

Effectiveness of Home Caregivers Teaching Program on Prevention of Decubitus Ulcer in Bed Ridden Elderly Patients

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Abstract:

Background: The elderly people are more prone to get illnesses due to conditions related to their health status, advancing age and lower susceptibility. **Aim:** The purpose of this study was to identify the effectiveness of home caregivers teaching program on prevention of decubitus ulcers. **Method:** the study design was quasi-experimental pretest- posttest. The population comprised caregivers of the 160 patients from Ras Al Khaimah Medical Centre and Julphar Health Center. Sample of the study were 45 caregivers of elderly patients selected by convenience sampling. The caregivers were given teaching on care of bedridden elderly to prevent bedsores at home. Data was collected by using bedridden patient's observation checklist and pre and posttest to caregivers. **Result:** The study finding indicated that the caregivers were mostly hired Arabic speaking, illiterate females without any health issues. Majority of the elderly patients were on oral feeds, with incontinence problem and had diabetes, hypertension and cerebrovascular accident and sleeplessness problems. Pretest on knowledge of the home caregivers of elderly on prevention of decubitus ulcers revealed that the majority (74 %) of the home caregivers had poor (45%) and very poor (29%) knowledge. The posttest observations of elderly patients showed no signs of bedsores and the posttest scores of the caregivers showed that 100% of them had excellent (85 %), very good (13%) and good (2%) knowledge. The home care givers teaching program on prevention of decubitus ulcer in bed ridden elderly patients was highly significant ($p=0.000$). **Conclusion:** The findings of the study showed that the teaching to the caregivers on prevention of decubitus ulcers among elderly bed ridden patients was very effective. This was observed by patients not developing decubitus ulcers or any skin changes related to it.

Key words: home care givers teaching program, prevention of decubitus ulcer, elderly bed ridden patient

Introduction:

Old age is one of the important phase of life cycle of human being characterized by the set of biopsychosocial factors that lead the elderly people to increased functional decline and risks of harm to their health (Geraghty, 2011). As the age advances, the health conditions of the elderly people get deteriorated due to various physical, psychological, mental, social and economic reasons. They may become bedridden due to health problems like blood pressures, heart diseases, fractures, anemia etc. These changes can cause the elderly to be dependent on others, as the elderly cannot perform their basic activities of daily life (Sdo & Apma, 2016). The most complications that the elderly bedridden people face in home care is pressure ulcers. (Moraes, Araujo, Caetano, Lopes & Silva, 2012). Those bedridden elderlies who are not hospitalized are looked after at home by the family members or hired caregivers. The physiological and physical changes in elderly may lead to their immobility, which may further give rise to psychological problems such as depression. Therefore, it becomes most important for the caregivers to understand the needs and problems of elderly in a comprehensive way. (Bernards and Calirim, 2016).

In UAE, the number of elderly people is estimated to be more than 1.04% of the total population. (Index CIA World, 2017). Majority of them are bedridden and are suffering from specific age-related health conditions, such as Parkinson's, dementia, Alzheimer's, paralysis, heart disease, along with other health issues and are cared at home. ("Sublime nursing," 2019). When people become old and bedridden, their chances of developing skin related disorders increase.

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(Zamboni, Ferrini & Cesari, 2014). Skin integrity is essential in many ways for maintaining the body, such as temperature regulation and protection of deeper tissues from ultraviolet radiation and pathogenic organisms. (Cowdell, et al, 2016). The structural and functional changes occurring in the elderly patients gives rise to skin problems and related complications such as bedsores. (Kirkup, 2014). The pressure ulcers are the areas of localized damage to the skin caused by pressure, shear, friction and combination of those causing skin problem and complications (Geraghty, 2011). There are multiple factors responsible for skin health in elderly such as age related disease in other organ systems, poor nutrition, failure to resolve skin problems, reduced mobility, poor dexterity, dementia, increasing rigidity of attitude and cognitive decline, refusal to accept advice, increasing physical frailty, poor hygiene, neglect and unable to perform self-care. ("Alzheimer Europe,"2018). Pressure ulcers can also occur due to medical devices that are used for diagnostic or therapeutic purposes such as drains, catheters, cannula, and immobilization equipment. (Ronald, et al.2013).In old age the epidermal turnover rates decreases by 30 to 50% leading to rough skin with decreased barrier of skin function and degeneration of skin. This leads to slow healing of epidermal and dermal wounds and can invade to subcutaneous tissue and even bone that makes aging a serious risk factor for developing pressure ulceration. (Magdi , Alam, Shebl, & Hatata, 2017). The caregivers can prevent and manage pressure ulcer occurrence by using precautions such as hands-on care, risk assessment, prevention of harm, ensuring comfort, providing safe environments to assist patients attain optimum health. Many skin disorders can be managed effectively at primary care level by teaching the caregivers about how to prevent pressure ulcer occurrence for elderly. (Kirkup, 2014).

