Relationships of parenting strain and mental health with family needs in mothers of severely handicapped school-aged children suffering from cerebral palsy

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Objective The study was designed to clarify relationships of family needs of mothers of school-aged children suffering from cerebral palsy with the parenting strain and mental health.

Methods The subjects were 249 mothers of cerebral palsy children from schools for the physically handicapped in Japan. The survey item consisted of sex and age of the children and age, family needs, parenting strain, and mental health of the mothers. Family needs of the mothers were determined according to "The Family Needs Survey". Parenting strain was assessed according to the "Parenting Strain Index for Parents with Disabled Children". Mental health was measured according to "General Health Questionaire-12". In the statistical analysis, an indirect model, with the parenting strain and family needs as the primary and secondary factor, respectively was postulated for mother's mental health, and fit of the model to the data was investigated.

Results The Comparative Fit Index (CFI) was 0.962, the Tucker-Lewis Index (TLI) was 0.977, and the Root Mean Square Error of Approximation (RMSEA) was 0.058; these indices were statistically within the tolerance range. The path coefficient of correlation of the parenting strain with the family needs was 0.656, and the path coefficient of the parenting strain with mental health was 0.406; both were statistically significant.

Conclusion Relationships between family needs of mothers of cerebral palsy children from schools for the physically handicapped children and the mothers' parenting strain and mental health were indicated. The findings suggested that in order to develop and implement social intervention strategies for reducing mothers' parenting strain and providing solutions, it is imperative to extensively consider what family needs are and what solutions are required to resolve those needs.

Key words: children with cerebral palsy, mother, family needs, parenting strain, mental health

I. Introduction

In recent years, needs of families with disabled children[1~7], reflected by development of scales for evaluation of such needs[2,8~10], have generated great research interest in the field[11~17].

Previously we analyzed and showed relationships between disabilities of school-aged children with cerebral palsy and family needs[18]. That particular study indicated that children's disabilities are related to family needs of the mothers. The present study, based on the results, focused on relationships of family needs to parenting strain and mental health in mothers with severely handicapped children.

On the basis of stress cognition theory[19], the needs of families with disabled children are recognized as a latent stressors[20]; their resolution could clearly impact on the mental health of mothers or other family members. In the past, few studies have investigated family needs with reference to stress cognition and responses. If relationships can be clarified, specialist interventions might be designed.

The objective of the present study was to clarify the family needs of mothers with severely handicapped school-aged children suffering from cerebral palsy in relation to stress cognition (the sense of parenting strain) and stress responses (mental health), on the basis of stress cognition theory.

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II. Methods

The subjects were 297 mothers of children with cerebral palsy from seven schools for the physically handicapped in Japan. After explaining the objectives of the study, the questionnaires were distributed through the PTA of each school in May 2003. Parents took the questionnaire home and filled in their responses, which were collected one month later; participation was voluntary. The questionnaires were distributed to 666 parents, and 527 (79.1%) responded. The study assumed two conditions: (1) The child's disability was cerebral palsy (208 other subjects were excluded) and (2) the mother was the respondent (22 other subjects were excluded). Based on these two criteria, 297 were selected from the 527 respondents. Finally, data were collected from 249 mothers, who had no missing value for any of the variables.

The study was approved by the Tokyo Metropolitan University's Ethics Committee. The items of the survey covered sex, age and disabilities of the children, family needs, parenting strain, and mental health of the mothers. The disabilities of the children were determined according to the Barthel Index (BI)[21].

Family needs were determined with "The Family Needs Survey"[2]. The original version of the scale ("The Family Needs Survey") consists of 35 items, but the following item, "I need help in getting appropriate care for my child in our church or synagogue nursery during church services", was excluded from the present survey, because it was not considered to be appropriate for Japan's socio-cultural context. The scale features six areas: "Needs for information", "Needs for support", "Explaining to others", "Community services", "Financial needs", and "Family functioning". The subjects were asked to "Please circle the appropriate responses to the following questions"; with three response categories, i.e., "I definitely need help with this: 2 points"; "Not sure: 1 point"; and "I definitely do not need help with this: 0 point".

The validity and the reliability of the Japanese-translated scale were earlier confirmed by Taneda[22] in a study of 277 mothers of children with cerebral palsy. Factor analysis revealed that the factor model, which used "need for information", "needs for support", "explaining for others", "community service", "financial needs", and "family functioning" as primary factors and "family needs" as secondary factors, was consistent with data within the statistically appropriate range.

