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The Relationship between Caregiving Burden and Self-efficacy in Mothers of Children with Type 1 Diabetes in Gorgan, Iran

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Abstract

Background: Caring for children with type 1 diabetic can create caregiving pressure for parents. This pressure can lead to high levels of stress, depression, and low self-efficacy in caregivers. Therefore, this study was conducted to investigate the relationship between caregiving burden and self-efficacy in mothers of children with diabetes.

Methods: This study is a descriptive-analytical cross-sectional study conducted on 167 mothers of children with type 1 diabetes who were referred to the type1diabetes clinic at Taleghani Educational and Medical Center in Gorgan, Northern Iran, Golestan Province in 2023. Data collection was done using a random sampling method proportional to the volume. Demographic characteristics and caregiving burden questionnaires were utilized, along with the Zarit and Berkeley self-efficacy questionnaires. Data were analyzed using IBM SPSS Statistics version 23. Given the distribution of data, t-tests or Mann-Whitney tests were used to compare caregiving burden and self-efficacy between two groups. In cases of more than two groups, one-way analysis of variance or Kruskal-Wallis test was employed. The relationship between variables was measured with Spearman's correlation coefficient, and the significance level was set at 0.05.

Results: The findings revealed that the average age of mothers was 38.98±6.38, with mean caregiving burden and self-efficacy sources of 30.01±11.10 and 83.91±8.33, respectively. This suggests that they experienced a mild caregiving burden and high self-efficacy. A moderate inverse correlation was found between caregiving burden and mothers' self-efficacy (r= -0.378, P=0.000). Significant differences were observed in mothers' caregiving based on their employment (P=0.048) and education (P=0.027). Additionally, there was a weak inverse correlation between caregiving burden and child age (P=0.001, r= -0.264) as well as mother's age (P=0.002, r= -0.177). Furthermore, statistically significant differences were found in mothers' caregiving burden (P<0.001) and self-efficacy (P=0.025) based on ethnicity.

Conclusion: The findings of this study revealed that slightly over half of the participants experienced a mild caregiving burden and most mothers had high self-efficacy. There was a moderate inverse correlation between caregiving burden and self-efficacy among mothers of children with diabetes. Therefore, it is necessary to pay special attention to these variables in mothers of children with type1diabetes so that they can effectively care for their children.

Key Words: Caregiving Burden, Children, Mothers, Self-Efficacy, Type 1 Diabetes.

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1- INTRODUCTION

Type 1 diabetes is a metabolic disease characterized by the lack of insulin production and secretion, and it is a common childhood disease (1). The reported global prevalence of type 1 diabetes is 5-8% (2). According to statistics from international studies, the age-standardized incidence rate of type 1 diabetes in Iran has increased from approximately 5.8 to 11 per 100,000 people between 1990 and 2019. In the same regard, the prevalence has also increased from approximately 199.6 to 388.9 per 100000 people (3).

Diabetes can cause serious physical, psychological, and clinical complications for children, disrupting their quality of life and that of their families (4). The entire family is affected by the management of a child with diabetes, which requires ongoing awareness and poses many challenges for parents (5), including adherence to diet, appropriate physical activity, recognition of hyperglycemia symptoms, and improving the quality of life of children (1). Most children with chronic illnesses require long-term assistance with daily activities, creating a burden on parents and other family members (6).

The concept of caregiver burden was first introduced by Hoenig and Hamilton, who believed that stress can be divided into objective and subjective stress. Subjective stress primarily includes the personal feelings of caregivers that arise during the caregiving process, while objective stress is defined as events and activities associated with negative caregiving experiences (7). Factors such as financial costs, social life restrictions, reduced interaction with significant others, reduced time with other family members, and increased discomfort or mental pressure are considered caregiving stress. Caregiving stress can cause high stress, depression, and low self-efficacy in caregivers. Caregivers with lower levels of self-efficacy experience more stress and caregiving pressure (8). Self-efficacy is a concept derived from Bandura's social learning theory and refers to an individual's belief in their ability to positively influence their own health behaviors (9). Mother's self-efficacy is defined as her judgment and beliefs about her ability to care for and raise her child (10). Research has shown that self-efficacy can predict personal performance and change as a result of learning, experience, and feedback. The extent of changes in self-efficacy is directly related to the individual's behavior. Factors such as personal knowledge, physical condition, self-confidence, interpersonal environment, available time, task complexity, and stress can affect self-efficacy and the resulting behavior (11).

