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Formal caregivers' competence of Alzheimer patients in long-term care institutions

Shimaa Salem Sanad Mohamed

Bachelor of nursing, Minia University, Egypt

Dr. Sahar Ahmad Shafik

Professor of Community Health Nursing, Faculty of Nursing, Fayoum University & College of Nursing, National University of Science and Technology, Iraq

*Corresponding author email: dsahar100@yahoo.com

Dr. Ons Said El-Zayat

Assistant professor of Community Health Nursing, Faculty of Nursing, Helwan University

Abstract---Background: Alzheimer's disease is a major public health problem and the most common cause of dementia that cripples the cognitive and physical aspects of a person's life. Formal caregivers' competence highly affects providing proper care for patients with Alzheimer's disease. Aim: The study aimed to assess the formal caregivers' competence of Alzheimer Patients in long-term care institutions. Design: Descriptive research design was applied in this study. Sample: A Convenient sample of 70 formal caregivers dealing with Alzheimer patients. Setting: The study conducted at six geriatric homes (Minia -Egypt). Tools: Two tools were used, first tool: structured interviewing questionnaire covered demographic characteristics of formal caregivers and formal caregiver's knowledge regarding Alzheimer, second tool: Formal caregiver's attitude regarding Alzheimer, third tool: Formal caregiver's competence regarding Alzheimer. Result: The study showed that, 50% of studied caregivers had poor Knowledge, 60% studied caregivers had negative attitude and 55% of studied caregivers had higher competence regarding Alzheimer's disease. Conclusion: there were high statistically significant relation between total knowledge and total attitude, total knowledge and total competence, total competence and total attitude. Recommendation: Disseminating health education booklets, poster to increase caregivers awareness about Alzheimer's disease.

Keywords---formal caregivers, competence, Alzheimer, long-term care institutions.

Introduction

Alzheimer's disease (AD) constitutes a significant health problem that affects mainly older people and causes a significant decline in cognitive abilities, thus affecting the quality of life and independence. The exact etiology of AD is not yet well understood; however, it is considered a progressive neurological disease with complex risk factors. Risk factors of AD include family history, high blood pressure, increased cholesterol level, heart disease, stroke, inadequate diet, low education, and the environmental pollution [1]. Alzheimer disease is a growing problem as the population ages. The global proportion of people above 60 years living with dementia is between 5% and 8%. Currently, approximately 50 million people are living with dementia, with 60% of them living in low- and middle-income countries. This number is expected to increase by 10 million each year, to reach 82 million in the year 2030 and 152 million in the year 2050[2].

The earliest stage of AD is characterized by memory loss, agitation, anxiety, personality changes and sleep problems. Patients may be observed having difficulty following conversations or movies and getting lost in familiar environments. Personality changes often occur in the context of diminished social skills, and increasingly poor judgment and insight. As intellectual deterioration progresses, these patients may develop language deficits characterized by wordfinding problems, impaired reading and writing skills, and difficulty with simple calculations [3]. Moreover, memory problems generally worsen, and patients experience difficulty performing even overlearned tasks such as cooking, sewing or driving. Late stage of AD is characterized by loss of control over physical functions. As well as problems with walking, bowel and bladder control, and disorientation. This can eventually result in total dependency on caregivers or on medical treatment in institutions or nursing homes [4].

Formal caregivers, consisting of nurses, enrolled nurses, and unskilled assistants, provide the daily nursing care for patients with AD. Most nursing homes have professional nursing-management to ensure high quality care. Formal nursing home caregivers consider physical and psychological issues for patients with AD. Alzheimer's disease has made a significant impact on formal caregivers in long term care institutions. Formal caregivers are challenged by the needs of patients diagnosed with AD while ensuring safe delivery of technical and specialized care in a fast-paced setting [5]. Healthcare delivered by formal caregivers is influenced by their attitude. Adjectives that described providers' attitudes as attentive, connected, friendly, helpful, unobtrusive, and respectful have a positive impact upon care recipients such as Alzheimer patients. Alzheimer's disease patients admitted into long term care facility have described their care as terrible, horrible, noisy, painful, hostile, confusing, and fast-paced. Managing an AD patient in long term care facility is challenging when specialized skills and technology are required. Formal caregivers need to take account their attitude when providing care to AD patients long term care facility [6].

