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Reliability and Validity of Turkish Version of the Impact on Family Scale: Assessment of Depressive Symptoms and Quality of Life in Mothers with Cerebral Palsied Children

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The pragmatic aims of this study were to investigate the reliability and validity of the Turkish version of the Impact on Family Scale (IFS) and to evaluate the impact of having disabled children on mothers. Two hundred and forty seven mothers with cerebral palsied children completed the Turkish version, Beck Depression Inventory (BDI) and Nottingham Health Profile (NHP). Fifteen mothers also completed the Turkish version on two occasions, one apart, to evaluate the test-retest reliability. Cronbach's alpha and Interclass Correlation Coefficient (ICC) were calculated, respectively. Concurrent validity was examined by comparing with two instruments: BDI and NHP. Internal consistency was 0.74. When the coping items were excluded, the results showed that its Cronbach's alpha was excellent (0.81). ICC score for the test-retest reliability coefficient was 0.79. The findings indicate that the Turkish version is a reliable tool for assessing the impact of having a cerebral palsied child on Turkish speaking mothers living in Turkey.

Key words: Disabled children, impact on family scale, validity, reliability

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INTRODUCTION

Mothers having children with or without disability have to provide most of the care for their children in addition to their many other responsibilities. In addition, extra attention and support should be given to handicapped children by the mothers. Moreover, the stigma of having a child with marked disabilities has often not abated in cultures around the world (McConkey *et al.*, 2008; Gartner *et al.*, 1991). There is growing evidence that these responsibilities have an impact on maternal well-being. It is well recognized that families of children with disabilities are under greater stress than other families (McConkey *et al.*, 2008; Baxter *et al.*, 2000) due to the additional demand on the parents' time, energy, finances and emotions and possible feelings of inadequacy about their competence to deal with their child's needs (McConkey *et al.*, 2008; Olsen *et al.*, 1999). It is important for health professionals to be aware of which issues parents consider priorities for their child's disability and therapy. This knowledge is essential for understanding the needs of these families and in planning the most suitable treatment program to improve their Quality of Life (QoL) (Dolva, 2004; Lindstrand, 2002; Knox, 2008). Few studies on this topic have been published. At the same time, studies about parents' concerns and expectations for their children with disabilities are also sparse (Dolva, 2004; Lindstrand *et al.*, 2002; Knox, 2008; Chomicki and Wilgosh, 1992; Cohn *et al.*, 2000; De Moor *et al.*, 2002; Piggot *et al.*, 2002). In Turkey, physiotherapists have recently started to attach more importance to the effects of chronically disabled children on their families. There are different methods for measuring the impact of having a chronically disabled child on mothers, including the Family Functioning Scale (Epstein *et al.*, 1983), Questionnaire on Resources and Stress (QRS-F), the General Health Questionnaire the generic instrument Child Health Questionnaire-Parent Form 50 (CHQ-PF50) (Waters *et al.*, 2000) and the Impact-on-Family Scale (IFS) (Stein and Riessman, 1980). The IFS has also been used to elucidate the different dimensions of the effects of chronic illnesses in parents with disabled children such as spina bifida (Loebig, 1990), behaviorally difficult children (Sheeber and Johnson, 1992) and cerebral palsy (CP). Cerebral palsy is the most common cause of severe physical disability in childhood in Turkey (Koman *et al.*, 2004; Wang *et al.*, 2008). Depending on the degree and location of the brain damage, there may be other associated deficits or co-morbidities that have the potential to be equally as important for the child and family in terms of QoL (Jones *et al.*, 2007; Hagberg *et al.*, 1996). Productivity loss by CP patients and their families

as a consequence of this condition is also significant (Wang *et al.*, 2008). As far as we know, the Turkish version of the IFS has not been validated. This prompted us to study the Turkish version, including its cultural adaptation, validation and reliability. Moreover, we studied mothers of cerebral palsied children to show how CP affects the mothers' psychological status in Turkey.