Parenting strain was assessed with the "Parenting Strain Index for Parents with Disabled Children". On this scale, a sense of strain in caring of disabled children was defined as negative emotion, and the lower-level concept was evaluated for: "Rejection emotions against their children (4 items)"; "negative emotions against childcare itself (4 items)"; "a sensation of constriction of their social role and personal activities (4 items)"; and "a sensation of strained family budget accompanying childcare (4 items)".

Taneda[23] also confirmed the validity and the reliability of the scale in a study involving 1,030 mothers of children with developmental delays. Confirmatory factor analysis revealed that the factor model, which used "rejection emotion against their children", "negative emotion against childcare itself", "a sensation of constriction of their social role and personal activities", and "a sensation of strained family budget accompanying childcare" as primary factors and "parenting strain" as the secondary factor, was consistent with data within the statistically appropriate range.

Mental health was assessed according to "the General Health Questionnaire-12 (GHQ-12)[24]. The scoring for GHQ-12 conformed to the GHQ marking method. There were 4 choices scored 1, 2, 3, and 4 point from the left order (Table 3), respectively, on a 12-point basis.

In the statistical analysis, an indirect model, with parenting strain and family needs as the primary and secondary factors, respectively, mother's mental health was postulated, and the fit of the model to the data was investigated. For this purpose, family needs included a factor model that used the total score for each factor in "The Family Needs Survey" as the observation variable, and the parenting strain included a factor model that used the total score for each factor in the "Parenting Strain Index for Parents with Disabled Children" as the observation variable. Mental health included a factor model composed of 12 items in GHQ-12. Correlations of fit of the above-described indirect effect model to the data with the factors were assessed by structural equation modeling. A polyserial correlation matrix was adopted for calculation of the correlation coefficient in the assessment, and weighted least squares with mean and variance adjustment (WLSMV)[16] was adopted for estimation of parameters. Fit of the model to the data was evaluated by the comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA). When CFI and TLI are 0.95 or more and RMSEA is less than 0.08, the model is judged to be relevantly consistent with the data[25]. As for the significance of standardization coefficient (path coefficient) of the factor structural model, an abso-

lute value for the coefficient of 1.96 or more (the level of significance, 0.05) was considered to be statistically significant with reference to the value (t value) resulting from division of non-standardization coefficient by the standard error (SE). In the analysis described above, statistical analysis software, Mplus (Ver. 2.01)[26] was used.

III. Results

1. Distribution of responses and association of the subjects

The children consisted of 146 boys (58.6%) and 103 girls (41.4%). The mean age was 12.4 years [Standard deviation (SD), 3.50], with an age range of 6.3 to 18.5 years. The mean age of the boys

Table 1. Response distribution of the Family Needs Survey (n=249)