The pressure sores can be successfully prevented by prompt skin care, positioning, effective range of motion exercises, regular and correct use of emollients to prevent common skin problems such as dryness and itching (Viera, Oliveira, Ribeiro, Luz & Araujo, 2016). In addition to cleaning the skin daily and eating a healthy diet, exercise is important in preventing pressure sores by performing physical activity that increases blood flow to the skin, which can keep bed sores from developing and increase blood circulation (Eljedi, El-Daharja & Dukhan, 2015).Skin hygiene is essential for skin health and important in promoting personal wellbeing. Washing skin with soap and water remains the standard method of skin cleansing. (Ford, 2012). Moreover, over washing can cause damage to the skin barrier by lipids removal from the surface of the skin resulting in further skin dryness. (Lawton, nd). Therefore, the skin must be dried by using clean towel with a gentle massage followed by application of skin emollient to prevent dryness of the skin. (Viera, Oliveira, Ribeiro, Luz &Araujo, 2016). It has been estimated that one of the best ways of preventing a pressure ulcer is to reduce or relieve pressure on the areas at risk by moving around and changing position as much as possible (Jocelyn, Thiara, Lopez & Shorey,2017 ; NHS,2014).

At home situation, the caregivers can prevent pressure sores in elderly by changing their positions at least every 2 to 4 hours to improve circulation. They must use pillows or comfort devices effectively to prevent bony surfaces from touching each other, keep the bottom sheet free from wrinkles, remove any crumbs and give range of motion exercise to the elderly bed ridden patients (Waxner Medical Center, 2016).

Balanced nutrition helps to promote health and functions of the body. A medical nutrition therapy is an effective disease management approach that lessens chronic disease risk, slows disease progression and reduces disease symptoms. (Tripathi, Singh, Dubey & Seven, 2016). It has been identified that malnutrition is common in elderly persons (Dorner, 2015). Balanced nutrition is very important for overall wellbeing in elderly due to their physiological changes and weaker immunity which is influenced by lack of nutrients and differed dietary habits that makes them more prone to several infections (Tripathi, Singh, Dubey & Seven, 2016). Eating balanced diet and drinking enough water will not only prevent malnutrition and dehydration among elderlies but also prevent bedsores from occurring. (Koller & Price, 2015). The elderly must eat foods rich in alpha linolenic acid such as legumes, green leafy vegetables, fenugreek and mustard seeds that leads to greater calcium excretion, which may result in reduction in pressure ulcer problem. (Tripathi, Singh, Dubey & Seven, 2016)

The home caregivers need sufficient training to be able to communicate the results of their assessment to all necessary persons in a clear, understandable and comprehensive manner. Training the caregivers in elderly care along with prompt communication and reporting skills that will enhance patient safety is most important. (Kloppers, Dyk, & Pretorius, 2015). The caregivers will usually focus on the self-care needs of older adults who are with some degree of cognitive and functional dependence. However, they should pay more attention towards prompt skin care of the older people which may contributes to early recovery (Sdo & Apma, 2016). It has been identified that the caregivers are overloaded with work and are facing problems like emotional and physical stress, family conflicts and lack of knowledge and skills about elderly bedridden care (Coelho, Faustino & Cruz, 2017). To provide effective care, it is important for the caregivers to have knowledge about aging as the pathological process, which can be recognized easily by them. (NHS, 2014). The knowledge of caregivers related to skin care, will help them in identifying the improvement in physical wellness of the elderly.

Therefore it becomes important to educate caregivers on how to undertake a comprehensive skin assessment that includes the techniques for identifying blanching response, localized heat, edema, changes in skin color and texture and induration (NPUAPEPUAP/PPPIA, 2014). The care givers need to be trained to perform this task correctly and safely (Sdo & Apma, 2016).

