Original Contribution / Clinical Investigation

Effect of family intervention on family caregivers' burden, depression, anxiety and stress among relatives of depressed patients

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ABSTRACT

Background: Depression is a major psychiatric disorder worldwide. It is a leading cause of individual disability and family burden worldwide.

The aim of the study: the aim of this study was to investigate the effect of family intervention on caregivers' burden, depression, anxiety and stress among relatives of depressed patients.

Subjects and method: A quasi-experimental design was conducted at the inpatient and outpatient Psychiatric Department Mansoura University Hospital, Egypt. Ninety five families participated in this study (n = 95). Pre-tests and post-tests (n = 95), and test 3 months after intervention were conducted on eighty six (n = 86). The caregivers were divided into ten groups, which ranged from 8 to 10 caregivers in each group; each group attended 12 sessions. A structured interview questionnaire for personal data for patients and their caregiver, Caregiver Burden scale, quality of life scale (QOL) and Depression, Anxiety and Stress Scale-21 items (DASS-21) were used to collect data.

Results: The findings of the study indicate that caregivers' burden, depression, anxiety and Stress level significantly reduced, and quality of life significantly improved after implementation of family intervention. There is a negative correlation between QOL and Caregivers' burden, and their feeling of depression, anxiety and stress, while there was a positive correlation between caregivers' burden and their feeling of depression, anxiety and stress.

Conclusions: Based on the current results, it can be concluded that caregivers' burden, |depression, anxiety and stress are highly prevalent among caregivers of patients with depression and significantly improved after implementation of family intervention one month after, moreover it slightly decreased three months after intervention. This conclusion leads to accept the hypothesis of the study that family interventions improve the caregivers' burden, QOL, and feelings of depression, anxiety and stress. Further research is needed to follow the intervention 6 and 12 months after family intervention.

Key words: Depression, Caregivers' Burden, Depression, Anxiety, Stress Quality Of Life, Family intervention.

Introduction

The total number of people diagnosed with depression increased worldwide; it was approximately 322 million in 2017 (WHO, 2017). The number of individuals with depression has increased worldwide in the past several decades (Boughton, 2009). Depression affects all age groups; through childhood, adolescence, adulthood and in the elderly, (Swan and Hamilton, 2014). Depression is a major psychiatric disorder worldwide. It is considered a major public health problem with a persistent rise in prevalence. Depression adds to the global burden of disease, leading to increased Years Lost due to Disability (YLD) in middle and low-income countries and depression is considered one of the top six causes of burden of disease (WHO, 2004).

In Egypt, according to (Okasha, 2006), depression is a widely existing illness and accounts for the majority of inpatients in the mental hospitals. Burden means the negative consequence of caring for a patient with mental illness. Caregiver burden is a mental condition that results from the combination of physical, social and emotional pressure involved in caring (George and Voruganti, 2008).

Caregiving is at times overwhelming and drains a person's coping ability and is associated with multidimensional areas of economic, physical, psychological and social consequences. As a result, quality of life of depressed patients and their families is affected (Rouget and Aruby, 2007; Sanchez-Moreno et al., 2009). Moreover it affects negatively on the psychological condition of caregivers of mentally ill patients and they became more liable to many physical and psychological problems like sleep disturbance, fatigue, anxiety, stress, depression, and loneliness which contribute to poor cognitive function (Epstein-Lubow et al., 2012; Joling et al., 2012; Richardson et al., 2013).

The family members of individuals with mental illness experience many problems during the course of treatment, rehabilitation and recovery, such as anxiety and depression (Steele, Maruyama, Galynker, 2010). Family caregivers of depressed patients experience high levels of burden and are vulnerable to emotional and behavioral disturbance (Duffy et al., 2014 ; Maoz et al., 2014).

Several studies have reported that depression not only affects the patient but also the relatives, who suffer the consequences of the episodes and who usually, adopt the role of caregivers (Keitner et al., 2003; Reinares and Vieta, 2006). The caregiving role is very demanding, frequently distressing, highly burdensome and harmful to health and causes low quality of life (Struening et al., 2001; and Kamel 2014). A high burden level on relatives of depressed patients has been reported (Perlick et al., 1999; Dore and Romans, 2001). QOL is influenced by personal health, mental status independence level, social communication, and the environment, and each factor can effect on individuals' well-being and ability in conducting their daily activities (Mojarad Kahani et al., 2012).

Caregivers' negative experience may affect their ability to care for the patients. Caregivers of mentally ill patients are at risk of having poor Quality Of Life (QOL) due to mental health problems and higher caregiver burden (Velligan et al., 2009; Awadalla et al., 2005). Relatives of patients with psychiatric disorders feel burdened, as these disorders are unpredictable and chronic. Previous studies have found that burden is experienced in the form of disturbance of family life, family interactions, health, well-being, and financial burden affecting their QOL (Talwar and Matheiken, 2010).

However, families are heavily stressed with patient's symptoms, frequent hospitalizations, illness duration, which is why it has been linked to increased stress on families of persons with depression (Keitner et al., 2003). Demands on families are immense including paying for treatment, supervision of ill family member, and emotional distress that may result from the patient's symptoms. Depression is a chronic disease and has negative consequences on patients, their families and the community as a whole in the form of disability, committing suicide, caregivers burden, and serious economic, social, occupational and health consequences. The area of assessing the effect of family intervention on the caregivers' burden, their psychological condition in the form of depression, anxiety stress and QOL among caregivers of depressed patients is under examination, therefore conducting this research is deemed necessary. Meanwhile there was not much reference to the use of family intervention in the Egyptian context, therefore the current research aimed to investigate the effect of family intervention in reducing caregivers' burden, depression, anxiety, and stress levels symptoms in patients with depression.

