Effect of Home Accidents Prevention and First aids Training Program on Elderly Caregivers' Knowledge and Practices

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Abstract

Background: Safety is a major concern when providing care for elderly as they are more susceptible to accidents and injuries than younger adults, So most home injuries can be prevented through elderly caregivers training regarding home safety measures and first aids practices. **Aim*:*** Evaluate the effect of home accidents prevention and first aids training program on elderly caregivers' knowledge and practices. **Design*:*** A Quasi- Experimental design (one group pre/post design) will be used in this study. **Setting*:*** The study was carried out at Geriatric Outpatient Clinics in the Specialized Medical Hospital that affiliated to Mansoura University and in General Hospital that affiliated to the Ministry of health at Mansoura City. **Subjects*:*** This study was carried out on 50 elderly caregivers whose selected from the previously mentioned setting **Tools*:*** Three tools were used in this study; Elderly caregivers' demographic data structured interview schedule, Elderly caregivers' home accidents prevention and first aids knowledge structured interview schedule and Elderly caregivers' first aids practices observational checklist **Results:** The study revealed that, about half of elderly caregivers fluctuated from 30 to less than 45 years, with the mean age of 39.60 ± 10.95 years and female were constituted four fifth of them. Moreover, significant improvement in elderly caregivers total knowledge scores regarding home accident prevention and first aids and in total practices scores regarding first aids in dealing with both fainting, fracture, bleeding ,wound , electrical accidents ,poisoning, choking, gas suffocation and burn were detected after implementation of the training program (P=0.000). **Conclusion:** The developed home accidents prevention and first aids training program proved to be effective in improving knowledge and practices of elderly caregivers. **Recommendations*:*** The developed home accidents prevention and first aids booklet should be distributed to all elderly caregivers attending geriatric outpatient clinics at Mansoura city through the responsible personal to raise their knowledge and practices.

Keywords: Caregivers, Elderly, First aids, Home accidents, Knowledge, Practices

Introduction

The world is growing old. ***World Health Organization, (2019)*** stated that between 2000 and 2050, the proportion of the people over 60 years will double from 11% to 22%. The absolute number of people aged 60 years and over is expected to increase from 605 million to 2 billion over the same period ***Hassan et al., (2020).*** In Egypt, the percentage of elderly was 6.9% in 2015, projected to be 9.2% in 2021, and it is expected to reach 12% by 2030 and 20.8% in 2050. This means that,

around 20 million Egyptians will be categorized as elderly by that time ***(Ismail et al ., 2018; Central agency for public mobilization statistic, 2019).***

An accident is an unplanned, unexpected and undersigned event which occurs suddenly anywhere at any time and causes injury and loss .The consequence of unintentional accident can be life threatening. Unintentional accident needs immediate and appropriate lifesaving care before the affected person get major treatment ***(Gupta and Gill 2017; Ganfure et al ., 2018)*** .

Unintentional injuries among elderly are an increasing public health concern and considered one of the major causes of death and disability as the mortality rate due to injury has increased over the past decade among elderly aged 65 years and older ***Zhang. et al., (2017)***. Age has been considered a major risk factor for unintentional injuries among the elderly as when people get older, impairment of elasticity of tissues occurs, lack of attention and concentration, weaker vision and hearing, slower movements and slower reactions ***(Zhang et al., 2017; Rasika and Abeysena., 2018 ;Rehman et al., 2020).***

Homes are considered an important setting for non-fatal unintentional injuries as well as the majority of elderly wish to live longer at home as 83%-86% of people over 65 wishes to go on living in their own homes. However, living at home involves a number of problems, including poor wellbeing, dependent living and fall risk ***(Abhilash et al ,2019; Aidsemark and Askenäs , 2019)*** .Home accident can take place at home or the immediate surroundings of the home, and it is not related to road traffic. It is considered the second most common type of accident after traffic accidents worldwide constituting 82% of accidents among elderly people. ***(World Health Organization, 2018; Zorlu, 2017; Yapici et al , 2019).*** There is a wide variety of home injuries as fall, burns, cuts, electric shocks, poisoning and suffocation ***(Joseph and Bagavandas , 2019)***.

Fall is defined as an event which results in a person coming to rest inadvertently on the ground or other lower level ***(Walling et al., 2019)***. Each year, an estimated 424,000 individuals die from falls worldwide. Fall is considered the second leading cause of accidental or unintentional injury worldwide. Although they may not be highly fatal, they can be associated with life-long physical and psychological disability ***(Spano et al., 2017)***. In addition, It can lead to loss of autonomy, greater isolation and depression, reduced mobility, and increased morbidity and mortality ***(Blanchet and Edwards, 2018)***. Fractures resulting from falls represent around 70% of accidental death in those above 75 years of age. Elderly are at 10 times higher risk of more hospitalization and 8 times more of death following a fall ***(Abdelrahman et al 2018; Samanci and Fatih , 2019)***.

In Addition, Burns are the fourth predominant cause of injury resulting in 265,000 deaths annually all over the world. An estimated 11 million people suffer from burn each year globally ***(Kattan et al., 2016 ; Mishra et al., 2019)*** . Burn injuries in elderly can be caused by cookers, candles, heaters, and contact with objects or liquids at elevated temperatures or with caustic products like soda, acids ***(Arezes, 2016; Spano et al., 2017).***

Moreover, the risk of electric shock is always present in homes, but this risk becomes more evident when the environment is damp and/or the elderly is barefoot ***(Kwan , 2019)***. It is necessary to keep a permanent alert state in electricity use, with special attention to bathroom and

kitchen areas, and also appliances as refrigerator, dish washer and washing machine ***(Gupta and Gill 2017; Joseph and Bagavandas ,2019)***.Furtherm ore, during the period 2007-2010 in the United States of America, there were 2214 deaths among persons aged 65 years due to chocking (suffocation from food) ***(Anand and Sumeet, 2017 ; Shirooka et al., 2017).***

Home accidents and injuries are part of daily events. These home accidents and injuries can cause serious consequences if not dealt with properly. Therefore, implementing correct first aids measures is vital for elderly ***(Khatatbeh , 2016; Mishra et al., 2019).*** First aids has been defined as a set of actions done for a person suffering a sudden illness or an injured person commonly via a nonprofessional but trained person, to save patient life through sustaining basic vital signs in optimal condition till medical treatment can be retrieved ***(Awasthi et al., 2019 ; Madkour et al., 2020).*** Providing abrupt first aids practices to persons who need emergency care can make a great variance in their outcomes by decreasing morbidity and mortality ***(Mohammed et al., 2019)***.