Formal caregivers' competency has been defined as a personal strength in the specific caregiving situation and has been associated with reduced burden and increased physical and mental health in the formal caregivers. Also, perceived competence in providing Alzheimer care in staff has been associated with greater job satisfaction and positive attitudes to AD. Furthermore, it seems that sense of

competence increases with training and level of knowledge [7]. Nurses, whose primary role is caring and having a key position among health workers, are expected to be sensitive to and support the caregiver's burden and difficulties. It is stated that this can improve the quality of life of both Alzheimer's patient and caregiver and other family members by increasing the caregiver's ability to adapt to changing conditions [8]. Moreover, caring for an Alzheimer's patient is a very tiring, demanding and long process. In order not to be affected much by this process, first of all it is necessary to accept the disease, obtain information about the disease and get help. Nurses are a profession that advocates that people should improve their quality of life, make conditions suitable for them, guarantee human rights, make fair use of resources and have a say in their own lives. Nurses work in collaboration with other professions and take part in the geriatric team to ensure coordination and communication among health professionals [9].

Significance of the study

According to the latest WHO data published in 2018 Alzheimer's & Dementia, deaths in Egypt reached 17,957 or 3.23% of total deaths. The age adjusted death Rate is 36.09 per 100,000 of population ranks Egypt 29 in the world [10]. In Egyptian study conducted by [11] to summarize current evidence regarding the prevalence of Alzheimer in upper Egypt. The results of this study illustrated that the prevalence of Alzheimer's disease was 1% for population aged 50 years and more, reaching 9.7 for patients aged > 80 years. Early onset Alzheimer (< 65 years) was recorded in 7.9%. The World Health Organization (WHO) reported that Alzheimer's disease is the most common form of dementia and may contribute to 60–70% of cases [12]. According to [13] reported that more than 5.8 million Americans now have Alzheimer's disease. By 2050, nearly 14 million (13.8 million) Americans over age 65 could be living with the disease, unless scientists develop new approaches to prevent or cure it.

Aim of the study

The aim of this study is to assess the formal caregivers' competence of Alzheimer Patients in long-term care institutions through the following objectives:

- Determining formal caregiver's knowledge about Alzheimer.
- Assessing formal caregiver's attitude about Alzheimer.
- Evaluating formal caregivers' competence for patients suffering from Alzheimer.

Research questions

- What are formal caregiver's knowledge about Alzheimer?
- What are formal caregiver's attitude about Alzheimer?
- What are level of formal caregivers, competence for patients suffering from Alzheimer?
- Is there relation between formal caregiver's knowledge, attitude and competence and their demographic characteristics?

Subjects and Methods

Research design

A Descriptive research design was applied to achieve the aim of this study.

Setting

The study conducted at six geriatric homes at Minia Governorate (Ard Elmold-motranyat el-edwa), at Beni-suif Governorate (Elnoor and El-aml) and at Assuit Govenorate (Elkarama home ,Elhamad and Abn -Rubah geriatric home).

Sampling

A Convenient sample of 70 formal caregivers dealing with Alzheimer patients.

Tools for data collection

Data was collected through using the following tools:

- **Tool I: Structured interviewing questionnaire sheet:** used in the study, it was developed by investigator after reviewing the national and international related literature and contains two parts:
 - **First part:** Demographic characteristics of caregivers: includes name, gender, age, educational level, marital status, occupation, place of residence, years of experience and monthly income (Q1-Q9).
 - **Second part:** Formal caregiver's knowledge regarding Alzheimer:
 - Concerned with Caregiver's knowledge about Alzheimer, it includes, meaning, signs and symptoms, causes, risk factors, methods of diagnosis, complications, methods of prevention, caregivers, role, the role of hereditary and the role of nutrition in Alzheimer's disease (Q10-Q19).
- **Scoring system for knowledge items,** a complete answer was scored 2 grades, incomplete answer was scored 1 grade and don't know or incorrect was scored zero. Total scores were 20 grades for 10 items, their knowledge was categorized into:
 - Good knowledge $\geq 75\%$ (≥ 15 grads)
 - Fair knowledge $50\% - < 75\%$ ($10 < 15$ grads)
 - Poor knowledge $< 50\%$ (< 10 grads)
- **Tool II:** Formal caregiver's Attitude regarding Alzheimer: Developed by [14] concerned with formal caregiver attitude about Alzheimer such as feel confident about people with Alzheimer disease and related dementia, dealing easy with Alzheimer disease and related dementia, feel uncomfortable being around Alzheimer diseased people and related dementia, awareness with Alzheimer diseased people and related dementia, avoiding an agitated person with Alzheimer disease and related dementia, feeling relaxed around people with Alzheimer disease and related dementia, feel frustrated because I do not know how to help people with Alzheimer disease and related dementia, It is rewarding to work with people who have Alzheimer disease and related dementia, can imagine caring for someone

with Alzheimer disease and related dementia and afraid from people with Alzheimer disease and related dementia (Q20-Q29) .

