The effect of educational program on care burden of informal caregivers of elderly people with type 2 diabetes in Ilam in 2016-2017

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ABSTRACT

Introduction: Diabetes is one of the most common chronic diseases in old age. The informal caregivers of these patients undergo heavy care. The aim of this study was to determine the effect of the educational program on care burden of informal caregivers of elderly with type II diabetes in 2016-2017. Materials and Methods: The present study was carried out according to the experimental purpose. In this study 80 out of 120 informal caregivers of elderly with diabetes who were referred to the Shahid Mostafa Khomeini Hospital in Ilam were selected by convenience sampling method and then randomly were placed in experiment and control groups. The experiment group received 8 sessions with 2 hours duration (face to face teaching and telephone follow-up) as intervention. The data were collected using two questionnaires: demographic and Zarit’s Care before and after intervention. The collected data were analyzed by using statistical software SPSS 22 and descriptive and inferential statistical tests (covariance) at the significant level of 0.05. Results: The results showed that there was not a significant difference between the level of care burden of the experimental and
control groups before intervention. Also, there was a significant difference between the care burden of the experimental group before and after the intervention (p=0.001). There was no significant difference between care burden of control group before and after intervention (p=0.2). Conclusion: According to the results, it can be concluded that the care burden of informal caregivers of elderly people with type II diabetes, after training intervention was significantly reduced. Therefore, this interventional program can be used to reduce the care burden of informal caregivers in this group of patients.

Keywords: Educational schedule, Caregivers, Elderly, type II Diabetes, Ilam

1. INTRODUCTION

Diabetes is one of the chronic diseases that human societies are facing today. According to the World Health Organization, the number of elderly people with diabetes has reached 300 million in 2015, and it is predicted that 50% of the population will be affected in some races. The prevalence of this disease among the elderly is 8%, which is three times more than youth (Joke, 2007). In Peyman et al (2011) study on 121 elderly people in Ilam, the prevalence of diabetes among the elderly was 17.4% (Peyman et al., 2011). Diabetes not only causes high economic risks, but also results inevitable mental and psychological damages which inflicted on the patients and their families. According to the literature, approximately all aspects of the lives of individuals can be affected by diabetes (White et al., 2009). As the age increases, the prevalence of chronic illnesses among the elderly increases (Cuellar and Butts, 1999) and to have a sick elderly creates a care burden in their families.

Care burden is a complex and general concept and is defined as a negative reaction that the care provider experiences through care giving (Wiles, 2010). High levels of care burden can lead to problems such as depression, anxiety and physical problems among the elderly caregivers, and continuous stress in this way reduces the quality of caregivers’ lives (Jokar, 2010). Informal caregivers are people other than formal caregivers such as nurses. Family caregivers as informal care givers of the elderly are those who are not trained and do not receive a pay for providing services, meanwhile they meet the needs of both the family and the patients (those who need care (Schulz and Martire, 2004). Informal care givers are an essential component of providing care for patients (Teschendorf et al., 2007). Family members have a very important role to play in maintaining the self-care behaviors of their patients (Bahadoran et al., 2013). With the advent of a change in health care, development of outpatient cure and shortening the length of hospitalization, the need for training family members and developing home-based caring is prominent (Nawabakhsh, 2006). Regarding the high prevalence of diabetes among the elderly and the importance of care burden among family members in this group, the researcher aimed to determine the effect of educational program on the care burden of informal care givers of elderly people with type II diabetes in Ilam in 2017.

2. MATERIALS AND METHODS

The research design was experimental with pre-test and post-test in experimental and control groups. Pre-test was done on experimental and control groups before training. Training was taken for the experiment group in 8 sessions. The first post-test and the final post-test were done on both groups a week and 6 weeks later. The statistical population of this research included 120 care givers of old patients with diabetes type 2 who referred to Shahid Mostafa Khomeini Educational-Treatment Center affiliated to Ilam Medical University, among them, 80 people were selected as a sample through available method. The volume of the sample was calculated according to Cochran formula, standard deviation and similar studies with 95% confidence (Spurlock, 2009). Therefore, the studied sample included 80 people of informal care givers to old people in Ilam in 2016. In this research, care giver is defined as a person who has a family relationship with the patient (father, mother, wife, husband, son, daughter, brother-in-law or sister-in-law) and has the responsibility to take care of the patient. In addition, the criteria to enter the study and exit the study are as follows:

Criteria to enter: the care giver must be the principal one to take care of the old patient and has taken care of the patient at least for 6 months. He must be 18 or over 18. He must not receive a pay for taking care of the patient. He must not suffer from a chronic psychiatric disease.

Criteria to exit: patient's death, assigning the responsibility of taking care of the patient with diabetes to another person, or to a care giver center, and not participating in experiment group in more than one session of training.

