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Effectiveness of the Educational Program on the Stroke Patient's Family Caregiver's Knowledge, Practice and Attitude Regarding Pressure Ulcer Prevention in Erbil City

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Abstract: Background: Stroke is a leading cause of long-term disability globally and necessitates extensive care and support from family members. Family caregivers play a pivotal role in preventing pressure ulcers. It requires patients' family caregivers to have adequate knowledge, practice and attitude about this issue. **Objectives:** To assess the knowledge, practice and attitude of stroke patients' family caregivers regarding the prevention of pressure ulcers. **Methods:** A randomized control trial (RCT) design was used. A simple random sampling technique was used to recruit 128 samples (64 family caregivers as a case and 64 family caregivers as a control group). The program was given to the family caregivers over two days period in the hospital. A structured questionnaire was used as a tool for data collection. **Results:** Most of the family caregivers had low knowledge scores (9.89 ±1.86), low practice scores (6.75±2.49) and low attitude scores (9.22±2.35), in the pre-educational program. However, in the post-program, their knowledge, practice and attitude score were significantly increased (15.78±1.41, 18.08 ±1.57 and 14.53±2.01, respectively). **Conclusion:** Appropriate and well-designed educational programs can significantly enhance the knowledge, practice and attitude of family caregivers, leading to improved patient outcomes in preventing pressure ulcers.

Key Words: Educational Program, Family Caregivers, Pressure Ulcers, Outcomes, Stroke

INTRODUCTION

Stroke is a leading cause of long-term disability globally and necessitates extensive care and support from family members. This debilitating condition affects millions of individuals worldwide, resulting in significant physical, cognitive and emotional challenges for both the patients and their family caregivers [1]. The recovery process following a stroke can be lengthy and complex, requiring a multifaceted approach to rehabilitation and ongoing care [2, 3].

A critical complication encountered during recovery in patients with stroke is the development of pressure ulcers, which can significantly impede the healing process and diminish quality of life [4, 5]. Pressure ulcers also referred to as bedsores or decubitus ulcers, are localized injuries to the skin and underlying tissues resulting from prolonged pressure on bony prominences [6-8]. These pressure injuries are particularly prevalent in immobile patients such as those recovering from stroke, because of their limited ability to independently change positions [5].

The prevention of pressure ulcers necessitates a comprehensive understanding of the risk factors, characteristics of pressure ulcers, intervention to prevent pressure ulcers, complications such as infection, signs and symptoms, nutrition, proper positioning techniques, and regular skin assessments [9]. The risk factors for pressure ulcer development include immobility, poor nutrition, incontinence and compromised circulation. Proper positioning techniques involve regularly changing the patient's position, using specialized support surfaces and ensuring proper alignment to distribute pressure across the body. Regular skin assessment is crucial for the early detection of potential pressure ulcer formation allowing prompt intervention and prevention of further tissue damage [10].

Family caregivers play a pivotal role in preventing pressure ulcers. However; they frequently lack the requisite knowledge and skills to provide optimal care. The demanding nature of caring for stroke patients combined with

the technical aspects of pressure ulcer prevention, can be overwhelming for family members who may not have prior healthcare experience. This knowledge gap can lead to inadequate care practices, potentially increasing the risk of pressure ulcer development in stroke patients [11].

Prevention of pressure ulcers requires patients' family caregivers to have adequate knowledge, practice and attitude about this issue [12]. To the best of our knowledge, no studies are available that assess the knowledge, practice and attitude levels of family caregivers regarding pressure ulcer prevention in the Kurdistan region of Iraq. Therefore, this study aimed to fill this gap in knowledge by examining the family caregivers' knowledge, practice and attitude and it is therefore aimed to evaluate the effect of educational program on family caregivers' knowledge, attitude and their performance regarding the prevention of pressure ulcers in Rizgary Teaching Hospital in the Erbil City-Kurdistan region of Iraq.

METHODS

Design of the Study

A randomized control trial (RCT) design was used to assess the effectiveness of the educational program on the family caregiver's knowledge, practice and attitude regarding pressure ulcer prevention.

