

ORIGINAL ARTICLE

Use of complementary and alternative medicine and the anxiety levels of mothers of children with chronic diseases

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Abstract

Aims: This study aimed to determine the use of complementary and alternative medicine (CAM) by mothers with a chronically ill child and their anxiety levels.

Methods: This study used a descriptive design. The study was conducted with 135 mothers of a chronically ill child at a general pediatric and oncology unit in Uludağ University Hospital, Bursa, Turkey. A questionnaire, including sociodemographic items and the State-Trait Anxiety Inventory, were given to the mothers.

Results: In the study, 42.29% of the mothers reported using one or more CAM therapies for their child with a chronic disease, including herbal medicine, taking the child to *hodja* (prayers), a special diet, and a special massage. The mothers experienced anxiety and the presence of a disease within the close family circle increased the anxiety level of the mothers.

Conclusion: Herbs and other alternative supplements were used by some children with a chronic disease in Turkey. The most commonly used CAM therapies included oral herbal medicine, taking the child to *hodja*, massage, and diets. Therefore, it is important to consider the implications of the popularity of complementary therapies. Most of the mothers used more than one of these therapies for their child and the anxiety level of the mothers was found to be moderate.

Key words: anxiety, children, chronic diseases, complementary and alternative medicine, herbal medicine, massage.

INTRODUCTION

Traditional approaches for treating and curing diseases have maintained their validity throughout history. Currently, these traditional approaches are grouped under the name “complementary and alternative medicine” (CAM). Complementary medicine is used with standard health care and alternative medicine is used instead of standard health care (National Center for Complementary and Alternative Medicine, National Institutes of Health, 2010a). The incidence of CAM use is rising

among children with chronic health conditions in Turkey (Gözüm, Arıkan, & Büyükavcı, 2007; Kaya, Ergüven, Tekin, Özdemir, & Yılmaz, 2009; Öztürk & Karayağız, 2008; Özyazıcıoğlu, Polat, & Bıçakçı, 2010).

Chronic diseases often have a dramatic and significant effect on children and their family; hence, ancestral legends and religious beliefs might lead to an increased use of CAM in families that are affected by chronic diseases (Sell Salazar, 2009). The use of CAM for children with chronic diseases varies across the world: 23.9% of children in the USA, 51% of children in England and Australia, 30% of children in Holland, and 48.9% of children in Turkey (Barnes, Bloom, & Nahin, 2009; Gözüm *et al.*, 2007; Lim, Cranswick, Skull, & South, 2005; Robinson *et al.*, 2008; Vlieger, van de Putte, & Hoeksma, 2006). Some of the most well-known CAM therapies include traditional healers,

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herbal medicines and drinks that are prepared at home, massage, exercise, and diet (Gözüm *et al.*; National Center for Complementary and Alternative Medicine, National Institutes of Health, 2010b; Post-White, Fitzgerald, Hageness, & Sencer, 2009a; Post-White *et al.*, 2009b).

The principal reasons for using CAM are the treatment of a disease, supporting the immune system, increasing the capacity of the child to cope with medical procedures, and alleviating pain (Gözüm *et al.*, 2007; Neuhaus *et al.*, 2001; Yeh *et al.*, 2000). However, the immune and central nervous systems of infants and young children are not fully developed, so they might respond to treatment differently (National Center for Complementary and Alternative Medicine, National Institutes of Health, 2010b).

Families consider the use of CAM to be safe and reliable. However, there is a lack of information about the effects, safety, and efficacy of the herbal medicines that are used within these traditional approaches (Lim *et al.*, 2006; National Center for Complementary and Alternative Medicine, National Institutes of Health, 2010a).

Families confronting illness experience fear, worry, and anxiety that are related to uncertainty about the course of the disease in their child during the treatment process, repeated operations, tests, the correct administration of medicines, the side-effects of medicines, and the rules and prohibitions (Fernandes & Souza, 2001; Lim *et al.*, 2006; Meleksi, 2002; Özkaya, Çetin, Uğurad, & Samancı, 2010; Svavarsdottir & Rayens, 2005). Studies have found that some alternative medicine methods, such as massage and herbal medicine, can help to reduce both the symptoms in the children and anxiety in their parents. For example, the massage of children with cancer is feasible and appears to decrease the level of anxiety of parents and younger children (Post-White *et al.*, 2009b).

However, the type of disease and the amount of time that has passed since the diagnosis might affect parental anxiety (Boman, Viksten, Kogner, & Samuelsson, 2004). In the event that the disease of the child becomes chronic, the family adjusts to the disease in time. Although the family's anxiety might decrease, the emotional conditions can change as the disease prognosis changes (Akçakaya, Aydoğan, Hassanzadeh, Camcıoğlu, & Çokuğraş, 2003; Boman, Lindahl, & Björk, 2003; Rabineau, Mabe, & Vega, 2008).