Aim of the study:

The aim of the current study was to investigate the effect of family intervention on the Caregivers' Burden, Depression, Anxiety and Stress and Quality Of Life among caregivers of depressed patients.

Research hypothesis:

Family intervention will decrease caregivers' burden, Depression, Anxiety and stress level and enhance the quality of life among caregivers of patients with depression.

Population and Method

Research Design:

A quasi-experimental design was used.

Setting:

The study was carried out at Mansoura University Psychiatric Hospital. The hospital is to be found in Dakahlia Governorate, Egypt. The hospital serves three governorates: Dakahlia, Demiatta and Kafer Elsheikh for psychotic and drug dependent patients. The outpatient clinics and the inpatient ward of the hospital were included. The capacity of inpatient wards was eighty beds and they are divided into male and female units. The maximum stay at the inpatient hospital is one month.

Sample:

Convenience samples of ninety five depressed patients and their caregivers were selected and assessed to fulfill the inclusion criteria.

Inclusion criteria

1- Patients with diagnosis of depression either unipolar or bipolar according to patients' records.
2- Age 18-60 years old.
3- Families of patients with depression.
4- Sex: both males and females.

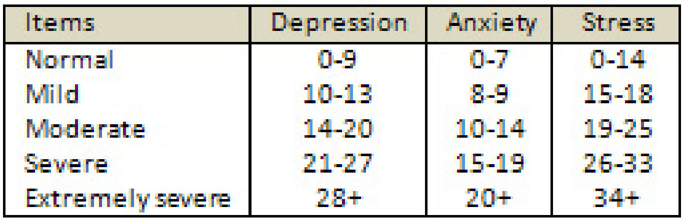
5- Giving informed consent before enrolment in the study.
6- Have at least one available caregiver willing to join in the study.

Exclusion Criteria
1- Presence of psychiatric co-morbidity (alcohol or other substance abuse or personality disorder).
2- Presence of mental retardation, developmental disability and neurological disorder.
3- Living alone.
4- Inability to understand the educational material presented in the program due to a clinically evident handicap, cognitive impairment or acute psychiatric pathology.

Tools of data collection:
Tool (1): based on the related review of literature, a structured interview questionnaire sheet was developed and the following tools were used:

1-Socio-demographic characteristics and clinical data:
a- Socio-demographic characteristics of the patient which included: patient's age, gender, educational level, and occupation.
b- Clinical data of the patients with depression: duration of illness, support system, mode of admission and family history.
c- Socio-demographic characteristics of caregivers: such as age, gender, marital status, degree of relation with the patient, social support, health problem and level of education.

2- Depression, Anxiety and Stress Scale-21 items (DASS-21)
The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) developed by Lovibond and Lovibond (1995), is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. It is a Likert scale: 0 means did not apply to myself, 1= Applied to me to some degree, 2= Applied to me to a considerable degree, 3= Applied to me very much. Scoring system: normal, mild, moderate, severe and extremely severe. DASS-21 needs to be multiplied by 2 to calculate the final score.



Items	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

3- Caregiver burden scale: This scale was originally designed by Deborah (2006). It consists of four subscales with a total item of 35 items, which assesses patient problem behavior represented by statements 1 to 15, disruption of household routine represented by statements 16 to 26, impairment in activities of daily living which are represented by statements 27 to 32 and Perceived patient helpfulness represented by statements 33 to 35. Scoring items were scored 0, 1, 2, 3, and 4 for the responses never, rarely, usually, and always, respectively. The scores of the items were summed up. These scores were converted into a percentage. The family caregiver has positive burden above the arbitrary cut off point of 50%. This scale was translated into Arabic; the validity and reliability for the caregivers' burden scale was 0.85 by using Cronbach's alpha test.

4- Quality of Life scale:-
This scale was developed by Bech, (1996). It is a quality of life questionnaire which is used to assess P (physical problems), C (cognitive problems), A (affective problems), S (social problems), E (economic problems), E (ego personality problems). It consists of 6 subscales; each one contains 5 items. Each item has 5 responses graded from 0-5, in which (0) means bad and (5) means well or good, and the family caregiver must choose the most descriptive one. The PCASEE questionnaire is scored individually for each column from (P to E). The sum of each column is multiplied by 4 to give a percentage score, in which 100 % means the best possible quality of life. All six columns can be added up into a total PCASEE score. Higher scores denote higher QOL. PCASEE scale was translated into Arabic by El-Bilsha (2005). The reliability for the quality of life scale was 0.90 by using Cronbach's alpha.

Method

Pilot study: A Pilot study was conducted on 10 family caregivers attending with their patients to the Psychiatric Department at Mansoura University Hospital for three months to evaluate the clarity, applicability, and reliability of the research tools and estimate the approximate time required for data collection. According to the results obtained, essential modifications were done. Some questions were read in slang to simplify their meanings to the patients. Tools of Caregiver burden and QOL were tested for their reliability which was carried out on 40 caregivers. The results were as follows: Cronbach's alpha was 0.85 for Caregiver burden and 0.90 for QOL.

Ethical consideration: Ethical approval was obtained from the Research Ethics Committee of School of Nursing, Mansoura University and therefore the official permission to hold out the study was obtained from the General Director of Mansoura University Hospitals and the head of Psychiatric Department after clarifying the purpose of the study. Verbal consent of the patients and their caregiver to participate in the study was obtained after explanation of the purpose of the study. The patients and their family caregivers' privacy were considered. Before the interview, participants were informed regarding the aim of the study and were assured regarding confidentiality of data. Every participant was free to withdraw at any time throughout the study.