Setting of the Study

The study was conducted at Rizgary Teaching Hospital (Neurology ward).

Selection of Study Participants

Sample Recruitment: In this study, the population of interest was family caregivers of immobile stroke patients attending the public hospital in Erbil city (Rizgary Teaching Hospital) was selected as the target population for the study.

Inclusion Criteria

Family caregivers' age ≥18 years old, both gender, family caregivers who were able to communicate, provided written informed consent, did not participate in another study and did not receive any information regarding pressure ulcer prevention.

Exclusion Criteria

Family caregivers who worked as a health care provider.

Sampling method

A randomized control trail (RCT) sampling technique was used to obtain necessary information from the family caregivers. An application of G*Power Software was used to calculate and estimated the study sample size. For the effect size between case and control group at 80% power, 5% type I error and 10% attrition rate, the calculated sample size for each arm was 64.

The total sample size of the study was 128 family caregivers (64 family caregivers for the cases and 64 family caregivers for the controls). admitted to the Rizgary Teaching Hospital were selected to be a study sample based on the inclusion criteria and their willingness to be a part of the study.

Instruments of Data Collection

Questionnaire: The Questionnaire was developed by the researchers according to the extensive literature search. The validity of the questionnaire was checked by 10 national experts in different specialities (one neurologist, one expert in maternity nursing and seven experts in adult nursing). The experts were given an option of agree or disagree regarding the items of the questionnaire and the content of the educational interventional program. The response of experts showed that all of them were agreed the items of the questionnaire with some modifications and they were also agreed that the content of the program and the questionnaire were strongly relevant. Based on the experts' responses the final version of the questionnaire was prepared. The questionnaire consisted of two parts. Part I, was the socio-demographic characteristics of the family caregivers such as such as: age, gender, marital status, educational level, and next of kin. Part II was divided into three sections. Section A, knowledge of family caregivers regarding pressure ulcer prevention. It was composed of 13 multiple-choice questions and 7 true and false questions. The total questions regarding knowledge were 20. The incorrect answer was given "0" and the correct answer was given "1". The total knowledge score of all questions ranged from "0-20", and then total scores were converted into percentages. Family caregivers who obtained high percent scores had higher knowledge level of pressure ulcer prevention.

Section B, the practice of family caregivers regarding pressure ulcer prevention. A 11-item structured questionnaire was developed by the researcher. A three-point Likert Scale was used to assess family caregivers' practice of pressure ulcer prevention, which ranged from 0 to 2; 2 = always, 1 = sometimes, and 0 = never. The total practice score of all questions ranged between "0-22", and then total scores were converted into percentages. Family caregivers who obtained high percent scores had higher practice levels of pressure ulcer prevention.

Section C, attitude of family caregivers regarding pressure ulcer prevention. A three-point Likert Scale was used to assess the family caregiver's attitude toward pressure ulcer prevention, which ranged from 0 to 2; 2 = agree, 1 = neutral, and 0 = disagree. The scores of negative items were reversed. The possible total score ranged from 0 to 18 and it was then converted into percentages. The higher attitude scores indicated a positive attitude.

Pilot Study

The-structured questionnaire was initially tested in a pilot study involving 10 family caregivers who were not included in the main study. Cronbach's alpha is used as a measure to evaluate the level of consistency among a set of scores [13]. For the knowledge part of the questionnaire, Test and Re-test Cronbach's alpha was (0.800 and 848) respectively.

Intraclass correlation coefficient was equal to 0.874, which is indicating consistent and excellent correlation between the items. The practice part of the questionnaire, Test and Re-test Cronbach's alpha was (0.769 and 0.793) respectively. Intraclass correlation coefficient was equal to 0.740, which is indicating consistent and good correlation between the items. The attitude part of the questionnaire, Test and Re-test Cronbach's alpha was (0.743 and 0.760) respectively. Intraclass correlation coefficient was equal to 0.863, which is indicating consistent and excellent correlation between the items.