Health personnel, including nurses, who are closely involved with families should be aware of the psychological problems and need for support of families who

have ill children. They should define and evaluate the traditional treatment approaches that are used apart from medical treatment and, if necessary, intervene (Fernandes & Souza, 2001) and provide the best care with evidence-based treatments, in accordance with the principle of causing no harm (Post-White & Hawks, 2005).

This study was conducted in order to detect whether mothers of a child with a chronic disease resort to CAM therapies and to evaluate these mothers' anxiety levels.

METHOD

Sample

The sample comprised the mothers of 135 children with a chronic disease who visited the child and adolescent oncology clinics of Uludağ University Medical Center Training, Treatment, and Research Hospital, Bursa, Turkey, on Thursdays and Fridays between February and April 2008. The ailments included respiratory conditions (e.g. asthma), endocrine diseases (e.g. diabetes), different types of cancer, nervous system conditions (e.g. cerebral palsy and epilepsy), and kidney diseases (e.g. chronic renal failure).

Data-collection tools

For the data collection, a questionnaire was used that captured the sociodemographic data of the children with a chronic disease and their mother and the State-Trait Anxiety Inventory (STAI). The questionnaire was given to the mothers at least 2 months after the diagnosis of the disease of their child.

The questionnaire consisted of three parts. The first part contained closed-ended questions that included the sociodemographic data of the mothers and children. The second part included open-ended questions that determined whether or not the mothers resorted to alternative treatments (Appendix I). In the third part, the STAI was used to determine the anxiety level of the mothers.

The Turkish adaptation of the STAI, which was developed by Spielberger in 1970, was carried out by Öner and Le Compte in 1982 (Öner & Le Compte, 1985; Spielberger, Gorsuch, & Lushene, 1970). The State Anxiety Inventory (SAI) requires individuals to define how they feel in a specific moment and under certain conditions, whereas the Trait Anxiety Inventory (TAI) requires individuals to define how they feel in general. The SAI can be conducted on the same individuals at different times in order to assess changes in the severity of their fear and anxiety levels. The TAI is not sensitive

to feelings that change based on temporary conditions. For both scales, the weight values of the answer options change from one to four. In the scales, there are direct or smooth statements, indicating negative feelings, and reverse statements, indicating positive feelings. The total score value that is obtained from either scale is between 20 and 80. High scores indicate a high level of anxiety. The scoring is carried out by subtracting the total score of the direct statements from the total score of the reverse statements. A predetermined and unchanging value is added to this number. This value is 10 for the state of anxiety and 35 for the trait of anxiety. The final value that is obtained is the anxiety score of the individual. Subscale scores of 20–39 are considered to be indicative of low anxiety, scores of 40–59 are considered to be of moderate anxiety, and scores of 60–80 are considered to be of severe anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

Two researchers collected the data via face-to-face interviews with the mothers. Each interview lasted for 20 min.

Data analysis

The statistical analysis was carried out by using the Statistical Package for the Social Sciences version 10.0 for Windows (SPSS, Bursa, Turkey). Both parametric and non-parametric linkage analyses were made.

In the comparison of two independent groups, the *t*-test was used for the parametric values and the Mann–Whitney *U*-test was used for the non-parametric values. In the comparison of multiple independent groups, the Kruskal–Wallis test was used and Pearson’s correlation analysis was used to assess the relationship between two averages. For all the analyses, $P \leq 0.05$ was considered to be statistically significant.

Ethical considerations

Before starting the study, the necessary permission from the Uludağ University Faculty of Medicine Ethics Committee and written consent from the families that were participating in the study were received. The mothers of the children who were included in the study were informed about the study and their voluntary participation was ensured.

RESULTS

The average age of the mothers was 33.54 years ($SD = 5.62$). The age distribution of the children was as follows: 39.3% were 1–5 years old, 31.1% were 6–10 years old, and 29.6% were ≥ 11 years old.

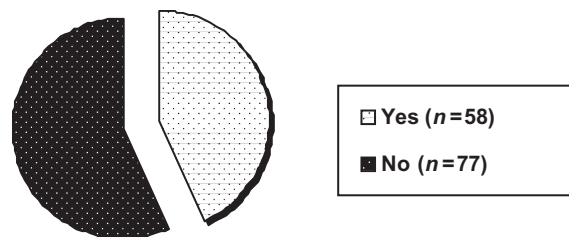


Figure 1 Use of one or more than one complementary and alternative medicine therapy for the child.