Patients' records were surveyed to determine the patients who met the study criteria when choosing patients and their caregivers. The number of the sessions for each group was 12. The caregivers were divided into ten groups; the number of participants for each group varied from 8-10 caregivers.

The program was applied through four phases:
The overall objective of the intervention was to improve psychological condition of the caregivers of patients with depression through: decreased caregiver burden, enhancing their QOL, and decreasing feelings of depression, anxiety and stress in order to deal with their patients in an effective and efficient way.

Assessment phase: Assess DASS, Caregiver Burden and QOL. Each participant was interviewed individually by the researcher to initiate and develop a trusting relation with patients and their caregivers.

Designing and implementation phase: family intervention was designed and implemented for 12 weeks for two – three sessions a week. Firstly, it started at the individual level, then in small groups and then in a large group.

Evaluation phase: evaluated the effect of the implementation of family intervention on caregiver burden, depression, anxiety and stress and quality of life by use of DASS, care giver burden scale and QOL scale one month after, and three months after, implementation of family intervention.

Intervention: Family intervention was conducted two to three times a week for 12 weeks. The intervention components included the following:

1- Engagement of family and building connection with caregivers.

2- Education about illness which was designed to enhance generalization to the real world and promote a supportive family environment, it included the following:

a- Understanding the nature of the illness
b- Main symptoms and early identification of symptoms
c- Identification of triggering factors
d- Treatment: mood stabilizers, antipsychotics and antidepressants
e- Family treatment: enhancing compliance planning of coping strategies
f- Other main issues: suicidal thoughts, hospitalization, and counseling on genetic factors.
g- Preventive methods to prevent relapse and importance of medication adherence.

3- Problem solving and communication skills including prevention and management of family stress.

4- Social skills training.

5- Stress management such as relaxation techniques and simple exercises.

Termination phase: Summary and feedback about the intervention, discussion of termination feelings, stressing about the importance of follow up

Statistical Analysis:
Data entry and analyses were performed using SPSS statistical package version 20. Qualitative data were presented as a number and percent. Comparison between groups was done by Chi-Square test. $P \leq 0.05$ was considered to be statistically significant.

Limitations of the study: The rapid discharge of the patients made it difficult to achieve follow up after 6 months. Hence follow up was made after only one month and three months after intervention. Some patients and their caregivers were illiterate so we depended on the caregivers' recall instead of writing. Some patients (7 patients) dropped out of the study during follow up three months after, so the numbers of caregivers were 88 three months after intervention.

Results

- Socio demographic and clinical characteristics of the studied depressed patients and their caregivers.
-Caregivers burden, depression, Anxiety and stress and Quality of live pre and post family intervention.

Part I: Socio demographic and clinical characteristics of the studied depressed patients and their caregivers.
Table (1) shows that around half of the study sample (49.5%) had age less than 35 years and more than half (51.6%) were female, around one third (32.6%) of them were illiterate, more than one third (35.8) were single and more than half (52.6) of the patients were unemployed.

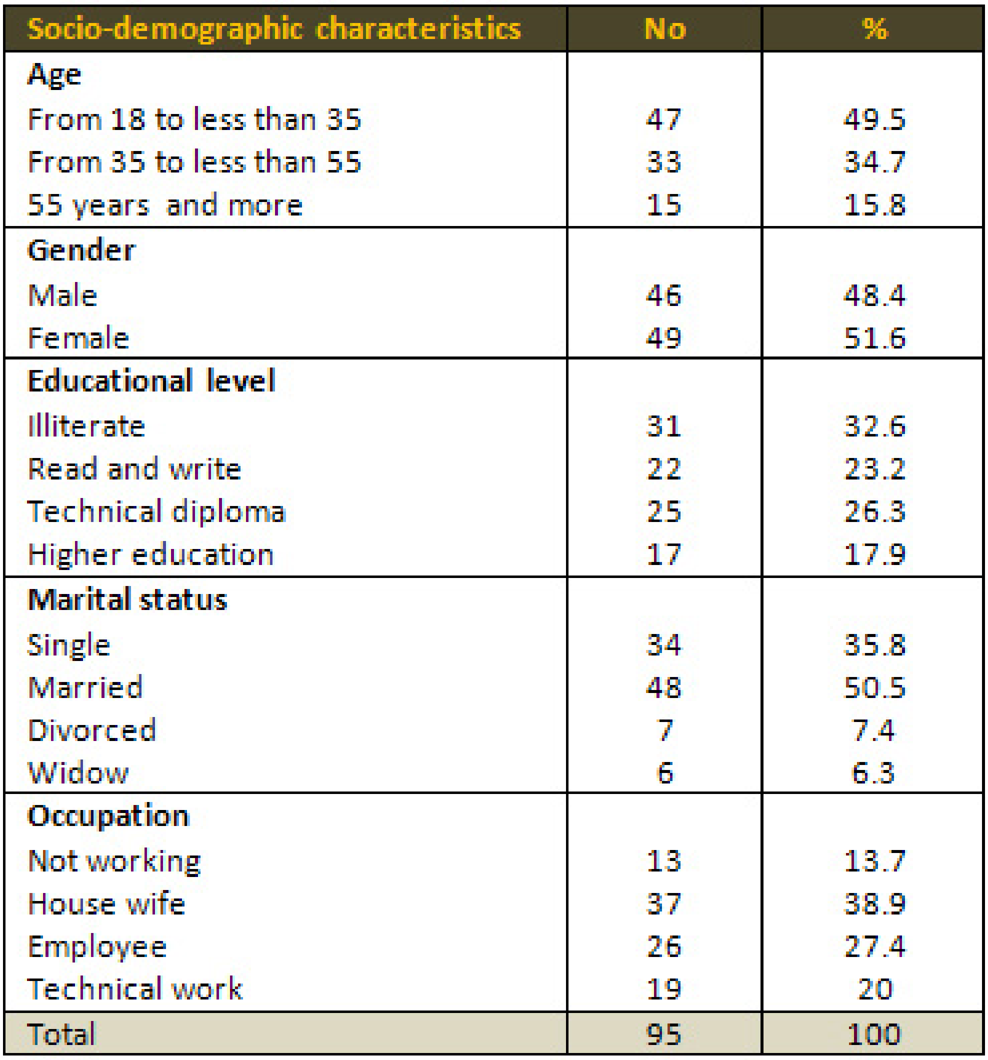
Table (2) illustrates that around two thirds (63%) of the depressed patients were admitted to the psychiatric hospital involuntary; also more than half of depressed patients (56.8%) have family history of mental illness. Also, for about the same percentage of the studied sample (52.7%) the date of beginning of illness was 10 years or more prior. Around one quarter of the patients (24.2%) were smokers, (58.9%) had suicidal thoughts and more than two thirds (76.8%) had sufficient support system.