A study showed that the higher the parents' self-efficacy, the better the parents' psychological functioning and children's health will be (12). Mohamed Mahmoud et al., in a study on parents of children with cancer, showed that the caregivers had a high burden and were prone to burnout, and their self-efficacy was moderate (13). In Iran, Hassanzadeh et al. conducted a study to determine the relationship between the perception of family-centered care, self-efficacy, and caregiving stress in mothers of children with chronic diseases in Tehran (Center of Iran). They showed that the perception of family-centered care was directly related to self-efficacy and inversely related to caregiving stress, and no significant relationship was found between self-efficacy and caregiving stress (14). Research conducted in Iran and various countries has generally included caregivers of children with cancer (13), asthma (15), phenylketonuria (16), and chronic diseases (14), but no research has been specifically conducted on parents of diabetic children. Therefore, due to differences in the research population,

study method, study environment, time, and cultural differences, as well as the different care needs of parents in various childhood diseases, this study was conducted with the aim of determining the relationship between caregiving burden and self-efficacy in mothers of children with diabetes. It is hoped that the results of this study can help promote family-centered care in mothers of children with type1 diabetes.

2- MATERIALS AND METHODS

This is a cross-sectional descriptive-analytical study conducted in 2024 on mothers of children with type1 diabetes. The samples for this study were selected from mothers of children with diabetes who visited the diabetes clinic at Taleghani Educational and Medical Center in Gorgan, (Northern Iran - Golestan Province). The inclusion criteria for the study included mothers of children with type1 diabetes under 18 years old, mothers who consented to answer the questionnaires, were literate, had no history of chronic physical or mental illness (based on self-report), had children with diabetes for at least 3 months, and did not have any other chronic illnesses or disabilities.

The sample size for this study was calculated using the results of the study by Mohamed Mahmoud et al. The correlation between the two scores of caregiving burden and mothers' self-efficacy in this study was estimated to be r=-0.366 (13). Considering the type I error rate $\alpha=0.05$ and type II error rate $\beta=0.2$, the minimum required sample size was calculated as 285 people. Due to the limited target population of 400 people and eligible mothers, the sample size was adjusted. Ultimately 167 mothers with children with type1 diabetes were evaluated in terms of caregiving burden and self-efficacy. The simple random sampling method was used to select the samples. The sampling frame included a list of all children with diabetes in the Pediatric Diabetes Clinic of Taleghani Educational and Medical Center, Gorgan. Each child was assigned a number, and 167 children were selected using simple random sampling. Their mothers were then asked to complete the questionnaires based on their eligibility. It should be noted that initially, the necessary explanations about the objectives and methodology were provided to mothers. If they were willing to participate, they were asked to complete the questionnaire.

The data collection tool in this study consists of three parts: 1-Demographic profile form 2-Zarit et al. Caregiver Burden Questionnaire 3- Berkeley Maternal Self-Efficacy Scale, second version.

1-The demographic profile form includes information about the mother's age, occupation and education, economic status, and the age of the sick child.

2-The Zarit Caregiver Burden Questionnaire was developed by Zarit et al. in 1980 to measure caregiver burden. This questionnaire includes 22 questions about personal, social, emotional, and economic pressures. Each factor is measured on a five-point Likert scale (never to always), which is scored from zero to four. Research participants will choose one of the following in response to each question: never (zero points), rarely (one point), sometimes (two points), often (three points), and always (four points). The total scores obtained range from 0 to 88. A lower score indicates less caregiver burden. The total scores obtained by each caregiver indicate their level of caregiver burden. A score of zero means no caregiver burden, while a source of and the 88 indicates the highest caregiver burden. Scores between 61-88 indicate severe caregiver burden, 31-60 indicate moderate caregiver burden, and less than 30 indicate mild caregiver burden (17).

Talebi et al. also assessed the validity of the questionnaire using a quantitative content validity method, determining CVI and CVR. The feedback from eleven faculty members of the nursing school indicated that the caregiving burden tool had acceptable content validity across all items in the CVR dimension. In the CVI dimension, scores range from 0.7 to 1, indicating the appropriateness of items in terms of simplicity, relevance, and clarity. The Cronbach's alpha coefficient was calculated as 0.86 (18). In the study by Dehvan et al., the opinions of ten experts were utilized to determine the validity of the data collection tool through the qualitative content validity method, with qualitative editing performed. To establish the reliability of the caregiving burden questionnaire in the recent study, 30 individuals were selected at a two-week interval. The test-retest reliability was approximately 0.83 and Cronbach's alpha was 0.84 (19).