First aids may be implemented by family, friends, or any members of the community who present at the traumatic or medical incident ***(Taklual et al ., 2020).*** Unfortunately, not all elderly caregivers have enough knowledge about accident prevention and first aids practices. Thus, even small accidents could cause problematic situations as elderly caregivers who do not know how to intervene or who intervene incorrectly. For instance, as she/he does not know how to do first aids, Elderly caregivers get nervous and thus cannot help the elderly ***(Rasika and Abeysena, 2018*** ; ***Sayed et al., 2020).*** Therefore, gerontological nurse can play a major role in prevention of home accident among elderly by educating elderly caregivers and provide basic first aids education. They can recognize risk factors of home accident through assessing the accident environment and help to decrease the number and severity of these accidents by environmental modification and safety education. This way, Elderly caregivers could perform first aids in a more awake and fast manner ***(Alvarez et al., 2017; Stanhope and Lancaster, 2018).***

Significance of the study

Elderly risk for home accidents more frequently than other age groups as they spend most of their time at home. Home accidents are the second most frequently type of accident after traffic accidents, constituting 18% to 25% of all accidents all over the world ***(Yapici et al ., 2019)***. Home accidents lead to significant morbidity and mortality in the elderly and a load to their family ***(Rasika and Abeysena, 2018)***. Injuries are responsible for approximately 9% (about 5.12 million) of all causes of deaths in the world and about 16% of the disabilities are reported due to injuries. About 3.6 million people die of unintentional home injuries globally every year ***(World Health Organization 2018;Moncatar et al .,2020)*** . Approximately 30% of people older than 65 years of age fall each year. This rate rises to 50% among those older than 75 years of age which lead to injury, reduces an elderly's ability to move independently and increases the risk of death ***(Junprateep et al., 2020)***. So, elderly caregiver training program regarding home accident prevention and first aids will be necessary to reserve home safety and among elderly and prevent home accidents.

Aim of the study

The present study aimed to evaluate the effect of home accidents prevention and first aids training program on elderly caregivers' knowledge and practices.

Research hypothesis:

- H1: The proposed training program has a positive effect in improving elderly caregivers' knowledge about home accidents prevention and first aids.
- H2: The proposed training has a positive effect in improving elderly caregivers' practices regarding first aids.

Subjects and Method

Research design

A Quasi- Experimental design (one group pre/ post design) will be used in this study.

Setting

The study was carried out at Geriatric Outpatient Clinics in the Specialized Medical Hospital that affiliated to Mansoura University and General Hospital that affiliated to the Ministry of health at Mansoura City.

Geriatric Outpatient Clinic in the Specialized Medical Hospital of Mansoura University located in the ground of Specialized Medical Hospital and consists of one big room and there is big reception for clients outside clinic. It receives elderly people two days per week (at Saturday and Wednesday) from 8 am to 1 pm according to the schedule of hospital. On the other hands, Geriatric Outpatient Clinic in the General Hospital that affiliated to the Ministry of health in Mansoura City. It located in the separate building specific for outpatient clinics inside general hospital and consists of one big room and there is huge reception for clients outside clinic. It receives elderly people three days per week (at Sunday, Tuesday and Thursday) from 8 am to 1 pm according to the schedule of hospital.

Subjects

A purposive sample of 50 elderly caregivers whose selected from the previously mentioned setting and fulfilling the following criteria:-

Inclusion criteria of elderly caregivers:

- Aged 18 years or more.
- Both sexes
- Responsible for providing direct care for elderly
- Stay with elderly at the same home
- Willing to participate in the study
- Available at the data collection time

The Sample size was calculated based on assuming complete correct knowledge about most common causes of home accidents among elderly is 2% before educational program and become 18% post educational program ***Sharkawy et.al, (2017)*** and by using http://www.DSS research.com sample size calculator at Alpha error 5% (95% significance level) and 20% B error (power of study 80%), So sample size is 42 and added 10% because of drop out to become 50 elderly caregivers.

Tools and technique of data collection:

In order to collect the necessary information for the study three tools were used:-

Tool I: Elderly caregivers' demographic data structured interview schedule:-

This tool was developed by the researcher after literature review and consists of demographic characteristics of the elderly caregivers' such as age, sex, marital status, level of education, occupation and the relation to elderly.

Tool II: Elderly caregivers' Home Accidents Prevention and first aids Knowledge structured interview schedule:-

This tool was established by the researcher after literature reviewing to assess baseline knowledge of elderly caregivers about home accidents prevention and first aids applied as pre, post and follow up test for study subjects. It consisted of fourty five (45) MCQ questions divided into two parts:-

Part 1:- Elderly caregivers' knowledge about home accidents prevention:-

It was consisted of twenty eight (28) MCQ questions (Q1-Q28) and covered the following items:-

- Definition of home accident.
- Risk factors for home accidents occurrence for elderly.
- Most common types of home accidents for elderly.
- Environmental hazards and methods of prevention
- Preventive measures for home accidents.

Part 2:- Elderly caregivers' knowledge about first aids measures:-

It was consisted of sixteen (16) MCQ questions (Q29-Q45) and covered the following items:-

- Definition of first aids.
- Objectives of first aids.
- First aids box and their components.
- Basic principles for first aids.
- Most common home injuries, signs and symptoms of them and basic first aids tips.

Scoring system for Elderly caregivers' home accidents prevention and first aids knowledge structured interview schedule:-

The correct answer for each question gets a score of one grade, while wrong answer gets a score of zero. The total knowledge score was computed out of 110 (one hundred and ten) grades. It was converted into percent.

The total knowledge score *Abd El-Hay et al ., (2015)*:-

- More than 70% (more than 77 grades) = Good knowledge
- From 50% to 70% (from 55 to77grades)= Average or fair knowledge
- Less than 50% (less than 55 grades)=Poor knowledge

Tool III: Elderly caregivers' first aids practices observational checklist:-

It was developed by the researcher after review literatures to assess practices of elderly's caregiver in relation to common first aids to all types of home accidents before and after the program then in follow up. It was consists of five parts:-

Part I:-Elderly caregivers' first aids practices for physical consequences of falls:

It was consisted of first aids measures for fainting (six steps), first aids measures for fractures (four steps for

closed fracture, seven steps for open fracture, three steps for pelvic bone fracture and five steps for vertebral fracture), first aids measures for bleeding (It was consisted of ten steps for external bleeding, four steps for internal bleeding, seven steps for bleeding from nose), first aids measures for wounds (ten steps).