This research is confirmed in ethical committee of Ilam University of Medical Sciences with ethical code: IR.MEDILAM.REC.1396.15.
Research tools
Demographic information questionnaire as well as ZARIT care burden questionnaire was used corresponding to the research objectives. The demographic information questionnaire includes information on demographic characteristics of informal care givers of the elderly (age, sex, economic status, marital status, education, place of residence, being sick or not). ZARIT care burden questionnaire includes 22 questions about care issues, which has Likert scale of 0,1,2,3 and 4 correspond to never, hardly ever, sometimes, often and always respectively. The score below 30 means low care burden, 31 to 60 means average and 61 to 88 means severe care burden. The range of scores in this questionnaire is 0-88 and the higher the score, the higher the burden (Shahbalaghi, 2005).

In Mohammad and Nozari study, the validity of this tool is confirmed by 12 experts and reliability of it was calculated as 74% through re-testing (Mohammadi and Nourzari, 2004). Pahlevanzadeh et al. reported the reliability of this tool as 94% for relative care givers of patients with mental disorders through re-testing (Pahlanvanzadeh et al., 2010). In this research, the questionnaire was given to 20 people under study in order to determine the reliability of the aforementioned tool, and a week later the questionnaire was given to them again, and the reliability of it was calculated during two stages (r=0.87) through re-testing and Pearson correlation coefficient.

Research Process
After selecting the sample, the participants were divided into two groups of control and experiment randomly. The training course was held in eight 2-hour classes each week (individually) for care givers by the researcher and telephone counselor, in the field of managing the problems and issues related to old people with diabetes. The training comprised 4 sections as follows:

- An introduction to the objectives of training sessions, the role of family in developing and maintaining the health of family members, the effective factors in causing mental disorders, and how to control and manage the stress and crisis.
- Train the care givers to identify the patients’ need such as need to move and exercise, nutrition, drug management
- Training the method of communicating with old patient with diabetes, how to take care of them and how to react and deal with the symptoms of the disease, training diet, how to use medicine, how to control the side effects of diabetes, how to adapt themselves to different stages of disease includes disease management and blood glucose control
- Train the care giver to manage the psychological problems

The care givers were encouraged to participate in training classes. After providing educational content, Q & A method and lecture were used in these training. Materials such as power point, film and brochure were used for training too. Then care burden was measured again in experimental and control groups in two periods of time (a week and 6 weeks later, after the last training session). It is worth mentioning that in order to observe ethical principles, all training sessions were held for the members of control group as well at the end of the study so that they take advantage of the training provided as well. Finally, the data were inserted in SPSS 22 (Covariance analysis) and analyzed.

3. FINDINGS
Demographic Characteristics and information of old people with diabetes type II and their care givers were gathered through demographic information questionnaire. Among those diabetic patients (type II) who participated in this research, 47 people were female and 33 people were male. Among the participants, 57 people were married and 23 people were single. 72 people suffered from other diseases not diabetes so it could make the care burden worse. Sixty-six of 80 people were superior member of their family. All 80 patients with type II diabetes were under the coverage of medical treatment insurance. Most of them were under diploma and a few of them were over diploma. The demographic information and characteristics of care givers is provided in Chart 1:
Descriptive findings (Mean and standard deviation) related to care burden variable in three stages of pre-test, post-test and second post-test are provided for two groups of control and experiment.

**Table 1** Mean and (standard deviation) of care burden before and after intervention in two groups of experiment and control

<table>
<thead>
<tr>
<th>Group</th>
<th>Experiment Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean and (standard deviation)</td>
<td>Mean and (standard deviation)</td>
</tr>
<tr>
<td>Pre-test</td>
<td>72/73 (7)</td>
<td>70/95 (7)</td>
</tr>
<tr>
<td>Post-test</td>
<td>64/64 (10)</td>
<td>70/32 (5)</td>
</tr>
<tr>
<td>Second post test</td>
<td>41/09 (9)</td>
<td>70/78 (5)</td>
</tr>
</tbody>
</table>

As shown in table 1, in experiment group, the mean of care burden reduced in three stages (pre-test, post-test, second post test) but there was no change in control group. In order to study the significance of changes in experiment group (whether it is significant statistically or not), multi variable covariance analysis was done on data, so that the scores of the post-test and the second post-test of the two groups of control and experiment were compared by adjusting initial differences (controlling the scores of their pre-tests). It should be mentioned, although both groups of care givers were selected randomly but the results of Levine test showed that the variance of the two groups are not significantly different (p≤ 0.01); thus statistical test of covariance analysis was used to control the initial differences. In addition before carrying out covariance analysis, its assumptions were studied and
confirmed by Homogeneity of gradient regression, Homogeneity of variance-covariance matrix, normality of variables distribution, and linear regression.

Table 2 & 3 shows the results of multimedia covariance analysis related to the comparison of post-test and second post-test scores for two groups of control and experiment by adjusting initial differences (pre-test of two groups).