Table (3) reveals that, more than half of the caregivers of the depressed patients (52.6%) had their ages either late adulthood or elderly; the majority of them (93.7%) were females; about three quarters of the caregivers were either parents or partner, which represents (44.2%) and (29.5%) respectively.

Table 4 illustrates the frequency distribution of caregivers' burden and Quality of life among caregivers of depressed patients. Concerning the caregiver burden, two thirds of the caregivers (65%) experienced a high level of burden while one month after intervention around one fifth (8.4%) experienced a high level of burden and around one quarter (23.9%) three months after intervention. The difference was statistically significant pre and post implementation of family intervention ($P \leq 0.000$). As regards quality of life among patients' caregivers, all of the caregivers had low quality of life. One month after implementation of the intervention, family caregivers with low quality of life constituted (15.8%). Three months after implementation of the family intervention, caregivers with low quality of life were around one quarter (23.9%) of the studied sample. The difference was statistically significant pre and post implementation of family intervention ($P \leq 0.000$).

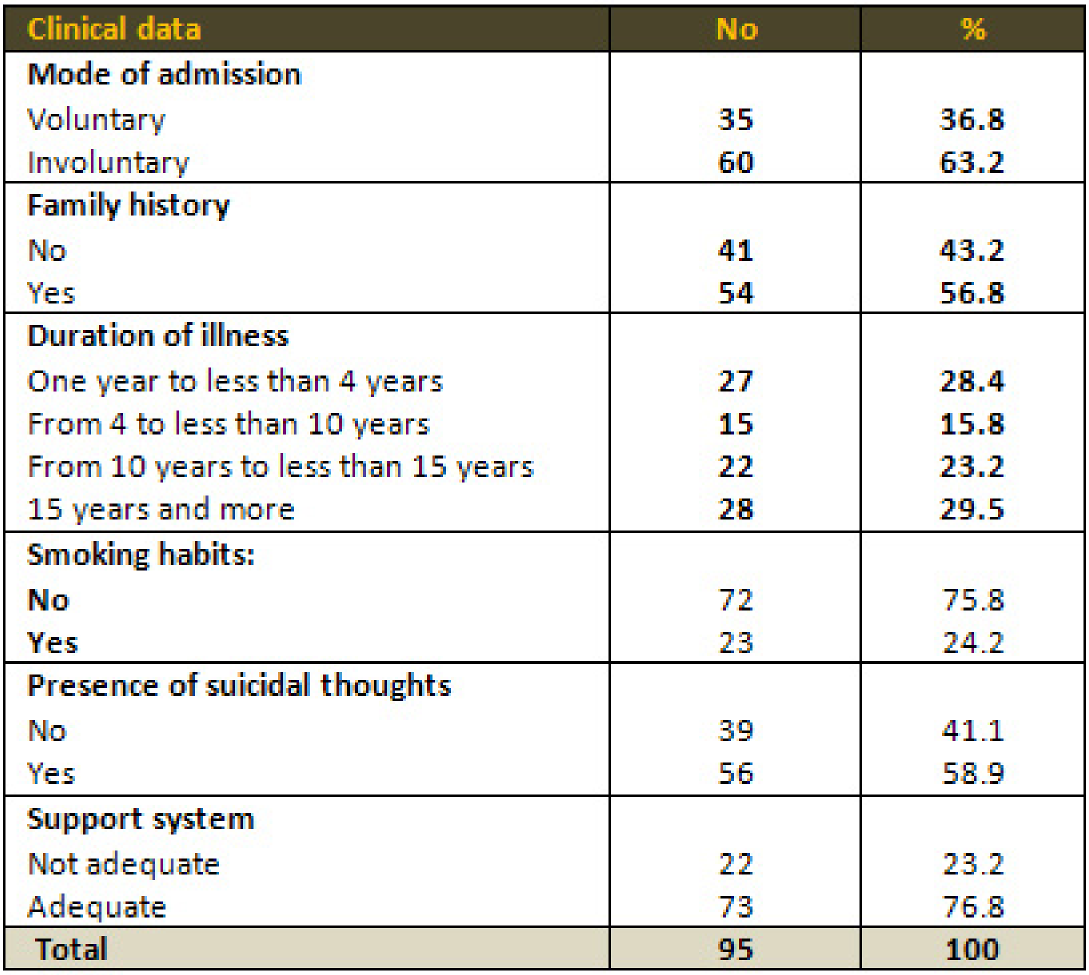
Table 5 shows that all caregivers experienced depression either in the moderate or severe level; they constituted 38.9% and 61.1% respectively. One month after implementation of the intervention more than half of the studied sample (53.7%) represented moderate and severe levels of depression, 47.4% and 6.3% respectively. Moreover three months after intervention, the moderate level of depression decreased to (31.8%). In relation to anxiety among the caregivers, all caregivers experienced anxiety in moderate and severe levels which represented