Aim/Objectives:

To evaluate the effectiveness of home giver teaching program on prevention of decubitus ulcer in bed ridden elderly patients.

To identify the association between the effectiveness of caregivers' teaching program in terms of knowledge of the caregiver on prevention of decubitus ulcers in bed ridden elderly patients with their selected demographic variables.

1.2 Hypothesis:

The caregivers who undergo educational program on care of elderly patients at home provide better care to the elderly along with preventing bedsores to them.

The caregivers educated through teaching program on care of elderly patients at home show better knowledge in caring for elderly.

Methodology:

2.1 Study Setting & Population

The study was conducted at home settings of the elderly people living in the catchment areas of Ras Al Khaimah and Julphar Primary health Centers, Ras al Khaimah (RAK). Ras Al Khaimah Medical Centre (Kuwaiti) presently caters to the nearby community that includes Aldait, Kuzam and Dhan. The Julphar Primary health center also caters to the nearby community that includes Julphar, Mamorah, Nakheel, Aljeer, Shaam and Kourkwair. Along with the regular primary health care functions such as maternal and child health care, adult care, treatment of acute and chronic health problems, elderly care is one of the important function of these centers. The centers have various departments like chronic diseases department and home care department. The home care department of the centers provides treatment to the elderly bedridden patients at home. Quite a number of these elderly patients have already developed bedsores.

The total population size of the bedridden elderly patients in both the centers were 160 with each center having 80 patients. The sample of the study constituted elderly bedridden patients who fulfilled the inclusion criteria. The convenient sampling method was used. The inclusion criteria for the study was the male or female bed ridden elderly patients, without bed sore, above the age of 60 years and looked after by family or hired caregivers at home and are willing to participate in the study after signing the written consent. The exclusion criteria of the study were the caregivers of the bed ridden patients with decubitus ulcers, ambulatory elderly, elderly who are under the care of Primary health centers medical care staff and caregivers who do not understand Arabic or English language.

2.2 Design

Quasiexperimental pretest- posttest design was used

2.3. Data Collection:

After getting approval from the RAKMHSU research and ethics committee and Ministry of Health and Prevention's regional ethics committee, the administrative permission was sought from the Primary health centers. The family caregivers and the elderly patients were approached at their homes and their willingness to participate in the study was sought by explaining them about the purpose of the research and the process of data collection. The study included total three self-constructed instruments as follows:

Questionnaire on care of elderly bed ridden patients at home:

This instrument contained questions under two sections.

Section I: This section had two parts A and B. The section 1- A was on demographic information of the caregivers. This section had nine questions such as age, gender, relation with patient, language, education, occupation, monthly income, nationality and health problems.

Section 1 – B was on demographic information of the bedridden elderly patients. This section had eight questions such as gender, nutritional status, patient's diagnosis, feeding, oral intake, urination and bowel movement.

Section II was on care of bedridden elderly at home. This section had 11 questions mainly on prevention of decubitus ulcers in bed ridden elderly patients that included skin care, prevention of bed sore, positioning, nutrition and exercises.

Risk assessment chick list: This observation checklist in the form of pictures and words was mainly constructed for the caregivers with 10 important observations that the caregivers needed to identify and mark on daily bases to prevent bed sores among the elderly patients at home.

3. *Intervention:* Health teaching plan on care of elderly at home: The teaching plan included a lesson plan and a booklet on care of elderly at home. The content of both the instruments mainly included the details of the caring procedures such as skin care, changing positions, use of comfort devises, exercises and nutrition of elderly patients.

2.4. *Validity and Reliability*

The content validity of the instrument was carried out by the experts from the education, nursing and medical fields. The Cronbach alpha for reliability was estimated as 0.81

2.5 *Pilot Study*

A feasibility study on caregivers of 10 elderly bedridden patients was conducted. Based on Pilot study findings, 'nationality' was added in the demographic information of the caregivers.

2.6. *Procedure:*

The study was conducted at home setting of the elderly people living in the catchment areas of Ras Al Khaimah and Julphar Primary Health Centers, RAK. Specific area wise home visiting plan was prepared and the families of the elderly patients were visited two times. The duration between two visits were of one month. Every day 3-4 families were visited. The first visit to the family lasted for one to one and half hour.