Table 2 Results of multivariate covariance analysis to compare the first post-test and the second post-test in experiment and control groups

<table>
<thead>
<tr>
<th>Effect</th>
<th>Value</th>
<th>F ratio</th>
<th>Df hypothesis</th>
<th>Df error</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piley Effect</td>
<td>0.001</td>
<td>152</td>
<td>2</td>
<td>76</td>
<td>≤ 0.0001</td>
</tr>
<tr>
<td>Wilks Lambda</td>
<td>0.001</td>
<td>152</td>
<td>2</td>
<td>76</td>
<td>≤ 0.0001</td>
</tr>
<tr>
<td>Hotelling Effect</td>
<td>0.004</td>
<td>152</td>
<td>2</td>
<td>76</td>
<td>≤ 0.0001</td>
</tr>
<tr>
<td>Roy’s Largest Root</td>
<td>0.004</td>
<td>152</td>
<td>2</td>
<td>76</td>
<td>≤ 0.0001</td>
</tr>
</tbody>
</table>

Table 3 Results of single-variable covariance analysis to compare the difference between the first post-test and the second post-test in experiment and control groups

<table>
<thead>
<tr>
<th>Source of changes</th>
<th>Sum of squares</th>
<th>1 Mean of squares</th>
<th>F ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>First post-test</td>
<td>478</td>
<td>1 478</td>
<td>7</td>
<td>0.009</td>
</tr>
<tr>
<td>Second post-test</td>
<td>15271</td>
<td>1 15271</td>
<td>263</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

By adjusting the pre-test scores between the post-test of the two groups of experiment and control, there was a significant difference in the care giver’s variable of care burden (F=7, p<0.009). In other words, in the first post-test stage, the training program reduced the care burden of experiment group significantly compared to control group (who were not under the control of this program) (considering the means of table 1). Therefore, the hypothesis of effectiveness of training program on the reduction of care burden for care givers was confirmed in the first post-test. Also, by adjusting the pre-test scores of experiment and control groups were significantly different in the second post-test in terms of care burden (p<0.0001, F=263). In the second post-test stage, the training program reduced the care burden of experiment group significantly compared to control group (who were not under the control of this program) (considering the means of table 1). Therefore, the hypothesis of effectiveness of training program on the reduction of care burden for care givers was confirmed in the first post-test.

4. DISCUSSION
The objective of this research was to study the effect of training program on the reduction of care givers’ care burden who takes care of old patients with type 2 diabetes, two hypotheses were studied in this regard:

*The first hypothesis:* the training program would reduce the care burden of caregivers after intervention (in the first post-test stage); the results showed that the educational program significantly reduced the care burden of experiment group compared to the control group in the first post-test.

These findings correspond with the ones achieved in Pasonn et al study with the aim of studying the impact of cognitive-behavioral therapy group on the stress and anxiety of 100 people (care givers of people with Alzheimer); they reported there was no significant difference in the care burden of control group before and after intervention but care burden of experiment group reduced after intervention (Pasonni et al., 2014).

Tabrizi et al. study titled: “The effect of cognitive behavioral interventions training on care burden” was done on 70 caregivers of old people with Alzheimer, according to their findings, there was a significant reduction in experiment group. This reduction occurred in experiment group after cognitive behavioral interventions training. Therefore, it can be proposed as an effective solution for reducing the care burden of caregivers of old people with Alzheimer (Bagherbeik Tabrizi et al., 2015).

*The second hypothesis:* the training program would reduce the care burden of caregivers 6 weeks after intervention (in the second post-test stage); the results showed that the educational program significantly reduced the care burden of experiment group compared to the pre-test and the first post-test. These findings correspond with the ones achieved in Shariatifar et al. study that showed that the care burden of caregivers reduced significantly after intervention immediately and after finishing the educational intervention as well (Far et al., 2016).
During the time and considering the needs of family caregivers of patients with type 2, it is expected that the care burden would reduce. By training the caregivers, they can promote the methods to access safe, desirable and qualified care and they try to promote the criteria of patients’ welfare, respect their choices and guarantee their privacy and safety through formal and informal education.

5. CONCLUSION
The results of this research showed that the care burden score has had a significant difference in experiment group in terms of statistics in pre-test and post-test stages. In other words, caregivers’ care burden scores (who were in experiment group) reduced significantly because they participated in educational sessions and used new knowledge in situations related to taking care of the patients, while there was no specific change in care burden of caregivers in control group because they did not participate in training process. Findings showed that training and education plays an important role in the field of nursing and midwifery and it can be effective on caregivers’ care burden. Training process helps all caregivers and nurses to promote their skills in dealing with situations to provide services for patients and reduce their care burden so it makes their lives healthier.

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Conflicts of Interest: The authors declare no conflict of interest.

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