marriage (years)		**11.48±8.29**	**1-41**
		Frequency	**percentage**
gender	**Female**	**53**	**26.1**
	male	**150**	**73.9**
	total	**203**	**100**
education	**Diploma**	**137**	**67.5**
	A.D	**35**	**17.2**
	Masters	**20**	**9.9**
	M.S.	**11**	**5.4**
	total	**203**	**100**
marital status	**Single**	**86**	**42.4**
	Married	**85**	**41.9**
	divorced	**19**	**9.4**
	Deceased wife	**13**	**6.4**
	total	**203**	**100**
number of children	**0**	**21**	**19.6**
	1	**32**	**29.9**
	2	**32**	**29.9**
	3 and more	**22**	**20.6**
	total	**107**	**100**
Occupational profile			
Shift system	**Irregular shift**	**73**	**36**
	Regular shift	**50**	**24.6**
	Fixed the night	**17**	**8.4**
	Fixed the afternoon	**26**	**12.8**
	Fixed the morning	**37**	**18.2**
	total	**203**	**100**
type of employment	**temporary**	**103**	**50.7**
	formal	**30**	**14.8**
	company	**44**	**21.7**
	sectional	**15**	**7.4**
	Pilot	**11**	**5.4**
	Total	**203**	**100**
second job	**Yes**	**38**	**18.7**
	No	**165**	**81.3**
	Total	**203**	**100**
Clinical work experience (years)	**Six months to 1 year**	**19**	**9.4**
	1 to 3 years	**45**	**22.2**
	3 to 5 years	**34**	**16.7**

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	5 to 10 years	**63**	**31**
	More than 10 years	**42**	**20.7**
	Total	**203**	**100**
position	**Nurse**	**49**	**24.1**
	Assistant nurse	**154**	**75.9**
	Total	**203**	**100**
Amount of salary received	**3million to 4**	**42**	**20.7**
	4 million to 6	**75**	**36.9**
	6million and more	**86**	**42.4**
	Total	**203**	**100**

Table 2: Numerical indicators of caring behavior, self-efficacy and job attachment in caregivers

Variable type	**Dimensions**	**Mean + standard deviation**	**Minimum-maximum**		
Caring behavior				**Basis on 1 to 5**	
				Mean + standard deviation	**Minimum-maximum**
	Physical-technical behaviors	**44.84±6.04**	**18-55**	**4.07±0.54**	**1.64-5**
	Improper behaviors	**5.56±1.71**	**2-10**	**2.78±0.85**	**1-5**
	Psychosocial behaviors	**41.17±5.23**	**20-50**	**4.11±0.52**	**2-5**
	Unnecessary behaviors	**4.01±0.84**	**1-5**	**4.01±0.84**	**1-5**
	Professional Behaviors	**4.41±0.83**	**1-5**	**4.41±0.83**	**1-5**
	total	**100.01±11.66**	**46-121**	**4±0.46**	**1.84-4.84**
Self -efficacy				**Frequency**	**percentage**
	low			**1**	**0.5**
	medium			**49**	**24.1**
	high			**153**	**75.4**
	total	**29.69±5.63**	**12-40**	**203**	**100**
Work engagement	**Vitality**	**11.29±2.79**	**3-15**		
	Sacrifice at work	**11.38±2.61**	**3-15**		
	Infatuation	**10.68±2.45**	**3-15**		
	total	**33.37±6.78**	**9-45**		

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Table 3: Frequency distribution, mean and standard deviation of caring behavior items in caregivers

Caring Behavior		Completely disagree (1)		Disagree (2)		I have no idea (3)		I agree (4)		I agree completely (5)		Mean (SD)
		F	P	F	P	F	P	F	P	F	P	
1	Assisting patients in the activities of daily routine	4	2	5	2.5	34	16.7	105	51.7	55	27.1	(0.84) 4
2	Writing nursing reports for patients	1	0.5	13	6.4	33	16.3	96	47.3	60	29.6	(0.87) 3.99
3	Compassion for the patient	4	2	9	4.4	30	14.8	102	50.2	58	28.6	(0.89) 2.01
4	Considering the patient as a human being	2	1	2	1	18	8.9	83	40.9	98	48.3	(0.76) 4.34
5	Explain clinical procedures to the patient before implementation	1	0.5	10	4.9	38	18.7	80	39.4	74	36.5	(0.89) 4.06
6	Wear clean and tidy clothes while working in the ward	2	1	6	3	16	7.9	61	30	118	58.1	(0.83) 4.41
7	Sitting and talking with the patient	2	1	14	6.9	33	16.3	85	41.9	69	34	(0.93) 4.01
8	Assessing the patient's lifestyle as part of the patient's evaluation and cognition	4	2	12	5.9	38	18.7	91	44.8	58	28.6	(0.94) 3.92
9	Report the patient's condition to the superior nurse	1	0.5	7	3.4	23	11.3	91	44.8	81	39.9	(0.81) 4.2
10	Do not leave the patient's alone during the invasive procedure	2	1	13	6.4	33	16.3	83	40.9	72	35.5	(0.93) 4.03
11	Be honest with the patient and	5	2.5	10	4.9	32	15.8	85	41.9	71	35	(0.96) 4.02

