

## State and Trait Anxiety in Parents of Children with Diabetes Mellitus Type I

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### Abstract

**Introduction:** A Diabetes Mellitus (DM) diagnosis in the child traumatic event that parents have to cope with.

**Aim:** It was the investigation of state and trait anxiety of parents of children suffering from DM and the comparison between the groups of fathers with that of mothers’.

**Material and method:** The sample of the study consisted of 83 parents (18 fathers and 65 mothers) of children with DM, accompanying their children during their regular examination as outpatients in the Pediatric Endocrinology Department of one University and one General hospital of a provincial town in Greece. The participants filled in the Spielberger’s State –Trait Anxiety Inventory. The statistical methods t-Test and Xp2 were used. Statistical significance was set at  $p < 0.05$

**Results:** The mean age of fathers and mothers was  $43.72 \pm 7.50$  and  $40.15 \pm 5.46$  respectively. Mean values of fathers’ State and Trait anxiety were  $45.67 \pm 11.31$  and  $40.56 \pm 12.83$ , while mothers’ were  $45.05 \pm 10.33$  and  $45.22 \pm 9.02$  respectively. When parents were divided into two categories, depending on cut-off value 43, which is the mean value of the healthy population for both subscales, no statistically significant difference was observed.

**Conclusion:** Parents of children with DM have higher levels of state anxiety than the general population, without a statistical difference noted between fathers and mothers

**Key words:** State anxiety, Trait anxiety, Parents, Children, Diabetes Mellitus, Nursing, Psychology.

### Introduction

Chronic diseases in childhood have a serious impact on little patient’s life as well as on family’s function ( Raina et al, 2005, Boman et al 2005). The diagnosis of serious chronic disease in childhood is an anxiogenic factor, resulting in long term psychosocial problems for the parents and the remainder members of family (Lowes et al 2005). As the management of a chronic illness require the parental attendance and adaptation in new data the evaluation of the socioeconomic status and the function of parents is exceptionally useful (Goldbeck et al, 2006).

Type I DM is characterized by a complex management of therapeutic education that has bodily and psychological effect on the entire family (Lowes et al. , 2005). As it is pointed out in the study of Liakopoulou et al.(2001) the

maternal feeling expression (as the critical comments, the hostility and emotional over-involvement ) are related with the metabolic control in children’s DM. In the research of Bowes et al. (2009) most parents reported that the management DM and the knowledge of the consequences of a control cause repeated stress and anxiety even a lot of years after the diagnosis was made, and they were still concerned in regard to the future health of their child. Mothers of children with DM are particularly vulnerable (Horsch et al, 2007).

The purpose of the present study was to investigate state and trait anxiety of the parents of children suffering of Diabetes Mellitus type I and the comparison between the two group of parents with the group of mothers. The

assumption of the research was that levels of both trait and state anxiety will be higher in parents of children with DM ,

than mean values of general Greek population and that mothers will exhibit higher rates of anxiety than fathers.

## Literature Review Material and Methods

The present study was conducted in the context of the Post Graduate Course "Primary Health Care" of the Health Science Department of the University of Thessaly and Health Science Department of the Technical Institute of Larissa. It lasted from December 2008 until September 2009. 83 parents (18 fathers) of children with Type I diabetes mellitus, visiting as outpatients the Pediatric Endocrinology Departments of a University hospital and a General hospital of a provincial town were included in the study. The parents were consecutively recruited on the condition they were beyond 18 years old and they voluntarily participated. Every single participant was the caregiver of one diabetic child only. Participants gave their informed consent and were reassured that their responses would remain anonymous and confidential. Parents filled in the Greek version of Spielberg's STAI (State and Trait Anxiety Inventory). STAI consists of 40 questions referring to 2 subscales:

a) The emotional state of the participant at the moment

of filling the questionnaire ( i.e state anxiety as a result of the present situation)

b) The emotional state of the participant in general (anxiety as a personality trait)

Evaluation is performed on the basis of a four-point Likert scale (1-2-3-4). In addition to the extracted index for each subscale, a general index of anxiety is produced, after totalizing the score of all sentences.

Questions n.1,2,5,8,11,15,16,20,21,26,27,33,36 and 39 are reversely scored (4=1), (3=2), (2=3), (1=4). Values in each subscale range from 20 to 80. The mean value in the general healthy Greek population for the first subscale is 43.21, for the second is 42.79 and for the total scale is 86.01 (Anagnostopoulou & Kioseoglou , 2002). The mean values mentioned and used in this study come from the second scale evaluation that is closer to the time of the conduction of the present study. The questionnaire has sufficient validity and reliability.