Table 1: Socio-demographic characteristics of the studied patients



Socio-demographic characteristics	No	%
Age		
From 18 to less than 35	47	49.5
From 35 to less than 55	33	34.7
55 years and more	15	15.8
Gender		
Male	46	48.4
Female	49	51.6
Educational level		
Illiterate	31	32.6
Read and write	22	23.2
Technical diploma	25	26.3
Higher education	17	17.9
Marital status		
Single	34	35.8
Married	48	50.5
Divorced	7	7.4
Widow	6	6.3
Occupation		
Not working	13	13.7
House wife	37	38.9
Employee	26	27.4
Technical work	19	20
Total	95	100

Table 2: Clinical characteristics of the studied depressed patients



Clinical data	No	%
Mode of admission		
Voluntary	**35**	**36.8**
Involuntary	**60**	**63.2**
Family history		
No	**41**	**43.2**
Yes	**54**	**56.8**
Duration of illness		
One year to less than 4 years	**27**	**28.4**
From 4 to less than 10 years	**15**	**15.8**
From 10 years to less than 15 years	**22**	**23.2**
15 years and more	**28**	**29.5**
Smoking habits:		
No	72	75.8
Yes	23	24.2
Presence of suicidal thoughts		
No	39	41.1
Yes	56	58.9
Support system		
Not adequate	22	23.2
Adequate	73	76.8
Total	**95**	**100**

Table 3: Socio-demographic characteristics of the studied caregivers

Items	No 95	% 100
Age		
Adolescent/early adulthood	22	23.2
Middle adulthood	23	24.2
Late adulthood	29	30.5
Elderly	21	22.1
Gender		
Male	5	5.3
Female	89	93.7
Degree of relative		
Parents	42	44.2
Partner	28	29.5
Sister/brother	7	7.4
Daughter/son	11	11.6
Daughter/son in law	7	7.4
Total	95	100

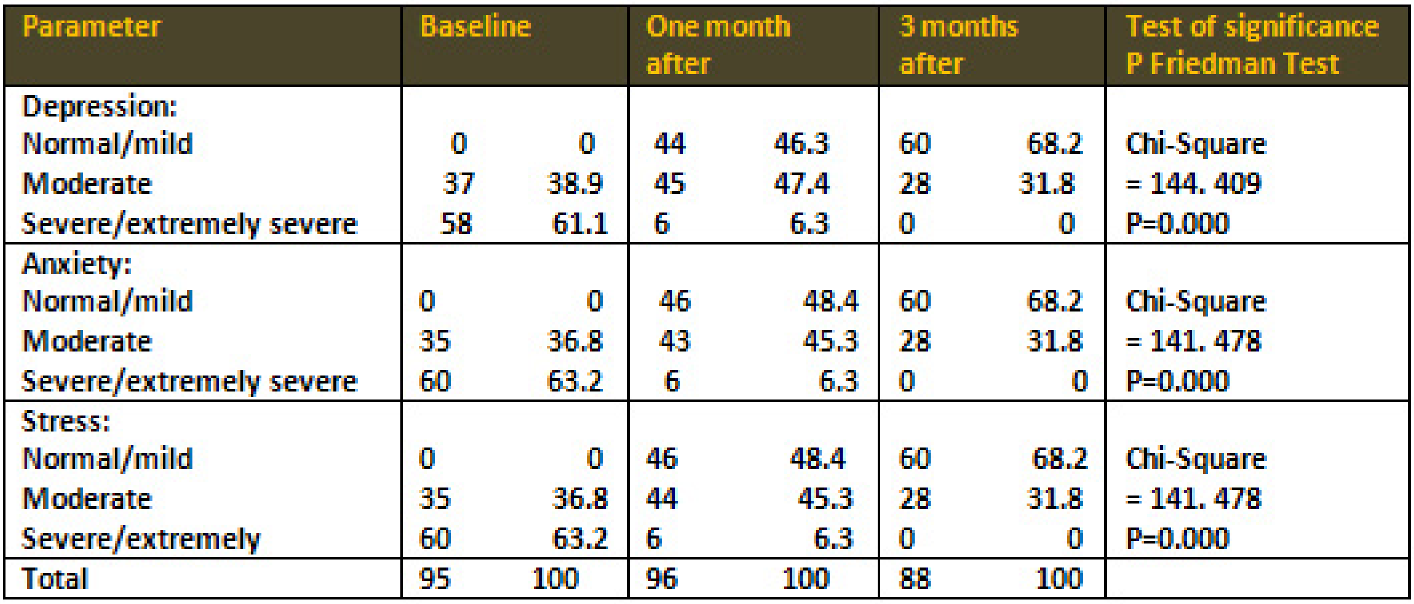
Table 4: Caregivers' burden and quality of life pre, and after implementation of family intervention at one month and three months

Variables	Baseline		One month		Three months		Test of significant P Friedman Test
	No	%	No	%	No	%	
Caregiver burden							Chi-Square
Negative/Low burden	33	34.7	87	91.6	67	76.1	=69.774
Positive/Highly burden	62	65.3	8	8.4	21	23.9	P= 0.000
Quality of life:							Chi-Square =127.72
Low QOL (less than 50)	95	100	15	15.8	21	23.9	P=0 .000
High QOL (50 and more)	0	0	80	84.2	67	76.1	
Total	95	100	95	100	88	100	

(36.8%) and (63.2%) respectively and greatly decreased to reach to 51.6% one month after in the form of moderate and severe anxiety (45.3%) and (6.3%) respectively, but after three months moderate anxiety decreased to (31.8%). The same was true with stress, all caregivers experienced stress which decreased to more than half of caregivers (51.6%) and one third (31.8%) after one month and three months of intervention respectively. A statistically significant difference was revealed between depression, anxiety and stress pre and post implementation of the family intervention (($P\leq 0.000$, $P\leq 0.000$, $P\leq 0.000$) respectively.

