Parental Characteristics, Parenting Style, and Behavioral Problems Among Chinese Children with Down Syndrome, Their Siblings and Controls in Taiwan

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Background/Purpose: The literature has documented maternal distress and behavioral problems among children with Down syndrome (DS), however, little is known about paternal adjustment and behavioral problems among the siblings of children with DS. Here, we examined parental psychopathology, parenting style and emotional/behavioral problems among children with DS, their siblings, and controls in Taiwan.
Methods: We recruited 45 families of children with DS (age, 2–14 years) and 50 families of normally developing children (age, 3–15 years). If there were more than two children in the case family, the sibling whose age was closest to the child with DS was recruited (age, 3–18 years). Both parents completed self-administered measures of their personality characteristics, psychopathology, family functioning, parenting styles, and child behavioral problems, using the Chinese versions of the Maudsley Personality Inventory, Brief Symptom Rating Scale, Family Adaptability and Cohesion Evaluation Scale, Parental Bonding Instrument, and Child Behavioral Checklist, respectively.
Results: Children with DS demonstrated significantly more severe symptoms than normal children of a wide range of behavioral problems such as attention problems, delinquency, social problems, somatic complaints, thought problems, and withdrawal compared with the other two groups, and obtained similar parental treatment, except for paternal overprotection. Their parents suffered from more psychopathology and their mothers were less often employed than their counterparts. The siblings of children with DS obtained less overprotection from their mothers than children with DS and less maternal care and control than normal children. There was no difference in emotional/behavioral problems between the siblings and normal controls.
Conclusion: Our findings suggest that in addition to the physical, educational and psychological needs of children with DS, the psychological care of their mothers, fathers and siblings also needs to be evaluated. Moreover, parenting counseling should focus not only on children with DS, but their siblings as well. [*J Formos Med Assoc* 2008;107(9):693–703]

Key Words: behavior disorders, Down syndrome, parents, parenting, siblings

Parents of children with disabilities face more challenges in child rearing, and have more family and parenting dysfunction than parents of normally developing children.[1-4] The long-term care, additional medical expenses, and behavioral problems of disabled children are major stressors for parents.[3,5] Some studies, however, have not demonstrated the same negative effects on the family,[6]

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and have found that many families can cope effectively with, and adapt well to their children's disabilities.[6,7] Factors that increase the levels of stress include parents of a younger age,[8] lower socioeconomic status,[8] less social support,[9,10] severity of behavioral problems,[11] and particular type of disability.[3,4,12]

Down syndrome (DS) occurs in 1–1.5 of every 1000 live births and is the most common chromosomal disorder associated with mental retardation, with typical physical features and health problems.[13] Mothers of children with DS display symptoms of anxiety and depression in Western[4,14] and Chinese families.[15,16]

Despite prominent physical and mental abnormalities, parents of children with DS, compared with parents of children with autism,[17,18] psychosis,[19] and other developmental delays,[3] tend to report a less difficult temperament in their children,[18] less pessimism about their children's future,[17,18] more extensive networks of support,[3] fewer family problems,[20] better wellbeing,[17] less anxiety,[19] and lower rates of major depression and social phobia.[18] In contrast, these findings are not supported by others.[21] Although parental adjustment to DS and other types of disability varies, based on comparisons with different disability groups,[3] parents of children with DS may show more obvious maladjustment than parents of normally developing children,[4] with possible differential adaptation and coping strategies between mothers and fathers.[5,15,22,23]

Although DS children are described as easygoing,[24] good-tempered, affectionate, and outgoing,[25] they display more behavioral disturbance than their siblings and peers,[11] including attention deficit,[26] hyperactivity,[26] autistic features,[27] compulsive-like behavior,[28] non-compliance, cognitive disorder, and social withdrawal.[29] Moreover, having a disabled child may shape the behavior of the other non-disabled children within the same family.[30] Studies of sibling behavioral problems have revealed inconsistent results.[26,31,32] Despite its importance, only a few studies have examined the parenting style or behavioral problems among siblings of DS children.[11,31]