Part II:-Elderly caregivers' first aids practices regarding to burn:

It was consisted of four steps for first aids practices for first degree burn, six steps for second degree burn and six steps for third degree burn.

Part III:-Elderly caregivers' first aids practices regarding to electrical accidents:

It was consisted of five steps for first aids practices for electrical shock and four steps for electrical burn.

Part IV:- Elderly caregivers' first aids practices regarding to poisoning:

It was consisted of four steps for first aids practices for poisoning through swallowing, five steps for skin poisoning with poison materials and five steps for swallowing chemical materials and home cleansers.

Part V:- Elderly caregivers' first aids practices regarding to suffocation:

It was consisted of ten steps for first aids practices for suffocation by foreign bodies or choking and five steps for suffocation by gas.

Scoring system for elderly caregivers' first aids practices observational checklist:-

If step was done score = 1 and if step not done score= zero. Then collect scores of five parts of observational checklist, the total scores = (110) grades. It was converted into percent.

The total first aids practices scores system *Mohamad et al., (2018):-*

- If elderly caregiver' practices 60% or more (66 grades or more), they had satisfactory practices.
- If elderly caregiver' practices less than 60% (less than 66 grades), they had unsatisfactory practices

Method

- An official letter was issued from the Faculty of Nursing, Mansoura University to the director of specialized medical hospital and general hospital to obtain their approval to carry out the study.
- The head of the out patients for those hospitals were informed about the purpose of the study, the date and the time of starting data collection in order to obtain their approval to interview elderly caregivers.
- After a thorough review of literatures, Tool I (Elderly caregivers' demographic data structured interview schedule), Tool II (Elderly caregivers' home accidents prevention and first aids knowledge structured interview schedule) and Tool III (Elderly caregivers' first aids practices observational checklists) were developed by the researcher. The reliability of tool II and tool III were tested by determining the stability of the tool's score over repeated use. The reliability was assured by Spearman's Correlation Coefficient r was r= 0.88 for tool II and r = 0.89 for tool III.
- The content validity of the study tools was assessed and revised by a panel of 5 experts in the fields of Gerontological

Nursing, Critical care Nursing, Community health Medicine, Geriatric medicine a for its clarity, content, sequence of items and relevance or irrelevance of the content according to their suggestions and the necessary modifications were done accordingly.

- A pilot study was carried out on (10% of sample size) 5 elderly caregivers at Geriatric Outpatient Clinic in the General Hospital before data collection to check the tools feasibility and to make the required modifications. Elderly caregivers involved in the pilot study were excluded from the study sample.
- Each elderly caregiver who agreed to participate in the study and fulfilling the inclusion criteria was interviewed individually in order to collect the necessary data using Tool I, Tool II, Tool III (in pre, immediately post and one month after).
- The researcher started by introducing herself to elderly caregiver and giving him/her a brief idea

about the nature and purpose of the study.

- Assessment of each elderly caregiver was done using Tool I, Tool II, Tool III (pretest) before implementing the training program to gather the baseline data. Time taken to fill the study tools ranged from 30 to 45 minutes approximately.
- The training program was developed and implemented on the study subjects based on the actual results that obtained from studied elderly caregivers pre assessment using the interviewing questionnaire, practice checklist as well as reviewing of the relevant literatures which aimed to satisfy the elderly caregivers deficit knowledge and practice regarding to home accident prevention and first aids.
- The training program booklet included knowledge and practices required for home accident prevention and perform appropriate first aids for each accident was designed by researcher in simple Arabic language with colored pictures to enhance the learning process.
- The contents of program were covered in six sessions. Three educational sessions for providing knowledge (each session was taken upon 30- 45 minutes approximately) and three training sessions for first aids practices (approximately from 45 to 60 minutes for each session).
- **First educational session (Introduction about home accident in elderly):-** Before starting this session; the researcher introduced herself, clarified the program aim and methods of teaching to be used. It included simple introduction about definition of home accident, risk factors for home accidents occurrence for elderly, most common types of home accidents for elderly. The researcher use simple language and simple pictures and they were allowed to ask questions and get explanatory answers to ensure their understanding.
- **Second educational session (How to prevent home accident among elderly):-** It covered the following items; environmental hazards inside home and preventive measures for home accidents among elderly.
- **Third educational session (Introduction about first aids practices for each home accident):-** It covered the following items; environmental hazards inside home and preventive measures for home accidents among elderly, Simple introduction about first aids, objectives of

first aids, first aids box and their components, basic principles for first aids and most common home injuries and signs and symptoms of them and basic first aids tips.

- **First training session (First aids practices for physical consequences of falls):-** It was consisted of first aids measures for fainting, fractures, bleeding and first aids measures for wounds.
- **Second training session (first aids practices for burn and electrical accidents):-** It included items related to first aids for three degree of burn and for electrical shock and electrical burn
- **Third training session (first aids practices regarding to poisoning and suffocation):-** It included items related to first aids for each type of poisoning (poisoning through swallowing, skin poisoning with poison materials and swallowing chemical materials and home cleansers) and first aids practices for suffocation by foreign bodies or choking and suffocation by gas.
- During each session the researcher used PowerPoint presentation via lap top in the program implementation and used clear, simple, concise words. Also, the researcher used the instructional material which are used in the process of teaching that included the booklet prepared by her through literature review ***(Kalita and Soumya ,2019; Awasthi et al., 2019 and Midani et al., 2019)*** ,video tapes, poster , brochure and power point presentation using lap top in the implementation of the program and used simple, brief, clear words. A booklet was given to each caregiver to refresh their knowledge. At the end of each session, a brief summary was given by the researcher, emphasizing on the most important points.
- In addition, at the beginning of the next sessions, the researcher used to ask questions about the topic discussed in the previous session; any missed or unclear points were reemphasizing by the researcher.
- The researcher demonstrated the component of practical sessions and then allow to each elderly caregiver to redemonestrate until ensuring that each study subjects mastered the first aids practices.
- Besides, the educational booklet was given to studied elderly caregivers to draw their attention, allow for reviewing and support practice at home and motivate them.
- The researcher used to meet with each elderly caregiver in the huge waiting reception outside geriatric outpatient clinics. A face to face interview was conducted with each elderly caregiver who fulfilled the study criteria.
- Elderly caregivers were informed to be in contact with the researchers by telephone at any time for any guidance.
- Also, the researcher used to did a telephone call weekly for elderly caregivers to answer any questions and clarify any vague points so as to maintain each elderly caregiver's motivation and provide positive feedback and reinforcement.
- Reassessment of elderly caregivers was performed two times to evaluate the training program effect. **The first reassessment** was done immediately after the training program implementation (post 1) using Tool II (Elderly caregivers' home accidents prevention and first aids knowledge structured interview schedule)

and Tool III (Elderly caregivers' first aids practices observational checklist).