Delivery of the Program

The educational program was given to the patients over two days period in the hospital. The education consisted of proper positioning, frequent change of patients' posture to limit or decrease pressure over the skin, and skincare, such as maintaining adequate hydration, keeping skin clean, preventing excessive dryness of skin, preventing message over bony prominence, and controlling moisture. A manual in the form of a booklet containing topics regarding pressure ulcer prevention was given to the family caregivers. After 12 weeks family caregivers' knowledge, practice and attitude were evaluated using a structured questionnaire.

Data Management and Statistical Analysis

Data was analyzed using SPSS (Statistical Package for Social Science) version 23. Frequency and percentage were used to describe family caregivers' sociodemographic characteristics. The chi-square test was used to find out the relationship between knowledge, practice and attitude of family caregivers with categorical variables. A paired t-test was used to compare and determine the significant difference between the means in the pre and post-test (case and control group).

Ethical Considerations

The ethical approval for this study was obtained from the ethical committee (No. 2470 on 01, September 2024) in the College of Nursing / Hawler Medical University. Before collecting the data, oral consent was obtained from all of the family caregivers and then each participant was asked to sign the written informed consent. The purpose, benefits and risks of the study were explained in detail to the family caregivers. They were also informed that their participation was voluntary and have the right to leave or withdraw from the study at any point they wanted without an obligation to continue and without explaining the reason for leaving the study. Finally, the participants were assured that their given information and collected data will be kept confidential, and will be used for the study purpose only.

RESULTS

Table 1 Shows the socio-demographic characteristics of the family caregivers (64 in the case and 64 in the control groups). Most of the family caregivers (40.6%) in the case group were aged between 31 to 40 years. The majority of them (51.6%) were female, (85.9%) were married. Majority (31.3%) were in primary schoo1. Regarding next of kin, about half (43.7%) were son of the patients. Regarding number of family caregiver with each patient, nearly all (90.6%) were one caregiver and (100.0%) of them were not received any instructions regarding pressure ulcer prevention. However, (37.5%) in the control group were aged between 20-30 years. The majority of them (56.3%) were male, (75%) were married. Majority (34.3%) were in high schoo1. Regarding next of kin, about half (51.6%) were son of the patients. Regarding number of family caregiver with each patient, more than three-quarter (87.5%) were one caregiver and (100.0%) of them were not received any instructions regarding pressure ulcer prevention. group were non-smokers and the highest percentage (71.9%) of the intervention group and (60.9%) of the control group smoked 0-20 cigarettes per day.

Table 1: Sociodemographic Characteristics of the Family Caregivers

Sociodemographic characteristics	Family caregivers (Case) (n =64) F (%)	Family caregivers (Control) (n =64) F (%)
Age group/years		
20-30	17 (26.6)	24 (37.5)
31-40	26 (40.6)	18 (28.1)
41-51	16 (25.0)	14 (21.9)
52-61	5 (7.8)	8 (12.5)
Gender		
Male	31(48.4)	36 (56.3)
Female	33(51.6)	28 (43.7)
Marital status		
Single	9(14.1)	16 (25)
Married	55(85.9)	48 (75)
Educational level		
Illiterate	8(12.5)	11 (17.2)
Primary school	20(31.3)	11 (17.2)
High school	17(26.6)	22 (34.3)
Technical diploma and college graduate	19(29.6)	20 (31.3)
Next of kin		
Spouse	16(25.0)	13 (20.3)
Son	28(43.7)	33 (51.6)
Daughter	19(29.7)	18 (28.1)
Others	1(1.6)	
Number of primary caregivers per patient.		
One	58(90.6)	56 (87.5)
Two	6(9.4)	8 (12.5)

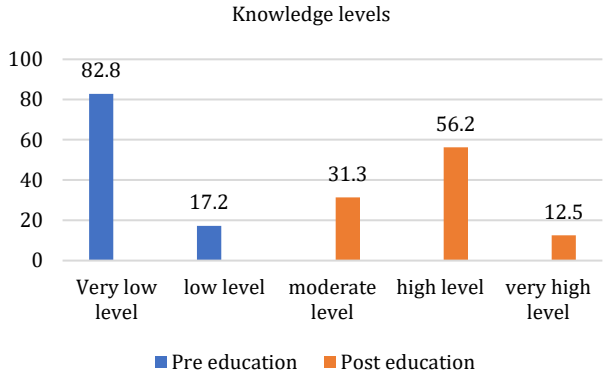

Figure 1: Levels of Knowledge of Family Caregivers (Case)