## Statistics

Descriptive statistics was performed and contingency tables were created for the values examined. The distribution of the answers in the two subscales was normal and comparison between the group of fathers and mothers was performed with the Student's T-test. A binary variable was produced, based on the cut-off score 43, which is the mean

value for the general healthy Greek population. According to this variable parents were divided into two groups within each subscale: Those with a score < 43 and those with a score > 43. Comparison between the two groups was performed with Yates  $\chi^2$  ( $\chi^2$ ), which is used for a 2x2 table. SPSS , 13.0 was used.

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## Results

Socio – demographic profile of individuals in both groups, as well as their answers to the additional questions posed in the socio-demographic questionnaire are presented in tables 1 & 2. The mean age of fathers was 43.72  $\pm$  7.50 years old, while the mean age of the mothers was 40.15  $\pm$  5.46 years old.. Regarding family status, the vast majority were married (N=78, 94%). Regarding number of children, most parents had one- two children (N=74, 90 %). Most parents were High School graduates (N=44, 53%), while 23 were unemployed (27.7%). Most parents lived in large urban centers (>150,000 residents, N=52, 62.7%). The majority of the children with DM were girls (N=44, 53.1%). Most children were 6-10 years old and in their majority (N=72, 90 %) the disease was diagnosed less than five years ago.

As shown in table 3, fathers' and mothers' state anxiety

mean value were 45.67  $\pm$  11.31 and 45.05  $\pm$  10.33 respectively, without any statistical difference. The comparison of the two groups after fusion of classes in a distribution consisting of two categories ( $\leq$ 43 points and >43, as 43.21 is the mean value for the state anxiety in the healthy population) with Yates  $\chi^2$  did not show a statistically significant difference between the two groups ( $p < 0.05$ ).

Regarding fathers' trait anxiety, the mean value was 40.56  $\pm$  12.83 while mothers' mean value was higher, 45.22  $\pm$  9.02 in particular, without, however any statistically significant difference. Again, the comparison between the two groups, above and below the cut off value of 43 (<43 and >43, as 42.71 is the mean value for the trait anxiety in the healthy population), revealed no statistically significant difference ( $p < 0.05$ ).

## Discussion

The parents of the children with DM had higher levels of state anxiety in comparison to the Greek general population and mothers had higher scores in the subscale of trait anxiety. These results confirm our assumption that parents of children with DM will have higher levels of state anxiety than the general Greek population, but the assumption of the difference between fathers and mothers regarding state anxiety is not confirmed. It is noted that state anxiety mean values proposed in an older evaluation in Greece by Liakos & Giannitsi (1984) for the healthy individuals were about 39.69. These results are in accordance with those of international studies, which show that management of DM and the awareness of the consequences of their poor control cause relapsing stress and anxiety, even many years after the initial diagnosis Bowes et al. (2009). Most parents may exhibit signs of anxiety and depression, a phenomenon more intense in mothers (Kokkonen et al., 1997). Although maternal anxiety or depressive symptoms are not prominent in general, they do exist, at least in some mothers, even when they are informed of the possibility of a DM screening test in newborns (Kerruish et al., 2007, Horsch et al., 2007). Fathers' stress has been positively associated with mother-reported difficult child behaviour (Mitchell et al. 2009). Hearing about the diagnosis is a traumatic stressor for the majority of the parents, with 40% of them reporting moderate to severe symptoms of state-anxiety and 17% moderate to severe symptoms of depression (Streisand et al., 2008).

It has also been found that parents of children with DM consider their child as less healthy in comparison to his peers, despite the fact in evaluation of physical activities, children with DM have similar scores with the rest of the children (Kaloudi,

2009). Parental stress is reversely related to the age of the parent and the socioeconomic status of the family (Mitchell et al., 2009). The regimens in use also affect the psychological status of the parent with insulin injections placing a greater burden on parental psychological status compared to pumps (Streisand et al., 2005). The importance of investigation and management of stressors and parental psychological burden is proven by the fact that the bad emotional status of the parent places a risk for the development of psychiatric disturbances in children, with unpleasant effects on DM control (Piazza-Waggoner et al., 2008, Mullins et al., 2007).

It would be important for future research on this issue to compare parents of children with DM, depending on the years suffering from DM and/or which side (fathers' or mothers') is likely responsible for the inheritance of the disease.

It would be interesting to compare the psychological features of parents of diabetic children with those of parents of healthy children and those suffering from other chronic diseases. It has been found that, comparing to other chronic illnesses diseases, children with DM exhibit a rather better quality of life (Kaloudi, 2009, Boman et al. 2004).

Limitations of the study include the small sample size of fathers, which limits the statistical power of the comparisons of the subgroups.