The first home visits were started in the Ras Al Khaimah Primary Health Center area from 16/12/2018 and ended on 26/12/2018 (9 days). Total 22 families were visited for data collection. The first visit to the families under Julphar PHC was stated from 27/12/2018. Total 23 families were visited in 8 days. These visits ended on 7/1/2019. During the first visit to the families of each elderly bedridden patients, the investigators introduced self and explained the purpose of visit briefly. After establishing rapport with the caregivers and the patients, they were explained in detail about the research procedure and on their agreement to participate, they were asked to sign the consent form. The family members signed the consent forms in case of unconscious patients or those patients who were not able to sign the consent form. The patients were assessed thoroughly for any skin conditions and ensured the absence of decubitus ulcer or its early signs. The pretest was administered to the caregivers for assessing their knowledge related to the care of elderly bed ridden patients. For the illiterate caregivers, the pretest questionnaire was explained and their responses were marked by the investigators. Teaching session was given after the pretest. Along with explaining the content on care of bedridden elderly, they were also shown flash cards that contained pictures about caring procedures for elderly on skin care, changing positions, use of comfort devises, exercises and nutrition. Each teaching session lasted for approximately 20 minutes. The teaching session was followed by the demonstrations of the procedures on skin care, changing positions, use of comfort devises and exercises. These procedures were directly demonstrated on the patients. The elderly patients were explained about the procedures and on their agreement, the procedures were performed. The demonstrations lasted for another 20-25 minutes. The caregivers were asked to show return demonstration of the procedures taught to them. The investigators reviewed the important points in caring for the patients at the end of the return demonstrations. The caregivers were explained about importance of risk assessment for bedsores in elderly. The observation checklist for skin was given to them as the risk assessment checklist for observing and marking the elderly bedridden patient's skin status. At the end of the visit the caregivers, patient and the family members were thanked for their participation and they were informed about the date and time of next visit.

The second visits to the families were made from 10/02/2019 to 03/03/2019 for 16 days. In this visit, the caregivers were asked about their feedback on performing the procedures as taught and demonstrated to them during the first visit. They were also asked about any difficulty that they faced in performing these procedures and the usefulness of the risk assessment observation checklist. The patients were examined thoroughly for his/her skin status. The posttest was administered thereafter to the caregivers. The second visit to the family took around 30 minutes. The caregivers were again reminded about the importance of performing the caring procedures for the elderly that they learnt. They were also informed to report to the health center or home care team of the Primary health center, if they face any difficulty in caring for the elderly patients at home in future.

2.7 *Ethical Consideration*

The ethical permission for conducting the research was sought from RAK Medical and Health Science Research and Ethics Committee and RAK Research and Ethics Committee, UAE. After the approval, the permission was sought from the caregivers and family members at home situations and on their approval the caregivers were selected as a sample and were asked to sign the informed consent form. The caregivers were informed about their right to discontinue the study if they wish. They were also assured about the confidentiality of information given by them.

2.8. Data Analysis:

The data was analyzed using descriptive statistics like frequency and percentage to assess the demographic characteristics of caregivers and the elderly bedridden patients. Mean and standard deviation was used for assessing the effectiveness of teaching and inferential statistics like paired t test and Chi square test was used to check the significance among the variables by using Statistical Package for the Social Sciences (SPSS) version 22.

Results:

3.1 demographic characteristics

Table 1: Analysis of the demographic characteristics (N=45):

Variables	Frequency	Percentage %
Home Care givers		
Age in years		
Below 20	1	2.22 %
21 – 40	25	55.56 %
41 – 60	17	37.78 %
Above 60	2	4.44 %
Gender		
Female	41	91.11 %
Male	4	8.89 %
Care givers relation to patients		
Maid	30	66.67 %
Daughter/ Son	11	24.44 %
Wife	4	8.89 %
Language		
Arabic	33	73.33 %
English	12	26.67 %
Education level		
Illiterate	18	40 %
Primary	5	11.11 %
Preparatory	1	2.22 %
Secondary	6	13.33 %
University	15	33.34 %
Nationality		
Non Local	30	66.66 %
Local	15	33.34 %
Health issues		
Diabetes and hypertension	6	13.33%
Diabetes	5	11.11%
Back pain	5	11.11 %
Asthma	1	2.22 %
No health issues	28	62.23 %
Elderly bed ridden Patients		
Gender		
Female	32	71.11 %
Male	13	28.89 %
Health problems of the patients		
Diabetes, Hypertension and Cerebrovascular accident	30	66.67 %
Heart diseases and asthma	6	13.33 %
Others (Osteoporosis, hip fractures, parkinsonism, gastritis, hypothyroidism, dementia)	9	20 %