Table 2: Knowledge Score Comparison of Family Caregivers (Pre -Post-Test)

Knowledge score	M±SD	Paired t-test	p-value
Pre-educational program group (n =64)	9.89 ±1.86	33.29	p<0.001
Post- educational program group (n =64)	15.78±1.41		
Pre- non- educational program group (n =64)	9.22±2.20	0.930	0.370
Post- non- educational program group (n =64)	9.31±2.21		

Table 3: Practice Score Comparison of Patient's Family Caregivers (Pre -Post-Test)

Practice score	M±SD	Paired t-test	p-value
Pre-educational program group (n =64)	6.75±2.49	36.32	p<0.001
Post- educational program group (n =64)	18.08 ±1.57		
Pre- Non-educational program group (n =64)	6.67±3.05	0.720	0.317
Post- Non-educational program group (n =64)	6.91±3.05		

Table 4: Attitude Score Comparison of Patient's Family Caregivers (Pre -Post-Test)

Attitude score	M±SD	Paired t-test	p-value
Pre-educational program group (n =64)	9.22±2.35	18.25	p<0.001
Post- educational program group (n =64)	14.53±2.01		
Pre- Non-educational program group (n =64)	8.64±2.42	0.876	0.168
Post- Non-educational program group (n =64)	8.44±2.21		

Table 5: Association Between Some Socio-Demographic Characteristics of the Family Caregivers and Their Levels of Knowledge (Pre -Post-Program)

		Family caregivers (n = 64)								
		Knowledge score								
		Pre-education					Post- education			
Variables		No.	MS	SD	T/F	p-Value	MS	SD	T/F	p-Value
Gender	Male	31	10.58	1.84	3.049[b]	0.003[a]	15.97	1.47	1.019[b]	0.312
	Female	33	9.24	1.66			15.61	1.37		
Marital status	Single	9	10.78	1.72	1.653[b]	0.124	16.89	1.17	2.989[b]	0.011[a]
	Married	55	9.75	1.86			15.60	1.38		
Educational level	Illiterate	8	8.0	1.60	39.923[c]	0.001[a]	14.88	1.25	9.572[c]	0.016[a]
	Primary school	20	8.55	1.15			14.90	1.17		
	High school	17	10.06	0.83			16.24	1.39		
	Technical Diploma and college graduate	19	11.95	1.03			16.68	1.01		
Age		36.80		8.50	R =0.26	0.033[a]	R = -0.40			0.001[a]

Table 6: Association Between Some Socio-Demographic Characteristics of the Family Caregivers and Their Levels of Practice (Pre -Post-Program)

		Family caregivers (n =64)								
		Practice score								
		Pre- education					Post- education			
Variables		No.	MS	SD	T/F	p-Value	MS	SD	T/F	p-Value
Gender	Male	31	5.85	2.55	2.887[b]	0.005[a]	17.84	1.51	1.181[b]	0.242
	Female	33	7.58	2.16			18.30	1.63		
Marital status	Single	9	6.67	3.60	0.107[b]	0.915	17.78	1.79	0.613[b]	0.542
	Married	55	6.75	2.30			18.13	1.55		
Educational level	Illiterate	8	7.0	1.60	0.751[c]	0.526	17.13	1.13	2.649[c]	0.063
	Primary school	20	6.90	2.36			17.65	1.46		
	High school	17	7.24	2.88			18.47	1.77		
	Technical Diploma and college graduate	19	6.05	2.59			18.58	1.47		
Age		36.80		8.50	R = -0.29	0.020[a]	R = 0.26			0.042[a]

Figure 1 Shows family caregiver knowledge levels before and after the implementation of the educational program. In the pre-educational program, majority (82.8%) of family caregivers showed a very low level and (17.2%) showed low level of knowledge. However, post-program, there was a marked shift in knowledge distribution, with a substantial proportion of caregivers achieving moderate (31.3%), high (56.2%) and very high (12.5%) knowledge levels.