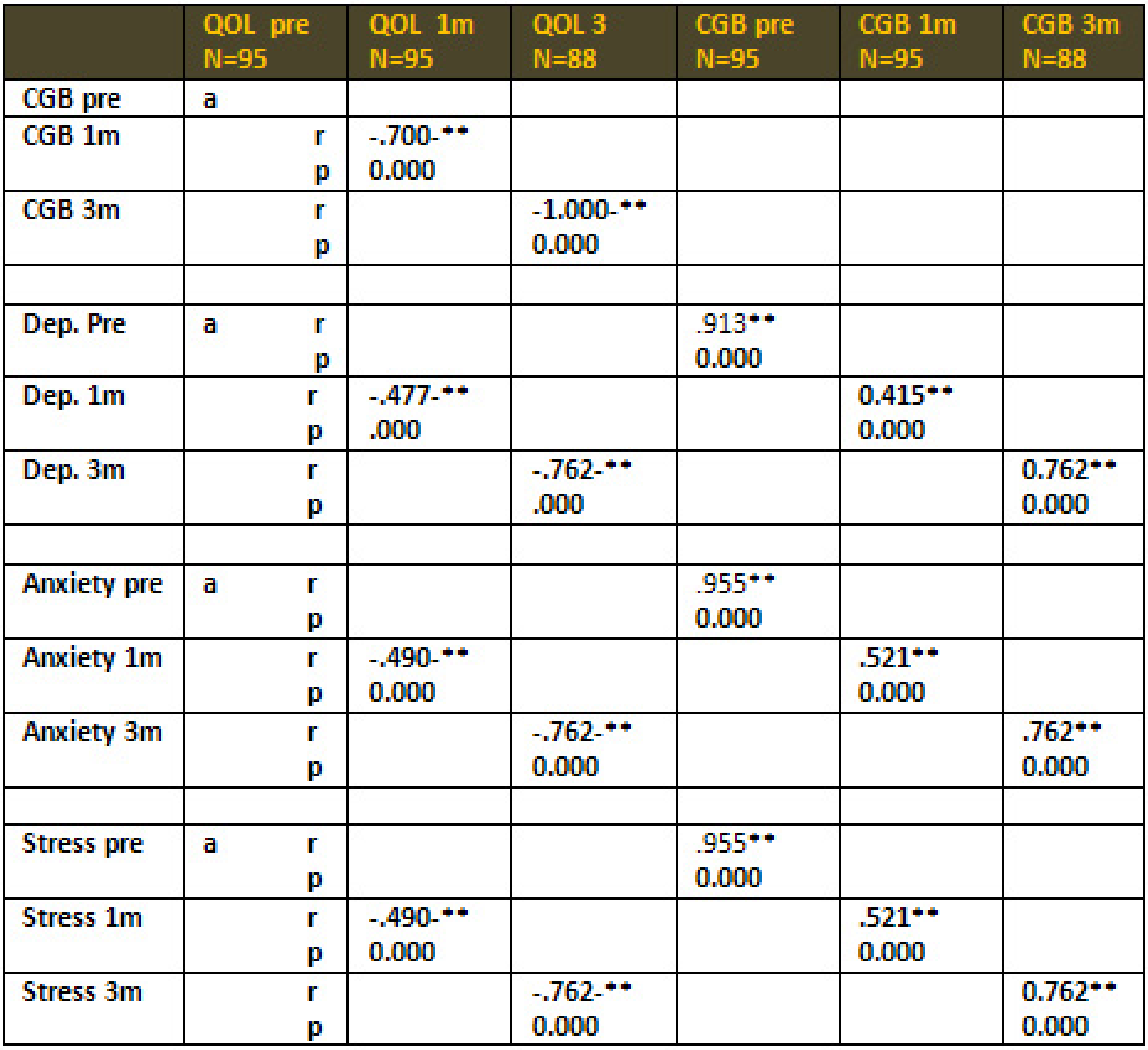
Table 6: represents the correlation between quality of life and caregivers' burden, their experience of depression, anxiety and stress. It shows statistically significant negative correlations among all these parameters. The strongest of these correlations are between QOL and caregivers' burden one month (r=-.700-**), and depression, anxiety and stress three months after family intervention (r=-.762-**, r=-.762-**, r= -.762-**) respectively. Conversely, there is a statistically significant positive correlation among caregivers' burden and their feeling of depression, anxiety, and stress. The strongest of these correlations are between caregivers' burden and depression, anxiety and stress pre and post intervention three months (r=.913**, r=.955**, r=.955**, r= .762**, r= .762**, r= 762**) respectively. In relation to the correlation between socio-demographic and clinical data, it was observed that there is a positive significant correlation between duration of illness and caregivers' burden, depression, anxiety and stress (r=.419**, r=.419**, r=.384**, r=.384**).

Table 5: Depression, Anxiety and Stress among caregivers according to Depression, Anxiety and Stress scale (DASS).