Feeding status:		
Oral	40	88.89 %
Percutaneous endoscopic gastrostomy(PEG)	4	8.89 %
Nasogastric tube	1	2.22 %
Oral intake		
Good	40	88.89 %
Moderate	5	11.11 %
Urination status		
Incontinence	30	66.66 %
Normal	8	17.77 %
Catheter	7	15.55 %
Bowel movement		
Normal	40	88.89 %
Constipation	5	11.11 %
Behavioral problems		
Sleep problem	28	62.22 %
Shouting	6	13.33 %
Beating	1	2.22 %
Nil	14	31.11 %

Table 1 shows that the majority (93.34%) of home caregivers were in the age group of 21 to 40 years (55.56 %) and 41 to 60 years (37.78%), females (91%), non-locals (66.66 %) and Arabic speaking (73%). About 40% of the caregivers were illiterate and without any health issues (62.23%). Whereas about 35.55 % of the caregivers were suffering from diabetes and hypertension (13.33%), diabetes (11.11 %) and back pain (11.11%).

Majority of the bed-ridden patients were females (71.11 %) taking food orally (88.89%) with good oral intake (88.89%), having incontinence problem (66.66%), normal bowel movement (88.89%), suffering from diabetes, hypertension, cerebrovascular accident (66.67 %) and sleep problems (62.22%).

Analysis of the effectiveness of home caregivers' teaching program on prevention of decubitus ulcer in bed ridden elderly patients related to skin care

Table 2: Analysis of the knowledge of the home caregivers about skin care

Caregivers knowledge on skin care	Pretest percentages of caregiver who answered correctly	Posttest percentages of caregivers who answered correctly
Function of the skin	14%	82%
Caring for the skin	10%	72%
Bedridden status affecting patient's skin	20%	44%
Meaning of the bed sore	40 %	100%
Importance of daily observation of the skin	2 %	60%
Importance of daily back care	36 %	86 %
Importance of positioning	86 %	86 %
Deferent positions to be given	2%	50 %

Table 2 shows pre and posttest knowledge scores of the caregivers on care of skin. The pretest scores were between 2 to 40 % except on importance of positioning (86%). Whereas the posttest scores of the caregivers were 60 % and above except in different positions to be given (50%) and bedridden status affecting patient's skin (44%).

Analysis of the effectiveness of home caregivers' teaching program on prevention of decubitus ulcer in bed ridden elderly patients related to diet and range of motion (ROM) exercises.

Table 3: Analysis of the knowledge of the home caregivers on bedridden elderly patient’s type of diet, importance of healthy diet and precautions to be taken while giving ROM exercises

Caregivers’ knowledge	Pretest percentages of caregivers who answered correctly	Posttest percentages of caregivers who answered correctly
Type of Diet		
High fat	4%	---
High carbohydrates	28%	18%
High proteins	24%	74%
High sugar	20%	---
Importance of healthy diet		
Increases food taste	2%	---
Keeps us healthy	74%	86%
Increases weight	20%	4%
Minimizes food wastage	4%	2%
Precautions to be taken while giving ROM exercises		
Holding and supporting body part while giving exercises	18%	80%
Giving vigorous exercises once a week	30%	2%
Exercise to be given at bed time	52%	10%
Exercise to be given immediately after meal	---	---

Table 3: Shows the pretest and posttest knowledge of home caregivers on types of diet to the elderly bedridden patient, its importance and precautions to be taken while giving ROM exercises to the bedridden elderly patients. In pretest, only 24% of the caregivers gave right answer for type of diet whereas in posttest, 74 % of them gave right answer as high protein diet. Similarly, in pretest only 18% of the caregivers gave right answer on precautions to be taken while giving ROM exercises to elderly bed ridden patients whereas the posttest scores showed improvement with 80 % of the caregivers giving right answers.

Analysis of the effectiveness of home caregivers’ teaching program on prevention of decubitus ulcer in bed ridden elderly patients

Effectiveness of teaching is presented in five categories based on the scores obtained by the caregivers in the pre and posttest. The categories were excellent with scores 90% and above, very good with scores between 89-80%, good with scores 79-75%, poor response with scores 74-69% and very poor responses with score 65% and below.