3-Berkeley Maternal Self-Efficacy Scale, Second Edition: This questionnaire has 17 questions and aims to assess mothers' self-efficacy in various dimensions (responsibility, self-management, child acceptance, and positive evaluation of the child). Its response spectrum is Likert-type, ranging from 1 strongly disagree, 2 somewhat disagree, 3 slightly disagree, 4 slightly agree, 5 somewhat agree, 6 strongly agree. The above questionnaire has four dimensions, with questions related to responsibility 1-4, self-management 5-8, child acceptance 9-14, and positive evaluation of the child 15-17. To obtain a score for each dimension, add together the total scores of the questions related to that dimension. Higher overall scores indicate higher self-efficacy of the responding mother and vice versa. In Rezai's research, the face and content validity of the questionnaire were confirmed using the opinions of university professors. The construct validity of the questionnaire was established thourgh a factor analysis test. The reliability of the questionnaire was assessed using Cronbach's alpha test, with reported values of 0.63 for the responsibility dimension, 0.65 for self-management, 0.53 for the child acceptance, 0.58 for positive evaluation of the child, and 0.81 for all dimensions (20). The validity obtained for this scale in the study by Ahmadi et al. was also 0.79. The reliability of the instrument in their study was 0.93, calculated using Cronbach's alpha (21).

After approving the proposal and obtaining permission from the Vice-Chancellor of Research and the Ethics Committee (IR.GOUMS.REC.1403.362), the researcher visited Taleghani Educational and Medical Center in Gorgan. After coordinating with and obtaining permission from center’s director, she then proceeded to the Children's Diabetes Clinic to select eligible samples were selected. The researcher explained the research objectives to the participants and obtained verbal informed consent from them ensuring all ethical issues were considered. Subsequently, the participants were asked to complete the relevant questionnaires.

2-1. Data Analysis

The data were analyzed using IBM SPSS Statistics version 26 software. Mean ± SD, Median (Q1, Q3) and Range were used to describe quantitative variables, while frequency (percent) was used for qualitative variables. Since the number of questions in different dimensions of the mothers' self-efficacy questionnaire varied, the score of each dimension was divided by the number of its questions to obtain a scaled score ranging from 1 to 6 for all dimensions. The assumption of normality of the data was checked using the Shapiro-Wilk test and the data histogram was drawn. Considering the data distribution, to compare the caregiving burden, self-efficacy and its components between the

two groups, the parametric t-test was used in conditions with normal distribution and otherwise the nonparametric Mann-Whitney test was used. When comparing more than two groups, one-way analysis of variance or Kruskal-Wallis test was used. The relationship between variables was measured with Spearman's correlation coefficient and the significance level was considered to be 0.05.

3-RESULT

In this study, 167 mothers caring for their children with Type1 diabetes were assessed for their caregiving burden, self-efficacy, and relatedness. The mean age of the mothers was 38.98 ± 6.38 years, with 32 (19.2%) of them employed and 7 (4.2%) as heads of household. The children ranged in age from 2 to 17 years with a mean age of 11.46 years, and almost half of them were girls. The mean duration of illness was 48.19 months (Table 1).

The mean caregiving burden of mothers was 30.01±10.11, with 56.3% (94) experiencing a mild care burden, 43.1% (72) a moderate care burden and only one (0.6%) a severe care burden. Their mean self-efficacy was 83.91±8.33, with the distribution of the questionnaire scores and their components presented in Table 2.

In examining the relationship between caregiving burden and self-efficacy of mothers with children with diabetes and each of its components, there was a moderate inverse correlation of -0.378 between caregiving burden and mothers' self-efficacy. Additionally, a moderate inverse correlation was observed between caregiving burden and responsibility and self-management. The magnitude of the relationship between caregiving burden and the above variables, as well as some other variables is presented in Table 3.

Table-1. Baseline characteristics of children with type1 diabetes and their mothers.

Characteristic (n=167)		**Distribution**
Child's age, years	**Mean ± SD (Range)**	11.46 ± 3.81 (2-17)
Mother's age, years	**Mean ± SD (Range)**	38.98 ± 6.38 (26-55)
Sex, n (%)	**Boy**	84 (50.3)
	Girl	83 (49.7)
Job status, n (%)	**With**	32 (19.2)
	Without	135 (80.8)
Education level, n (%)	**Less than a diploma**	78 (46.7)
	Diploma	53 (31.7)
	University	36 (21.6)
Ethnicity, n (%)	**Fars**	75 (44.9)
	Turkmen and Kazakh	41 (24.6)
	Baloch	12 (7.2)
	Sistani	39 (23.4)
Head of household, n (%)	**Yes**	7 (4.2)
	No	160 (95.8)
Economic status, n (%)	**Poor**	71 (42.5)
	Average or Excellent	96 (57.5)
Duration of illness, months	**Mean ± SD (Range)**	48.19 ± 32.62 (2-150)

Table-2. Distribution of Care Burden score, Self-Efficacy, and its components.