- **Scoring system for assessment formal caregivers attitude regarding Alzheimer:** Attitude scale include 10 items with total score equal 30 scores. Each item has three responses. The likert scale include agree (equal 3 score) neutral (equal 2 score) and disagree (equal 1 score).The total score are calculated and converted into percent scores as:
 - Positive attitude $\geq 60\%$ (18-30).
 - Negative attitude $< 60\%$ (10<18).
- **Tool III: Formal caregiver's competence regarding Alzheimer**
Developed by [15] include four dimensions (care skills, personal qualities, caregiver's health and interpersonal relationship)."Care skills include 12 items, personal qualities 4 items, caregiver's health 3 items and interpersonal relationship 3 items", with the total items equal 22 items (Q30-Q51).
- **Scoring system for formal caregiver's competence regarding Alzheimer:**
Include 22 items with total score 66 score. Each item has three responses. The likert scale include agree (equal 3 score) neutral (equal 2 score) and disagree (equal 1 score).The total score were calculated and converted into percent scores as:
 - Higher competence $\geq 60\%$ (40-66).
 - Lower competence $< 60\%$ (22<40).

Validity

The developed tool would be formulated and submitted to three experts in community health nursing and geriatric nursing to assess the content validity, needed modifications would be done.

Reliability

Reliability of the tools was tested to determine the extent to which the questionnaire items related to each other. Cronbach's Alpha was be used to determine the internal reliability of the tool.

Ethical considerations

An official permission to conduct the proposed study was been obtained from the Scientific Research Ethics Committee. Participation in the study was voluntary and subjects were given complete full information about the study and their role before signing the informed consent. The ethical considerations was include explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it was not be accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs was be respected.

Preparatory phase

It was include reviewing of past, current, national and international related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop tools for data collection.

Pilot study

The pilot study has been conducted on (10%) (7) of the sample to examine the clarity of questions and time needed to complete the study tools. Based on the results, modification has been done (if necessary). Subjects included in the pilot study were excluded from the study if major modifications are required.

Field work

Data collection of the study was started at the beginning of July 2021 until the end of September 2021. The investigator introduced herself to formal caregivers explained the aim of the study and its implications and how to fill in the questionnaire and ensure their cooperation. Informed consent was obtained from the participants. Interviewing the caregiver was carried out in specialized room in long term care institutions at Beni-suif, Assuit and Minia governorates. The questionnaire sheet takes about 20-30 minutes to complete. Data was collected two days per week from 9 am -1 pm. The interviewing questionnaire sheet was completed by the investigator from each caregiver.

Statistical Item

Upon completion of data collection, data was being computed and analyzed using Statistical Package for the Social Science (SPSS), version 24 for analysis. The P value was being set at 0.05. Descriptive statistics tests as numbers, percentage, mean \pm standard deviation (\pm SD), was being used to describe the results. Appropriate inferential statistics such as “F” test or “t” test was been used as well.

Significance of the results

- Highly statistically significant $p < 0.001$
- Statistically significant $p < 0.05$
- Non-significant >0.05

Results

Table (1): shows that, 55.7% of the studied formal caregivers their age were < 30 years with the mean age was 28.70 ± 8.03 . Concerning their gender, 85.7% were female and 64.2% of them live at rural area. Besides, 80% of them were married. Regarding years of experience 55.7% of them had 5- <10 years and 78.5% of them monthly income was not enough. Figure (1): illustrates that, 57.1% of formal caregivers had nursing diploma, 35.7% of them had technical institute of nursing. While, 7.2% of them had bachelor degree in nursing. Figure (2): illustrates that, 50% of formal caregiver had poor Knowledge about Alzheimer's disease, 35% of them had fair knowledge. While 15% of them had good knowledge about

Alzheimer's disease. Figure (3): shows that, 60% formal caregivers had negative attitude regarding Alzheimer's disease, while, 40% of them had positive attitude regarding Alzheimer's diseases. Figure (4): reveals that, 55% of formal caregivers had higher competence regarding Alzheimer's disease, while 45% of them had lower competence about Alzheimer's disease. Table (2): reveals that, there were high statistically significant relation between total knowledge and total attitude at p value = 0.005. Table (3): shows that, there were high statistically significant relation between total knowledge and total competence at p value = 0.0001. Table (4): illustrates that, there were high statistically significant relation between total competence and total attitude at p value = 0.007.