In the study, 42.29% of the mothers reported using one or more CAM therapies for their chronically ill child, including herbal medicine, taking the child to *hodja* (prayers), a special diet, and a special massage (Fig. 1). The herbal medicines were used as follows: stinging nettle for cancer (three patients), cough tea for asthma (three patients), locust molasses for cancer (one patient), basil for renal failure (one patient), linden for nervous system diseases (one patient) and asthma (one patient), and *zam-zam* water for nervous system diseases (one patient) (Table 1).

Figure 2 displays the mothers’ use of CAM therapies by the type of chronic disease that was suffered by their child (Table 1):

- 1 Taking the child to *hodja*: nervous system diseases (five patients, 31.3%); asthma (one patient, 20%); chronic renal failure (one patient, 11.1%); and cancer (three patients, 3.2%).
- 2 Using herbal medicine: asthma (four patients, 80%); nervous system diseases (two patients, 12.5%); chronic renal failure (one patient, 11.1%); and cancer (four patients, 4.2%).
- 3 Using a special massage: asthma (two patients, 40%); nervous system diseases (four patients, 25%); diabetes (two patients, 20%); cancer (17 patients, 17.9%); and chronic renal failure (one patient, 11.1%).
- 4 Using a special diet: diabetes (eight patients, 80%); chronic renal failure (eight patients, 25.8%); asthma (one patient, 20%); cancer (12 patients, 12.6%); and nervous system diseases (two patients, 12.5%).

Moreover, only the mothers of four patients (3%) consulted with their nurses or doctors about CAM use.

The study found that the mothers of a child with a chronic disease recorded an average anxiety level score ($SAI = 51.18 \pm 11.13$, $TAI = 45.95 \pm 8.61$).

The mothers’ anxiety scores were not statistically significantly different according to the type of disease that was affecting their child (Table 2). When the correlation between the mothers resorting to CAM therapies and

Table 1 Type of herbal medicine used according to the type of chronic disease

Traditional method	Disease				Total
	Oncologic	Nervous system	Chronic renal failure	Asthma	
Stinging nettle	3	0	0	0	3
Zam-zam water	0	1	0	0	1
Linden	0	1	0	1	2
Cough tea/herb	0	0	0	3	3
Basil	0	0	1	0	1
Locust molasses	1	0	0	0	1

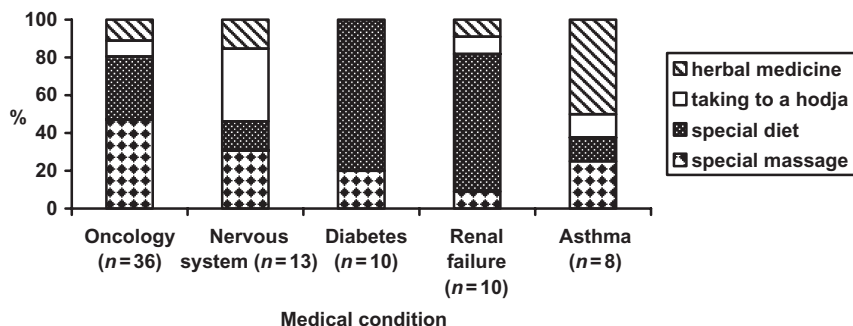


Figure 2 Distribution of the traditional methods that are used for the treatment of children's diseases.

the SAI-TAI average scores was considered, a statistically significant difference was discovered between the use of a special massage and the SAI-TAI score, between the use of a special diet and the TAI score, and between the use of herbal medicine and the TAI score.

A meaningful correlation was found between the existence of other diseases in the family and the SAI-TAI anxiety score and between the existence of the same disease in the family and the SAI score.

A statistically significant difference was found between the SAI scores and the TAI scores of the mothers (an average anxiety level score: SAI = 51.18 ± 11.13, TAI = 45.95 ± 8.61; *P* < 0.001).

DISCUSSION

Many (42.29%) of the mothers who participated in the study reported using one or more CAM therapies with their chronically ill child (Fig. 1). Studies that have been conducted in Turkey have found that the mothers reported varying use of traditional treatment approaches with their child: 57% for general pediatric conditions (Öztürk & Karayağız, 2008), 48.9% for children with cancer (Gözüm *et al.*, 2007), and 66.8% for children with asthma (Kaya *et al.*, 2009).

