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Training of Formal Caregivers Dealing with Alzheimer Diseased Patients at Helwan City Cairo Egypt

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Abstract: Alzheimer prevalence increases with aging and in 2012 it is estimated that Alzheimer worldwide will affect 35.6 million people, this number will double by 2030 and more than triple by 2050. The aim of this study is to evaluate the effect training program for formal caregivers' dealing with Alzheimer diseased patients at Helwan City Cairo Egypt. Design: A quasi-experimental research design was used. Setting: The study was conducted at four available geriatric homes and out-patient psychiatric clinics in Helwan City. Sampling: A purposive sampling was used for selection of forty formal caregivers'. Tool: A self-designed semi-structured interview questionnaire was used, it included demographic information as; age, sex, professional qualification, and experience, formal caregiver's knowledge regarding Alzheimer disease as definition of Alzheimer, causes, risk factor, prevention and control, attitude questionnaire as I feel confident about people with Alzheimer disease, and I feel uncomfortable being around Alzheimer diseased people and related dementia, and formal caregiver's practices as Practice methods of non-therapeutic care to deal with Alzheimer patients, and Configure appropriate environment to Alzheimer patients Results: The pre /posttests among formal caregivers revealed that overall knowledge, attitude and practices improved with highly statistically significant differences at p <0.001 that approved the hypothesis of implementing training program for formal caregivers. Conclusion: The training program significantly brought out improvements in formal caregivers knowledge, attitude and practices regarding Alzheimer diseased patients. Recommendations: The study can be replicated with a larger number of formal caregivers for generalizations of the results, and further studies conduct to improve nurse's knowledge and practices regarding caring for Alzheimer diseased patients.

Keywords: Alzheimer Disease, Training Program, Formal Care Giver, and Helwan City

1. Introduction

"Alzheimer's disease (AD) is a health concern which evolves quickly and Alzheimer is a dangerous disease which affects the cognitive function badly; it is the sixth causes which lead to mortality in the USA. About 5.2 million of Americans have been diagnosed to suffer from Alzheimer's disease. The Alzheimer Association has evaluated that 46.8 million People worldwide are living with dementia in 2015. These numbers will almost double every 20 years, reaching 74.7 million in 2030 and 131.5 million in 2050. These new estimates are 12-13% higher than those made for the world Alzheimer report 2009 [1] and [2]".

Alzheimer disease is the most famous type of dementia, its main characteristics are the presence of neurofibrillary plaques and tangles in the brain, a variety of genetic, environmental and other factors can cause this disease. The prevalence of Alzheimer disease increases in advancing age with the highest rates among those who are 80. years and older. Its diagnostic criteria include memory impairment and

cognitive disturbances, and deficits, such as; aphasia, agnosia, apraxia, or changes in executive functioning. Behavioral symptoms are not known in the beginning of the disease; the loss of memory is often hidden by using preserved social skills and memory aids. More than 8 to 10 year period, the functional dependence and loss of ability to deal with daily life increases (such as; shopping, food preparation, medication, financial matters, and driving). Eventually, grooming, toileting, bathing, dressing and eating become impaired and end in death [3].

The increasingly aging population in all developed societies, the role of caregiver has been increasingly recognized as an important one, both functionally and economically. Many organizations which provide support for persons with disabilities have developed various forms of support for careers as well. Formal caregivers refer to paid care services by a healthcare institution or individual for a person in need and are considered members of an organization and accountable to defined norms of conduct and practice. They may be professionals, support workers, or volunteers. They are sometimes called 'providers'. Formal caregivers are volunteers or paid care providers associated with a service system. Service systems might include for-profit or nonprofit nursing homes, intermediate care facilities, assisted living, home care agencies, community services, hospice, church or charity service groups, adult day care, senior centers, association services, state aging services and so on [4].

Alzheimer is a destructive disease that affects both the mind and body. There is no cure for that disease but there are other options for treatments. Such treatments should focus on non- pharmacological interventions with sparing use of medications to improve patient's life. More researches are needed to find a cure and prevent that disease. Supporting programs are also needed because population ages and dementia becomes more common [5].

1.1. Significance of the Study

˝In Egypt about 1, 119, 373 reported as a warning case among 76, 117, 421 in 2004 so nurse and other health care staff take care and a great responsibility toward a person with Alzheimer's through providing them with adequate required knowledge, practical skills, identify the patient's problems correctly, understand the nature of the disease and how to help patients and families cope with Alzheimer. She can also determine the level of functioning of the patient and adjust the appropriate forms of therapy. The nurse strives to provide the highest quality of life of the sick and prevents complications of the disease. Educational role of the nurse is very important, especially when it concerns care of patients with Alzheimer's disease [6] ˝.

1.2. Aim of the Study

The current study aimed to evaluate the effect of training program for formal caregivers 'dealing with Alzheimer diseased patient, through the following objectives:

1 Assessing the knowledge, attitude and practices of

formal caregiver regarding patients affected with Alzheimer disease to identify their needs.
2 Designing, planning, and implementing training program to meet caregivers' needs.
3 Evaluate the effect of training program on studied formal caregivers.
4 Finding the association between change of scores of knowledge, attitude and practices of formal caregivers and training program as well as selected demographic variables.