Table 1
Number and percentage distribution of formal caregivers according to demographic Characteristics (n=70)

Demographic Characteristics	No.	%
Age/years		
< 30 years	39	55.7
30 -< 40	10	14.3
40< 50	20	28.6
≥50 years	1	1.4
Mean ± SD 28.70±8.03		
Gender		
Male	10	14.3
Female	60	85.7
Place of residence		
Rural	45	64.2
Urban	25	35.8
Marital status		
Single	2	2.8
Married	56	80
Divorce	7	10
Widow	5	7.2
Years of experience:		
5- <10 years	39	55.7
10- <15 years	10	14.3
15- <20 years	20	28.6
≥ 20 years	1	1.4
Monthly income		
Enough	10	14.3
Enough and saved	5	7.2
Not enough	55	78.5

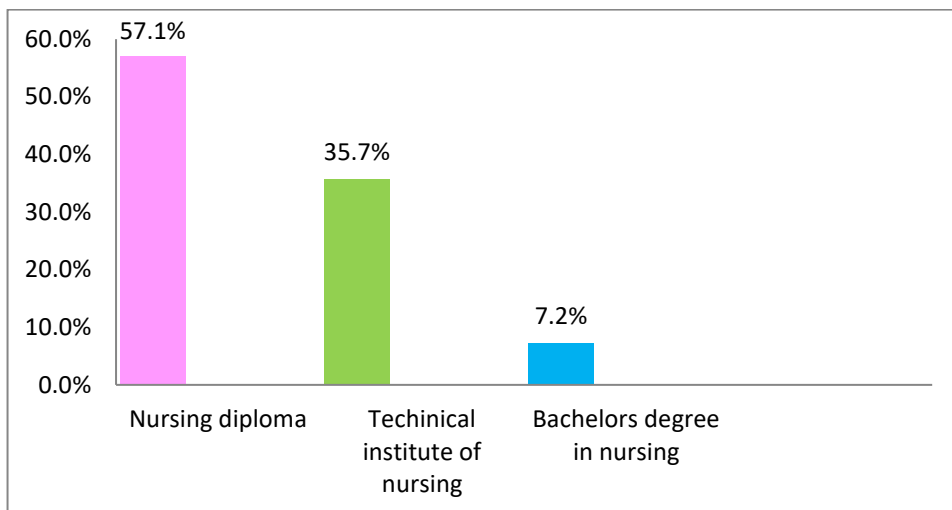


Figure 1. Educational levels of formal caregivers (n=70)