We conducted this pilot study to fill the gap in our understanding of the impact of having a child with DS in Western and ethnic Chinese populations. We aimed to answer the following four questions. (1) Do DS parents have more psychopathology, marital problems, and family dysfunction than parents of normal children? (2) Do DS children display more behavioral and emotional problems compared with their siblings and controls? (3) Do DS parents treat their children with and without DS differently? (4) Do mothers, compared with fathers, treat their children with and without DS differently? Among the four questions, the behavioral problems of and parenting styles toward siblings of DS children have not been studied to any extent before. We anticipate that, given the impact of taking care of a child with DS, the rearing of his/her siblings would be affected.

Methods

Participants

The sample consisted of 45 case families, in which one child had DS, and 50 control families. Children with DS and autism were excluded from this study. The 45 index cases aged 2–14 years were recruited from a medical center ($n = 24$, 53.3%), the Chinese Down Syndrome Foundation ($n = 5$, 11.1%), preschool intervention centers ($n = 5$, 11.1%), and primary schools ($n = 11$, 24.5%) in Taipei. The referral bias was unknown.

The controls (aged 3–15 years), whose siblings did not have a history of developmental delay, were recruited according to the gender and age structure of the cases from the same school district. Among the 45 DS children, six were single children, 24 had one sibling, and 15 had more than one sibling. Siblings of DS children were recruited into the sibling group if they were older than 2 years. If there were more than two children in a family, the sibling whose age was closest to the child with DS was recruited. The sibling group consisted of 36 children aged 3–18 years. All the DS parents and the controls were married and lived together except for one dyad of DS parents

who were divorced. Despite consenting to the study, parents had no obligation to complete the assessments. Eventually, 43 mothers and 37 fathers of the case families and 50 mothers and 50 fathers of the control families completed the self-administered measures.

Self-administered measures

Maudsley Personality Inventory (MPI)

The MPI, a 30-item self-administered scale, is designed to measure three personality traits: neuroticism (13 items), extroversion (13 items), and social desirability (4 items), using a yes or no response. The Chinese MPI has been proved to be a reliable and valid instrument for use in both community and medical settings in Taiwan.[33] In our sample, the internal consistency was high for neuroticism (Cronbach's α, 0.87) and extroversion (Cronbach's α, 0.76). The social desirability subscale was not included in the analysis because of low internal consistency (Cronbach's α, 0.41).

Brief Symptom Rating Scale (BSRS)

The BSRS, a 50-item self-reported scale, is modified from the Derogatis Symptom Check List-90-Revised, which covers nine dimensions of psychopathology: somatization, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and additional symptoms including vegetative signs and suicidal ideation. Each item is rated on a four-point Likert scale from 0 (not at all) to 4 (extremely). The General Symptom Index (GSI) is a mean score of all BSRS categories. The BSRS, a reliable and valid measure, has been widely used in clinical and research settings in Taiwan.[34] The internal consistency of the 10 BSRS subscales was high in this study (Cronbach's α, 0.73–0.87).

Child Behavior Checklist (CBCL)

The CBCL is a parental report that concerns children aged 4–18 years. Two broad-band and eight narrow-band syndromes were derived from the 118 emotional and behavioral items, including attention problems, anxiety/depression syndrome, aggressive behavior, delinquency, social problems, somatic complaints, thought problems, and withdrawal.[35] Each item was scored 0 if not true, 1 if somewhat true or sometimes true, and 2 if very true or often true. The Chinese CBCL, a reliable and valid instrument, has been widely used in studies about child and adolescent behavioral problems in Taiwan.[36] The t score was computed based on a norm of 1391 Taiwanese children aged 4–9 years.[36] The internal consistency of the eight behavioral syndromes was moderate to high (Cronbach's α, 0.60–0.84).