Item	Response Category*		
	0	1	2
Needs for information (fn1(fig1))			
X1 I need more information about my child's condition or disability.	25(10.0)	71(28.5)	153(61.5)
X2 I need more information about how to handle my child's behavior.	33(13.3)	80(32.1)	136(54.6)
X3 I need more information about how to teach my child.	22(8.8)	90(36.1)	137(55.1)
X4 I need more information on how to play with or talk to my child.	43(17.3)	102(41.0)	104(41.7)
X5 I need more information on the services that are presently available for my child.	7(2.8)	26(10.4)	216(86.8)
X6 I need more information about the services that my child might receive in the future.	3(1.2)	17(6.8)	229(92.0)
X7 I need more information about how children grow and develop.	28(11.2)	80(32.1)	141(56.7)
Needs for Support (fn2(fig1))			
X8 I need to have someone in my family that I can talk to more about problems.	68(27.3)	89(35.7)	92(37.0)
X9 I need to have more friends that I can talk to.	45(18.1)	104(41.8)	100(40.1)
X10 I need to have more opportunities to meet and talk with other parents of handicapped children.	53(21.3)	124(49.8)	72(28.9)
X11 I need to have more time just to talk with my child's teacher or therapist.	27(10.8)	116(46.6)	106(42.6)
X12 I would like to meet more regularly with a counselor (psychologist, social worker, psychiatrist) to talk about problems.	63(25.3)	120(48.2)	66(26.5)
X13 I need to talk more to a minister who could help me deal with problems.	199(79.9)	36(14.5)	14(5.6)
X14 I need reading material about other parents who have a child similar to mine.	57(22.9)	128(51.4)	64(25.7)
X15 I need to have more time for myself.	13(5.2)	41(16.5)	195(78.3)
Explaining to Others (fn3(fig1))			
X16 I need more help in how to explain my child's condition to his or her siblings.	166(66.7)	65(26.1)	18(7.2)
X17 I need more help in explaining my child's condition to either my spouse or my spouse's parents.	145(58.2)	88(35.3)	16(6.5)
X18 My spouse needs help in understanding and accepting our child's condition.	165(66.3)	71(28.5)	13(5.2)
X19 I need help in knowing how to respond when friends, neighbors, or strangers ask questions about my child's condition.	157(63.1)	70(28.1)	22(8.8)
X20 I need help in explaining my child's condition to other children.	133(53.4)	71(28.5)	45(18.1)
Community Services (fn4(fig1))			
X21 I need help locating a doctor who understands me and my child's needs.	40(16.1)	55(22.1)	154(61.8)
X22 I need help locating a dentist who will see my child.	35(14.1)	52(20.9)	162(65.0)
X23 I need help locating babysitters or respite care providers who are willing and able to care for my child.	24(9.6)	48(19.3)	177(71.1)
X24 I need help locating a day care center or preschool for my child.	31(12.4)	59(23.7)	159(63.9)
Financial Needs (fn5(fig1))			
X26 I need more help in paying for expenses such as food, housing, medical care, clothing, or transportation.	37(14.9)	66(26.5)	146(58.6)
X27 I need more help in getting special equipment for my child's needs.	16(6.4)	30(12.0)	203(81.6)
X28 I need more help in paying for therapy, day care, or other services my child needs.	16(6.4)	44(17.7)	189(75.9)
X29 I or my spouse need more counseling or help in getting a job.	32(12.9)	91(36.5)	126(50.6)
X30 I need more help paying for babysitting or respite care.	24(9.6)	46(18.5)	179(71.9)
X31 I need more help paying for toys that my child needs.	43(17.3)	92(36.9)	114(45.8)
Family Functioning (fn6(fig1))			
X32 Our family needs help in discussing problems and reaching solutions.	76(30.5)	98(39.4)	75(30.1)
X33 Our family needs help in learning how to support each other during difficult times.	12(4.8)	39(15.7)	198(79.5)
X34 Our family needs help in deciding who will do household chores, child care, and other family tasks.	38(15.3)	116(46.6)	95(38.1)
X35 Our family needs help deciding on and doing recreational activities.	25(10.0)	69(27.7)	155(62.3)

* 0=I definitely do not need help with this, 1=not sure, 2=I definitely need help with this.

Table 2. Response distribution of the Parenting Strain Index for parents with disabled children (n＝249)

	Item	Response Category				
		never	rarely	sometimes	often	usually
	A sensation of constriction of their social role and personal activities (b1(fig1))					
X_b1	I am anxious, because I can not sufficiently play a social role due to child-rearing.	68(27.3)	100(40.2)	55(22.1)	19(7.6)	7(2.8)
X_b2	I feel that I am gradually losing contact with my family and relatives due to child-rearing.	104(41.8)	85(34.1)	29(11.6)	17(6.8)	14(5.6)
X_b3	I feel that I have no free time for myself due to child-rearing.	20(8.0)	70(28.1)	59(23.7)	58(23.3)	42(16.9)
X_b4	I feel that parenting is disturbing my personal activities (e.g., hobbies and learning) due to child-rearing.	35(14.1)	70(28.1)	50(20.1)	49(19.7)	45(18.1)
	Negative emotion against childcare itself (b2(fig1))					
X_b5	I am irritated even when I am around my child.	86(34.5)	119(47.8)	25(10.0)	17(6.8)	2(0.8)
X_b6	I feel that, although I am adequately taking care of the child, he/she does not appreciate me.	77(30.9)	99(39.8)	44(17.7)	20(8.0)	9(3.6)
X_b7	Sometimes, I can not understand what my child says and does.	67(26.9)	112(45.0)	38(15.3)	21(8.4)	11(4.4)
X_b8	Sometimes, I get so angry at my child that I act without thinking.	104(41.8)	105(42.2)	22(8.8)	16(6.4)	2(0.8)
	A sensation of strained family budget accompanying childcare (b3(fig1))					
X_b9	I feel anxious about my future, since I have spent my savings for child-rearing.	90(36.1)	79(31.7)	30(12.0)	15(6.0)	35(14.1)
X_b10	I feel that the cost for child-rearing is putting pressure on my household budget.	74(29.7)	84(33.7)	35(14.1)	28(11.2)	28(11.2)
X_b11	I feel that I am no longer able to enjoy a financially comfortable life due to the cost of child-rearing.	82(32.9)	91(36.5)	27(10.8)	25(10.0)	24(9.6)
X_b12	I feel that child-rearing is so expensive.	48(19.3)	100(40.2)	46(18.5)	28(11.2)	27(10.8)
	Rejection emotion against their children (b4(fig1))					
X_b13	I feel that my health is disturbed due to child-rearing.	45(18.1)	89(35.7)	51(20.5)	34(13.7)	30(12.0)
X_b14	I feel that child-rearing is so painful.	81(32.5)	131(52.6)	24(9.6)	8(3.2)	5(2.0)
X_b15	I feel anxious, because I don't know how long the child-rearing will go on.	52(20.9)	98(39.4)	28(11.2)	33(13.3)	38(15.3)
X_b16	Sometimes I feel like abandoning my child-rearing due to exhaustion.	74(29.7)	122(49.0)	29(11.6)	14(5.6)	10(4.0)