1.3. Hypothesis

After implementation of the training program, improvement in formal caregiver's knowledge, attitude and practices regarding patients affected with Alzheimer disease would be achieved.

2. Subjects and Methods

2.1. Design

A quasi-experimental research design was used.

2.2. Setting

The study was conducted at four geriatric homes and outpatient psychiatric hospital clinics at Helwan City.

2.3. Sampling

Purposive sample was used to select four geriatric home as Dar Huda Talaat Harb, Dar Oum Kalthoum, Dar El-Sayeda Nafisa, Home for the Elderly affiliated to the University Hospital in Helwan and the outpatient psychiatric clinics, Helwan hospital, and all formal caregivers (40) dealing with Alzheimer patients having the following inclusion criteria: available at the time of data collection, direct dealing with Alzheimer patient, and willing to participate in the study.

2.4. Tools for Date Collection

A self-designed semi-structured interview questionnaire was used to collect the study it includes 4 parts:
Part 1: Demographic characteristic data such as: sex, age, Academic qualification, job, experience in years and attended training program or workshop related to Alzheimer.
Part 2: Assesses formal caregivers' knowledge as: definition of Alzheimer, causes, risk factor, prevention and control.
Scoring system:
Each knowledge question was scored by one for a «yes» answer and zero for a «No» answer. For questions having answers categorized into don't know, they were scored zero. for incomplete answer scored one, and for complete answer, scored two. The total knowledge scores ranged from 0-30, they were evaluated as follows:

1 Incorrect knowledge (< 60%) (With scores ranged from 0-17).
2 Correct knowledge (60-100%) (With scores ranged

from 18-30).

Part 3: Assesses caregiver's attitude regarding Alzheimer using Likert scale*, it is designed by [7], as i feel confident about people with Alzheimer disease and related dementia, and i feel comfortable being around Alzheimer diseased people and related dementia

Scoring system: The results were categorized as the following:

Questions from 1-20 were scored by (0-2) (0 for not sure, 1 for don't agree, 2 for strongly agree) and total scores of these questions ranged from (0-40). were categorized as follows:

1 Negative attitude (<33.3%) (With scores ranged from 0-13).
2 Neutral attitude (33.3-66.7%) (With scores ranged from 14-27).
3 Positive attitude (>66.7%) (With scores ranged from 28-40).

Part 4: Assesses caregiver's practices as reported by formal care giver Alzheimer it was designed by the researchers as Practice methods of non-therapeutic care to deal with Alzheimer patients and Configure appropriate environment to Alzheimer patients.

Scoring system:

Questions had three answers (don't know, unsatisfactory and satisfactory and were scored from 0-2 with total scores ranged from (0-12), which was categorized as the following:

1 Not done practices (<60%) (With scores ranged from 0-7).
2 Done good practice (60-100%) (With scores ranged from 8-12).

2.5. Content Validity

Content validity of the tool was established and revised by a panel of jury of three experts for judgment of clarity, relevance of sentences, comprehensiveness and appropriateness of content. According to the opinion of the expertise's minor modifications were applied on the form of rephrasing, or comprehension and changing of some questions was performed. The face validity of the questionnaire was 96%.

2.6. Reliability

To assess reliability, the study tool, it was tested by the pilot subjects at first session and retested after 2. weeks as test-retest reliability for calculating Cronbach's Alpha which was 0.988.

2.7. Pilot Study

A pilot study was conducted on 10% of the formal caregivers who were later excluded from the main study sample it was used to test the applicability of the tool and its clarity to estimate the time needed to fill in the tool.

2.8. Ethical Considerations

Agreements for participation were taken from formal caregivers after explaining the purpose of the study, and before data collection. They were given an opportunity to refuse to participate and they were notified that they can withdraw at any stage of the research without giving any reason. Also, they were assured that, the information given will remain confidential and used for the research purpose only.

2.9. Field Work

Official letters issued from the Faculty of Nursing, Helwan University, including the aim and schedule of the study, were forwarded to ministry of health and population general secretariat of mental health and addiction treatment to obtain permission to visit and conduct the study, at the geriatric homes caring for the elderly, in Helwan City. These were Dar Huda Talaat Harb, Dar Oum Kalthoum, Dar El-Sayeda Nafisa, Home for the Elderly affiliated to the University Hospital in Helwan and the outpatient psychiatric clinics, Helwan hospital, due to the presence of cooperation protocols between the Faculty of Nursing and the elderly homes, in Helwan City.

Instructive program built included 4 phases:

1. Preparatory phase: The preliminary stage was done by utilizing the assessment tools after being revised and tested for general information about Alzheimer disease prevention. Time expended for answering the study sheet ranged from 30-45 minutes. This phase lasted for 2. weeks.