- **The second reassessment (post 2),** one month from the implementation of the proposed training program ***Abd El-Hay et al., (2015)*** as follow up was carried out in geriatric outpatient clinic at specialized medical hospital two days per week at Saturday and Wednesday from 8 am to 1 pm according to the schedule of hospital and at and in geriatric outpatient clinic at general hospital two days per week at Tuesday and Thursday from 8 am to 1 pm according to the schedule of hospital using Tool II (Elderly caregivers' home accidents prevention and first aids knowledge structured interview schedule) and Tool III (Elderly caregivers' first aids practices observational checklist).
- Researcher was collected the data over a period of eight months from the first of June 2019 to the end of January 2020.

Ethical considerations

Verbal and informed consent from the elderly caregivers was obtained after clarification of the study aim and assured that data collection was used only for the purpose of the study. Then, the necessary data were collected using the study tools. The study subjects' privacy and confidentiality of the data were sustained and the collected data were used only for research purpose. Elderly caregivers were informed about their rights to withdraw from the study at any time without any penality or any responsibility.

Statistical analysis:

After data collection, they were coded, to be suitable for computer feeding. The Statistical Package for Social Sciences "SPSS" software version 22.0 was utilized for data analysis and tabulation. Descriptive statistics were done using numbers, percentages, arithmetic mean and standard deviation. The independent sample t test was used to evaluate the differences between the groups and one way ANOVA test used to assess whether the means of three or more independent groups are statistically different from each other. Paired sample t- test was used to compare the means of two variables for a single group. Pearson's correlation coefficient (r) was used to evaluate the association between the different study variables. For all above mentioned statistical tests done, the threshold of significance is fixed at 5% level (P- value ≤ 0.05). The smaller the P-value, the more significant are the results. Graphs were done for data visualization using Microsoft Excel software and SPSS.

Results

Table (1) shows the distribution of the studied elderly caregivers according to their demographic characteristics. Half of them (52 %) fluctuated from 30 to less than 45 years, with the mean age of 39.60 ± 10.95 years. Female were constituted 80% of them and 72% were married. Concerning the educational level the results revealed that Diplome was prevailing among 66 % of them. Regarding occupation, It was observed that about two third (68%) of the studied subjects were housewives and 78% of them were residing in rural areas. In relation to their relation with elderly, Most of them (76%) were elderly's son/daughter.

Figure (1) illustrates the distribution of the studied subjects according to their opinions about most common accident sites among elderly. It was observed that the majority of the studied subjects (86%) believe that street is the most common accident sites among elderly.

Table 2 shows relation between total knowledge scores and demographic characteristics of the studied subjects before and after implementation of the program. It appears from the table that the relation of caregivers with elderly didn't affect significantly on the total knowledge score immediately after and after one month from training program. On the other hand, results revealed that age , level of education, occupation of them affect significantly on total knowledge score immediately after and after one month from training program (P=0.000). Regarding Sex, Male had higher score of knowledge than female with statistical significant difference was found immediately after and after one month from implementation of training program (P=0.002and P=0.001 respectively).

With regard to the marital status, the table illustrates that single studied subjects had higher knowledge scores than others with statistical significant difference was found before and immediately after implementation of training program (P=0.000, P=0.004 respectively).

Concerning the relation between the studied subjects' residence and their total scores of knowledge. The studied subjects residing in urban area had higher score of knowledge than who residing in rural area with statistical significant difference was found immediately after and after one month from implementation of training program (P=0.001and P=0.003 respectively).

Figure (2) presents the studied subject's previous attendance of first aids courses. It was noticed that the majority of the studied subjects (98%) didn't attend any first aids courses

Table 3 states relation between total practices scores and demographic characteristics of the studied subjects before and after implementation of the program. It appears from the table that both age, level of education and occupation of the studied subjects affect significantly on the total practices score immediately after and after one month from training program (P=0.000). Furthermore, the studied Subjects residing in urban area had higher practice score than study subjects with not enough income immediately after and one month from training program implementation (P=0.004 and P=0.002 respectively).

Regarding sex, Male had higher score of practice score than female with statistical significant difference was found immediately after and after one month from training program (P=0.001 and P=0.005 respectively). In contrast table shows that there was no significant relation found between total practices score and both marital status and relation of studied subjects with elderly immediately after and after one month from training program.

Table 4 observes effect of home accidents prevention and first aids training program on practices of most types of first aids among the studied subjects. It was observed that training program had statistical significant effect on improving first aids practices among subjects in dealing with both fainting, fracture, bleeding ,wound , electrical accidents ,poisoning, choking, gas suffocation and burn immediately after and one month after the training program implementation (P=0.000).

Table 5 shows effect of training program on both home prevention and first aids knowledge among the studied subjects. It was observed that training program had statistical significant effect on improving both home prevention and first aids knowledge among subjects

immediately after and one month after the training program implementation (P=0.000).

Table 6 demonstrates the effect of home prevention and first aids training program on level of knowledge and practices of the studied subjects. It was noticed that the majority (96%) of studied subjects had poor knowledge before implementation of the training program, 90% of them immediately after and one month after implementation of the training program had good knowledge. Thus home prevention and first aids training program had statistical significant effect on increasing knowledge of studied subjects immediately after and one month after implementation of the training program (P=0.000).

Regarding level of practices, It was observed that 98% of the studied subjects had unsatisfactory practices regarding first aids before implementation of the training program compared with 94% of them immediately after and 92% of them one month after implementation of the training program had satisfactory practices regarding first aids. It should be pointed out that home prevention and first aids training program had statistical significant effect on improving practices of studied subjects immediately after and one month after the training program implementation (P=0.000).

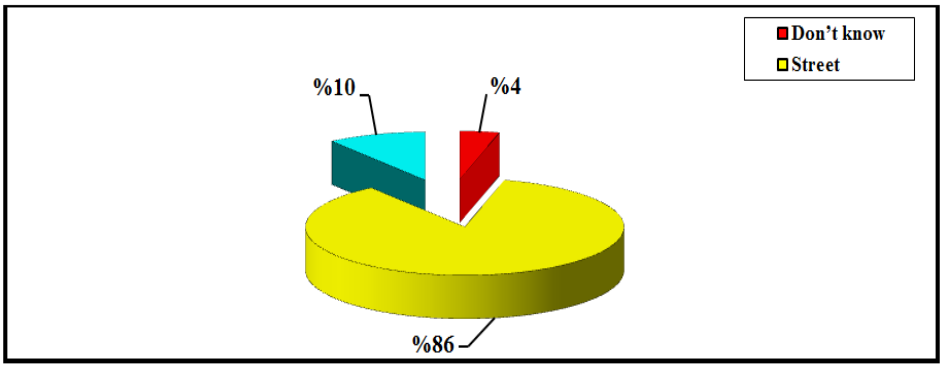
Figures 3&4 describe correlation between total practices scores and total knowledge scores of the studied subjects after training program. This figures showed that, there was statistical significant strong positive correlation between total practices scores and total knowledge scores immediately and one month after implementation of training program.