Table 3. Response distribution of the General Health *Questionnaire-12* (n＝249)

Item	Response Category*			
	1	2	3	4
y_g1 (fig1) lost sleep over worries	130(52.2)	58(23.3)	44(17.7)	17(6.8)
y_g2 (fig1) constantly under strain	114(45.8)	79(31.7)	40(16.1)	16(6.4)
y_g3 (fig1) able to concentrate	5(2.0)	196(78.7)	42(16.9)	6(2.4)
y_g4 (fig1) playing a useful part	20(8.0)	193(77.5)	20(8.0)	16(6.5)
y_g5 (fig1) face up to problems	13(5.2)	183(73.5)	44(17.7)	9(3.6)
y_g6 (fig1) capable of making decisions	8(3.2)	197(79.1)	38(15.3)	6(2.4)
y_g7 (fig1) couldn't overcome difficulties	103(41.4)	79(31.7)	58(23.3)	9(3.6)
y_g8 (fig1) feeling reasonably happy	6(2.4)	186(74.7)	34(13.7)	23(9.2)
y_g9 (fig1) enjoy normal activities	12(4.8)	174(69.9)	49(19.7)	14(5.6)
y_g10 (fig1) unhappy and depressed	157(63.1)	55(22.1)	24(9.6)	13(5.2)
y_g11 (fig1) losing confidence in yourself	128(51.4)	64(25.7)	43(17.3)	14(5.6)
y_g12 (fig1) thinking of yourself as worthless	154(61.8)	53(21.3)	31(12.4)	11(4.5)

Item 1, 2, 7, 10, 11, 12：1＝not at all, 2＝no more than usual, 3＝rather more than usual, 4＝much more than usual
Item 3：1＝better than usual, 2＝same as usual, 3＝less than usual, 4＝much less than usual
Item 4：1＝more so than usual, 2＝same as usual, 3＝less useful than usual, 4＝much less than useful
Item 5：1＝more so than usual, 2＝same as usual, 3＝less able than usual, 4＝much less able
Item 6：1＝more so than usual, 2＝same as usual, 3＝less so than usual, 4＝much less capable
Item 8：1＝more so than usual, 2＝about same as usual, 3＝less so than usual, 4＝much less than usual
Item 9：1＝more so than usual, 2＝same as usual, 3＝less so than usual, 4＝much less than usual

was 12.5 years (SD, 3.59) and the mean age of the girls was 12.4 years (SD, 3.48), with no sex difference. The mean score for the BI was 5.80 points (SD: 6.37), ranging from 0 to 20. BI is a standard by which degree of activity of daily living independence is measured. Total independence is indicated by the maximum of 100. The average value for the subjects was 5.80, reflecting need for assistance for all aspects of life.

The mean age of the mothers was 41.4 years (SD, 5.33), with an age range of 27 to 55 years. Table 1 shows the distribution of responses concerning family needs of the mothers. The mean score for responses to "The Family Needs Survey" was 42.7 points (SD, 11.24), with a score ranging from 13 to 66 points. Tables 2 and 3 show the distribution of responses relating to parenting strain and responses to GHQ-12, respectively. The mean score for responses concerning the parenting strain was 21.1 points (SD, 11.09), ranging from 1 to 61 points. The mean score for responses to GHQ-12 was 2.5 points (SD, 3.32), with a score ranging from 0 to 12 points.

2. Fit of the causal model, including the mothers' needs and stress, to the data

Regarding the fit of the indirect model postulated by the authors to the data (Fig. 1), CFI was 0.962, TLI, 0.977, and RMSEA, 0.058. The values for these indices were all statistically within the tolerance range. The path coefficient of correlation of the parenting strain with the family needs was 0.656, and the path coefficient of correlation of the parenting strain with mental health was 0.406. These correlations were statistically significant.