The results of this study revealed that cough tea and linden were used frequently for children with asthma and urtica urens was used for children with cancer. Herbal medicines were used to control asthma attacks and to treat respiratory problems for children with asthma (Kaya *et al.*, 2009; Madsen *et al.*, 2003; Oshikoya, Senbanjo, Njokanma, & Soipe, 2008). Cough tea and linden, which have expectorant qualities, are used frequently in Turkey. Stinging nettle is commonly used for the treatment of adults, as well as of children (Gözüm *et al.*, 2007) (Fig. 2).

As displayed in Figure 2, a special massage and herbal medicine were the most frequently used CAM modalities by the mothers of a child with cancer. The herbal medicines that are used for patients with cancer might prevent chemotherapeutic agents from reaching an efficient dose or might cause toxic effects (Post-White & Hawks, 2005). It can be said that mothers who use herbal medicines have insufficient information about this issue.

The use of CAM varied by the type of disease. The chronic disease for which CAM therapies were used most frequently was asthma, followed by diabetes, nervous system diseases, chronic renal failure, and cancer. In keeping with the findings of this study, other

Table 2 Demographic and treatment characteristics and the State Anxiety Inventory (SAI)–Trait Anxiety Inventory (TAI) levels of the complementary and alternative medicine therapy (CAM) users, compared to the non-users ($n = 135$)

Descriptive features	N	SAI [†]	Test values and P-value	TAI [†]	Test values and P-value
Average age of the mother (mean \pm SD)	33.54 \pm 5.62	$r = 0.034$	$P > 0.05$	$r = -0.085$	$P > 0.05$
Educational level of the mother					
Illiterate	10	50.20 \pm 14.83	$\chi^2_{k-w} = 1.152$; d.f. = 3; $P > 0.05$	47.70 \pm 13.52	$\chi^2_{k-w} = 3.145$; d.f. = 3; $P > 0.05$
Primary school	87	51.97 \pm 11.32		46.18 \pm 7.88	
High school	30	49.23 \pm 9.06		43.87 \pm 8.54	
University	8	51.18 \pm 11.13		49.00 \pm 9.17	
Existence of other diseases in the family					
Yes	33	54.58 \pm 10.58	$t = 2.041$; $P < 0.05$	49.03 \pm 9.46	$t = 2.459$; $P < 0.05$
No	102	50.08 \pm 11.13		44.93 \pm 8.10	
Existence of the same disease in the family					
Yes	20	57.85 \pm 12.07	M-WU = 705.000; $P < 0.01$	47.15 \pm 8.77	M-WU = 1076.500; $P > 0.05$
No	115	50.02 \pm 10.59		45.74 \pm 8.60	
Disease of the child					
Oncologic	95	50.75 \pm 10.60	$\chi^2_{k-w} = 2.035$; d.f. = 4; $P > 0.05$	46.66 \pm 8.62	$\chi^2_{k-w} = 3.858$; d.f. = ; $P > 0.05$
Nervous system	16	52.25 \pm 11.85		43.31 \pm 10.43	
Diabetes	10	55.20 \pm 12.95		45.20 \pm 6.68	
Chronic renal failure	9	52.67 \pm 14.46		45.00 \pm 8.15	
Asthma	5	45.20 \pm 9.42		44.00 \pm 6.60	
Use of herbal medicines [‡]					
Yes	11	54.45 \pm 10.08	M-WU = 548.000; $P > 0.05$	51.45 \pm 6.47	M-WU = 392.000; $P < 0.05$
No	124	50.89 \pm 11.21		45.46 \pm 8.62	
Taking the child to <i>hodja</i> [‡]					
Yes	10	51.10 \pm 10.27	M-WU = 608.000; $P > 0.05$	46.80 \pm 10.13	M-WU = 614.000; $P > 0.05$
No	125	51.18 \pm 11.24		45.88 \pm 8.52	
Special massage [‡]					
Yes	26	44.15 \pm 11.03	M-WU = 821.500; $P < 0.001$	42.58 \pm 7.15	M-WU = 1016.000; $P < 0.05$
No	109	52.85 \pm 10.53		46.75 \pm 8.76	
Special diet [‡]					
Yes	31	49.31 \pm 12.84	$t = -1.058$; $P > 0.05$	43.39 \pm 7.83	$t = -1.906$; $P < 0.05$
No	104	51.73 \pm 10.57		46.71 \pm 8.71	

[†]Values are the mean \pm SD; [‡]the mothers who were using CAM for their child reported more than one answer for the types of CAM that were used. k-w, Kruskal-Wallis; M-WU, Mann-Whitney U-test.

studies have found that traditional therapies were used more frequently for asthma than for other chronic diseases (Madsen *et al.*, 2003; Post-White *et al.*, 2009a).