Table (7) shows correlation between studied subjects knowledge and practices about home prevention and first aids immediately after and after one month from implementation of training program. This table shows that, immediately after implementation of training program a positive highly significant relation was found between the total mean score of knowledge (88.54±11.58)and the total mean score of practices (88.44±12.78) evidenced by (0.931,P=0.000).Moreover, After one month from implementation of training program a positive highly significant relation is observed between the total mean score of total mean score of knowledge (88.08±10.84)and the total mean score of practices (85.92±13.54) evidenced by (0.899,P=0.000) , There was statistical significant strong positive correlation between total practices scores and total knowledge scores immediately and one month after implementation of training program. The higher level of knowledge, the better practices of the studied subjects.

Table (1): Distribution of the studied subjects according to their demographic characteristics:

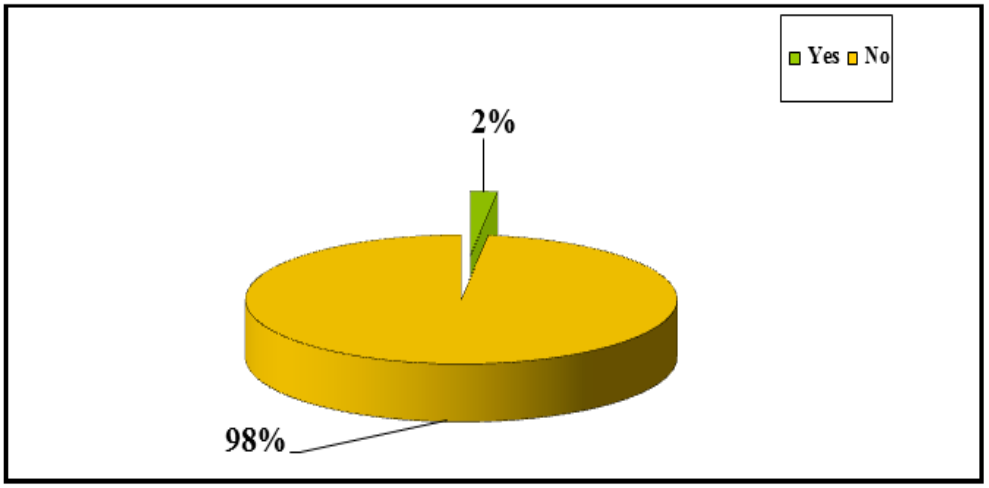
Items	N=50	%
Age (in years)		
• From18 years to less than 30 years	11	22
• From 30 years to less than 45 years	26	52
• 45 years and more	13	26
Mean ± SD = 39.60 ± 10.95		
Sex		
• Male	10	20
• Female	40	80
Marital status		
• Single	9	18
• Married	36	72
• Widow	3	6
• Divorced	2	4
Level of education		
• Illiterate	3	6
• Read &write	2	4
• Diplom	33	66
• High education	12	24
Occupation before retirement		
• Employee	12	24
• Housewife	34	68
• Retired	4	8
Residence		
• Rural	39	78
• Urban	11	22
Relation with elderly		
• Son /daughter	38	76
• Husband/wife	6	12
• Son's wife	4	8
• Brother/sister	2	4

Means only 4 females were employee; 2 retired and the rest was housewife



N=50

Figure (1): The studied subject's opinion about most common accident sites among elderly



N=50

Figure (2): The studied subject's previous attendance of first aid courses

Table (2): Relation between total knowledge scores and demographic characteristics of the studied subjects before and after implementation of the program

Demographic characteristics	N	Total knowledge scores		
		Before program	***Immediately after training program***	***After one month***
		Mean±SD	Mean±SD	Mean±SD
Age (in years)				
• From18 years to less than 30 years	11	52.27±9.76	100.18±4.99	98.36±3.85
• From 30 years to less than 45 years	26	30.54±10.75	81.96±11.27	82.11±11.08
• 45 years and more	13	36.54±6.55	91.85±5.64	91.31±5.08
Test of significance		F =19.710 P=0.000*	F = 17.020 P=0.000*	F=14.804 P=0.000*
Sex				
• Male	10	49.00±13.86	98.50±8.00	97.00±7.73
• Female	40	33.8500±10.68	86.05±11.04	85.85±10.40
Test of significance		T =3.779 P=0.000*	T = 3.343 P=0.002	T =3.784 P=0.001
Marital status				
• Single	9	14.51±54.67	100.33±7.467	98.00±7.19
• Married	36	32.28±7.52	85.72±9.81	85.53±9.45
• Widow	3	12.42±37.67	91.33±8.37	93.00±8.66
• Divorced	2	20.51±38.50	82.00±31.11	82.00±28.28
Test of significance		F=12.626 P=0.000*	F=5.132 P=0.004	F=4.329 P=0.009
Level of education				
• Illiterate	3	34.67±2.31	91.67±3.21	92.00±1.00
• Read &write	2	38.50±0.71	95.50±0.71	94.50±0.711
• Diplom	33	30.06±5.99	83.00±9.95	83.03±9.68
• High education	12	55.92±9.27	101.83±3.23	99.92±3.06
Test of significance		F=42.98 P= 0.000*	F=15.114 P=0.000*	F=13.104 P=0.000*
Residence				
• Rural	39	33.49±9.54	85.85±11.15	85.72±10.72
• Urban	11	48.91±15.84	98.09±7.48	96.46±6.29
Test of significance		T =4.051 P=0.000*	T =3.420 P=0.001	T =3.157 P=0.003
Occupation				
• Employee	12	52.00±14.38	99.17±7.56	97.42±7.14
• Housewife	34	30.68±6.61	83.79±10.32	83.9412±10.07
• Retired	4	44.25±2.63	97.00±2.59	95.25±2.22
Test of significance		F=26.823 P= 0.000*	F=13.601 P=0.000*	F=10.997 P=0.000*
Relation with elderly				
• Son /daughter	38	37.18±14.27	87.76±12.93	86.97±12.13
• Husband/wife	6	40.83±5.81	95.00±4.147	94.00±2.76
• Son's wife	4	31.00±0.82	87.00±0.82	89.00±1.15
• Brother/sister	2	31.00±1.41	87.00±1.41	89.50±2.12
Test of significance		F=0.606 P= 0.614	F=0.702 P=0.556	F=0.738 P=0.535