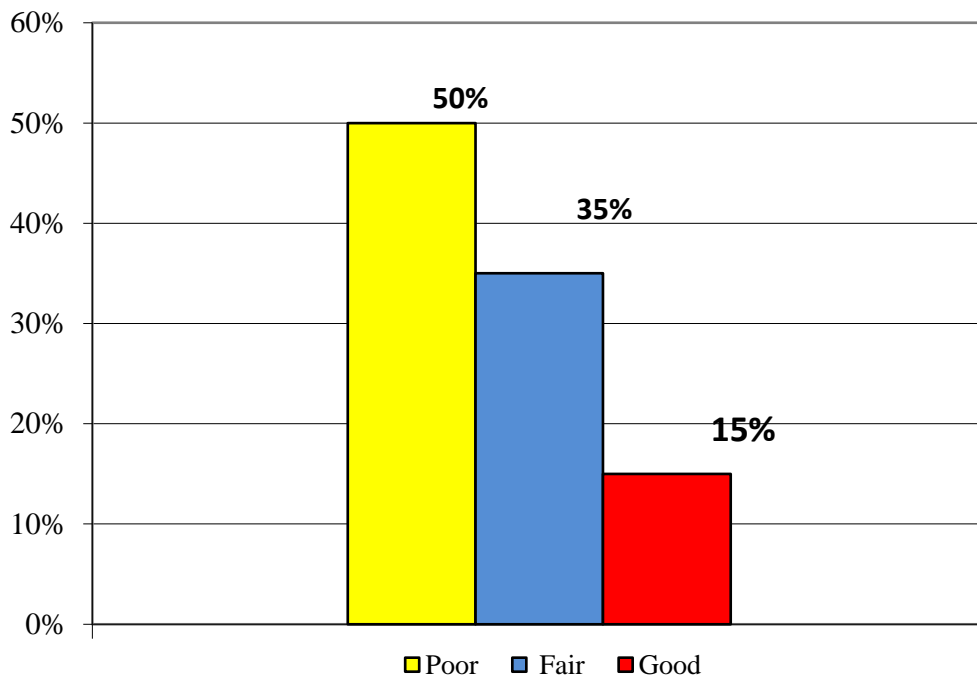


Figure 2. Total Knowledge scores of formal Caregiver's about Alzheimer's Disease (n=70)

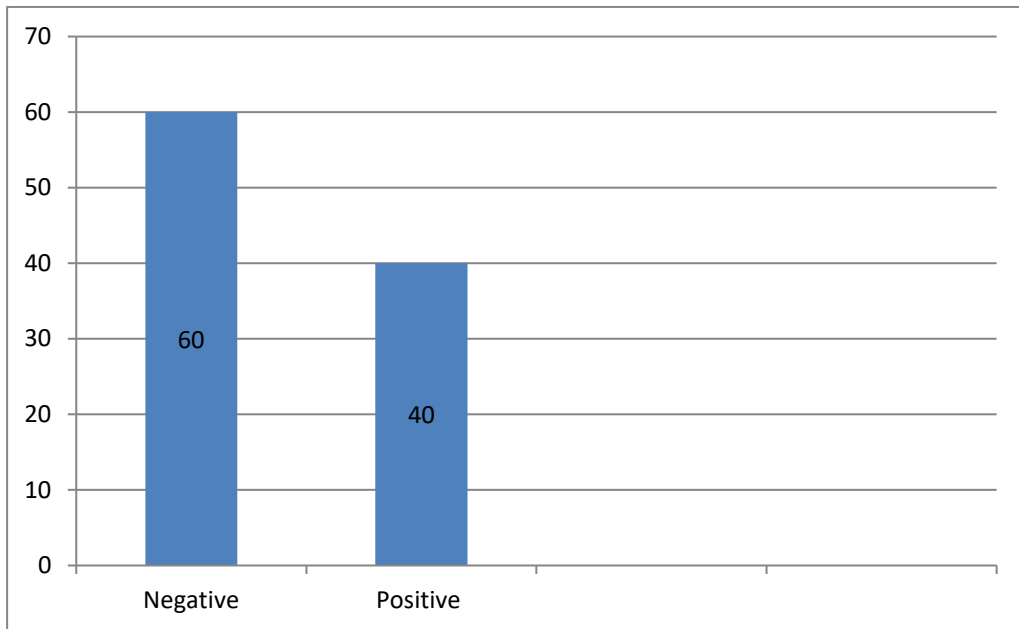


Figure 3. Total attitude scores of Formal caregiver's regarding Alzheimer's disease (n=70)