2. Planning phase: Based on the outcome acquired from the assessment Phase. The training lectures were created after reviewing of related literature. Detected needs, requirements and deficiencies were converted into aim of evaluating the effect of training program for formal caregivers 'dealing with Alzheimer diseased patient, through the following objectives: Assessing the knowledge, attitude and practices of formal caregivers regarding patients affected with Alzheimer disease to identify their needs, designing, planning, and implementing training program to meet caregivers' needs, evaluate the effect of training program on studied formal caregivers, and finding the association between change of scores of knowledge, attitude and practices of formal caregivers and training program. The booklet included knowledge about Alzheimer diseases such as; definition, the most contributing factors, symptoms, how diagnose the disease, and causes. Practices about Alzheimer included different types of behavioral disorders need to be noted or evaluated, support and care for people living with Alzheimer patient in particular, living in the house and people with behavioral disorders, practice methods of non-therapeutic care to deal with Alzheimer patients, configure appropriate environment to Alzheimer patients, care provided to increase awareness and memory especially related to daily activities, and nursing care provided to overcome the problems of talk, and attitude cover feeling confident about people with Alzheimer disease and related dementia, dealing easy

with Alzheimer disease, and being uncomfortable around Alzheimer diseased people and related dementia. The methods used were lectures, discussions, brainstorming, and demonstration. Data show and handouts were used as teaching media; and an illustrated booklet was created by the researchers and offered to every member as reference.

3. Program implementation phase: The data was collected during work day from September and December 2015, which starts from 8.00 a. m. to 2.00 p. m. Each group of formal caregivers attended 3 lectures. The duration of each lecture was one hour according to presented items. Each lecture was followed by a summary of the essential knowledge presented about Alzheimer disease control and prevention. The booklet was implemented in the form of lectures. The length of every lecture was distinctive according to formal caregivers' response, time accessible, and the content of each lecture.

4. Evaluation phase: Evaluation of the training program was done immediately after its Implementation by contrasting the change in formal caregiver level of knowledge, attitudes and practices through applying the similar apparatuses of pre-test as posttest.

2.10. Statistical Analysis

The collected data were organized, tabulated and statistically analyzed using the Statistical Package for Social Sciences (SPSS), version 16. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison between two groups and more was done using Chi-square test (χ^2). For comparison between means of two groups of parametric data of independent samples, student t-test was used. For comparison between means of two related groups (before and after data) of parametric data, paired t-test was used. For comparison between more than two means of parametric data, F- value of ANOVA test was calculated. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at $p<0.05$ for interpretation of results of tests of significance.

3. Result

Table 1. Socio-demographic data of the studied formal caregivers to Alzheimer patients at Helwan City (n=40).

Variables	Studied Formal Caregivers to Alzheimer Patients (n=40)	
	No	%
Sex:		
Male	12	30.0
Female	28	70.0
Age years:		
18-	28	70.0
30-	9	22.5
≥45	3	7.5
Academic qualification:		
Diploma of nursing (Secondary school)	13	32.5
Bachelor of nursing	26	65.0
Others	1	2.5
Job:		
Nurse	25	62.5
Head nurse	12	30.0
Senior assistant	3	7.5
Experience (years):		
<10 years	31	77.5
≥10	9	22.5
Attended training program/ workshop related to Alzheimer	2	5.0

Table 1. presents demographic characteristics of the formal caregivers it reveals that, more than 70% were female, 70% aged from 18-<30 years. Regarding academic qualification, 65.0% of them had bachelor degree. As regards years of experience, 77.5% of formal caregivers had less than 10 years' of experience in their work, and according to research hypothesis table 2, 3, 4, 5, 6, and 7 and figure 1, 2, and 3 approved the hypothesis of implementation of the training program improve the formal caregiver's knowledge, attitude and practices regarding patients affected with Alzheimer disease.

Table 2. Response of the studied formal caregivers at Helwan city about questions related to knowledge of Alzheimer disease and patients (n=40).

Knowledge items about Alzheimer disease and its scores		Response of the studied formal caregivers to Alzheimer patients pre and post training (n=40)				χ^2	P
		Pre-training		Post-training			
		n	%	n	%		
1-Definition:	(0-2)					27.556	0.0001*
Don't know		5	12.5	0	0		
Incomplete answer		31	77.5	14	35.0		
Complete answer		4	10.0	26	65.0		
2-Level of information about Alzheimer disease:	(1-4)					53.754	0.0001*
Weak		11	27.5	0	0		
Good		28	70.0	7	17.5		
Very good		1	2.5	25	62.5		
Excellent		0	0	8	20.0		
3-The most contributing factors:	(0-2)					26.826	0.0001*
Don't know		9	22.5	0	0		
Incomplete answer		26	65.0	14	35.0		
Complete answer		5	12.5	26	65.0		
4-Symptoms:	(0-2)					44.632	0.0001*
Don't know		16	40.0	0	0		

Knowledge items about Alzheimer disease and its scores		Response of the studied formal caregivers to Alzheimer patients pre and post training (n=40)				χ^2	P
		Pre-training		Post-training			
		n	%	n	%		
Incomplete answer		24	60.0	14	35.0		
Complete answer		0	0	26	65.0		
5-How diagnose the disease:	(0-2)						
Don't know		27	67.5	0	0	65.221	0.0001*
Incomplete answer		10	25.0	1	2.5		
Complete answer		3	7.5	39	97.5		
6-The percentage of people over 65. years who have severe dementia caused by Alzheimer disease:	(0-1)						
Wrong or don't know		40	100	0	0	80.000	0.0001*
Correct		0	0	40	100		
7-The expected prevalence of Alzheimer disease among residents:	(0-1)						
Wrong or don't know		31	77.5	7	17.5	28.872	0.0001*
Correct		9	22.5	33	82.5		
8-Causes:	(0-1)						
Wrong or don't know		40	100	4	10.0	65.455	0.0001*
Correct		0	0	36	90.0		
9-Preliminary research suggests that persons with a close relation with Alzheimer disease have an increased risk of becoming affected:	(0-1)						
Wrong or don't know		31	77.5	2	5.0	43.378	0.0001*
Correct		9	22.5	38	95.0		
10-Studies clarified the role of aluminum in causing the disease as being detected in larger than normal amounts in brain of diseased patients:	(0-1)						
Wrong or don't know		21	52.5	0	0	28.475	0.0001*
Correct		19	47.5	40	100		

Tables 2 illustrate that highly statistically significant difference between studied formal caregiver pre/post training in knowledge items.