Characteristic (n=167)	Score		
	Raw		Rescaled
	Range	Mean ± SD	Mean ± SD
Care Burden	8-65	30.01 ± 10.11	-
Responsibility	6-24	18.68 ± 3.90	4.67 ± 0.97
Self-Management	12-24	19.26 ± 2.82	4.82 ± 0.71
Child Acceptance	19-36	29.16 ± 3.20	4.86 ± 0.53
Positive Evaluation of Child	10-18	16.81 ± 1.45	5.60 ± 0.48
Mother's Self-Efficacy	63-100	83.91 ± 8.33	4.94 ± 0.49

Table-3. Relationship between care burden and self-efficacy of mothers with diabetic children.

Variable	Spearman	Child's age	Mother's age	Duration of illness	Responsibility
Care Burden	Correlation	-0.264	-0.177	-0.127	-0.336
	P-value	0.001	0.022	0.101	< 0.001
Variable	Spearman	Self-management	Child's acceptance	Positive evaluation of the child	Mother's self-efficacy
Care Burden	Correlation	-0.336	-0.190	-0.203	-0.378
	P-value	< 0.001	0.014	0.009	< 0.001

There were no statistically significant differences in mothers' caregiving burden and self-efficacy based on the child's gender or whether the mother was the head of the household (p-value <0.05). Additionally, there were no statistically significant difference in mothers' self-efficacy based on their employment status (p-value <0.05). However, the average caregiving burden of employed mothers was 26.84 ± 9.02, which was lower than that of unemployed mothers, at 30.76 ± 10.24 (p-value = 0.048). There was a statistically significant difference in mothers' caregiving burden, self-efficacy, and its components (except for child adoption) based on the economic status of the household (p-value <0.05). Mothers in families with low economic status had a higher average caregiving burden, and their average responsibility, self-management, positive evaluation of their child and self-efficacy were lower compared to those in families with medium or high economic status (Table 4). Furthermore, statistically significant differences were observed in the caregiving burden and self-efficacy of mothers across ethnic groups. Mothers of Baluch ethnicity had the highest caregiving burden, followed by Sistani, Farsi, Turkmen, and Kazakh ethnic groups with the lowest caregiving burden, respectively. There were also statistically significant differences between mothers across ethnic groups in terms of responsibility, positive evaluation of their child, and maternal self-efficacy, as shown in Table 5, along with details of these results.

4- DISCUSSION

According to the statistical results and analysis of the findings, it was determined that 56.3 percent of the participants had a low care burden. In line with the present study, Shogi et al. (22) conducted a study aimed at determining the relationship between resilience and care burden of mothers of children with cancer undergoing chemotherapy. The results of their study showed that almost half of the mothers had a low care burden.

Table-4. Comparison of mothers' caregiving burden and self-efficacy according to household economic status.

Characteristic (n=167)	Economic status				Test value	P-value*
	low (n=71)		Average or Excellent (n=96)			
	Mean ± SD	Median (Q1, Q3)	Mean ± SD	Median (Q1, Q3)		
Care Burden	35.72 ± 9.96	34 (29, 40)	25.79 ± 7.96	25 (19, 31)	7.158	**<0.001**#
Responsibility	17.17 ± 4.13	17 (15, 20)	19.80 ± 3.32	20 (18, 23)	-4.177	**<0.001**
Self-Management	18.69 ± 2.83	19 (17, 21)	19.69 ± 2.76	20 (18, 22)	-2.191	**0.028**
Child Acceptance	28.63 ± 3.26	29 (26, 30)	29.54 ± 3.12	30 (28, 32)	-1.824	0.070#
Positive Evaluation of Child	16.46 ± 1.65	17 (15, 18)	17.06 ± 1.24	18 (16, 18)	-2.369	**0.018**
Mother's Self-Efficacy	80.96 ± 7.89	80 (75, 87)	86.09 ± 8.00	86 (82, 92)	-3.938	**<0.001**

Q1: first quartile, **Q3:** third quartile
*: Mann-Whitney test, #: T-test

Table-5. Comparison of mothers' caregiving burden and self-efficacy according to Ethnicity.