MATERIALS AND METHODS

The IFS is a reliable evaluation tool to measure the impact on families, but Turkish version has not been studied. The mothers of 247 cerebral palsied children participated in this study. The study started in August 2007 and ended in February 2008. The Ethics Committee of Pamukkale University, Faculty of Medicine, Denizli, Turkey (2007/10, 15.11.2007) approved the protocol and the study was conducted in accordance with the rules of the Declaration of Helsinki. Before any volunteer participated in this study, written informed consent was obtained after all procedures had been fully explained. Mothers from 5 different regions (7 cities) in Turkey were included. Mothers who had at least one child with CP and mothers free from any mental problem or physical disability were included. Mothers who did not understand or speak Turkish and mothers with children with a disability other than CP were excluded. Two hundred and seventy-two mothers were asked to participate in this study. Twenty of them refused for various reasons, such as family reasons, a lack of time or insufficient interest in participating. Five mothers were excluded as they did not meet the given above criteria. Thus the final number of mothers participating in this study was 247. The socio-demographic data of the mothers are illustrated in Table 1.

Table 1: Demographics about the mothers (N = 247)

Variables	n	%
Age interval (year)		
18-27	52	19.8
28-37	114	46.2
38-47	72	29.0
47-1	9	5.0
Education level		
Reading and writing	27	10.9
Primary school	159	64.4
Secondary school	16	6.5
High school	32	13.0
University	13	5.2
Marital status		
Divorced	9	3.6
Married, living separated	2	0.9
Married, living together	236	95.5
Job status		
Retired	4	1.6
Housewife	231	93.5
Working	12	4.9

Outcome measures: Before the scale was administered to the sample, a test-retest was administered once again to 15 mothers two weeks later. The data were collected by interview with the mothers by a physiotherapist, who had at least two years' experience in pediatric physical therapy rehabilitation during rehabilitation centers visits. A form was used to record the demographics of the mothers and children as well. In addition, the IFS was used to measure the degree to which family life was affected by the presence of a chronic physical disorder during childhood. The Nottingham Health Profile (NHP) (Küçükdeveci *et al.*, 2000) and Beck Depression Inventory (BDI) (Beck and Steer, 1984) were also used to record health related quality of life and depressive symptoms, respectively.

The impact on family scale: The IFS was developed by Stein and Riessman for parents with children suffering from chronic illness. The IFS contains 33 statements. Factor 1 measure Financial Burden and contains 4 items relating to the economic consequences for the family of the presence of an ill child. Factor 2 measures Familial/Social Impact and contains 9 items relating to the disruption of normal social interactions both within and outside the family system as a direct consequence of a child's illness. The 6 items comprising Factor 3 measure Personal Strain, the personal disequilibrium experienced by the primary caregiver relating to the psychological burden of the illness. Factor 4 measures coping and contains 5 items largely independent of the other dimensions (Stein and Riessman, 1980). Impact on family scale was written in English and translated into Spanish (Stein and Riessman, 1980), Italian (Annemarie and Janine, 2000) and German (Ravens-Sieberer, 2001). To date, no Turkish version of the IFS has been validated. Respondents are asked to rate on a 4-point Likert-type scales to what degree the statements apply to mothers (strongly agree or strongly disagree). Stein and Riessman (1980) conducted a principal components analysis on the ratings of 100 mothers and found four dimensions of impact. The original scale consists of 27 questions, but the questions b, c and e are excluded when the total score is calculated. Internal consistency reliabilities (Cronbach's alpha) were 0.72 for Financial Burden, 0.86 for Familial/Social Impact, 0.81 for Personal Strain and 0.60 for Coping. A total score was obtained by summation of all 24 score. A high score indicate greater impact (min: 24; max: 96). Cronbach's alpha was 0.88 for the total scale. Test-retest Cronbach's alpha was 0.93 (Stein and Riessman, 1980).