As a conclusion, both parents of children with DM present higher state anxiety levels in comparison with the mean value of the healthy general Greek population, while mothers also exhibit higher levels of trait anxiety. No statistically significant difference is observed between fathers and mothers.

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## Tables

**Table I. Distribution of the 83 parents of children with DM, depending on age, family status and number of children.**

	Fathers N(%)	Mothers N(%)	Total N(%)
<b>Age ( years)</b>			
≥ 24-30	1 (5.5)	3 (4.6)	4 (4.8)
31-40	5 (27.8)	30 (46.2)	35 (42.2)
41- ≤54	12 (66.7)	32 (49.2)	44 (53.0)
Total	18 (21.7)	65 (78.3)	83(100.0)
<b>Family status</b>			
Unmarried	0 (0.0)	1 (1.5)	1 (1.2)
Married	16 (88.9)	62 (95.4)	78 (94.0)
Divorced	2 (11.1)	2 (3.1)	4 (4.8)
Total	18 (21.7)	65 (78.3)	83 (100.0)
<b>Number of children</b>			
1	1 (5.6)	34 (52.3)	35 (42.2)
2	15 (83.3)	25 (38.4)	40 (48.2)
3	2 (11.1)	4 (6.2)	6 (7.2)
4	0 (0.0)	2 (3.1)	2 (2.4)
Total	18 (21.7)	65 (78.3)	83(100.0)
<b>Educational level</b>			
Junior High School graduate	0 (0.0)	1 (1.5)	1 (1.2)
High School graduate	9 (50.0)	35 (53.8)	44 (53.0)
University/TEI graduate	9 (50.0)	29 (44.6)	38 (45.8)
Total	18 (21.7)	65 (78.3)	83(100.0)
<b>Profession</b>			
Unemployed/ Housekeeping	0 (0.0)	23 (35.4)	23 ( 27.7)
Freelancer	1 (5.6)	5 (7.7)	6 (7.2)
Employee in private sector	10 (55.6)	12 (18.4)	22 (26.5)
Public servant	7 (38.9)	25 (38.5)	32 (38.6)
Total	18 (21.7)	65 (78.3)	83(100.0)
<b>Place of residence</b>			
Village-small town	3 (16.7)	8 (12.3)	11 (13.2)
Town < 150.000 residents	5 (27.8)	15 (23.1)	20 (24.1)
Town > 150.000			
Residents	10 (55.6)	42 (64.6)	52 (62.7)
Total	18 (21.7)	65 (78.3)	83(100.0)

**Table 2. Distribution of the 83 parents of children with DM, depending on children's age, gender and duration of the disease.**

	Fathers N(%)	Mothers N(%)	Total N(%)
<b>Children's (age years)</b>			
1-5	1 (5.6)	17 (26.2)	18 (21.7)
6-10	9 (50.0)	35 (53.8)	44 (53.0)
11-15	8 (44.4)	11 (16.9)	19 (22.9)
16-20	0 (0.0)	2 (3.1)	2 (2.4)
Total	18 (21.7)	65 (78.3)	83 (100.0)
<b>Children's gender.</b>			
Male	14 (77.8)	24 (38.1)	38 (46.9)
Female	4 (22.2)	39 (61.9)	43 (53.1)
Total	18 (21.7)	65 (78.3)	83 (100.0)
<b>Duration of the disease( years)</b>			
≤ 5	16 (88.9)	56 (90.3)	72 (90.0)
6-10	2 (11.1)	3 (4.8)	5 (6.2)
> 10	0 (0.0)	3 (4.8)	3 (3.8)

**Table 3 . Distribution and comparison of the 83 parents of the children with DM, depending on STAI subscales.**

	Fathers N(%)	Mothers N(%)	Total N(%)
<b>State anxiety</b>			
≤ 43	8 (44.4)	32 (49.2)	40 (48.2) $\chi^2=0.39$
$P<0.05$			
> 43	10 (55.6)	33 (50.8)	43 (51.8)
Total	18 (21.7)	65 (78.3)	83 (100.0)
Mean value ( $\bar{x} \pm SD$ )	45.67 $\pm$ 11.31	45.05 $\pm$ 10.33	45.18 $\pm$ 10.49 $t=0.221$
$p<0.05$			
<b>Trait anxiety</b>			
<43	8 (44.4)	22 (33.8)	30 (36.1) $\chi^2=0.30$
$P<0.05$			
≥43	10 (55.6)	43 (66.2)	53 (63.9)
Total	18 (21.7)	65 (78.3)	83 (100.0)
Mean value ( $\bar{x} \pm SD$ )	40.56 $\pm$ 12.83	45.22 $\pm$ 9.02	44.20 $\pm$ 10.07 $t=-1.759$
$p<0.05$			