Table 3. *The statistical significance difference of total knowledge about Alzheimer disease and patients among the studied formal caregivers at Helwan City pre / post training (n=40).*

Total knowledge scores about Alzheimer disease			The studied formal caregivers to Alzheimer patients pre and post program training (n=40)				χ^2	P
			Pre-training		Post-training			
			n	%	n	%		
Levels of total knowledge:								
Incorrect	(<60%)	(0-17)	40	100	0	0	80.000	0.0001*
Correct	(60-100%)	(18-30)	0	0	40	100		
Mean scores of total knowledge:								
Range (0-30)			6-15		18-29			
Mean±SD			9.30±2.11		23.27±3.39			
Paired t-test			22.125					
P			0.0001*					
Mean change of scores of total knowledge post training:								
Range			6-19					
Mean±SD			13.97±3.69					
% of knowledge improvement post training:								
Range			40%-317%					
Mean±SD			163.32%±73.36					

*Significant (P<0.05)

Table 3. shows highly statistically significant improvement among Alzheimer formal caregivers knowledge after the training implementation P=0.0001.

Table 4. *Agreement of the studied caregivers at Helwan city about items related to Alzheimer disease and patients (n=40).*

Attitude items about Alzheimer disease and its scores (Each item scored 0-2)	Agreement of the studied caregivers at Helwan city about Alzheimer disease and patients pre and post training (n=40)				χ^2	P
	Prep-training		Post-training			
	n	%	n	%		
1-I feel confident about people with Alzheimer disease and related dementia:						
Don't sure	35	87.5	0	0	68.837	0.0001*
Disagree	2	5.0	0	0		
Strongly agree	3	7.5	40	100		
2-I am dealing easy with Alzheimer disease and related dementia:						
Don't sure	17	42.5	0	0	59.815	0.0001*
Disagree	22	55.0	5	12.5		
Strongly agree	1	2.5	35	87.5		
3-I feel uncomfortable being around Alzheimer diseased people and related dementia:						
Don't sure	2	5.0	2	5.0	29.018	0.0001*
Disagree	17	42.5	38	95.0		
Strongly agree	21	52.5	0	0		
4-I am aware with Alzheimer diseased people and related dementia:						
Don't sure	13	32.5	2	5.0	41.400	0.0001*
Disagree	17	42.5	0	0		
Strongly agree	10	25.0	38	95.0		
5-I would avoid an agitated person with Alzheimer disease and related dementia:						
Don't sure	9	22.5	0	0	37.580	0.0001*
Disagree	7	17.5	34	85.0		
Strongly agree	24	60.0	6	15.0		
6-I feel relaxed around people with Alzheimer disease and related dementia:						
Don't sure	27	67.5	0	0	61.800	0.0001*
Disagree	13	32.5	7	17.5		
Strongly agree	0	0	33	82.5		
7- I feel frustrated because I do not know how to help people with Alzheimer disease and related dementia:						
Don't sure	10	25.0	0	0	21.203	0.0001*
Disagree	14	35.0	33	82.5		
Strongly agree	16	40.0	7	17.5		
8-It is rewarding to work with people who have Alzheimer disease and related dementia:						
Don't sure	16	40.0	0	0	76.098	0.0001*
Disagree	23	57.5	0	0		
Strongly agree	1	2.5	40	100		
9-I can imagine caring for someone with Alzheimer disease and related dementia:						
Don't sure	16	40.0	0	0	22.564	0.0001*
Disagree	22	55.0	10	25.0		
Strongly agree	2	5.0	30	75.0		
10-I am afraid from people with Alzheimer disease and related dementia:						
Don't sure	4	10.0	2	5.0	24.681	0.0001*
Disagree	33	82.5	14	35.0		
Strongly agree	3	7.5	24	60.0		

Table 4. indicates that highly statistically significant difference between studied formal caregiver pre/post training in attitude items.

Table 5. *The statistical significance difference of total attitude towards Alzheimer disease and patients among the studied formal caregivers at Helwan city pre and post training (n=40).*

Total Attitude Scores about Alzheimer Disease			Attitude of the Studied Formal Caregiver towards Alzheimer Patients Pre /Post training Program (n=40)				χ^2	P P value
			Pre training		Post training			
			n	%	n	%		
Levels of total attitude:								
Negative	(<33.3%)	(0-13)	16	41.0	0	0	79.000	0.0001*
Neutral	((33.3-66.7%)	(14-27)	23	59.0	0	0		
positive	(>66.7%)	(28-40)	0	0	40	100		
Mean scores of total attitude:								
Range (0-40)			6-15		18-29			
Mean±SD			15.52±5.31		32.70±1.74			
Paired t-test			19.418					
P value			0.0001*					
Mean change of scores of total attitude post intervention:								
Range			5.26					
Mean±SD			17.17±5.59					
Percentageof attitude improvement post intervention:								
Range			17.24%-288.89%					
Mean±SD			132.51%±72.79					

*Significant (P<0.05)

Table 5. Delineates highly statistically significant improvement among Alzheimer formal caregivers attitude level after the training implementation (P=0.0001).