Nottingham health profile: The NHP is a widely used generic tool to measure HRQoL. The Turkish version was administered and it has been shown to be valid and cross-

culturally equivalent to the original. It contains 38 items divided into six dimensions: energy (NHP-E), pain (NHP-P), emotional reactions (NHP-ER), sleep (NHP-S), social isolation (NHP-SI) and physical mobility (NHP-PM). All the parameters are summed as NHP total (NHP TOT). The respondent answers yes if the statement adequately reflects the current status or feeling, or no otherwise (Küçükdeveci *et al.*, 2000). Dimension scores range from 0 (no problem) to 100 (maximum problems).

Beck depression inventory: The Beck Depression Inventory (BDI) is a self-report measure containing 21 items designed to assess the affective, motivational, cognitive and somatic symptoms of depression. The response to each item is assigned a score of 0-3 points, with high total scores showing severe depression (Beck and Steer, 1984). The BDI score is ranges from 0 to 63. The cut-off point for the Turkish population is 17 and over. Previous studies have demonstrated that the BDI is reliable and valid for Turkish population samples.

Translation: The translation process followed the guidelines of the International Quality of Life Assessment Project. Two translations from English to Turkish were performed by two different and independent translators whose mother tongue was Turkish, allowing detection of errors and divergent interpretations of items with ambiguous meaning in the original instrument. One of the translators was aware of the process purpose and the concepts involved in the instrument to obtain a better idiomatic and conceptual rather than literal equivalence between the two versions of the questionnaire and to render the intended measurement more reliable. The other translator was unaware of the translation's objective and this was useful in eliciting unexpected meanings from the original tool. Both Turkish translations were then compared for inconsistencies. The two translations were then retranslated, also blindly and independently, into English by two native English speakers. Each English translation was then compared with original English version of IFS and checked for inconsistencies. The Turkish version was studied by two physiotherapists to assess the necessity of performing a cultural adaptation and to fine-tune it for use among Turkish patients. They again compared the Turkish version with the original English version to detect errors of interpretation and nuances that might have been missed. The final stage of the adaptation process is the test of the prefinal version. Fifteen mothers were tested in the study. This ensures that the adapted version still retains its equivalence in an applied situation. Some changes in the statements m, p, o,

x and aa were made to ensure that the scale was more understandable for Turkish speaking mothers. The expression roller coaster is not used in Turkish language and so it was translated as büyük bir kriz yaşamak. Twenty mothers skipped this statement. The word discuss was interpreted as tartışırız rather than konuşuruz (speak, talk) by the mothers. Therefore, the word discuss was translated as konuşuruz. The word partner and the word strain were translated as eş and as gerginlik, respectively. The mothers understood these expressions more easily. Since the test of the refinal version did not include validity and reliability, the mothers were not recalled 15 days later. This version was finalized after slight changes were made by consensus.

Statistical analysis: The Statistical Package for the Social Sciences, version 13.00 for Windows (SPSS-13) was used for the data entry with appropriate coding. The statistical level of significance was taken as 0.05. The test-retest reliability was described by using intra-class correlation coefficient (ICC) and Pearson's correlation analysis. To determine of concurrent validity, the relationship between IFS, NHP and BDI was analyzed using the Pearson's correlation. Confirmatory factor analysis was used to test the hypothesis that a relationship between observed variables and their underlying latent constructs exists.

RESULTS

In this section of the study, at first the data from the IFS were summarized and then questions about reliability of the IFS and the mothers' NHP and BDI scores were investigated in three main subsections. Two hundred and forty-seven mothers with children diagnosed with CP, at special education and rehabilitation centers from seven different cities in Turkey, completed this study. Of the cerebral palsied children, 107 were girls (mean age, 8.02±5.21 year) and 140 were boys (mean age, 7.60±4.78 year). Of the mothers 46.2% (n = 114) were in the 28-37 age interval, 64.4% of them had completed primary school, 95.5% were married and living with their husbands and 93.5% were housewives. The descriptive statistics about these facts are given in Table 1. The socio-demographics of the families are given in (Table 2).