Figure 1: Analysis the effectiveness of home care giver’s teaching program on prevention of decubitus ulcer in bed ridden elderly patients

Figure 1 describes the knowledge of the home caregivers about the effectiveness of home caregiver’s teaching program on prevention of decubitus ulcer in bed ridden elderly patients. In pretest the knowledge, score of the caregivers were between 26 to 45 % and majority (74 %) of the home caregivers had poor (45%) and very poor (29%)knowledge whereas in posttest all 100% of the caregivers had excellent (85 %), very good (13%), and good(2%) knowledge.

Table 4: Analysis of the mean, standard deviation and significance of the effectiveness of home caregivers teaching program on prevention of decubitus ulcer in bed ridden elderly patients: Based on the scores obtained by the caregivers in the pre and posttest.

Data	Mean	σ (SD)	Mean deference	paired t test	P
Pretest score	9.36	3.57	9.16	4.47	0.000
Posttest score	18.51	2.42			

*** $p < 0.001$

Table 4 shows mean and standard deviation of the pretest knowledge scores as 9.36 and 3.575 respectively. On the other hand, the mean and standard deviation of posttest knowledge score were 18.51 and 2.42.

The result shows that the home care givers teaching program on prevention of decubitus ulcer in the bed ridden elderly patients was highly significant ($p=0.000$).

Table 5: Association between the effectiveness of caregivers 'teaching program in terms of knowledge of the caregivers on prevention of decubitus ulcers in bed ridden elderly patients with their demographic variables related to age, gender, nationality, language, relation with the patients, educational level and health problems.

Demographic variables	Value(χ^2)	Significance(at 0.05 level)
Age	6.22	0.32
Gender	0.93	0.815
Language	0.306	0.916
Nationality	2.172	0.363
Relation to the care givers	6.869	0.104
Education	10.54	0.16
Health problems	11.75	0.016

Table 5: Shows that there is no significant association between the effectiveness of teaching program on knowledge of the caregivers related to prevention of decubitus ulcer in bedridden elderly patients' with their demographic variables except health problems in caregivers. ($\chi^2=11.75$, $p= 0.016$). The caregivers without health problems had better knowledge scores than the caregivers with health problems.

4. Discussion:

The study aimed to assess the effectiveness of home caregivers teaching program on prevention of decubitus ulcer in bedridden elderly patients. The participants of the study were caregivers mostly in the age group of 21 to 60 years, females, non-locals (maids) and Arabic speaking. About 40% of the caregivers were illiterate and without any health issues (62.23%).

Majority of the bed-ridden patients were females, taking food orally, with good oral intake, having incontinence problem and normal bowel movements. Majority of them were suffering from diabetes, hypertension and cerebrovascular accident and mostly had sleeplessness problems.

4.3 Effectiveness of home caregivers teaching program on prevention of decubitus ulcer in bed ridden elderly patients.

The effectiveness of teaching program was assessed mainly by two measures. First by assessing, the knowledge of the caregivers before and after planned teaching and by assessing the patients for their skin conditions and presence of any signs of bedsores. Initially the patients were observed and ensured that there were no skin changes related to decubitus ulcers amongst them. To assess the knowledge of the caregivers, the pretest was administered on them. Thereafter the teaching was carried out for the caregivers on care of bedridden elderly. The teaching was focused on importance of home care of bedridden elderly patients, structure and functions of the skin, causes of bed sore, early signs of bed sore, care of skin, changing positions of bedridden patients, range of motion exercises, use of comfort devises, importance of good nutrition and bowel and bladder care to prevent decubitus ulcer. The entire teaching was carried out using flash cards with pictures. The teaching was followed by demonstration of care procedures directly on the patients such as back care, positioning, providing comfort devices mainly pillows and giving range of motion exercises. The caregivers were asked to re-demonstrate the procedures. The teaching was terminated on satisfactory re-demonstration of the procedures by the caregivers.

The posttest was carried out one month after the pretest which comprised observing the patients for the signs of bedsores and assessing caregivers' knowledge. The scores obtained by the caregivers in pre and posttest were categorized as excellent with score 90% and above, very good with scores between 89-80%, good with score 79-75%, poor with score 74-69% and very poor responses with scores 65% and below.

The pretest on knowledge of the home caregivers of elderly on prevention of decubitus ulcers revealed that the majority (74 %) of the home caregivers had poor (45%) and very poor (29%) scores whereas the posttest finding indicated that all the 100% of the caregivers had excellent (85 %), very good (13%) and good (2%) scores.