Table 6. *Practice items of the studied formal caregivers at Helwan city for Alzheimer diseased patients pre and post training (n=40).*

Practice items for Alzheimer diseased patients and its scores (Each item scored 0-2)	The studied formal caregivers at Helwan city for Alzheimer diseased patients pre and post program training (n=40)				χ^2	P
	Prep-training		Post-training			
	n	%	n	%		
1-Differentiate types of behavioral disorders need to be noted or evaluated:						
No practice	27	67.5	0	0	47.314	0.0001*
Unsatisfactory	13	32.5	22	55.0		
Satisfactory	0	0	18	45.0		
2-Support and care for people living with Alzheimer patient in particular, living in the house and people with behavioral disorders:						
No practice	30	75.0	0	0	56.667	0.0001*
Unsatisfactory	10	25.0	14	35.0		
Satisfactory	0	0	26	65.0		
3-Practice methods of non-therapeutic care to deal with Alzheimer patients:						
No practice	38	95.0	0	0	72.727	0.0001*
Unsatisfactory	2	5.0	20	50.0		
Satisfactory	0	0	20	50.0		
4-Configure appropriate environment to Alzheimer patients :						
No practice	5	12.5	0	0	34.231	0.0001*
Unsatisfactory	35	87.5	17	42.5		
Satisfactory	0	0	23	57.5		
5-Care provided to increase awareness and memory especially related to daily activities:						
No practice	21	52.5	0	0	45.257	0.0001*
Unsatisfactory	19	57.5	16	40.0		
Satisfactory	0	0	24	60.0		
6-Nursing care provided to overcome the problems of talk:						
No practice	27	67.5	0	0	47.882	0.0001*
Unsatisfactory	13	32.5	21	52.5		
Satisfactory	0	0	19	47.5		

Tables 6 illustrates that highly statistically significant difference between studied formal caregiver pre/post training in practices items as reported.

Table 7. *The statistical significance difference of total practices for Alzheimer diseased patients among the studied formal caregivers at Helwan City pre / post training (n=40).*

Total practice scores for Alzheimer diseased patients			The studied formal caregivers For Alzheimer patients pre and post program training (n=40)				χ^2	P
			Prep-training		Post-training			
			n	%	n	%		
Levels of total practice:								
Not done	(0-<60%)	(0-7)	40	100	0	0	80.000	0.0001*
Done	(60-100%)	(8-12)	0	0	40	100		
Mean scores of total practice:								
Range (0-12)			0-4		6-12			
Mean±SD			2.30±0.97		9.25±2.52			
Paired t-test			16.282					
P			0.0001*					
Mean change of scores of total practice post training:								
Range			3-11					
Mean±SD			6.95±2.98					
% of practice improvement post training:								
Range			100%-600%					
Mean±SD			336.94%±62.79.79					

*Significant (P<0.05)

Table 7. Reveals highly statistically significant improvement among caregivers practices level after the training implementation (P=0.0001).
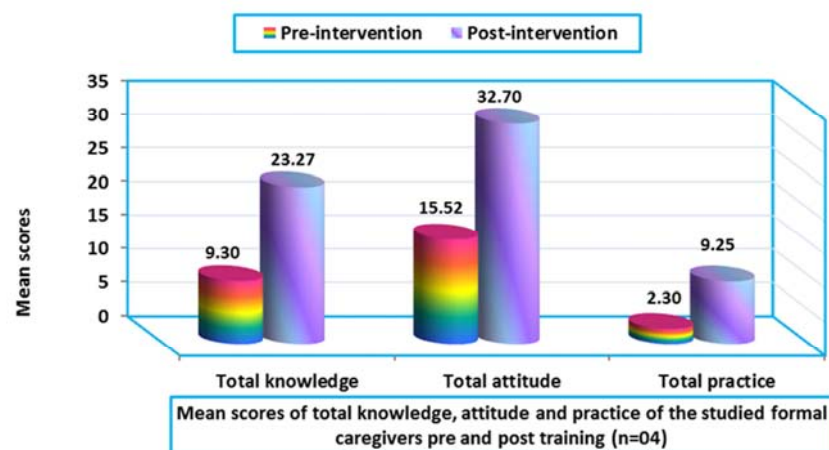

Figure 1. *Mean scores of total knowledge, attitude and practices of the studied formal caregivers at Helwan City about Alzheimer diseased patients' pre / post training (n=40).*