Table 2 Compares knowledge scores of family caregivers before and after the implementation of the educational program. The educational program significantly improved knowledge scores of the family caregivers (t = 33.29 and p< 0.001). In the pre- educational program, mean knowledge score = 9.89 ±1.86, while in the post-educational program, mean knowledge score = 15.78±1.41. In contrast, control group showed no significant change (t = 0.930 and p> 0.05). Mean knowledge score of the control's family caregivers, in the pre- non-educational program = 9.22±2.20, while in the post-non-educational program, mean knowledge score = 9.31±2.21.

Figure 2 Shows family caregiver practice levels before and after the implementation of the educational program. In

Table 7: Association Between Some Socio-Demographic Characteristics of the Family Caregivers and Their Levels of Attitude (Pre -Post-Program)

Variables		Family caregivers (n =64)								
		Attitude score								
		Pre- education					Post- education			
		No.	MS	SD	T/F	p-Value	MS	SD	T/F	p-Value
Gender	Male	31	10.10	2.26	3.082b	0.003a	15.06	2.18	1.877b	0.065
	Female	33	8.39	2.16			14.03	2.23		
Marital status	Single	9	10.11	2.47	1.232b	0.223	15.11	2.32	0.833b	0.408
	Married	55	9.07	2.32			14.44	2.24		
Educational level	Illiterate	8	7.63	2.20	7.682c	0.001a	12.38	2.39	21.037c	0.001a
	Primary school	20	8.05	1.61			12.90	1.41		
	High school	17	9.59	2.32			15.59	1.62		
	Technical Diploma and college graduate	19	10.79	2.15			16.21	1.40		
Age		36.80		8.50	R = -0.28	0.022a	R = - 0.21			0.094

[a]Significant, [b]Independent sample t-test, [c]One-way ANOVA test, [d]Pearson correlation test

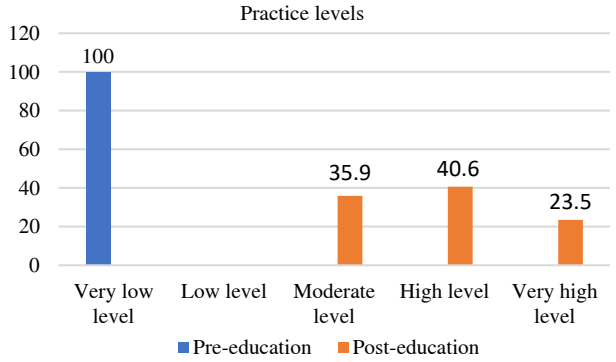

Figure 2: Levels of Practice of Family Caregivers (Case)

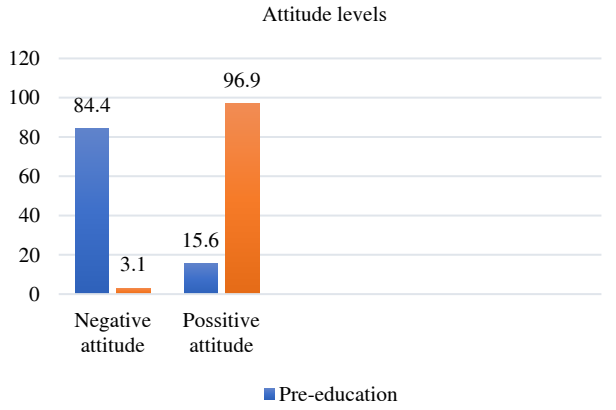

Figure 3: Levels of Attitude of Family Caregivers (Case)

the pre-educational program, all (100.0%) of family caregivers demonstrated a very low levels of practice. However, post-program, there was a significant change in practice distribution, with a substantial proportion of caregivers achieving moderate (35.9%) high (40.6%) and very high (23.5%) practice levels.

Figure 3 Shows family caregiver attitude levels before and after the implementation of the educational program. In the pre-educational program, majority (84.4%) of family caregivers showed a negative level of attitude. However, post-program, there was a significant change in attitude levels, with a substantial proportion of caregivers achieving negative (15.6%) and positive (96.9%) attitude levels.