When all the CAM therapies were considered in the context of the various chronic conditions, the following results were the most salient: using herbal medicines for asthma, using special diets for diabetes, taking children to *hodja* for nervous system diseases, and using a special massage and special diets for cancer. The spiritual and religious approaches of mothers in Turkey contribute to the use of traditional approaches, such as taking the

child to *hodja* and resorting to personal prayers for treatment (Özyazıcıoğlu & Polat, 2004; 2005). In this study, taking an ill child to *hodja* was practised most frequently by the mothers with a child who was suffering from a nervous system disorder, but it also was observed in relation to all the other chronic diseases that presented in this study. The literature shows that traditional healers (e.g. elite persons who are believed to have special powers) are sought out frequently throughout the world, especially for the treatment of epilepsy (Oshikoya *et al.*, 2008; Yeh *et al.*, 2000).

This study found that only a few mothers reported seeing their child's nurse or doctor about alternative therapy. The mothers refrained from disclosing to the medical personnel that they used CAM, probably because of their fear about negative feedback from the healthcare personnel. This result is supported by another study (Gözüm *et al.*, 2007).

Repeated additional stresses, such as the health status of the child, financial problems, and unemployment, increase the demands on parents and decrease their self-confidence. The insecurity that is formed as a result of these strenuous experiences might cause anxiety and depression in parents (Hilton, 1993). This study found that the existence of the same chronic disease, as well as other chronic diseases, in close relatives resulted in an increase in the anxiety level of the mothers. The possibility of the genetic transfer of the disease also was considered and the mothers sometimes felt that they were responsible for their child's situation. In order to decrease parents' anxiety and to increase their ability to cope with stress, healthcare providers must establish open communication with parents who have similar disease patterns within their families and support them spiritually.

Additionally, the existence of chronic disease and the uncertainty that is felt by mothers and fathers could lead to stress. The results of this study revealed that a moderate level of anxiety was experienced by the mothers with a chronically ill child. In the study, the average anxiety scores of all the mothers were 51.18 ± 11.13 for the SAI and 45.95 ± 8.61 for the TAI. The maternal anxiety level that was reported by Aksu (2008) was less than that of our sample (SAI = 42.12, TAI = 46.85), but this level was defined as moderate anxiety in the study that was conducted on mothers with a child who was suffering from asthma, epilepsy, or a urinary tract condition in Turkey.

For the mothers of a child with cancer, the anxiety level in relation to the SAI was 50.75 ± 10.60 , which is a moderate anxiety level. In the study by Arıkan and Çelebioğlu (1999), which was carried out on the mothers of a child with cancer in Turkey, the mothers' situational-permanent anxiety level was found to be more than that of our study (SAI = 56.1, TAI = 53.4), yet this study defined this anxiety level as "medium". In another study on this issue, Boman *et al.* (2003) stated that, after a child was diagnosed with cancer, the anxiety and depression levels of the mother decreased with time, but it was not possible to entirely explain the reason for these decreases. In contrast, Rabineau *et al.* (2008) reported that most parental stress can be relatively

transitory and can change in stages during the diagnosis and the treatment process.

In this study, the anxiety scores of the mothers of a child with epilepsy were 52.25 ± 11.85 for the SAI and 43.31 ± 10.43 for the TAI. In Aksu's (2008) study, the SAI score (44.20) was lower than that of this study and the TAI score (49.48) was higher than that of this study. The point average of the mothers of a child with epilepsy was found to be higher than that of the mothers in the control group ($P < 0.05$). In another study, the anxiety level of the parents of a child with epilepsy was within normal limits and it was found that good organization and strong support within the family might have played an influential part in this result (Baki *et al.*, 2004; Williams *et al.*, 2003). However, changes in the treatment period of chronic diseases and other stressful events (i.e. financial problems and the status of the disease) might increase the anxiety levels of mothers (Simonen *et al.*, 2006).

The anxiety score of the mothers of a child with diabetes was determined to be at a medium level (SAI = 55.20 ± 12.95 and TAI = 45.20 ± 6.68). Streisand *et al.* (2008) detected that the anxiety level of the mothers was at a medium level (45.65) and that the anxiety level of the fathers was lower than that of the mothers in a study that was conducted on mothers within 4 months of their child's diagnosis. Multiple authors have reported lower parental anxiety levels than are reported here, including Mitchell *et al.* (2009) in their study of the fathers of a child with diabetes and Hood, Johnson, Baughcum, She, and Schatz (2006) in their study of mothers' anxiety scores.