Figure 1. Shows highly statistically significant improvement among Alzheimer formal caregivers knowledge, attitude and practices level after the structured educational program implementation
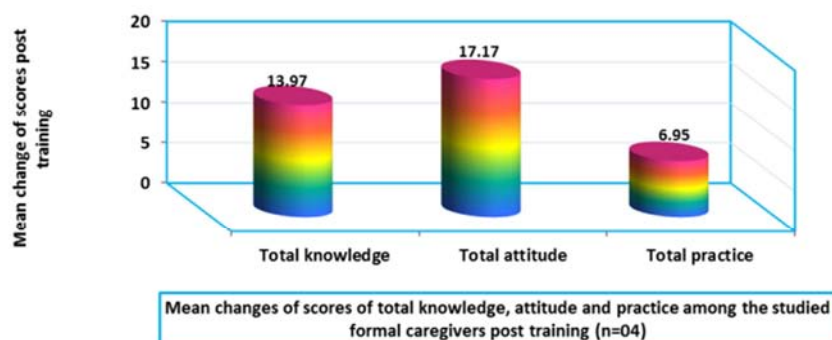

Figure 2. *Mean improvement of total knowledge, attitude and practices among the studied formal caregivers at Helwan City about Alzheimer diseased patients post training n (40).*

Figure 2. represents mean changes of scores of total knowledge, attitude and practices among the studied formal caregivers at Helwan City about Alzheimer diseased patients post training program with highly statistically significant improvement.

Table 8. *Correlation between changes of knowledge, attitude and practice scores regarding Alzheimer disease and patients post training program among the studied formal caregivers at Helwan city (n=40)*

Change of scores of total knowledge, attitude and practice	Change of scores of total knowledge, attitude and practice of the studied Formal caregivers post training program (n=40)			
	Knowledge		Attitude	
	r	P	r	P
Attitude	0.583	0.0001*	-	
Practice	0.681	0.0001*	0.144	0.376

*Significant (P<0.05) r=Correlation Coefficient

Table 8. Represents statistically, significant positive correlations were detected between change of knowledge scores of formal caregivers with change in attitude scores and practices scores P=0.0001). The non-significant correlations were found between change in attitude scores and change in practice scores.

Figure 3. Shows statistically significant positive correlations detected between change of knowledge scores of formal caregivers with change in attitude scores and practice scores 0.0001.
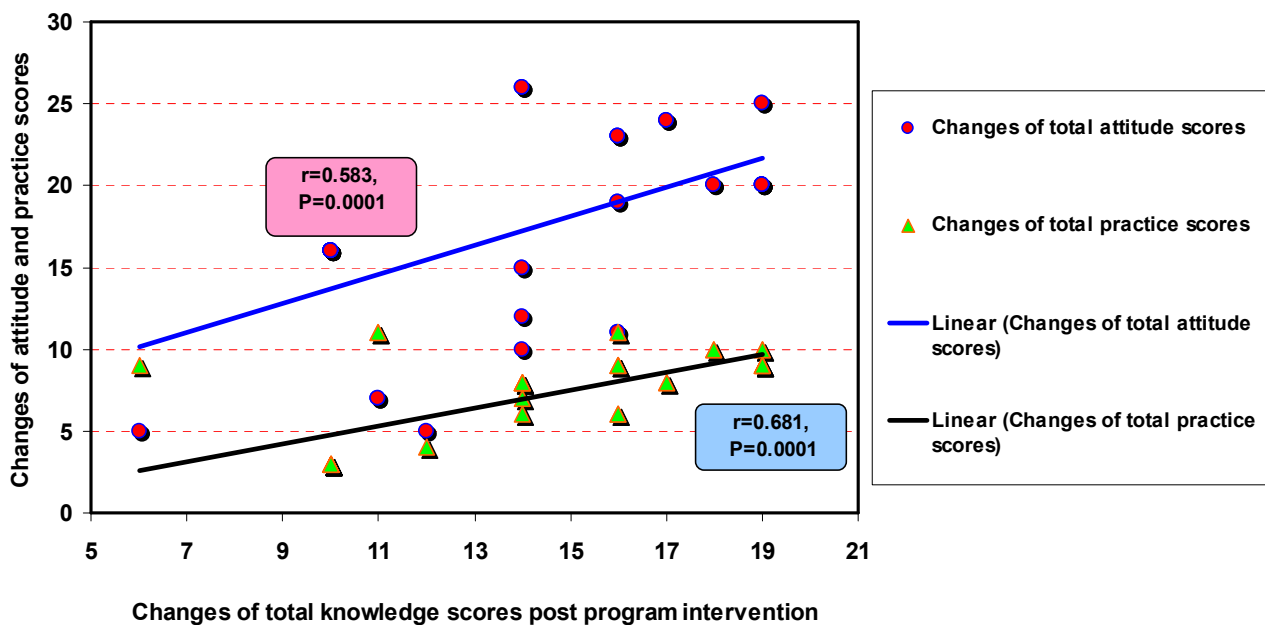

Figure 3. *Correlation between changes of knowledge, attitude and practice scores regarding Alzheimer disease and patients post program intervention among the studied formal caregivers at Helwan City (n=40)*

Table 9. *Mean changes of knowledge, attitude and practice scores regarding Alzheimer disease and patients post program intervention among the studied health caregivers at Helwan city in relation to their socio-demographic data (n=40).*