*Significant at P ≤ 0.05 T=Independent samples t- test F= One Way ANOVA test

Table (3): Relation between total first aids practices scores and demographic characteristics of the studied subjects before and after implementation of the program

Demographic characteristics	N	Total Practices scores		
		Before program	***Immediately after training program***	***After one month***
		Mean±SD	Mean±SD	Mean±SD
Age (in years)				
• From18 years to less than 30 years	11	59.00±8.77	102.27±3.64	100.55±3.64
• From 30 years to less than 45 years	26	11.09±28.31	81.11±11.79	78.38±12.29
• 45 years and more	13	35.15±8.36	91.38±8.04	88.61±9.79
Test of significance		F =36.789 P=0.000*	F =19.356 P=0.000*	F=18.237 P=0.000*
Sex				
• Male	10	52.40±14.67	99.50±7.86	96.40±11.71
• Female	40	32.95±13.45	85.68±12.313	83.30±12.78
Test of significance		T =4.020 P=0.000*	T =3.368 P=0.001	T =2.943 P=0.005
Marital status				
• Single	9	58.22±13.08	100.00±10.95	98.56±10.79
• Married	36	31.03±10.31	85.33±11.29	82.39±12.15
• Widow	3	39.00±19.08	93.00±9.64	91.67±9.07
• Divorced	2	42.00±28.28	85.50±27.57716	84.00±26.87
Test of significance		F=12.510 P=0.000*	F=3.924 P=0.014	F=4.372 P=0.009
Level of education				
• Illiterate	3	31.33±1.15	90.33±0.58	89.00±1.00
• Read &write	2	35.50±0.71	93.50±0.71	91.5000±0.71
• Diplom	33	28.24±7.43	82.45±11.15	79.48±11.76
• High education	12	62.08±2.43	103.58±1.44	101.9167±1.38
Test of significance		F=85.109 P= 0.000*	F=15.310 P=0.000*	F=15.596 P=0.000*
Residence				
• Rural	39	33.49±14.23	85.77±12.74	82.92±13.43
• Urban	11	48.73±15.26	97.91±7.56	96.55±7.33
Test of significance		T =3.089 P=0.003	T =3.002 P=0.004	T =3.216 P=0.002
Occupation				
• Governmental employee	12	56.42±14.15	100.58±7.38	97.58±10.87
• Housewife	34	28.91±9.03	82.88±11.14	80.44±11.64
• Retired	4	45.50±5.26	99.25±2.22	97.50±2.52
Test of significance		F=33.211 P=0.000*	F=16.397 P=0.000*	F=12.944 P=0.000*
Relation with elderly				
• Son /daughter	38	37.34±17.42	87.05±14.14	84.68±14.69
• Husband/wife	6	40.83±8.35	96.50±4.64	94.67±4.84
• Son's wife	4	29.75±2.22	89.50±1.73	88.00±1.41
• Brother/sister	2	3.54±29.50	88.50±3.54	79.00±15.56
Test of significance		F=0.547 P= 0.652	F=0.952 P=0.424	F=1.157 P=0.336

*Significant at P ≤ 0.05 T=Independent samples t- test F= One Way ANOVA test

Table 4: Effect of home accidents prevention and first aids training program on practices of most types of first aids among the studied subjects

Item	Before program	Immediately after training program	After one month	t-test P1	t-test P2
Fainting					
Mean* ± *SD	1.78±0.47	4.44±1.49	3.98±1.48	12.485 (0.000)*	10.111(0.000)*
Fracture					
Mean* ± *SD	5.98±3.01	13.42±2.04	12.76± 1.91	30.036 (0.000)*	22.804 (0.000)*
Bleeding					
Mean* ± *SD	5.94±3.30	18.72±2.71	18.38±2.97	35.441 (0.000)*	32.084 (0.000)*
Wound					
Mean* ± *SD	3.76±1.38	7.74±1.75	7.28±1.67	23.383 (0.000)*	18.523 (0.000)*
Electrical accidents					
Mean* ± *SD	3.08±1.77	6.16±0.99	6.00±1.14	3.50519 (0.000)*	3.41671 (0.000)*
Poisoning					
Mean* ± *SD	5.36±3.00	11.88±1.33	11.90±1.57	20.640 (0.000)*	20.456 (0.000)*
Choking					
Mean* ± *SD	2.28±0.73	3.98±0.82	3.76±0.87	12.907 (0.000)*	10.311(0.000)*
Gas suffocation					
Mean* ± *SD	2.80±1.21	7.74±1.99	7.30±2.149	22.064 (0.000)*	18.278(0.000)*
Burn					
Mean* ± *SD	5.70±3.25	14.24±1.59	13.96±1.60	27.727(0.000)*	25.775(0.000)*
The total mean score of first aid Practices					
Mean* ± *SD	36.840±15.66	88.44±12.78	85.92±13.54	23.738 (0.000)*	21.000 (0.000)*

(*) Statistically Significant at $p \leq 0.05$

Paired t-test (P1) =Comparing before and immediately after training program in study group

Paired t-test (P2) = Comparing before and one month after training program in study group

Table (5): Effect of Home Accidents Prevention and First aids Training Program on knowledge of the studied subject

Item	*Before program*	Immediately after training program	*After one month*	t-test P1	P2
Elderly caregivers knowledge about Home prevention					
Mean ± SD	20.54±9.59	56.02±8.30	55.66±7.27	52.558 (0.000)*	48.986 (0.000)*
Elderly caregivers knowledge about First aid					
Mean ± SD	16.40±4.23	32.26±4.76	32.28±4.71	24.389 (0.000)*	25.195 (0.000)*
The total mean score of knowledge					
Mean ± SD	36.88±12.78	88.54±11.58	88.08±10.84	30.842 (0.000)*	37.523 (0.000)*

(*) Statistically Significant at p≤ 0.05

Paired t-test (P1) = Comparing before and immediately after training program in study group

Paired t-test (P2) = Comparing before and one month after training program in study group

Table (6): Effect of home accidents prevention and First aid training program on total knowledge and practices of the studied subjects