In this study, the maternal anxiety levels in the context of asthma were 45.20 ± 9.42 (SAI) and 44.00 ± 6.60 (TAI). In a study on the mothers of a child with asthma, Aksu (2008) found that the SAI score (41.16) was lower than that of this study and that the TAI score (46.00) was higher than that of this study. In the study by Özkaya, Çetin, Uğurad, and Samancı (2010), the mean of both the state and trait anxiety scale scores was found to be 40 ± 4.54 in the case groups and 34 ± 3.17 in the control groups and the difference between them was statistically significant. Contrary to our findings, Akçakaya, Aydoğan, Hassanzadeh, Camcıoğlu, and Çokuğraş (2003) discovered that asthma caused no change in the anxiety level of the mothers in their study, which was conducted with the mothers of a child with asthma.

Results similar to those described above were found for the mothers of a child with chronic renal failure and nervous system disorders. Changes in the health

condition of the child, poor control of the disease, and the isolation that was experienced by the child were effective in isolating the parents and increasing the anxiety of the mothers (Freidman, 2006; Williams *et al.*, 2003).

In the context of all the chronic diseases that were examined in this study, the anxiety level of the mothers was found to be only at a moderate level. This result suggests that the mothers of a child with a chronic disease accept the disease and partially adapt to the new condition, apart from changes during the disease period. No significant relationship was observed in this study between the demographic data and the anxiety level of the mothers. In the findings of Arıkan and Çelebioğlu (1999), no statistically significant difference was found between the age and educational level of the parents and their anxiety level.

This study found that the anxiety level of the mothers who used massage for their child was low and a significant difference was detected between the SAI and TAI scores and the use of a special massage. Post-White and Hawks (2005) and Post-White *et al.* (2009b) stated that the mothers of a child with cancer had higher anxiety scores; however, the use of massage was considerably beneficial for the child, decreased the child's anxiety, and also decreased maternal anxiety (Table 2).

A statistically significant difference was found between the use of a special diet and herbal medicine and the TAI score. The SAI score of the mothers was found to be higher than their TAI score and the difference was statistically significant. Toros, Tot, and Düzovalı (2002) discovered that the parents of a child with a chronic disease had higher anxiety levels than the parents of a healthy child.

Limitations of the study

There were several limitations to this study. The mothers who were analyzed in this study had a child whose condition fell within one of five large chronic disease groupings. In addition, a paucity of research examining the relationship between maternal anxiety levels and CAM use limits the use of the guiding functions of the previous studies in the Discussion. The individualized nature of this study design forms a restriction in terms of human power and the resulting small sample size makes it difficult to determine a cause-and-effect relationship from the obtained data.

RECOMMENDATIONS

In order to ensure the complete avoidance of CAM therapies, parents should be informed that there is insuffi-

cient information about the possible consequences of these kinds of methods and that they should approach such methods with caution and limit their use of them (Cuzzolin *et al.*, 2003; National Center for Complementary and Alternative Medicine, National Institutes of Health, 2010b). Furthermore, counseling services should be provided in order to relieve maternal anxiety.

CONCLUSIONS

We found that families did resort to CAM therapies, although the use of them was at a relatively low level. In the context of all the chronic diseases that were examined in this study, the mothers of a child with a chronic disease only experienced a moderate level of anxiety. However, the frequency of the incidence of disease among close relatives increased their anxiety level.

REFERENCES

- Akçakaya, N., Aydoğan, M., Hassanzadeh, A., Camcıoğlu, Y. & Çokuğraş, H. (2003). Psychological problems in Turkish asthmatic children and their families. *Allergologia et Immunopathologia*, 31, 282–287.
- Aksu, M. T. (2008). *Sociodemographic features of the parents of the children who have chronic illness and have been followed up in the children's polyclinic*. Istanbul: Sağlık Bakanlığı Haydarpaşa Numune Eğitim ve Araştırma Hastanesi, Aile Hekimliği (in Turkish).
- Arıkan, D. & Çelebioğlu, A. (1999). Investigation of parents' state-trait anxiety levels who have a child with cancer. *Journal of Atatürk University School of Nursing*, 2, 95–103 (in Turkish).
- Baki, O., Erdoğan, A., Kantarcı, O., Akışık, G., Kayaalp, L. & Yalçınkaya, C. (2004). Anxiety and depression in children with epilepsy and their mothers. *Epilepsy & Behavior*, 5, 958–964.
- Barnes, P. M., Bloom, B. & Nahin, R. L. (2009). Complementary and alternative medicine use among adults and children: United States, 2007. *National Health Statistics Report*, 10, 1–23.
- Boman, K., Lindahl, A. & Björk, O. (2003). Disease-related distress in parents of children with cancer at various stages after the time of diagnosis. *Acta Oncologica*, 42, 137–146.
- Boman, K. K., Viksten, J., Kogner, P. & Samuelsson, U. (2004). Serious illness in childhood: the different threats of cancer and diabetes from a parent perspective. *The Journal of Pediatrics*, 145, 373–379.
- Cuzzolin, L., Zaffani, S., Murgia, V., Gangemi, M., Meneghelli, G., Chiamenti, G. *et al.* (2003). Patterns and perceptions of complementary/alternative medicine among paediatricians and patients' mothers: a review of the literature. *European Journal of Pediatrics*, 162, 820–827.