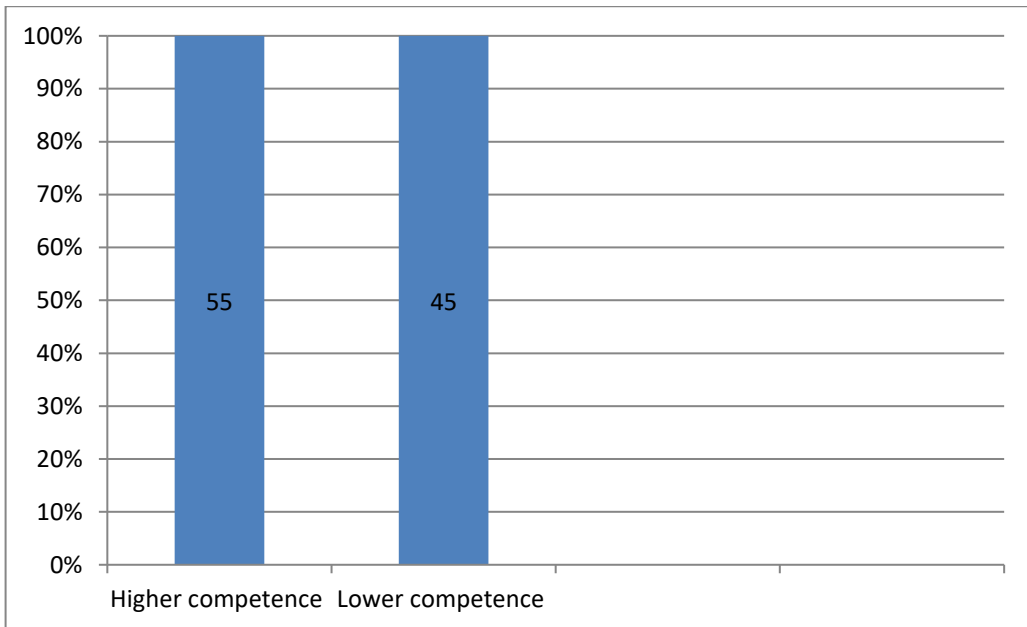


Figure 4. Total competence scores of formal caregivers competence regarding Alzheimer's disease (n=70)

Table 2
Association between total knowledge and total attitude of formal caregivers regarding Alzheimer's diseases. (n=70)

Total Attitude	Total Knowledge	T-test	P-value
	Mean \pm SD		
Positive	12.1 \pm 2.7	5.932	0.005**
Negative	8.7 \pm 1.2		

(*) statistically significant & (**) high statistically significant

Table 3
Association between total knowledge and total competence of formal caregivers regarding Alzheimer's diseases. (n=70)

Total competence	Total Knowledge	T-test	P-value
	Mean \pm SD		
Higher	11.8 \pm 4.2	4.253	0.0001**
Lower	7.3 \pm 2.1		

(*) statistically significant & (**) high statistically significant

Table 4
Association between total competence and total attitude of formal caregivers regarding Alzheimer's diseases. (n=70)

Total competence	Total attitude	T-test	P-value
	Mean \pm SD		
Higher	21.4 \pm 2.4	6.325	0.007**
Lower	14.3 \pm 3.7		

(*) statistically significant & (**) high statistically significant

Discussion

Alzheimer's disease is the most common type of dementia, the prevalence of Alzheimer's disease continues to increase worldwide. In the later stages of the disease, physical functioning often becomes impaired with balance issues or weakness, as well as swallowing problems, all of which can also lead to complications [16]. Formal caregivers should be aware with the professional nursing management to ensure high quality care. The caregivers should not only meet the daily nursing needs of Alzheimer-s patients, but also deal with the behavioral and psychological symptoms that may occur at any time. Therefore, this study was conducted to assess formal caregivers' competence of Alzheimer Patients in long-term care institutions [17].

Regarding to age of the studied formal caregivers, the finding of the current study revealed that, more than half of studied formal caregivers their age were < 30 years, with mean age 28.70 \pm 8.03. This result agree with the result of study performed by El-kattan et al [18] , in Egypt entitled as " Training of Formal Caregivers Dealing with Alzheimer Diseased Patients" stated that, more than half

of studied formal caregivers under study their were < 30 years. Regarding to gender of studied formal caregivers, the finding of the current study revealed that, majority of them were female. This result was accordance with Chanu [19] in Telangana whose conducted study entitled as " Assessment of the knowledge, attitudes and practices of caregivers of elderly with Alzheimer's disease at selected hospitals of Hyderabad, " and revealed that 86.1% of the studied group were female.

Regarding to the marital status, the finding of the current study revealed that, more than three quarters of the studied formal caregivers were married. Also, more than half of them residing at rural areas. These results were in accordance with Wang et al [20] in china whose study entitled as "Analysis on nursing competence and training needs of Alzheimer's caregivers in long-term care institutions" and revealed that 81% of the studied participants were married. Also, 63.1% of them residing at rural areas. Concerning years of experience, the finding of the current study revealed that, more than half of the studied formal caregivers had 5- <10 years. This result approved with the study performed by Ibrahim & El-Lassy [3] in Egypt whose conducted study entitled as " Effect of an In-Service Training Program about Alzheimer's Disease on Knowledge and Attitude of Formal Caregivers in Damanhour City" whose stated that 53% of the studied formal caregivers had 5- <10 years of experience.