IV. Discussion

The present study was designed to elucidate correlations between family needs of mothers of disabled children, and stress cognition (parenting strain) and responses (mental health), focusing on cases with cerebral palsy.

Various models are conceivable in this context. For the present study, referring to the research results of Tunali[27], the hypothesis that needs influence stress was adopted. For this purpose, an indirect effect model, comprising the parenting strain and family needs of the mothers as the primary and secondary factors, respectively, for mother's mental health was postulated. Fit of the causal model to the data was assessed by structural equation modeling, constructed with reference to the Lazarus' transaction theory[18]. The validity of the model could be validated through the assessment of fit of the model to the data by corresponding the actual data to the model theoretically constructed in advance. Since structural equation modeling is characterized by possible evaluation of fit of the whole model after adjustment for measurement error, this statistical procedure was considered valid for our objectives.

In the present study, family needs of mothers of severely handicapped school-aged children with cerebral palsy had a distinct influence on mother's

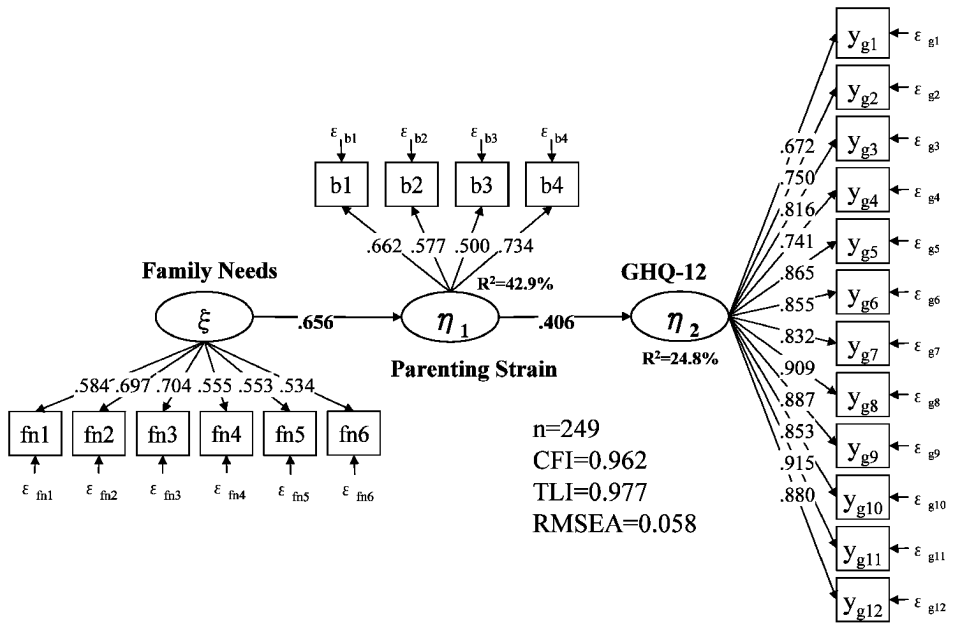

Figure 1. An indirect effect model for mothers' mental health

mental health due to parenting strain, showing that the indirect effect model fit the data. Our findings provide supports for the Lazarus' stress theory, and at the same time point to suggestions concerning ideal social interventions for mothers of disabled children. It is imperative for specialists to develop aggressive intervention strategies which will provide solutions to individual needs. It may also be advisable to systematize needs according to the following items in "The Family Needs Survey": "Needs for information", "Needs for support", "Explaining to others", "Community services", "Financial needs", and "Family functioning". It is clear that the contents measured by "The Family Needs Survey" do not all relate to family needs of individual mothers. However, the contents do provide important information about family needs as a conceptual framework. It is hoped that increase awareness of this conceptual framework will enable specialists to adequately counsel families with disabled children. High scores for family needs demand consolidation of the various childcare consultation organizations within the social system to provide the most effective system possible. Observed high scores with "Community Services" clearly implied a lack of support for the mothers. Considering the great importance and influence of social support on mothers' mental health[28,29], it is essential that social support networks are optimized and maintained.

Longitudinal studies are also needed in view of the various patterns and changes within the families of disabled children. For example, how will the parenting strain and mental health change as a consequence of resolving one of the family needs? Such continuing studies provide tool for determining which services and family environments are appropriate for mothers with disabled children.

In conclusion, correlations of needs of mothers of cerebral palsy children from schools for physically handicapped children with parenting strain and mental health were here elucidated. All of the observations in the study indicated that in order to develop and implement social intervention strategies for reducing parenting strain and providing solutions to mothers of cerebral palsy children, it is imperative to extensively consider what family needs exist and what solutions might be applied for their resolution.

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