- Fernandes, P. T. & Souza, E. A. (2001). Identification of family variables in parents' groups of children with epilepsy. *Arquivos de Neuro-psiquiatria*, 59, 854–858.
- Freidman, A. L. (2006). The broader burden of end-stage renal disease on children and their families. *Kidney International*, 70, 1893–1894.
- Gözüm, S., Arıkan, D. & Büyükavcı, M. (2007). Complementary and alternative medicine use in pediatric oncology patients in eastern Turkey. *Cancer Nursing*, 30, 38–44.
- Hilton, D. (1993). *Counselling parents of children with chronic illness or disability. Family adaptation to disease*. Leicester, UK: Wiley-Blackwell.
- Hood, K. K., Johnson, S. B., Baughcum, A. E., She, J. X. & Schatz, D. A. (2006). Maternal understanding of infant diabetes risk: Differential effects of maternal anxiety and depression. *Genetics in Medicine*, 8, 665–670.
- Kaya, Y., Ergüven, M., Tekin, E., Özdemir, M. & Yılmaz, H. Ö. (2009). Use of alternative treatment methods in children with asthma bronchiale in our region. *Journal of the Child*, 9, 84–89 (in Turkish).
- Lim, A., Cranswick, N., Skull, S. & South, M. (2005). Survey of complementary and alternative medicine use at a tertiary children's hospital. *Journal of Paediatrics and Child Health*, 41, 424–427.
- Lim, J., Wong, M., Chan, M. Y., Tan, A. M., Rajalingam, V., Lim, L. P. *et al.* (2006). Use of complementary and alternative medicine in paediatric oncology patients in Singapore. *Annals of the Academy of Medicine, Singapore*, 35, 753–758.
- Madsen, H., Andersen, S., Nielsen, R. G., Dolmer, B. S., Høst, A. & Damkier, A. (2003). Use of complementary/alternative medicine among paediatric patients. *European Journal of Pediatrics*, 162, 334–341.
- Meleksi, D. D. (2002). Families with chronically ill children. *The American Journal of Nursing*, 102, 47–54.
- Mitchell, S. J., Hilliard, M. E., Mednick, L., Henderson, C., Cogen, F. R. & Streisand, R. (2009). Stress among fathers of young children with type 1 diabetes. *Families, Systems, & Health*, 27, 314–324.
- National Center for Complementary and Alternative Medicine, National Institutes of Health. (2010a). *What is CAM?* [Cited 15 May 2010.] Available from URL: <http://nccam.nih.gov/health/whatiscam/overview.htm>
- National Center for Complementary and Alternative Medicine, National Institutes of Health. (2010b). *Safety of childhood complementary and alternative medicine use*. [Cited 15 May 2010.] Available from URL: <http://nccam.nih.gov/health/children/>
- Neuhouser, M. L., Patterson, R. E., Schwartz, S. M., Hedderston, M. M., Bowen, D. J. & Standish, L. J. (2001). Use of alternative medicine by children with cancer in Washington State. *Preventive Medicine*, 33, 347–354.
- Öner, N. & Le Compte, A. L. (1985). *State-trait anxiety inventory handbook*. İstanbul: Boğaziçi University Press (in Turkish).
- Oshikoya, K. A., Senbanjo, I. O., Njokanma, O. F. & Soipe, A. (2008). Use of complementary and alternative medicines for children with chronic health conditions in Lagos, Nigeria. *BMC Complementary Alternative Medicine*, 8, 66.
- Özkaya, E., Çetin, M., Uğurad, Z. & Samancı, N. (2010). Evaluation of family functioning and anxiety–depression parameters in mothers of children with asthma. *Allergologia et Immunopathologia*, 38, 25–30.
- Öztürk, C. & Karayağız, G. (2008). Exploration of the use of complementary and alternative medicine among Turkish children. *Journal of Clinical Nursing*, 17, 2558–2564.
- Özyazıcıoğlu, N. & Polat, S. (2004). Traditional treatments that the mothers with a 12-month old child applied for some health problems. *Journal of Atatürk University School of Nursing*, 7, 30–38 (in Turkish).
- Özyazıcıoğlu, N. & Polat, S. (2005). Traditional child care treatments by mothers with a 12-month old child. *Journal of Atatürk University School of Nursing*, 8, 63–68 (in Turkish).
- Özyazıcıoğlu, N., Polat, S. & Bıçakçı, H. (2010). Mothers' use of traditional approaches in the treatment of selected child health problems. *Pakistan Journal of Medical Sciences*, 26, 126–131.
- Post-White, J. & Hawks, R. G. (2005). Complementary and alternative medicine in pediatric oncology. *Seminars in Oncology Nursing*, 21, 107–114.
- Post-White, J., Fitzgerald, M., Hageness, S. & Sencer, S. F. (2009a). Complementary and alternative medicine use in children with cancer and general and specialty pediatrics. *Journal of Pediatric Oncology Nursing*, 26, 7–15.
- Post-White, J., Fitzgerald, M., Savik, K., Hooke, M. C., Hannahan, A. B. & Sencer, S. F. (2009b). Massage therapy for children with cancer. *Journal of Pediatric Oncology Nursing*, 26, 16–28.
- Rabineau, K. M., Mabe, P. A. & Vega, R. A. (2008). Parenting stress in pediatric oncology populations. *Journal of Pediatric Hematology/Oncology*, 30, 358–365.
- Robinson, N., Blair, M., Lorenc, A., Gully, N., Fox, P. & Mitchell, K. (2008). Complementary medicine use in multi-ethnic paediatric outpatients. *Complementary Therapies in Clinical Practice*, 14, 17–24.
- Sell Salazar, F. (2009). Psychosocial aspects of childhood epilepsy. *Medicina (B Aires)*, 69, 3–7 (in Spanish).
- Simonen, P., Korhonen, T., Simell, T., Keskinen, P., Kärkkäinen, M., Knip, M. *et al.* (2006). Parental reactions to information about increased genetic risk of type 1 diabetes mellitus in infants. *Archives of Pediatrics & Adolescent Medicine*, 160, 1131–1136.
- Spielberger, C. D., Gorsuch, R. L. & Lushene, R. E. (1970). *Manual for state-trait anxiety inventory ("self-evaluation questionnaire")*. Palo Alto, CA: Consulting Psychologists Press.