Item	*Before program*		*Immediately after training program*		*After one month*		t-test	
	N (50)	%	N (50)	%	N (50)	%	P1	P2
Knowledge								
• Poor	48	96	1	2	0	0	30.842	37.523
• Average	2	4	4	8	5	10		(0.000)*
• Good	0	0	45	90	45	90	(0.000)*	
Mean ± SD	36.88±12.78		88.54±11.58		88.08±10.84			
Practices								
• Satisfactory	1	2	47	94	46	92	23.738	21.000
• Unsatisfactory	49	98	3	6	4	8	(0.000)*	(0.000)*
Mean ± SD	36.840±15.66		88.44±12.78		85.92±13.54			

(*) Statistically Significant at p≤ 0.05

Paired t-test (P1) =Comparing before and immediately after training program in study group

Paired t-test (P2) = Comparing before and one month after training program in study group

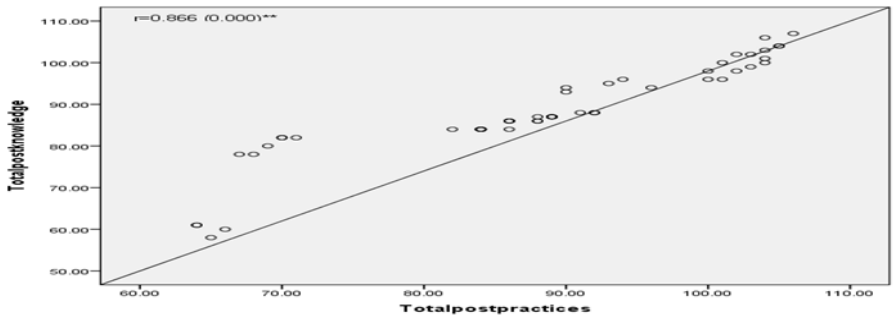


Figure (3): *Correlation between total score of knowledge and total score of practice immediately after training program*

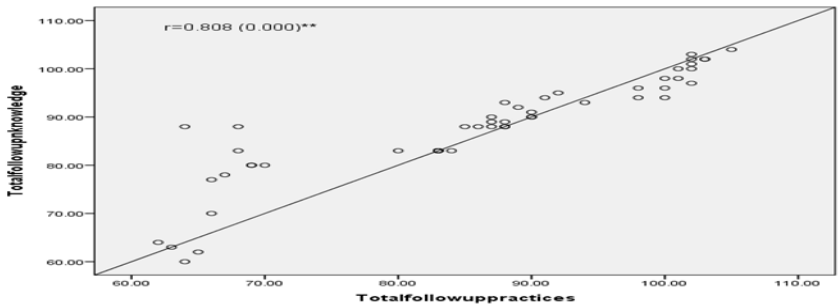


Figure (4): *Correlation between total score of knowledge and total score of practice after one month from training program*

Table (7): Correlation between studied subjects knowledge and practices about home prevention and first aids immediately after and after one month from implementation of training program

The total mean score of practices	Mean ± SD	The total mean score of knowledge	Mean ± SD	r
Immediately after program intervention	88.44±12.78	Immediately after program intervention	88.54±11.58	0.931 (0.000) **
After one month	85.92±13.54	After one month	88.08±10.84	0.899 (0.000) **

** Correlation is significant at the 0.01 level (2-tailed)

Discussion

When growing old, the body abilities of elderly begin to diminish, making them disposed to accidents especially in their own homes ***Yapici et al.,(2019)*** . Provision of training to elderly caregiver to maintain and improve their knowledge and practices may have significant effect on preventing home accidents and lessening their negative consequences when occurring ***(Ismail et al ., 2020; Vu et al ., 2020; Chartchay et al ,2020)*** Therefore, the aim of this study aimed to evaluate the effect of home accidents prevention and first aids training program on elderly caregivers' knowledge and practices.

Regarding demographic characteristics of the studies elderly caregivers, the current study revealed that

half of the studied elderly caregivers were ranged from 30 to less than 45 years, with a mean age of 39.60 ± 10.95 years. The same finding was reported by other study done in Baghdad by ***Ibrahim and Hassan (2019)*** who cleared that about half of elderly caregivers at age group (39-48) years old. While, ***Abo-Zeid et al., (2014)*** in Assiut Governorate reported that the mean age among the caregivers was (30.0 ± 7.9). Another study conducted in Minia by ***Mohamed et al ., (2018)*** who reported that more than half of the studied subjects aged ≥ 30 years with a mean of 33.32 ± 7.478 years. This finding points toward the fact that middle age groups are assigned the role of caregivers more often.

Concerning gender, this study revealed that about three quarters of studied subjects were female this may be due to woman in developing countries, like Egypt, undertake the task of providing care. This result in the same line with studies conducted in Brazil by ***Moreira et al ., (2018)*** and ***Mamani et al., (2019)*** who stated that thirty four of the elderly caregivers were females. Another study conducted in Cameron by ***Bassah et al ., (2018)*** reported that about thirty four of studied subjects were female. In accordance, the current study results revealed that two third of study sample were married .This result may be due to the all of the studied caregivers were 18 years and old the age of marriage in Egypt.

This results at the same line with another study established in Baghdad by ***Ibrahim and Hassan (2019)*** and in Minia by ***Mohamed et al ., (2018)*** who reported that the majority of the caregivers were married. Sons and daughters were the most common elderly caregivers' rankings in this study. This result may be due to the presence of aged wife with chronic illness who can't provide care for the spouse and by tradition, the other family members especially daughters take responsibility for caring for elderly. Also in Egypt, it is an obligation to provide care for the elderly, owing to the thought of filial piety. In the same line, Another studies done in Brazil by ***Moreira et al ., (2018)*** stated that more than half of elderly caregivers were their son/daughter.

These results disagree with studies done by ***Bassah et al ., (2018)*** in Cameron who reported that about half of family caregivers were caring for their spouse. This difference may be due to cultural difference that Children were separated from their parents at the age of youth Unlike the Egyptian culture that sanctifies the family bonding.

The present study showed that three quarters of elderly caregivers reported that street was the most common accident sites among elderly. This may be explained by overcrowded and lack of road safety in the streets. This result is consistent with study conducted by ***Kamel et al (2013)*** in Egypt who found that more than one third of accidents among elderly occur outside their homes. Furthermore, Study conducted in Egypt by ***Sharkawy et al ., (2017)*** who reported that have of study subjects reported that the most common type of accident among elderly occurs in street. On the other hand, a study conducted in Iran by ***Amiri et al .,(2013)*** revealed that more than half of accidents among elderly occurred at home.