Table 3 Shows practice scores comparison of family caregivers before and after the implementation of the educational program. The educational program significantly improved practice scores of the family caregivers (t = 36.32 and p< 0.001). In the pre- educational program, mean practice score = 6.75±2.49, while in the post-educational program, mean practice score = 18.08 ±1.57. However, control group showed no significant change (t = 0.720 and p> 0.05). Mean practice score of the control's family caregivers, in the pre-non-educational program = 6.67±3.05, while in the post-non-educational program, mean practice score = 6.91±3.05.

Table 4 Presents attitude scores comparison of family caregivers before and after the implementation of the educational program. The educational program significantly improved attitude scores of the family caregivers (t = 18.25 and p<0.001). In the pre- educational program, mean attitude score was 9.22±2.35, while in the post-educational program, mean attitude score was 14.53±2.01. In contrast, control group showed no significant change (t = 0.876 and p>0.05). Mean attitude score of the control's family caregivers, in the pre- non-educational program was 8.64±2.42, while in the post- non-educational program, mean attitude score in the pre-non-educational program was 8.44±2.21.

Table 5 Shows the associations between socio-demographic characteristics of family caregivers and their levels of knowledge before and after an educational program. Before implementing an educational program, there was highly statistically significant associations between gender and knowledge levels (t = 3.049, p = 0.003), mean (MS) knowledge score for male (MS =10.58 and for female (MS = 9.24). However, no statistical difference was found after educational program (t = 1.019, p = 0.312), mean (MS) knowledge score for male (MS =15.95 and for female (MS =15.61). In pre-educational program, there was no statistical difference between marital status and their knowledge level (t = 1.653, p = 0.124), after the education statistical difference was found (t = 2.989, p = 0.011). Highly statistically significant associations were also found between educational level and knowledge levels, both before and after educational program (F = 39.923, p = 0.001, and F

=9.572, p =0.016, respectively). Statistically significant weak correlation was also noticed between age and knowledge level before and after the educational program (R = 0.26, p =0.033, and R = -0.40, p =0.001, respectively). Negative correlation between age and knowledge score suggests that younger caregivers tend to have higher knowledge score after the program. This table also shows a dramatic increase in mean knowledge score in the post educational program of all variables.

Table 6 Shows the associations between socio-demographic characteristics of family caregivers and their levels of practice before and after an educational program. Before the educational program, there was highly statistically significant associations between gender and practice levels (t = 2.889 and p = 0.005). However, no statistical difference was found after educational program (t = 1.181 and p = 0.242). In pre-educational program, there was no statistical difference between marital status, level of education and their practice level, in both pre and post educational program (t = 0.107, p = 0.915 and t =0.613, p = 0.542) and (F = 0.751, p = 0.526 and F =2.649, p = 0.063), respectively.

Statistically significant weak correlation was noticed between age and practice in both pre and post educational program (R = -0.29 and p = 0.020, R = 0.26 and p = 0.042, respectively). Negative correlation between age and practice score suggests that younger caregivers tend to have higher practice score before the program. Furthermore, after the program, there was an increase in practice score of all ages. This table also shows a dramatic increase in mean practice score in the post educational program of all variables.

Table 7 Shows the associations between socio-demographic characteristics of family caregivers and their levels of attitude before and after an educational program. Before the educational program, there was highly statistically significant associations between gender and attitude levels (t = 3.082 and p = 0.003). However, no statistical difference was found after educational program (t = 1.877 and p = 0.065). In pre-educational program, there was no statistical difference between marital status, and their attitude level, in both pre and post educational program (t = 1.232, p = 0.232 and t =0.833, p = 0.408). There were highly statistically significant associations between educational level and attitude levels before and after the implementation of educational program (F =7.682, p =0.001 and F =21.037, p =0.001), respectively. Statistically significant negative weak correlation was found between age and attitude in pre-educational program (R = - 0.28 and p = 0.022). However, no statistically significant correlation was found after educational program (R = - 0.21 and p = 0.094).