- Spielberger, C. D., Gorsuch, R. L., Lushene, R. E., Vagg, P. R. & Jacobs, G. A. (1983). *Manual for the state-trait anxiety inventory (form Y)*. Palo Alto, CA: Consulting Psychologists Press.
- Streisand, R., Mackey, E. R., Elliot, B. M., Mednick, L., Slaughter, I. M., Turek, J. *et al.* (2008). Parental anxiety and depression associated with caring for a child newly diagnosed with type 1 diabetes: opportunities for education and counseling. *Patient Education and Counseling*, 73, 333–338.
- Svavarsdottir, E. K. & Rayens, M. K. (2005). Hardiness in families of young children with asthma. *Journal of Advanced Nursing*, 50, 381–390.
- Toros, F., Tot, Ş. & Düzovalı, Ö. (2002). Depression and anxiety levels of parents and children with chronic illness. *Journal of Clinical Psychiatry*, 5, 240–247 (in Turkish).
- Vlieger, A. M., van de Putte, E. M. & Hoeksma, H. (2006). The use of complementary and alternative medicine in children at a general paediatric clinic and parental reasons for use. *Nederlands Tijdschrift voor Geneeskunde*, 150, 625–630 (in Dutch).
- Williams, J., Steel, C., Sharp, G. B., DelosReyes, E., Phillips, T., Bates, S. *et al.* (2003). Parental anxiety and quality of life in children with epilepsy. *Epilepsy & Behavior*, 4, 483–486.

- Yeh, C. H., Tsai, J. L., Li, W., Chen, H. M., Lee, S. C., Lin, C. F. *et al.* (2000). Use of alternative therapy among pediatric oncology patients in Taiwan. *Pediatric Hematology and Oncology*, 17, 55–65.

APPENDIX I

Questionnaire

Apart from the medical treatment that the hospital recommended for your child:

- 1 Have you ever used herbal drugs? If Yes:
 - Which herbs did you use?
 - Why?
 - Have you experienced any benefit?
- 2 Did you take your child to *hodja*?
- 3 Have you used a special massage?
- 4 Have you used a special diet?
- 5 Which other treatments have you used
- 6 Where did you learn these treatments?
- 7 Were you applying these treatments before the diagnosis of the disease?
- 8 Have you seen your doctor/nurse about these treatments?