In relation to monthly income, the finding of the current study revealed that, more than three quarters of the studied formal caregivers their monthly income were not enough. This result supported with the study done by Zeng et al [21], in china whose study entitled as " The quality of life for formal caregivers dealing with the elderly in long-term care institutions in Zhejiang Province" whose stated that , more than three quarters of the studied participants, their salaries were not adequate. In relation to the educational level of the studied formal caregivers, they were found that, more than half of studied formal caregivers had nursing diploma. The present study was consistent with Wang et al [22] in china whose study entitled as " formal caregivers' knoweledge,attitudes about Alzaheimer's " reported that more than half of studied sample had nursing diploma.

Regarding to the total knowledge scores of formal Caregiver's about Alzheimer's Disease. The findings of the current study revealed that, half of the studied formal caregivers had poor knowledge about Alzheimer's disease. These result agree with the study performed by Ibrahim& El-Lassy [3] who stated that nearly half of formal caregivers had poor knowledge about Alzheimer's disease. Regarding to the total attitude scores of formal caregiver's about Alzheimer's Disease, the findings of the current study revealed that, less than two thirds of the studied formal caregiver had negative attitude regarding Alzheimer's disease.This study was supported with the study performed by Evripidou et al [23] in Europe whose conducted study entitled about " Formal caregiver-s knowledge and attitudes about Alzheimer-s disease care " who found that the 60% of the participants has negative attitudes toward Alzheimer-s disease.

Regarding to the total competence scores of formal caregivers regarding Alzheimer's disease.The findings of the current study revealed that more than half of the studied formal caregivers had higher competence regarding Alzheimer's

disease. These results were Agree with the study performed by Wang et al [20], who stated that 56% of the studied participants had higher level of competence about care of Alzheimer patients. Concerning association between total knowledge and total attitude of formal caregivers regarding Alzheimer's diseases, the present study revealed that there were high statistically significant relation between total knowledge and total attitude at p value =0.005. These findings were similar with the results of study performed by Attard et al [24] in Malta, whose a study entitled about " Exploring the knowledge, attitudes and perceived learning needs of formal carers of patients with Alzheimer-s disease" who stated that there were high statistically significant relation between total knowledge and total attitude at p value = <0.05.

Regarding association between total knowledge and total competence of formal caregivers regarding Alzheimer's diseases, the present study revealed that there were high statistically significant relation between total knowledge and total competence at p value =0.0001 .These findings were inconsistent with the results of study performed by Sewell &Nowaskie [25]. in America whose study entitled about " Assessing the cultural competency of Alzheimer-s disease care providers" who stated that there were no statistically significant relation between total knowledge and total competence. In relation with Association between total competence and total attitude of formal caregivers regarding Alzheimer's diseases. the present study revealed that, there were high statistically significant relation between total competence and total attitude at p value =0.007. These findings were congruent with the results of study performed by Vedel et al [26] in Canada whose study, entitled about " Impact on formal caregiver's knowledge, attitudes and practices on quality of Alzaheimer patients care" who founded that there were high statistically significant relation between total competence and total attitude at p value < 0.05.

Conclusion

In the light of results of the current study and answers of research questions, it could be concluded that there was half of the studied formal caregivers had poor knowledge about Alzheimer's disease. While less than two thirds of the studied formal caregiver had negative attitude regarding Alzheimer's disease. Moreover, more than half of the studied formal caregivers had higher competence regarding Alzheimer's disease. There was highly statistically significant relation between total knowledge scores of formal caregivers and their age, educational level , years of experience , place of residence and monthly income.Also, there was highly statistically significant relation between total attitude scores of formal caregivers regarding Alzheimer's diseases and their age, educational level , years of experience , place of residence and monthly income. While, there was highly statistically significant relation between total competence scores of formal caregivers regarding Alzheimer's diseases and their age, educational level , years of experience , place of residence and monthly income. Also, there were high statistically significant relation between total knowledge and total attitude, total knowledge and total competence, total competence and total attitude.

Recommendations

From the previous findings, the following recommendations are suggested that:

- Formal caregivers should be knowledgeable and updated by attending in-service training program, and workshops regarding Alzheimer disease.
- Disseminating health education booklets, poster to increase caregivers awareness about Alzheimer's disease
- Further research on a large sample and other setting is needed.

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