Parameter	Baseline		One month after		3 months after		Test of significance P Friedman Test
Depression:							
Normal/mild	0	0	44	46.3	60	68.2	Chi-Square
Moderate	37	38.9	45	47.4	28	31.8	= 144. 409
Severe/extremely severe	58	61.1	6	6.3	0	0	P=0.000
Anxiety:							
Normal/mild	0	0	46	48.4	60	68.2	Chi-Square
Moderate	35	36.8	43	45.3	28	31.8	= 141. 478
Severe/extremely severe	60	63.2	6	6.3	0	0	P=0.000
Stress:							
Normal/mild	0	0	46	48.4	60	68.2	Chi-Square
Moderate	35	36.8	44	45.3	28	31.8	= 141. 478
Severe/extremely	60	63.2	6	6.3	0	0	P=0.000
Total	95	100	96	100	88	100	

Table 6: Correlation between Caregivers' burden and their QOL, depression, anxiety and stress level



	QOL pre N=95	QOL 1m N=95	QOL 3 N=88	CGB pre N=95	CGB 1m N=95	CGB 3m N=88
CGB pre	a					
CGB 1m	r p	-.700-** 0.000				
CGB 3m	r p		-1.000-** 0.000			
Dep. Pre	a r p			.913** 0.000		
Dep. 1m	r p	-.477-** .000			0.415** 0.000	
Dep. 3m	r p		-.762-** .000			0.762** 0.000
Anxiety pre	a r p			.955** 0.000		
Anxiety 1m	r p	-.490-** 0.000			.521** 0.000	
Anxiety 3m	r p		-.762-** 0.000			.762** 0.000
Stress pre	a r p			.955** 0.000		
Stress 1m	r p	-.490-** 0.000			.521** 0.000	
Stress 3m	r p		-.762-** 0.000			0.762** 0.000

**Correlation is significant at the 0.01 level (2-tailed).
a Cannot be computed because at least one of the variables is constant
r=Pearson Correlation coefficient P value using Pearson Correlation test
CGB= Caregiver Burden Dep. =Depression QOL= Quality of life

Discussion

Depression has an intense impact not only on the patients but also on their family members (Keitner et al., 2003). Depression is the most common psychiatric disorder worldwide. It is a leading cause of individual disability and family burden worldwide. The movement of de-institutionalization led to increase the burden of caregivers and increase their feelings of depression, anxiety and stress.

Previous studies reported that caregivers commonly don't have enough knowledge and skills for providing care to a patient with mental illness, therefore, family intervention has been established to intervene and teach effective coping strategies for the families with mentally ill members (Fallahi et al.,2014; Yazici et al., 2016). Moreover, some studies have revealed that family psycho-educational interventions significantly improve depressive symptoms and reduce caregivers' burden (Bernhard et al., 2006; Perlick et al., 2010).

Family intervention is an effective therapy in treating people with depression. Family therapy for depression, is widely used across the developed countries, e.g. United Kingdom and United States (Henken et al, 2007). Abdel-Razek et al, (2001) concluded that clinical interventions to improve QOL in people with mental illness should include family psycho-educational programs and better recognition, evaluation, and treatment of both depressive symptoms and side effects of drugs.

So, caregivers need family psycho-educational interventions to decrease their burden, and feelings of depression, anxiety and stress. Also families of patients with depression need to be taught effective coping strategies, moreover, to enhance the quality of life of family caregivers. Therefore, the present study aimed to investigate the effect of family intervention on Caregivers' Burden, Depression, Anxiety and Stress and Quality Of Life among caregivers of depressed patients, in conjunction with psychopharmacological drugs.

Regarding caregivers' gender, the majority of the caregivers were females more than half of them were in the adulthood or elderly. In relation to the degree of relation to patients, mothers or wives of the patients were the main caregivers. This is expected because females are responsible about caring for all family members especially the sick members. In addition, most of the patients live in rural areas where the extended families are common. Mothers as caregiver represents less than half of the studied samples; this may be related to the nature of the extended families, more than one third of the patients were single which means that mothers are responsible for their caring and this reflects the nature of the women in Egyptian culture. These results are similar to the previous studies by (Wong, lam and Chan 2011; George, Sharma and Sreekumaran 2015) who highlighted that more than half of the caregivers were females, were married and housewives. In line with the foregoing, Abdel-Aziz et al., (2011) , El-Mahdi et al.,(2010) and Souza et al., (2016) mentioned that mothers, wives amd daughters were most of the caregivers. In contrast, studies done in Portugal (Goncalves et al., 2011; Ranjbar et al., 2015) showed that the most of the caregivers were male.

Regarding caregivers' burden, (WHO, 2003) highlighted that the burden of mental disorders will arise significantly over the next decades. Mental disorders are associated with massive disruption in patients' lives, causing impaired quality of life and burden to their families and society. It was observed that two thirds of caregivers experience high level of burden (positive caregivers' burden); this may be related to many reasons, such as the effect of caring for mentally ill family members, health illiteracy, and lack of coping strategies among caregivers which help them to deal with burdens of mental illness in effective ways, in addition to the effect of stigma, non-compliance to medication, financial costs of the drugs, lack of community health resources, and overlapping or role confusion within the families. In agreement with the foregoing study findings, Abdel-Kader et al., (2011) demonstrated that there is a severe burden imposed upon the whole family when caring for a patient with mental illness, because of unpredictable and bizarre behavior, external stressors of stigma and isolation, family conflict, emotional frustration and burnout. Moreover, several studies reported a high level of burden experienced among caregivers with mentally ill patients; it was 47.3% in Nigerian, (Yusuf, 2010), 90% in Turkey (Unal et al., 2004; Magliano et al., 2005) and 92% in Egyptian caregivers (Kamel 2014). Similar finding were also reported in a study conducted in Mansoura, Egypt by Aboul-Ezz (2006) who reported that caregivers who have patients not married and males have greater burden.