Demographic data	Mean Change of Scores of knowledge, Attitude and Practice of the Studied Health Caregivers to Alzheimer patients (n=40)		
	Knowledge	Attitude	Practices
Sex:			
Males	13.50±3.20	16.17±5.84	7.33±2.96
Females	14.17±3.92	17.61±5.53	6.78±3.02
t-test	0.528	0.742	0.528
P value	0.601	0.463	0.601
Age years:			
18-	15.61±3.02	18.61±5.53	8.28±2.29
30-	10.22±2.11	13.11±4.78	4.11±2.09
≥45	10.00±2.11	16.00±0.00	3.00±0.00
F-value	16.305	3.852	17.735
P value	0.0001*	0.030*	0.0001*
Academic qualification:			
Diploma of nursing (Secondary school)	10.15±0.55	15.15±3.05	3.08±0.28

Demographic data	Mean Change of Scores of knowledge, Attitude and Practice of the Studied Health Caregivers to Alzheimer patients (n=40)		
	Knowledge	Attitude	Practices
Bachelor of nursing	15.88±3.11	18.38±6.29	8.92±1.38
Other	14.00±0.00	12.00±0.00	6.00±0.00
F-value	21.375	1.980	112.716
P value	0.0001*	0.152	0.0001*
Job:			
Nurse	14.12±3.90	17.00±4.80	6.40±3.12
Head nurse	14.33±3.47	18.17±7.53	8.83±1.64
Older assistant	11.33±2.31	14.67±2.31	4.00±1.73
F-value	0.838	0.489	5.230
P value	0.441	0.617	0.010*
Experience years:			
<10 years	15.19±3.20	18.22±5.41	7.87±2.56
≥10	9.78±1.56	13.55±4.85	3.78±1.99
t-test	4.880	2.327	4.403
P value	0.0001*	0.025*	0.0001*
Attended training program or workshop related to Alzheimer:			
No	14.13±3.72	17.71±5.20	6.74±2.90
Yes	11.00±0.00	7.00±0.00	11.00±0.00
t-test	1.175	2.875	2.053
P value	0.247	0.007*	0.047*

*Significant (P<0.05)

Table 9. Demonstrates statistically significant relationships were detected between changes of knowledge, attitude, and practice scores of formal caregivers with some of demographic characteristics as age, academic qualification, and years of experience. However no significant relationships were detected between mean changes of knowledge, attitude, and practice scores and sex, types of job and attended training program.

4. Discussion

It there mentioned by [8] Alzheimer's disease is one of the most devastating conditions that affect human beings because it destroys the mind. Dementia impairs memory and interferes with the ability to make rational decisions, thus preventing person from functioning effectively in their environment. Dementia robs the person of dignity and independence, because AD is completely irreversible, cannot yet be adequately treated, and is associated with a long survival period, it affects not only the person's life, but also the person's family, caregivers, and society.

Discussion of the study findings are categorized under the following parts:

First part: formal care giver demographic characteristics:

Forty formal caregivers caring of Alzheimer patients were included in the present study, more than two third of them were female, their age ranged between 18- <30 years and slightly less than two third of study sample were bachelor degree of nursing. These results are in agreement with *[9], America* who stated that approximately two third of caregivers are women. As Regards age, the result of this study denoted that the caregivers of Alzheimer's patients are mostly recent graduates, this result supported by *[10], Cairo,* who mentioned that three quarter of the study samples age ranged between 18-<30 with a mean age of 29.8±6.9 years.

Regarding academic qualification, this study result may be due to the proliferation of nursing colleges in Egypt and the enrollment of a large number of students as well as the result of increased awareness of the Egyptian society about the importance of the nursing profession. However this finding was contradicted to that of *[11], Cairo*, who found that more than half of their study nurses were nursing diploma holders, while only one fifth of nurses were bachelor degree holders and slightly less than quarter of nurses were having nursing diploma in addition to diploma of specialty.

As regards years of experience of formal caregivers in the present study, more than three quarters of them had less than 10 years of experience. This findings was in agreement with that of a study conducted by *[12], America,* who stated that more than half of the nurses who work in day care units have more than 8 years of experience, and was congruent with the *[13], U. S.* which stated that, more than three in ten (32%) are caregivers for five years or more for a person with Alzheimer's disease or another form of dementia. this might be due to that the most common age group of the studied nurses and caregivers are in the youngest age group ranged between 18- <30 years. Considering attendance training program of workshop related to Alzheimer, the results of the present study showed that, most of the sample did not attend training programs or workshops related to Alzheimer. However, this finding is in agreement with that of a study conducted *by [14], Cairo,* who stated that more than three quarters of nurses did not receive any training courses.

Second part: Assessment of the studied formal caregivers' knowledge pre/post program:

Regarding levels and mean score of total formal caregivers knowledge about patients affected with Alzheimer disease, the present study results showed that most of the studied sample had incorrect level of knowledge preprogram, and from the researcher point of view it may be due to lack of

preparation during the basic nursing education or lack of nurses desire to acquire new knowledge adding to that the studied sample did not receive any training programs on care for Alzheimer's patients. This result was in agreement with [*15*], *Australia*, who reported that defect in knowledge dementia were identified among Australian health care staff.

Regarding knowledge and attitude preprogram [*16*], *at Northern Queensland, Australia,* reported that, nurses have positive attitudes toward elderly people, and they have significant deficits knowledge in clinical practice.