Characteristic	Ethnicity (n=167)								Test value	P-value*
	Fars (n=75)		Turkmen and Kazakh (n=41)		Baloch(n=12)		Sistani(n=39)			
	Mean ± SD	Median (Q1, Q3)	Mean ± SD	Median (Q1, Q3)	Mean ± SD	Median (Q1, Q3)	Mean ± SD	Median (Q1, Q3)		
Care Burden	28.32 ± 8.70	30 (22, 34)	27.05 ± 10.39	24 (19, 32)	42.17 ± 12.29	39 (35, 51)	32.64 ± 8.54	30 (28, 38)	21.119	**<0.001**
Responsibility	19.47 ± 3.59	20 (17, 22)	18.95 ± 3.92	19 (17, 23)	15.58 ± 3.99	17 (14, 17)	17.85 ± 3.94	18 (15, 21)	12.621	**0.006**
Self-Management	19.45 ± 2.72	20 (18, 22)	19.46 ± 2.98	20 (17, 22)	17.25 ± 3.14	17 (15, 20)	19.31 ± 2.60	20 (17, 21)	5.786	0.122
Child Acceptance	28.77 ± 2.91	29 (27, 31)	29.73 ± 3.30	30 (28, 32)	28.33 ± 5.09	29 (25, 32)	29.54 ± 2.89	30 (28, 31)	1.254	0.292#
Positive Evaluation of Child	16.93 ± 1.31	18 (15, 18)	16.56 ± 1.66	17 (15, 18)	15.83 ± 1.47	16 (15, 17)	17.13 ± 1.36	18 (17, 18)	9.137	**0.028**
Mother's Self-Efficacy	84.63 ± 7.67	85 (80, 90)	84.71 ± 8.87	84 (77, 90)	77.00 ± 8.39	81 (70, 83)	83.82 ± 8.28	84 (78, 90)	3.184	**0.025**#

Q1: first quartile, **Q3:** third quartile
*: Kruskal-Wallis test, #: one-way ANOVA

Similarly, Mishra et al. (23) conducted a study to investigate the care burden and quality of life in families of children undergoing chemotherapy. They found that the majority of caregivers had a low care burden. It can be said that in the traditional culture of Iranian society, parents consider caring for their children as a natural duty and responsibility, viewing the difficulties as part of their parental duties. Since in Iran, mothers are the primary caregivers for children with diabetes at home, they are considered the primary caregivers in the treatment process. Mothers with low caregiving burden scores are able to adapt to the challenges of diagnosing the disease and caring for the sick child (22). In contrast to this current study, Wang et al. (24) aimed to determine "supportive care intervention for parents of children with leukemia" in California, showing that a large percentage of caregivers reported a moderate level of caregiving burden. Additionally, Rezaei et al. (25) conducted a study aimed at determining "caregiver burden in caregivers of Iranian patients with chronic disorders" in 2020, showing that a large percentage of caregivers of dialysis patients reported high caregiver burden. The reason for the observed difference can be attributed to the difference in the target population in the present study compared to the other studies mentioned.

The findings of the present study showed that the mean self-efficacy of mothers with children with type1 diabetes was 83.91, indicating that they have high self-efficacy. In this regard, the study by Ali et al. (15) and Gomes et al. (26) showed that most participants had high self-efficacy. In contrast to our study, Niya HM. (27) in a study aimed at determining the "Effect of General Psychology Education on Self-Efficacy of Mothers Whose Children Underwent Surgery at Taleghani Children's Hospital in Gorgan" showed that mothers of children undergoing surgery always have a low level of self-efficacy. In explaining the observed difference, it can be pointed out that although this study was conducted in Gorgan, like the present study, the target population of this study was different from the present study. The results of the present study showed that there was a significant difference in mothers' caregiving in terms of their employment, education level, and economic level. Mothers in the pharmacy with lower educational and economic levels had a higher care burden. In line with our study, Mohammad Mahmoud et al. (13) showed that there is a significant relationship between parental care burden and their employment. While Alibakhshi et al. (28) in 2019 and Hassanzadeh et al (14) in 2020, showed that there is no significant relationship between parental care burden and their employment status. In line with our study, Dastyar et al. (29) and Dehvan et al. (19) showed that parents with lower educational levels experience a higher level of care burden. In justification of this issue, it can be said that caregivers with lower educational levels have less awareness of the disease process and care methods, are less able to seek social support, and this can increase their caregiving pressure. The results of the study by Alibakhshi et al. (28) and Aliakbarian et al. (30) were also consistent with our study and showed that caregivers with low economic status suffer from high care burden. Poor economic status is associated with high care burden and economic suffering in caregivers, which can be due to job loss or illness costs. On the other hand, with increasing income, the economic status improves and access to health care increases, and parents with high income can better support their families, so it is obvious that the family care burden decreases (28). The results of our study showed that there is a weak and inverse correlation between the age of the child and the mother with care burden. In