After one month of intervention the level of burden decreased to around one fifth. This is expected due to the effect of psycho-educational intervention which leads to increased adherence to medication, increased awareness about depression and enhanced stress management among the caregivers. But the level of burden slightly increased again to around one quarter after three months. This may be related to the residual effect of the mentally ill, and effect of psychosocial stressors still present in the community such as stigma, unemployment and the cost of the treatment. In line with the foregoing, studies carried out by (Tanriverdi and Ekinci 2012; Huis et al., 2015) reported that caregivers who received psycho-educational intervention expected a decrease of caregivers' burden. In the same line, (Yildirm et al., 2014) found that psycho-education programs are effective in reducing the pressures imposed on the family. Caregivers' burden causes destructive effects not only for themselves but also for patients, other family members, and the health care system (Caqueo-Urizar et al., 2009).

The present study reported that more than two thirds of the studied samples have sufficient support system. This reflects the Arab culture, which emphasizes the importance of the role of families and friends in supporting patients according to the teachings of Islamic law. But still there is insufficient support and they need more support for both patients and their families. In line with the foregoing, (Kathleen et al., 2011) recommended the importance of family and friends in supporting people with depression. Also in congruence with the current study findings, (Christensen et al., 2006) found that an internet psycho-educational intervention was effective in reducing depressive symptoms.

Regarding QOL among caregivers of depressed patients, all of the caregivers had low quality of life. After implementation of the intervention one month and three months, family caregivers with low quality of life constituted (15.8%) and (23.9) respectively. This may be explained by (Fredman et al., 2010) who mentioned that caring for mentally ill patients is a persistent stressor due to the constant physically and emotionally demanding role of caring and other factors such as loss, disability, and prolonged distress. It may reflect the effect of family intervention. This finding is consistent with (Kulhara et al., 2009) who highlighted the positive effect of psycho-education on family caregivers' burden.

Moreover there is a statistically significant negative correlation between caregivers' burden and their QOL. This means that quality of life was significantly affected by the caregivers' burden. The present study is supported by several studies which concluded that the physical demands of caring of depressed patients may cause increased risk for physical health problems, leading to poor quality of life (Richardson et al., 2013). In congruence with this, (Shah, Wadoo, Latoo, 2010; Zamzam et al., 2011) revealed the negative effect of caregivers' burden on their QOL such as physical and emotional distress, and restriction or impairment in social and occupational functions. Similarly, (Velligan et al., 2009; Awadalla et al., 2005; Struening et al., 2001; and Kamel 2014) reported that high level of caregivers' burden is associated with poor quality of life.

Depression is the most prevalent mental problem among caregivers. The current study assessed feelings of depression, anxiety and stress levels among caregivers. The study results indicated that all caregivers had moderate or severe levels of depression. Moreover, after intervention the level of depression was significantly decreased. The differences are statistically significant. Depression level was found to be positively and significantly correlated to the caregivers' burden, because caregivers' burden may be an important risk factor for the onset of many psychiatric disorders. In this regard, (Epstein-Lubow et al., 2012; Joling et al., 2012) indicated that depression is the most common mental health problem experienced among caregivers of depressed patients moreso than non-givers. Also, in congruence with the current study findings, (Stelling, Habers, Jungbauer, (2008); Duffy et al., 2014; and Maoz et al., 2014) reported that caregivers of bipolar disorder patients suffer positive burden and are at high risk for developing emotional and behavioral disorders such as depression, social isolation, anxiety and suicidal ideation as a result of the heavy responsibility of the caregiving (Chessick et al., 2007 and 2009; and Steele; Maruyama, Galynker 2010). Also in congruence with the current study findings, (Mittleman, et al., 2004) concluded that sustained counseling and support lead to reduced depressive symptoms.This is agreement with (Katon,1999) who emphasized that after the interventions, patients with major depression presented significant improvements in depressive outcomes, medication adherence, and satisfaction with care.

An important finding concerning caregiver experience of anxiety and stress, the present study showed that all of the participants experience moderate and severe levels of anxiety and stress, and after intervention the level of anxiety was significant decreased. This may be due to the effect of family intervention, which decreases level of anxiety and stress through encouragement of social interaction and interpersonal relationships, as well as the effect of support system. Moreover, anxiety and stress levels were found to be positively and significantly correlated to the caregivers' burden. This is expected and reflects the interrelationship between caregivers' burden and experience of anxiety and stress. This result goes in line with (Henken et al, 2007) who concluded that family intervention is an effective therapy in treating people with depression. These present study findings are also in agreement with those of the study conducted by (Steele, Maruyama, Galynker, 2010). These authors stated that caregivers feel depressed and anxious as well and rates of depression and anxiety in the family members represent 40% to 55%.

In summary, the results of the present study suggest that after the implementation of family intervention, caregivers of patients with depression showed significant improvements in caregivers' burden, depression, anxiety and stress level.

Conclusions: Based on the current results, it can be concluded that caregivers' burden, depression, anxiety and stress are highly prevalent among caregivers of patients with depression and are significantly improved after implementation of family intervention one month after, and moreover slightly decreased three months after intervention. This conclusion leads to accept the hypothesis of the study which was that family interventions improve the caregivers' burden, QOL, feelings of depression, anxiety and stress. Further research is needed to follow the intervention 6 and 12 months after family intervention.

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