Concerning the effect of the program on the study formal caregivers knowledge there was a highly statistically significant improvement among the study sample after the implementation of training program when compared with preprogram, this improvement may be due to knowledge refreshment through the program sessions and relevance of items of the program content. This result is congruent with [*17*], *Jordan,* who revealed that education may improve the adequate knowledge of nurses to be caring practitioners effectively.

This finding is also in agreement with [*18*], France, who reported a significant positive effect of a therapeutic educational program on patients' life and that of their caregivers. As well [*19*], Canada, who indicated that, significant improvement on the posttest participants' attitudes, practices, confidence, and knowledge [*14*], emphasized that the highest percentage of nurses' knowledge were unsatisfactory and immediately improved after implementation of the guidelines.

However this study result conflicted with that of [*20*], in University of York, UK, who reported that a small positive effect respite for careers of elderly people upon careers in terms of burden and mental or physical health.

Third part: Assessment of the attitude of formal caregivers regarding Alzheimer patients.

Concerning levels and means scores of total attitude towards Alzheimer disease and patients among the studied formal caregivers at Helwan City pre and post intervention, this study finding showed that, there was highly statistically significant improvement among Alzheimer formal caregivers attitude level after the training. This improvement may be due to the impact of the program on the attitude of caregivers which showed to be influential and effective program.

This study result agreed with that of [*21*], in New York, USA, and. [*22*], Queensland, Australian mentioned that involvement in dementia education program lead to positive attitudes towards people with dementia. In a similar study, [*23*], *Cairo,* observed that highly statistically significant differences toward positive attitude among nurses in post and follow up program.

On the other hand, This study result is conflicting with that of [*24*], University of Malta, whom found that there was no statistically significant difference in the attitudes of students in dementia care. AS well, the result agree to some extent with [*25*], *London, who* reported that registered and student nurses attitudes towards older people were inconsistent with positive, negative and neutral attitudes and appear to be slightly less positive. This study results was conflicting with that of the study of [*26*], The University of Sydney, Australia, who stated that training in person-centered care for residential care staff did not improve staff attitudes. Likewise, in-service training did not emerge as significant predictor of positive attitudes towards AD and older persons. In this respect, [*27*], Sweden reported that the results of the study show that, the nurses' attitudes fell at the positive to neutral end, on the positive to negative attitude continuum.

Fourth part: Assessment the practices of formal caregiver regarding care of Alzheimer patients.

Regarding levels and mean scores of total practices for patients affected with Alzheimer disease among the studied formal caregivers at Helwan City, this study indicated that highly statistically significant improvement among caregivers' practices levels as reported by formal caregiver after the training compared to pre/ program. This may be due to the positive effect of the program, which improved formal caregivers' practices knowledge immediately after program sessions. At the same line, the incompetence level of caregivers' practices pre implementation of the program may be due to neglection from nurses and caregivers also may be due to lack of supervision.

This study finding is in accordance with [*28*], *London*, who stated that most nurses can learn as many skills in theory, but all of that would be a waste if they don't implement the skills in their clinical practice. This study was also supported by [*29*], Hong Kong, who reported that education has a positive influence on job performance in their study nurses.

Fifth part: Relation between demographic characteristics and mean changes of knowledge, attitude and practice scores of health caregivers regarding care of Alzheimer diseased patients.

The present study detected statistically significant relationships between age, years of experience and mean changes of knowledge, attitude and practice scores of formal caregivers and that may be due to the age group 18-<30 have the ability to learn more than others. Also this study showed statistically significant relationships between academic qualification and mean changes of knowledge and practice scores of caregivers; also between attend once of training program and mean changes of

attitude and practice scores of caregivers, this may be due to that the greatest percentage of the study sample holds a Bachelor degree and that may be due to long period of study with different specialized topics. In the same context, [*30*], In Turku, Finland, stated that nursing students who had more work experience in caring for older adults had a more positive attitude towards gerontological nursing. In similar study [*7*], Ohio state reported that Participants' mean knowledge score was reported at 55% and the mean attitude score reported moderately positive attitudes at 5.5 on a scale of 1-7. It was found that participants who had higher knowledge scores also had more positive attitude scores.

[*24*], University of Malta, stated that higher age and clinical experience are associated significantly with a more positive attitude.

Finally, the results of this study justified the hypothesis that the educational program will have positive effect and improvement in health caregivers' knowledge, attitude and practices regarding patients affected with Alzheimer disease.

5. Conclusion

According to the result and research hypothesis the training program had a positive effect on formal caregivers' knowledge, attitude and practices regarding caring of patient's with Alzheimer p= 0, 0001.

Recommendations

Based upon the results of the current study, the following recommendations are suggested:
- Periodic continuing training courses, program, and workshops for nurses to refresh their knowledge about Alzheimer as causes, predisposing factors, manifestation, methods of control and prevention and improve their practices especially practice methods of non-therapeutic care to deal with Alzheimer patients, configure appropriate environment to Alzheimer patients, care provided to increase awareness and memory especially related to daily activities, and nursing care provided to overcome the problems of talk.
- Further studies conduct to improve nurses' knowledge and practices regarding caring for Alzheimer diseased patients.
- But Sign boards and Poster at geriatric center to illustrate how to deal and carewith diseased Alzheimer patients.
- Spread of the culture of caring for patient with Alzheimer's by means of modern media (internet & T. V).

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