this regard, Alibakhshi et al. (28) showed that there is an inverse correlation between care burden and the age of the parents and the child. Similarly, the study by Wang et al. (24) and Mohammad Mahmoud et al. (13) also showed that there is a significant relationship between care burden and the age of the mother. In contrast to this study, Hassanzadeh et al. reported that there is no significant relationship between caregiving burden and the age of the child (14). According to our results and similar studies, it can be said that the younger the parents are, the less easily they may be able to adapt to the problems that have arisen for their child. On the other hand, economic problems are usually more common at younger ages, which naturally affects caregiving burden. Also, younger parents may not have enough experience to use support resources (31).

The results of our study showed a significant relationship between mothers' self-efficacy scores and their economic status. Mothers who are economically weak have lower self-efficacy scores. In line with our study, Ramzani et al. showed a significant relationship between the perceived economic status of the patient and caregiver and the caregivers' self-efficacy (32). However, Mohammad Mahmoud et al. showed that there is no relationship between the self-efficacy scores and economic status (13). Hassanzadeh et al. also showed that there is no significant relationship between mothers' self-efficacy and household income (14). The reason for the discrepancy could be differences in the research population, environment, and method.

The results of the present study showed an inverse and moderate correlation between the burden of care and the self-efficacy of mothers with children with type1 diabetes. In this regard, the study by Fouad NA, et al. in Egypt (33) and also by Mohamed Mahmoud et al. (13) showed an inverse correlation between the burden of care and the self-efficacy of caregivers. It can be said that people with higher levels of self-efficacy for performing care tasks have higher levels of success in performing tasks, lower levels of mental and physical illness, reduced burnout, and higher well-being than people with low levels of self-efficacy. In contrast to our study, Hassanzadeh et al. (14) showed that there is no significant relationship between the burden of care of mothers with children with chronic diseases and their self-efficacy. It seems that the main reason for the difference between the results of the study by Hassanzadeh et al. and the present study is the difference in individual-social variables between the studied populations in the research.

Unfortunately, regarding the results of the relationship between caregiving burden, self-efficacy, and ethnicity, we did not find any studies with an extensive search to discuss the variable domains of self-efficacy, which requires further study in this field.

4-1. Limitations

The present study is a cross-sectional study that cannot definitively establish a causal relationship due to the simultaneous examination of independent and dependent variables and the lack of a precise temporal relationship. Additionally, the psychological conditions of the mothers in the study were not suitable at the time of completing the questionnaires. To reduce this limitation, the mothers were given the opportunity to answer the questionnaires at an appropriate time. And other limitation present study is to we don’t regard key clinical variables such as mean HBA1C, DKA frequency in year, sever hypoglycemic attack in year, insulin regimen (old insulins, MDI, pomp), duration of diabetes.

5- CONCLUSION

The findings of this study showed that more than half of the participants had a mild caregiving burden and most mothers had high self-efficacy. There was a moderate inverse correlation between caregiving burden and self-efficacy of mothers with children with type1diabetes. Therefore, it is necessary to pay special attention to these variables in mothers with children with type1 diabetes so that they can perform more effectively in caring for their children.

Additionally, managers of diabetes departments and clinics must adopt strategies to reduce the caregiving burden and improve the self-efficacy of mothers with children suffering from diabetes. This will enhance the quality of nursing care by improving the care for children with diabetes and take a step towards advancing the nursing profession

6- ACKNOWLEDGMENTS

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7- ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study adhered to the ethical framework of the Declaration of Helsinki. Permission was obtained from the Ethics Committee of Golestan University of Medical Sciences, Gorgan, Iran (IR.GOUMS.REC.1403.362) All participants were informed of the voluntary nature of their participation in the study and were told that they were free to withdraw at any time. We also ensured the confidentiality of participants' personal information. Additionally, we obtained written informed consent from each participant.

8- AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

9- COMPETING INTERESTS

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

10- FUNDING

This article was extracted from a research project and approved by the Nursing Research Committee, Golestan University of Medical Sciences.

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