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	do not lie to him/her											
12	**Coordinating and organizing counseling and treatment work for the patient**	**2**	**1**	**10**	**4.9**	**32**	**15.8**	**98**	**48.3**	**61**	**30**	**(0.86) 4.01**
13	**Listen patiently to the patient**	**1**	**0.5**	**36**	**17.7**	**29**	**14.3**	**73**	**36**	**64**	**31.5**	**(1.08)3.8**
14	**Talk to the doctor about the patient's problems and issues**	**3**	**1.5**	**6**	**3**	**34**	**16.7**	**88**	**43.3**	**72**	**35.5**	**(0.87)4.08**
15	**Explain aspects of self-care to patients**	**2**	**1**	**11**	**5.4**	**47**	**23.2**	**81**	**39.9**	**62**	**30.5**	**(0.91)3.94**
16	**Sharing personal problems with the patient**	**74**	**36.5**	**45**	**22.2**	**27**	**13.3**	**34**	**16.7**	**23**	**11.3**	**(1.41)3.56**
17	**Inform the patient's relatives of his condition**	**5**	**2.5**	**11**	**5.4**	**25**	**12.3**	**86**	**42.4**	**76**	**37.4**	**(0.96) 4.07**
18	**Carefully monitor the patient's vital signs**	**3**	**1.5**	**4**	**2**	**23**	**11.3**	**70**	**34.5**	**103**	**50.7**	**(0.86) 4.31**
19	**In any case, give priority to meeting the needs of patients**	**2**	**1.5**	**8**	**3.9**	**31**	**15.3**	**99**	**48.8**	**62**	**30.5**	**(0.86) 4.03**
20	**Having the competence and ability to perform clinical procedures**	**1**	**0.5**	**6**	**3**	**41**	**20.2**	**80**	**39.4**	**75**	**36.9**	**(0.85) 4.09**
21	**Involving the patient in self-care**	**2**	**1**	**13**	**6.4**	**38**	**18.7**	**76**	**37.4**	**74**	**36.5**	**(0.94) 4.02**
22	**Assure about the need for and importance of clinical procedures**	**2**	**1**	**7**	**3.4**	**38**	**18.7**	**97**	**47.8**	**59**	**29.1**	**(0.84) 4.00**

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23	**Patient privacy**	**1**	**0.5**	**3**	**1.5**	**19**	**9.4**	**55**	**27.1**	**125**	**61.6**	**(0.76) 4.48**
24	**Be merry and happy with the patient**	**1**	**0.5**	**2**	**1**	**24**	**11.8**	**70**	**34.5**	**106**	**52.2**	**(0.76) 4.37**
25	**Considering the effects of the drug and its side effects**	**2**	**1**	**4**	**2**	**34**	**16.7**	**67**	**33**	**96**	**47.3**	**(0.86) 4.24**

Table 4: Frequency distribution, mean and standard deviation of self-efficacy items in caregivers

self-efficacy		**Not at all true (1)**		**Hardly true (2)**		**Moderately true (3)**		**Exactly true (4)**		**Mean (SD)**
		F	**P**	**F**	**P**	**F**	**P**	**F**	**P**	
1	**I can always manage to solve difficult problems if I try hard enough.**	**6**	**3**	**38**	**18.7**	**87**	**42.9**	**72**	**35.5**	**(0.81) 3.11**
2	**If someone opposes me, I can find the means and ways to get what I want.**	**7**	**3.4**	**43**	**23.2**	**100**	**49.3**	**49**	**24.1**	**(0.78) 2.94**
3	**It is easy for me to stick to my aims and accomplish my goals.**	**8**	**3.9**	**43**	**21.2**	**101**	**49.8**	**51**	**25.1**	**(0.75) 2.96**
4	**I am confident that I could deal efficiently with unexpected events.**	**9**	**4.4**	**56**	**27.6**	**86**	**42.4**	**52**	**25.6**	**(0.83) 2.89**
5	**Thanks to my resourcefulness, I know how to handle unforeseen situations.**.	**11**	**5.4**	**49**	**24.1**	**101**	**49.8**	**42**	**20.7**	**(0.8) 2.86**
6	**I can solve most problems if I invest the necessary effort**.	**6**	**3**	**35**	**17.2**	**104**	**51.2**	**58**	**28.6**	**(0.75) 3.05**
7	**I can remain calm when facing difficulties because I can rely on my coping abilities.**	**12**	**5.9**	**47**	**23.2**	**90**	**44.3**	**54**	**26.6**	**(0.85) 2.92**
8	**When I am confronted with a problem, I can usually find several solutions**	**5**	**2.5**	**31**	**15.3**	**106**	**52.2**	**61**	**30**	**(0.75) 3.1**
9	**If I am in trouble, I can usually think of a solution**.	**9**	**4.4**	**39**	**19.2**	**99**	**48.8**	**56**	**27.6**	**(0.8) 3.00**
10	**I can usually handle whatever comes my way**	**8**	**3.9**	**56**	**27.6**	**92**	**45.3**	**47**	**23.2**	**(0.8) 2.88**