The reliability of IFS: The conclusions about the reliability of IFS were based on analysis of the scale's sub-parameters, the internal consistency and test-retest reliability.

The analysis of the sub-parameters of IFS: Here, the analysis of sub-parameters is performed. The total

correlation coefficients of sub parameters were evaluated in order to point out the level of the relation in whole scale. Total impact of that fact of disability to the mothers with cerebral palsied children, was determined as 57.27±10.08. The four sub parameters, including financial support (9.60±2.29), general impact (30.56±6.29), disruption of social relations (24.42± 4.97) and coping (6.53±2.06) were also computed. If each of the sub parameter is neglected then how the value of the Cronbach's alpha differs is observed and the total correlation value of the sub parameters is calculated. Cronbach's alpha was seen to be 0.81 when coping items were excluded. The general mean of sub parameters of IFS was obtained as 68±19.10. When the total correlations of the sub parameters of IFS were examined, it was identified that they were strongly correlated except the coping sub parameter (Table 3). The correlation value between the sub-parameters of the IFS is given in (Table 4). As seen in (Table 4), only the coping parameter is negatively correlated by the others. Table 5 shows the means

Table 2: Demographics of the families

Variables	n	%
Income level		
Low	79	32.0
Middle	155	62.8
Upper	11	4.4
Highest	2	0.8
Residence place		
Village	34	13.8
Town	32	13.0
City center	158	64.0
Squatter's houses	23	9.2
Social assurance		
Exist	209	84.6
Non-exist	38	15.4
The houses where families live		
Rental	91	36.8
Owner	156	63.2
Education of fathers		
No writing/no reading	2	0.8
Writing/reading	5	2.0
Primary school	117	47.4
Secondary school	36	14.6
High school	58	23.5
University	29	11.7
Work status of fathers		
Not working	25	10.1
Retired	16	6.5
Working	206	83.4

Table 3: The analysis of sub-parameters of IFS

IFS parameters	No. of questions	Mean±SD	Alpha value except the indicated sub parameter	Total correlation of sub parameter
Financial support	4	9.60±2.29	0.70	0.87
Social relations	9	24.42±4.97	0.58	0.97
General impact	6	30.56±6.29	0.63	0.97
Coping	5	6.53±2.06	0.81	-0.47
Total impact	19	57.27±10.08	0.58	0.98
Total	24	25.68±19.10	-	-

concerning the factor financial burden, the factor social support (a little higher in Turkish sample) and the total impact score stand for good similarity. The factor personal strain and the factor mastery have a rather poor similarity.

Inter consistency of IFS: In order to evaluate the inter consistency of the scale, Cronbach's alpha coefficient is calculated. Inter consistency was determined to be 0.74. This coefficient guarantees the reliability of IFS. The results about mentioned facts are given on Table 6.

Test-retest reliability: Here, the aim is to test the stability of the scale versus time. Hence, the initial test was applied to 15 mothers and then the test was reapplied to the same mothers after two weeks. By this way, the data for the test-retest were collected. Test-retest reliability coefficient was calculated as 0.79 (p = 0.000). The comparison of test-retest scores of IFS is given on Table 7. Dependent t-test was applied to examine whether there was any difference between two measurements. No significant difference was found between the two measurements of test-retest.

Confirmatory Factor Analysis (CFA): The factor loadings of the sub-parameters (coping, financial burden, social support, mastery) of the IFS were described as follows,

Table 4: Correlation between sub parameters of IFS

Sub parameters	Total impact	Financial support	General impact	Social relations	Coping
Financial support	0.73	1.00	0.53	0.62	-0.18
General impact	0.66	0.53	1.00	0.57	-0.07
Social relations	0.89	0.62	0.57	1.00	-0.14
Coping	-0.28	-0.18	-0.07	-0.14	1.00
Total impact	1.00	0.73	0.66	0.89	-0.28