Parental Bonding Instrument (PBI)

The PBI is a 25-item instrument (item-rated on a 4-point Likert scale from "very likely" to "very unlikely") that measures parenting styles during the child's first 16 years, with three principal dimensions: care/affection (12 items), overprotection (7 items) and authoritarianism (6 items).[37] A high score on the care/affection subscale reflects affection and warmth. Overprotection reflects overprotective parenting and denial of the child's psychological autonomy, and authoritarianism reflects parental authoritarian control over the child's behavior.[38] The psychometric properties of the Chinese PBI have been described elsewhere.[39]

Family Adaptability and Cohesion Evaluation Scale (FACESIII)

The FACESIII, a 40-item self-reported scale, was developed to assess family systems with respect to the levels of current and ideal cohesion and adaptability, with a high score indicating better family functioning.[40] Each item is rated on a five-point Likert scale: 1, almost never; 2, once in a while; 3, sometimes; 4, frequently; and 5, almost always. Accordingly, the sum scores for each of the four subscales (with 10 items for each) ranged from 10 to 50. The differences in family cohesion and adaptability were also calculated. The internal consistency was high for the four subscales (Cronbach's α, 0.75–0.84).

Dyadic Adjustment Scale (DAS)

The DAS, a 32-item self-reported scale, was developed to measure the quality of marital dyadic

relationships with four subscales: dyadic consensus, dyadic satisfaction, dyadic cohesion, and affection expression.[41] The test–retest reliability of the Chinese DAS was acceptable (ICC, 0.46–0.79). The internal consistency for the subscales was good (Cronbach's α, 0.70–0.90) except the dyadic satisfaction (Cronbach's α, 0.50), which was removed from the analysis.

Procedures

The Research Ethics Committee of National Taiwan University Hospital approved this study prior to recruitment. Written informed consent was obtained from the parents after explanation of the purpose and procedures of the study, as well as reassurance of confidentiality. Both parents reported on the questionnaires independently in different interview rooms. Thirty-five mothers and 34 fathers of the DS children, and 50 mothers and 50 fathers of the controls reported on the MPI, BSRS and DAS about themselves, and on the FACESIII about their families. Mothers and fathers reported on the PBI about their parenting styles (cases: 40 mothers and 37 fathers; their siblings: 32 mothers and 25 fathers; controls: 50 mothers and 50 fathers). The numbers of children with mothers' reports on the CBCL for 4–18-year-olds were 34 for the DS cases, 32 for siblings, and 50 for the controls.

Statistical analysis

SAS 9.1 (SAS Institute, Cary, NC, USA) was used for data analyses and the preselected α value was 0.05. For the demographic differences between the DS children and controls, frequency and percentage were presented, and a χ^2 test was employed for categorical variables; means and standard deviations (SD) were presented, and analysis of variance was used for continuous variables. Analysis of covariance (ANCOVA) was used to compare the mean score of each dimension of the MPI, BSRS, Chinese FACESIII and Chinese DAS between the DS and control parents, while controlling for the parents' educational level and employment status. Parental total score of the BSRS was also controlled in the analysis of Chinese FACESIII and DAS.

ANCOVA was also used to compare the mean t scores of eight behavioral syndromes derived from the CBCL, and of the parenting styles among DS children, siblings and controls, while controlling for the subjects' gender and age, and parental total score of the BSRS, educational level and employment status.

A linear multilevel model with a fixed and random effect model was used to address the lack of independence within the same family when we analyzed the difference between mothers' and fathers' reports on themselves, parenting styles, and family functioning, and the difference between DS children and their siblings in behavioral problems and parenting styles. These analyses were controlled for the potential confounding factors mentioned above.

Results

Demographic characteristics

Table 1 presents the demographic characteristics of the case and control groups. We found that mothers of DS children were significantly less educated and less likely to be employed than control mothers. Fathers of DS children were significantly less educated than control fathers; however, there was no difference between the two groups in terms of the fathers' employment status. Maternal educational level was moderately correlated with that of the fathers (Spearman's correlation, 0.492). There was no difference in children's gender and age distribution, number of children in the families, and the current age of the parents between the two groups.