DISCUSSION

The present study aimed to assess the effectiveness of an educational program on stroke patient's family caregiver's knowledge, practice and attitude regarding pressure ulcer prevention. Stroke is a leading cause of long-term disability globally and necessitates extensive care and support from family members [1]. A critical complication encountered during recovery in patients with stroke is the development of pressure ulcers, which can significantly impede the healing process and diminish quality of life [4]. Family caregiver's knowledge, practice and attitude play a crucial role in decreasing the incidence or preventing the development of pressure ulcer [14]. The result of the present study found that, majority (82.8%) of family caregivers before the implementation of educational program had very low level of knowledge. However, after the educational program more than half (56.2%) had high knowledge level. These findings are supported by the studies done by [15-17] who declared that family caregivers had lack of knowledge. Furthermore, the study results is not consistent with the study done by [18] which is revealed that majority of the family caregivers had moderate knowledge level regarding pressure ulcer prevention. The study found a significant association between educational level and knowledge score in pre and post education program implementation, (p = 0.001 and 0.016, respectively). Significant association was also found between marital status and knowledge score in post program p<0.05. A significant correlation was found between age and knowledge sore in pre and post program (R = 0.26, P = 0.033 and R = -0.40, p = 0.001, respectively). Similar results is observed in a study conducted by [18]. The educational program was highly significant and effective on raising knowledge levels of the family caregivers, because, mean pre-knowledge score was 9.89 ±1.86, while in the post-educational program, mean knowledge score was 15.78±1.41. Similar findings are found in a study done by [19] who used video teaching to educate family caregivers about preventing pressure ulcers in elderly patients. The study findings indicated that caregivers had poor knowledge about pressure ulcer prevention. However, after participating in the video teaching program, they demonstrated a significant improvement in their knowledge levels. The present study results also consistent with the study done by [20] who revealed the significance (p = 0.000) of educational interventional program in enhancing caregiver's knowledge regarding pressure ulcer prevention. The present study showed a considerable increase in mean knowledge scores from pre-test to post-test and reduction in standard deviation, indicating more uniform knowledge levels post educational program [20].

Regarding the practice and attitudes of family caregivers of pressure ulcers prevention, the present study demonstrated that before the educational program all of the family caregivers had very low practice and nearly all of them had negative attitude. However, after the educational program, majority of the family caregivers showed a positive attitude and high level of practice regarding pressure ulcer prevention. A highly statistically significant differences was found between gender and practice levels in pre-program, p = 0.005. however, this difference was not found in post-program, this mean that after the implementation of the educational program both male and female improved their performance regarding pressure ulcer prevention. Moreover,

a significant correlation was found between age and practice sore in pre and post program (R = -0.29, p =0.020 and R = 0.26, p = 0.042, respectively). This result is consistent with the study done by [18,21]. Regarding family caregiver's attitude, a highly statistically significant differences was found between gender and attitude level in pre-program, p = 0.003. However, this difference was not found in post-education program, this mean that after the implementation of the program both male and female improved their attitude regarding pressure ulcer prevention. A very high significant differences was found between educational level and attitude levels in pre and post program p = 0.001. Furthermore, a significant correlation was found between age and attitude in pre - program (R = -0.28, p = 0.022). These findings are consistent with the studies done by [18,22,23]. Meanwhile, the study revealed the effectiveness of the program on the family caregiver's practice and attitude (t =36.32, p<0.001 and t = 18.25, p<0.001, respectively). These findings are consistent with the studies conducted by [22] who examined the pressure injury preventive measurements. Found it that in the post- program implementation , practice and attitude of family caregivers were improved significantly [23].

CONCLUSIONS AND RECOMMENDATION

Appropriate and well-designed educational programs can significantly enhance the knowledge, practice and attitude of family caregivers, leading to improved patient outcomes in preventing pressure ulcer. Healthcare organizations should prioritize the development and implementation of comprehensive educational programs for family caregivers. These programs should be evidence-based. Addressed the specific needs of the patient and delivered by qualified healthcare professionals.

Conflict of Interest Statement

The authors declare that there is no conflict of interest.

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