Table 5: Means±SD of the IFS in Turkish and American Mothers

Subparameters	Turkish mothers (n = 247)	American mothers (n = 100)
Financial burden	9.60±2.2	10.37±2.2
Social support	24.42±4.9	22.09±4.9
Personal strain	30.56±6.2	16.62±3.5
Mastery	6.53±2.0	9.95±1.9
Total impact	57.27±10.0	59.04±9.4

Table 9: Correlations between IFS sub parameters and NHP parameters*

Parameters	The parameters of NHP and total impact						
	NHPE	NHPP	NHPER	NHPSI	NHPS	NHPPM	NHPTOT
Financial Support	p = 0.003 r = 0.187	p = 0.019 r = 0.149	p = 0.000 r = 0.350	p = 0.000 r = 0.245	p = 0.000 r = 0.239	p = 0.001 r = 0.206	p = 0.000 r = 0.313
Social Relations	p = 0.000 r = 0.242	p = 0.001 r = 0.207	p = 0.000 r = 0.304	p = 0.001 r = 0.212	p = 0.000 r = 0.258	p = 0.000 r = 0.228	p = 0.000 r = 0.326
General Impact	p = 0.001 r = 0.216	p = 0.124 r = 0.098	p = 0.000 r = 0.308	p = 0.000 r = 0.244	p = 0.004 r = 0.184	p = 0.004 r = 0.184	p = 0.000 r = 0.282
Coping	p = 0.314 r = -0.064	p = 0.404 r = 0.053	p = 0.905 r = -0.080	p = 0.173 r = 0.807	p = 0.128 r = -0.097	p = 0.522 r = -0.041	p = 0.855 r = -0.012
Total Impact	p = 0.000 r = 0.269	p = 0.004 r = 0.185	p = 0.000 r = 0.362	p = 0.000 r = 0.255	p = 0.000 r = 0.286	p = 0.000 r = 0.249	p = 0.000 r = 0.363

*Pearson correlation test was used

respectively; 0.111, 0.271, 0.304, 0.293. The results of the CFA showed that the IFS can be used as a unidimensional and its reliable and valid scale.

Evaluation of items by the nottingham health profile: The mother's health related quality of life was evaluated by the NHP. The average values for NHP were determined as follows; NHPE: 56.63±36.20; NHPP: 27.44±29.32; NHPER: 46.97±31.79; NHPSI: 36.47±33.18; NHPS: 34.15±29.92; NHPPM: 21.27±18.80; NHP TOT: 271.21±133.68. The results are also summarized on Table 8. As can be seen in (Table 9), there is no significant relation between coping items and NHP parameters. In addition to this, there is no significant relation between general impact subparameter and NHPP parameter (p>0.05). Except these mentioned parameters, the rest items are significantly correlated with each other (p = 0.00) (Table 9).

Table 6: Inter consistency of the IFS

Facts	Values
Numbers of items	24
Financial support's max. Point	16
Social relations's max. Point	36
General impact's max. Point	24
Coping's max point	20
Total impact's min.- max point	24-96
Cronbach's alpha	0.74

Table 7: The test-retest scores

IFS*	Test (n = 15)	Retest (n = 15)
Financial support	9.20±3.09	9.20±3.09
Social relations	24.06±5.81	24.06±5.81
General impact	30.20±6.50	30.20±6.50
Coping	6.26±2.12	6.26±2.12
Total impact	55.8±12.49	55.8±12.49

*Since the test-retest results were good fitted with each other, standard deviation and p-values were not calculated

Table 8: The scores of NHP items

Items	Min.-Max.	Mean±SD
NHPE	0.00-100.0	56.630±36.20
NHPP	0.00-100.0	27.440±29.32
NHPER	0.00-100.0	46.970±31.79
NHPSI	0.00-100.0	36.470±33.18
NHPS	0.00-100.0	34.150±29.92
NHPPM	0.00-100.0	21.270±18.80
NHPTOT	0.00-543.37	271.21±133.68

Table 10: Correlations between BDI scores and sub parameters IFS*

Sub parameters	BDI
Financial support	0.00 r = 0.230
Social relations	0.00 r = 0.257
General impact	0.00 r = 0.253
Coping	0.608 r = 0.03
Total impact	0.00 r = 0.320

*Pearson correlation test was used

Evaluations of items by using the beck depression inventory: In this study, 108 mothers (43.7%) scored 17 and over on the BDI. The rest (56.3%) scored 16 and below. That means more or less half of the mothers showed depressive symptoms. If parameters of IFS and the parameters of BDI are compared in sense of correlations, it is observed that except coping parameters all the others are significantly correlated ($p = 0.00$) (Table 10).