The posttest observation of the patient indicated that there were no presence of decubitus ulcers.

The significance of the knowledge of the caregivers on prevention of decubitus ulcers among elderly bed ridden patients in pre and posttest was examined by using paired t test. The result showed that mean knowledge and standard deviation scores were 9.36 and 3.57 respectively in pretest. On the other hand, the mean and standard deviation of posttest knowledge scores were 18.51 and 2.42 respectively. The home caregivers teaching program on prevention of decubitus ulcer in the bed ridden elderly patients was highly significant ($p=0.000$).

Similar findings were identified by Magdi, Alam, Shebl and Hatata (2017). This study was performed by giving video teaching to the caregivers. The results of the study showed that the pretest knowledge of caregivers related to caring for elderly to prevent decubitus ulcers was poor and after conducting the teaching program, the caregivers' knowledge had significantly improved. Similar findings were also reported by several studies conducted on teaching the caregivers of elderly bedridden patients on home care of elderly. (Coelho, Faustino, Cruz and Santos, 2017; NPUAP, 2016 & Eljedi, El-Daharja and Dukhan, 2015).

4.4 Association between the effectiveness of caregivers' teaching program in terms of knowledge of the caregivers on prevention of decubitus ulcers in bed ridden elderly patients with their demographic variables

In the present study there was no association between the effectiveness of teaching program on prevention of decubitus ulcers in bed ridden elderly patients with the demographic variables of the caregivers such as age, gender, nationality, language, relation to the care givers, educational level except health issues of the caregivers. The health issues of the caregivers was highly significant at 0.05 level ($\chi^2 = 11.75$, $p=0.016$). The caregivers without health problems had better scores in posttest knowledge than the caregivers with health problems. On the contrary to this findings, the European Pressure Ulcer Advisory Panel and National Pressure Ulcer Advisory Panel (2014) identified that higher education of the caregivers and their good relationship with the patient have significant relation with the effectiveness of teaching program than those caregivers who are less educated and does not share good relationship with the patients. Kloppers, Dyk and Pretorius (2015) suggested that, those caregivers who are experienced and have suitable and sufficient knowledge in caring the elderly bed ridden patients have more significant association with the effeteness of teaching. According to Ronald, et al (2014) demographic variables such as female sex, low educational level, depression, social isolation, financial stress, higher number of hours spent in care giving and lack of choice in being a caregiver have negative impact on care of elderly at home. However, the present study does not show such association.

Recommendation:

The elderly bedridden people face the greatest risk of decubitus ulcers. However prompt and efficient care provided by home caregivers can prevent the occurrence of bedsores among the bedridden elderly patients. Based on this study, the following recommendations are suggested:

Specifically qualified family care nurses must be designated to perform the job of rendering care, teaching and demonstrating the family members and home caregivers about elderly care.

The nurses must monitor the efficiency of the caregivers of the elderly patients regularly especially in performing risk assessment for skin.

The caregivers of the bedridden elderly must be experienced in elderly care. The inexperience caregivers must be extensively coached and monitored till they achieve the expected levels of competency in elderly care.

Similar study can be conducted on larger sample involving control and experimental groups of caregivers.

Extensive study involving all seven Emirates could be undertaken to teach and evaluate the effectiveness of teaching program on prevention of decubitus ulcers among elderly bed

Primary health center level workshops could be conducted on homecare of elderly bed ridden patients.

Regular evaluation studies should be carried out to assess the care provided to the bedridden elderly patients at home.

Conclusion

The findings of the study showed that the teaching to the caregivers on prevention of decubitus ulcers among elderly bed ridden patients was very effective. None of the elderly patient under the study developed any decubitus ulcer or even any skin changes related to it. The analysis of pre and posttest knowledge scores of the caregivers also showed significant difference. In posttest, the caregivers mostly received excellent scores whereas in the pretest their scores were mostly poor and very poor.

However, the study also reveals that there was no significant association between effectiveness of teaching program in terms of knowledge of the caregivers on prevention of decubitus ulcers with their demographic variables except health issues in them. It was observed that the caregivers who underwent educational program on care of elderly patients at home in prevention of decubitus ulcers were able to provide better care to the elderly and no decubitus ulcers were identified in bedridden elderly patient even after one month.

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