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Table 5: Frequency distribution, the mean and standard deviation of job engagement items in caregivers

self-efficacy		Not at all true (1)		Hardly true (2)		Moderately true (3)		Exactly true (4)		Mean (SD)
		F	P	F	P	F	P	F	P	
1	I can always manage to solve difficult problems if I try hard enough.	6	3	38	18.7	87	42.9	72	35.5	(0.81) 3.11
2	If someone opposes me, I can find the means and ways to get what I want.	7	3.4	43	23.2	100	49.3	49	24.1	(0.78) 2.94
3	It is easy for me to stick to my aims and accomplish my goals.	8	3.9	43	21.2	101	49.8	51	25.1	(0.75) 2.96
4	I am confident that I could deal efficiently with unexpected events.	9	4.4	56	27.6	86	42.4	52	25.6	(0.83) 2.89
5	Thanks to my resourcefulness, I know how to handle unforeseen situations..	11	5.4	49	24.1	101	49.8	42	20.7	(0.8) 2.86
6	I can solve most problems if I invest the necessary effort.	6	3	35	17.2	104	51.2	58	28.6	(0.75) 3.05
7	I can remain calm when facing difficulties because I can rely on my coping abilities.	12	5.9	47	23.2	90	44.3	54	26.6	(0.85) 2.92
8	When I am confronted with a problem, I can usually find several solutions	5	2.5	31	15.3	106	52.2	61	30	(0.75) 3.1
9	If I am in trouble, I can usually think of a solution.	9	4.4	39	19.2	99	48.8	56	27.6	(0.8) 3.00
10	I can usually handle whatever comes my way	8	3.9	56	27.6	92	45.3	47	23.2	(0.8) 2.88

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Table 6: Correlation between caring behavior with self-efficacy and job attachment in caregivers

Caring behavior	Self-efficacy	Work engagement			
		vitality	Immersed in work	preoccupation	total
Physical-technical behaviors	r=0.127 P=0.002	r=0.235 P=0.001	r=0.366 P<0.001	r=0.143 P=0.041	r=0.29 P<0.001
Improper behaviors	r= -0.325 p<0.001	r= -0.118 P=0.094	r= -0.085 P=0.23	r= -0.114 P=0.105	r= -0.123 P<0.001
Psychosocial behaviors	r=0.208 P=0.003	r=0.211 P=0.003	r=0.344 P<0.001	r=0.149 P=0.033	r=0.274 P<0.001
Unnecessary behaviors	r=0.114 P=0.105	r=0.115 P=0.102	r=0.273 P<0.001	r=0.171 P=0.015	r=0.215 P=0.002
Professional Behaviors	r=0.085 P=0.226	r=0.077 P=0.226	r=0.121 P=0.081	r= -0.007 P=0.92	r=0.076 P=0.279
total	r=0.172 P=0.014	r=0.212 P=0.002	r=0.359 P<0.001	r=0.136 P=0.053	r=0.275 P<0.001

Table 7: Results of Multiple Linear Regression of Self-Efficacy and Job engagement on Caregiver Behavior in Caregivers

Independent variables	coefficient	Standard coefficient	test statistics	Confidence level	Significance interval	R^2
Constant amount	79.975	-	15.853	<0.001	(70.027,89.239)	0.084
Self-Efficacy	0.2	0.096	1.355	0.177	(-0.091,0.49)	
Work engagement	0.423	0.246	3.458	0.001	(0.182,0.664)	

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Table 8: Mean and standard deviation of caregiver behavior, self-efficacy and job engagement of caregivers according to personal and job characteristics