DISCUSSION

An estimated 10% of the world's population approximately 650 million people, of which 200 million are children experience some form of disability. The number of people with disabilities is growing as a result of factors such as population growth, ageing and medical advances that preserve and prolong life. Disability is both a cause and a consequence of poverty. About 80% of the world's population of people with disabilities live in low-income countries and experience social and economic disadvantages and denial of rights (WHO, World Report on Disability and Rehabilitation) (www.who.int). That's why; attention to health and its social determinants are essential to promote and protect the health of people with disabilities and their families. Mothers with disabled children tend to have poorer health, including depressive symptoms and anxiety than do mothers of normally developing children (Andersson, 1993; Blacher and Mink, 2004). The same results related to Turkish mothers can also be seen in the literature. According to the results of the SIS, 2002 Turkey Disability Survey, which was conducted by the Turkish Republic Prime Ministry Presidency Administration for Disabled People (www.ozida.gov.tr) 12.29% of the Turkish population experience same form of disability. The Turkish Statistical Institute reported that the Turkish population aged 0-19 is 24.799.424 (<http://tuikapp.taik.gov.tr>). An estimated 2.18% of the disabled people in Turkey are below 19 years old. These results prompted us to design this study and to show mothers' with disabled children perception of the effect of a child's chronic condition. A cultural and linguistic adaptation of the IFS was done and its reliability and validity for Turkish mothers with disabled children

were studied. In this current study, Turkish mothers with cerebral palsied children were selected as a study sample. CP was described first time in 1862 by English Orthopedic Surgeon W.L. Little as a nonprogressive disorder of the immature brain. It effects movement and posture due to a defect or lesion the immature brain before second year of the lifespan (Molnar, 1991; Blasko, 1991; Nelson, 1989). CP is the most common cause of disability at childhood worldwide as well in Turkey. In the industrialized world, the incidence is about 2 per 1000 live births. In Turkey, the rate is thought to vary from between 8 per 1000 live births (Serdaroğlu *et al.*, 2006; Bozkurt, 2007). Two researchers, who are designed this study, live in Denizli located in western part of Turkey. Bozkurt *et al.* (2007) reported that CP prevalence in Denizli was found as 0.09%. Since, CP prevalence is very high among disabled children, the mothers with cerebral palsied children were studied in this current work. Although, there have been a lot of studies in the literature investigating the health problems of the mothers with disabled children, but there is no reliable scale in Turkish to measure impact on family. The study results indicated that the validity and reliability except the coping items were found to be satisfactory. The internal consistency was found to be 0.74. When the coping items of the scale were excluded, the statistical analysis showed that its internal consistency (Cronbach's alpha) was found to be excellent (0.81). The item total correlation coefficients were at very strong levels when the coping items were excluded. The IFS has also been used in different studies in Europe (Stein and Riessman, 1980; Annemarie and Janine, 2000; Ravens-Sieberer, 2001) and Middle East (Zahr, 1994) occasionally with the aim of making cross-cultural comparisons and validation. Our results generally support the findings of Dr. Stein, who established the IFS.