In fact, educating and supporting elderly caregivers is a vital nursing role and is essential in promoting elderly quality of life and prevent home accidents **Santos et al.,(2020).** As regards to the studied subjects' knowledge score throughout the study phases, the results of the present study revealed that the majority of elderly caregivers had poor knowledge before implementation of the training program this may be due to insufficient information that was given to them about

home accident prevention and first aids. While, the majority of them in immediately after and one month after implementation of the training program had good knowledge regarding home accident prevention and first aids.

Concerning , the total scores of studied subject's practice throughout the study phases, the results of present study revealed that , there was a highly statistically significant difference between before/ immediately after and after one month from implementation of the training program . Before the program implementation, It was observed that the majority of elderly caregivers had unsatisfactory practices regarding first aids vice versa the majority of them had satisfactory practices regarding first aids measures in both immediately after and one month after implementation of the training program

These results may be related to effect of repeated & regular revising booklet steps about first aids at home leading to improve the skills of performance and mastering first aids measures. These results were consistent with other studies conducted in Egypt by ***Mohammed et al ., (2013)*** and ***El-Sabely et al ., (2014)*** who revealed that educational program improve knowledge and practice of study subjects regarding causes of home accidents and first aids immediately after and in follow up period ($p<0.001$).

Similar results was reported by ***Kamei et al.,(2015)*** in Japan who mentioned that study group had higher score after implementation of home hazard modification program than the control group. In the same line, study conducted in Turkey by ***Arli and Yildirim .,(2017)*** who showed that educational program improve knowledge and practice about basic first aids of study subjects immediately after and in follow up period. Moreover, study conducted in Minia by ***Mohamad et al ., (2018)*** found that significant improvement was indicated in knowledge and practices after Accident Prevention Program compared to before program .

Additionally, another study done in Alexandria by ***Elkaluby et al ., (2020)*** and in found that first aids educational program had statistically significant effect on increasing level of knowledge and practice after implementation of educational program.

In accordance, the current study results revealed that there was statistical significant effect of training program on first aids practices among subjects in dealing with both fainting, fracture, bleeding ,wound , electrical accidents ,poisoning, choking, gas suffocation and burn immediately after and one month after implementation of the training program ($P=0.000$). This result in line with the study done in Cairo by ***Mersal and Aly (2016)*** who revealed that first aids guidelines improve practices of study subjects about first aids practices for Fractures , fainting ,burn and wounds ($p=0.000$) and epistaxis ($p=0.001$) . At the same line, another study done in Korea by ***Lee and Oh (2018)*** who reported that first aids program improving first aids performance of subjects in cases of fracture, abrasion and dislocation ($P=0.001$) .

This finding is similar to study done in Hawaii by ***Kam .,(2020)*** who revealed that, providing standardized printed patient education improve first aids practice of elderly in case of fainting . This may be due to first aids of fainting, fracture, bleeding ,wound , electrical accidents ,poisoning, choking, gas suffocation and burn were newly recognized practices for study subjects and they have great desire to catch more

practices in this concern especially the majority of them didn't attend any first aids courses before.

As regard to correlation between elderly caregivers, knowledge and practices, the present study observed that there was significant strong positive correlation between total practices scores and total knowledge scores immediately after and one month after training program. The same opinion was supported by another study conducted in Egypt by ***Abd El-Hay et al.,(2015)*** and in Banha by ***Mohammed,(2018)*** who mentioned that A positive correlation was identified between knowledge and practice of caregivers ($P < 0.001$).

Furthermore, the same results was found in in India by ***Walling et al.,(2019)*** who reflected that there was positive correlation between knowledge and practices of study subjects regarding first aids measures ($P < 0.001$). From my point of view this can be due to improve caregiver's knowledge about accident prevention and first aids enhance their understanding and motivation to carry out first aids practices correctly.

Concerning the relation between educational level of elderly caregivers and level of knowledge and practices regarding to home accident prevention and first aids, the present study revealed that there was significant relation between level of knowledge and practices and educational level as study subjects with high educational level obtain higher knowledge and practices scores than others before, immediately after and after one month from training program (P=0.000).

The same result was conducted in Egypt by ***Kamel et al., (2014)*** found that there was statistically significant relation between caregivers' educational level and scores of knowledge and practices regarding first aids as caregivers with higher educational level had higher knowledge and practices scores than others(P=0.000) . Along with this results, Another study done in Malaysia by ***Hassan et al., (2017)*** who stated that level of education is a significant predictor of knowledge scores and higher level of education led to higher scores of knowledge. Furthermore, a study done in Egypt by ***Moshtohry et al ., (2017)*** reported that the study subjects with university education had higher knowledge and performance than illiterate subjects pre and post implementation of guiding program (P=0.000). From my point of view subjects with high educational level were acquire new information and practices easily and had more motivation to learn than others.

Considering sex, this study revealed that there was significant relation between sex and level of knowledge and practices among elderly caregivers, as male had higher level of knowledge and practices regarding home accident prevention and first aids than female before ,immediately and one month after program implementation (P=0.000).

Similar results had been previously reported by ***Amro and Qtait (2017)*** in Palestine who showed that male had higher knowledge and first aids practices scores than female. This may be explained by the fact that male had high educational level than female which made them more motivated to know about home accidents and first aids and may be due to female was overlapped with a lot of duties inside the home. On the other hand these results disagreeing with Studies done in Minia by

El magrabi and Khalaf (2017) and in Assuit by ***Mohamad et al ., (2018)*** revealed that there was no statistical significant relation between sex and level

of study subjects knowledge and practices (P= 0.469 and 0 .509 respectively).

Finally, these previous findings highlight the importance of home accident prevention and fist aids training program on knowledge and practices of elderly caregivers as implementation of home accident prevention and fist aides training program proved to be effective in improving knowledge and practices of elderly caregivers.

Conclusion

Based on findings of the present study, it can be concluded that implementation of home accidents prevention and first aids training program has significant positive effect on increasing elderly caregivers' knowledge and practices. This is proved by the highly significant differences between before/immediately after and one month after the implementation of training program in all tested variables; knowledge and practices.

Recommendations

Based on the results of the present study the following recommendations are suggested:-

- The developed home accidents prevention and first aids booklet to be distributed to all elderly caregivers attending geriatric outpatient clinics at Mansoura city through the responsible personal to raise their knowledge and practices.
- Providing elderly caregivers with educational materials as books, pamphlets and videos to increase their awareness about environmental safety and home accidents prevention.
- Increase awareness of elderly caregivers about first aids measures and encourage them to use safety measures to avoid injuries to the elderly through nursing educational programs in all health care setting dealing with elderly

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No

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