Personal characteristics			work engagement	Self-efficacy	Care behavior
			Mean + standard deviation	Mean + standard deviation	Mean + standard deviation
Age(year)		Result of Pearson correlation coefficient	P=0.081 r= -0.123	P=0.117 r= -0.11	P=0.465 r=0.052
Duration of marriage (years)		Result of Pearson correlation coefficient	P=0.378 r=0.087	P=0.983 r=0.002	P=0.811 r= -0.024
Gender	female	150	33.31±6.62	29.84±5.54	99.96±11.61
	male	53	33.56±7.28	29.3±5.9	100.13±11.92
	Independent t-test result		t=0.239 df=201 P=0.812	t=0.597 df=201 P=0.551	t=0.089 df=201 P=0.93
Education	diploma	137	20.29±5.71	32.8±6.13	100.35±10.8
	A.D	35	20.37±5.89	35.42±8.33	99.11±13.14
	BS. and higher	30	20.25±5.11	33.58±7.37	99.48±9.5
	Result of analysis of variance		P=0.824 F=0.194	P=0.122 F=2.127	P=0.996 F=0.004
marital status	single	86	33.39±6.99	30.41±5.91	100.29±11.06
	married	85	34.42±6.32	29.11±6.06	101.28±12.44
	divorced	19	31.84±6.83	29.36±2.83	98.47±11.07
	Deceased spouse	13	28.61±6.55	29.31±3.14	92.07±10.53
	Result of analysis of variance		P=0.023 F=3.236	P=0.498 F=0.795	P=0.824 F=2.523
number of children	0	21	33±5.36	30.14±5.31	98.04±12.57
	1	32	34.41±7.07	26.96±6.05	101.43±13.21
	2	32	34.15±6.93	29.57±5.3	101.53±10.18
	3 and more	22	32.95±4.58	29.54±4.33	96.31±14.56
	Result of analysis of variance		P=0.769 F=0.379	P=0.101 F=2.127	P=0.343 F=1.125
Occupational profile					
Shift system	Irregular shift	73	32.83±6.83	27.39±5.01	102.16±12.56
	Regular shift	50	31.74±8.67	29.42±4.95	97.46±11.07

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	Fixed the night	17	32.88±6.26	29.88±3.07	95.23±10.75
	Fixed the afternoon	26	36.03±3.95	33.76±6.08	101.31±10.15
	Fixed the morning	37	35±4.71	31.67±6.11	100.48±11.28
	Result of analysis of variance		P=0.056 F=2.365	P<0.001 F=8.794	P=0.086 F=2.07
type of employment	temporary	103	33.99±7.12	30.97±5.82	101.15±11.04
	formal	30	31.86±7.12	29.4±4.68	99.16±14.77
	company	44	32.59±5.28	28.22±4.81	96.06±11.77
	sectional	15	35.13±6.95	29.06±6.79	100.93±16.5
	pilot	11	32.45±7.62	25.36±4.34	106.09±13.34
	Result of analysis of variance		P=0.392 F=1.032	P=0.004 F=3.895	P=0.053 F=2.377
second job	yes	P=0.392 F=1.032	P=0.004 F=3.895	P=0.053 F=2.377	P=0.392 F=1.032
	no	P=0.392 F=1.032	P=0.004 F=3.895	P=0.053 F=2.377	P=0.392 F=1.032
	Independent t-test result		t=0.842 df=201 P=0.401	t=2.881 df=201 P=0.004	t=1.191 df=47.67 P=0.24
Clinical work experience (years(	Six months to 1 year	19	34.15±8.82	29.78±4.66	100.47±12.09
	1 to 3 years	45	32.97±7.87	27.62±5.59	102.66±10.63
	3 to 5 years	34	32.47±7.3	30.76±4.27	101.35±8.08
	5 to 10 years	63	35.01±5.81	31.69±6.8	102.09±10.32
	More than 10 years	42	31.71±4.87	28.02±3.22	92.73±14.18
	Result of analysis of variance		P=0.124 F=1.832	P=0.001 F=5.139	F=5.787 P<0.001
position	Nurse	43	34.82±7.83	30.76±4.91	99.35±9.37
	Assistant nurse	154	33.22±6.39	29.53±5.85	100.13±12.4
	Independent t-test result		t=1.33 df=191 P=0.185	t=1.215 df=191 P=0.226	t=0.431 df=75.53 P=0.668
Amount of salary received	3million to 4	42	33.21±7.96	28.78±5.54	99.66±10.39
	4 million to 6	75	33.24±6.53	29.77±4.96	97.22±11.88
	6million and more	86	33.56±6.44	30.08±6.2	102.17±11.78
	Result of analysis of variance		P=0.94 F=0.061	P=0.471 F=0.755	P=0.052 F=3.001

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