Chronic illness or disability in families has been shown to affect parents, siblings and others (Stein and Riessman, 1980; Örsal, 2007; Al-Kuwari, 2007; Manuel *et al.*, 2003; Ones *et al.*, 2005; Altındağ *et al.*, 2007; Akmeşe *et al.*, 2007). Several researches from Turkey and other countries support the results showing that mothers of children with chronic illness/disability are at psychological risk. Altındağ *et al.* (2007) from Turkey have showed that chronic condition/disability in families has been found to affect Turkish mothers' socio-psychological status. However; none of them used any reliable specific tool for this subject. Therefore, we focused on this study to establish an adapted Turkish version of the IFS.

The 43.7% of the mothers in our study scored above the cut off point on the screening instrument (BDI) for

depressive symptoms. The results obtained from this study and previous studies show that the mothers with disabled children needed to take social support. Moreover, mothers of disabled children may also share a heavier socio-psychological burden than might be expected. Chronic illness or disability also affects quality of life of family and family well-being (McConkey *et al.*, 2008; Gartner *et al.*, 1991). A valid, reliable instrument to measure quality of life of mothers with disabled children is helpful to health providers, such as pediatricians, physical therapists, nurses as well as researchers. The NHP, which was used in this study, has been designed specifically to measure the health-related quality of life. Previous studies in the literature show that having a disabled child also affects the mother's quality of life. Several studies, which have been carried out in Turkey, showed that CP affected mothers' QoL. Our findings support the results mentioned above. These negative effects predict easily mothers' depression and a lack of QoL level.

This study is limited by the homogeneity of the sample. Because all mothers, who were included in this study, had cerebral palsied children. The homogeneity of the sample also limits the generalizability of these findings, as does the lack of a comparison group. This study aimed to investigate the suitability of the IFS for use with Turkish mothers of children with disability. The pragmatic purposes of this study were (1) the replicability of the original factor structure of the IFS, (2) the degree of internal consistency of the sub scales, (3) whether there are cultural differences in impact-scores. On the other hand, the authors have started to study with mothers who had children with different disabilities, including mental retardation, spina bifida, brachial plexus injury, seeing and hearing disability. They also work to show the differences between mothers and fathers' socio-psychological status in Turkey. The results of the current study showed that the relationship between the scale and BDI score was found to be significant except the coping items. The same result was also found concerning relationship between the scale and the NHP scores.

In conclusion, the Turkish version of the IFS measures perceived reaction of a family member especially mother to chronic illness or disability. It can also be used with minimal training. If reading level is adequate, it can be self-administered. Although, the majority of the mothers

in our study sample (81.8%) were low educated mothers (8 years and below), we had no problem during administration the tool.

It has significant face validity and psychometric data, including the construct validity. In its current form, the Turkish version of IFS fills a gap in the measurement of the negative effects consequences of disability, especially CP in childhood on mothers in Turkey. Future studies should examine mothers of children with different disabilities. Further, the use of mothers' socio-demographics to show the relationship each other may be useful. Finally, the present study demonstrated that Turkish speaking mothers with cerebral palsied children were at risk in terms of socio-psychological determinants. Therefore, the mother having a disabled child should also be detected earlier before planning the most suitable rehabilitation program to prevent the mother's socio-psychological problems and to increase their QoL.

CONCLUSION

Based on the numerical results it can be concluded that not only the weight percentage of piping but also the pipes' end conditions and particularly the type of connection between pipes and the pipe-way structure are also important factors affecting the whole system behavior and may cause the system conditions to be different from the code assumptions. In fact, it can be said that the stiffness interactive effect of pipes and connecting links of pipes to the pipe-way frame, is much more on the response values than the mass interactive effect. Therefore, it is recommended to modify the code provisions for seismic evaluation, design and retrofit of combination structures in petrochemical plants to take into account the pipe's relative stiffness to the pipe to pipe-way structure connections (if there is any), end conditions and also pipe combination in the response values. Finally, it can be said that in the cases of combination structures consisted of a primary structure and single secondary structure the weight ratio may be an appropriate factor for making decision on inclusion or exclusion of weight interaction effects, however, in cases with multiple extended secondary structures weight ratio alone is not enough and more research is needed in this regard.

APPENDIX

Appendix: The Turkish version of the impact of family scale

Aile Etki Ölçeği (Türkçe versiyonu)*				
	Tamamen			Hiç
	Katılıyorum	Katılıyorum	Katılmıyorum	Katılmıyorum
a. Hastalık aile için maddi problemlere neden oluyor	1	2	3	4

Apendix: Continued

Aile Etki Ölçeği (Türkçe versiyonu)*		Tamamen		Hiç	
		Katılıyorum	Katılmıyorum	Katılıyorum	Katılmıyorum
b.	Hastane hizmetlerinden dolayı işte zaman kaybı olmaktadır	1	2	3	4
c.	Çocuğuma bakmak için çalışma saatlerimi azaltıyorum	1	2	3	4
d.	Tıbbi masrafları karşılamak için ek gelire ihtiyaç duyulur	1	2	3	4
e.	Çocuğumun hastalığı nedeniyle işi bıraktım	1	2	3	4
f.	Hastalıklar nedeniyle şehir dışına seyahat edemiyoruz	1	2	3	4
g.	Çevredeki insanlar çocuğumun hastalığı nedeniyle bize farklı davranır	1	2	3	4
h.	Çocuğumun hastalığı nedeniyle dışarıya çıkmak için az isteğimiz var	1	2	3	4
i.	Çocuğumun bakımını üstlenmek için güvenilir bir kişi bulmak zordur	1	2	3	4
j.	Bazen, çocuğumun durumu nedeniyle son dakikada dışarıya çıkmayla ilgili planlarımızı değiştirmek zorunda kalırız	1	2	3	4
k.	Biz, hastalık nedeniyle aile ve arkadaşları daha az görürüz	1	2	3	4
l.	Paylaşmakta olduğumuz şeyler nedeniyle ailemize daha yakınız	1	2	3	4
m.	Bazen, çocuğuma özel olarak mı ya da normal bir çocukmuş gibi mi davranmalı merak ediyorum	1	2	3	4
n.	Akrabalarım çocuğumu anlıyor ve yardım ediyorlar	1	2	3	4
o.	Hastalık nedeniyle daha fazla çocuk sahibi olmayı düşünmüyorum	1	2	3	4
p.	Eşim/Partnerim ve ben çocuğumun problemlerini beraber konuşuruz	1	2	3	4
q.	Çocuğumuza normal bir çocukmuş gibi davranmaya çaba gösteriyoruz	1	2	3	4
r.	Çocuğumun bakımından sonra diğer aile üyelerine daha fazla vaktim kalmıyor Tamamen	1	2	3	4
s.	Akrabalar çocuğum için en iyisinin ne olduğunu bildiklerini düşünürler ve karışırılar	1	2	3	4
t.	Ailemiz, çocuğumun hastalığından dolayı eşya, giyecek, mobilya gibi şeylerden vazgeçer	1	2	3	4
u.	Yorgunluk, çocuğumun hastalığından kaynaklanan bir problemdir	1	2	3	4
v.	Günlük yaşıyorum ve gelecek için plan yapmıyorum	1	2	3	4
w.	Hiç kimse, benim taşıdığım ağır yükü anlayamaz	1	2	3	4
x.	Hastaneye gidip-gelmek beni gergin hale getirir	1	2	3	4
y.	Çocuğumun hastalığının üstesinden gelmeyi öğrenmek kendimi daha iyi hissetmemi sağlamaktadır	1	2	3	4
z.	Gelecekte çocuğuma neler olacağına dair endişelerim var (O büyüdüğünde ve ben yanında olmadığımında)	1	2	3	4

Apendix: Continued

Aile Etki Ölçeği (Türkçe versiyonu)*				
	Tamamen Katılıyorum	Katılıyorum	Katılmıyorum	Hiç Katılmıyorum
aa. Bazen, çocuğum hastalığı nedeniyle ani değişiklik içindeyken büyük bir krizde yaşadığımızı hissedebiliriz ya da her şey normalken kendimizi iyi hissedebiliriz	1	2	3	4

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