Parental personality characteristics and psychopathology

For the comparisons between DS and control parents, mothers of DS children scored higher in obsession, depression, anxiety, psychoticism, general symptom severity index, and the total number of positive symptoms. Fathers of DS children scored significantly higher in neurotic personality characteristics, somatization and hostility (Table 2).

Table 1. Description of parental characteristics for the case and control groups*

	DS ($n = 45$)	Control ($n = 50$)	Sibling ($n = 34$)	F or χ^2 statistic[†]
Age (yr)	7.82 ± 3.08	8.44 ± 2.80	9.53 ± 4.24	$F_{(2,126)} = 2.57^{‡}$
Male gender	62.2	55.9	54.0	$\chi^2 = 0.70$
Children (n)	2.27 ± 0.81	2.00 ± 0.67		$F_{(1,93)} = 3.08^{‡}$
Mothers				
Current age (yr)	37.33 ± 5.38	37.02 ± 4.41		$F_{(1,93)} = 0.10$
Age at childbirth	30.84 ± 4.62	29.26 ± 4.03		$F_{(1,93)} = 3.19^{‡}$
Educational level				$\chi^2 = 12.17^{§}$
Senior high or lower	76.2	40.0		
College or higher	23.8	60.0		
Employed	34.2	59.6		$\chi^2 = 5.68^{‖}$
Fathers				
Current age (yr)	40.23 ± 5.81	40.20 ± 4.56		$F_{(1,93)} = 0.00$
Educational level				$\chi^2 = 5.39^{‖}$
Senior high or lower	64.3	40.0		
College or higher	35.7	60.0		
Employed	100.0	97.9		$\chi^2 = 0.88$

*Data presented as mean ± standard deviation or %; [†]one degree of freedom for χ^2 statistic; [‡]$p < 0.1$; [§]$p < 0.01$; [‖]$p < 0.05$.

There was no difference in personality characteristics and psychopathology between mothers and fathers in both groups, with some exceptions. For the DS group, mothers scored significantly higher for anxiety and phobia than did fathers. For the control group, mothers showed greater hostility, and a higher positive symptom distress index than the fathers (Table 2).

Behavioral characteristics of children with DS, siblings and controls

Table 3 lists the mean t scores and SDs of the eight behavioral syndromes derived from the CBCL among DS children, siblings and controls. DS children had more severe attention problems, social problems, somatic complaints, thought problems, and withdrawal than their siblings and controls. Moreover, DS children had more delinquent behavior than their siblings. However, DS children had less severe anxiety/depression symptoms than the controls. There was no difference between the siblings and the controls for behavioral problems.

Parenting styles among DS children, siblings and controls

Siblings of DS children were less overprotected by their mothers than DS children, and obtained significantly less affection/care and authoritarian control from their mothers than the controls did (Table 4). There was no significant difference between DS children and controls in terms of mothering.

DS children tended to be more overprotected by their fathers than their siblings and the controls. Fathers of DS children exerted less authoritarian control over their children without DS than their DS children. There was no difference among the three groups in terms of paternal affection/care (Table 4).

Differences in parenting styles between mothers and fathers

Mothers displayed greater affection/caring ($F_{(1,33)} = 6.83$, $p = 0.013$) and a less overprotective attitude ($F_{(1,33)} = 6.50$, $p = 0.015$) toward DS children than did fathers (Table 4). There was no

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Table 2. Personality and psychopathology of parents of children with DS and controls*

	Mother		Father		DS vs. Control		Mother vs. Father	
	DS (n=34)	Control (n=50)	DS (n=33)	Control (n=49)	Mother $F_{(1,82)}$	Father $F_{(1,80)}$	DS $F_{(1,33)}$	Control $F_{(1,49)}$
Personality characteristics								
Neuroticism	8.93±7.65	6.72±6.24	9.63±7.77	6.04±5.82	2.10	5.76[†]	0.14	0.38
Extroversion	16.31±4.99	17.48±4.82	15.03±5.53	15.80±5.00	1.18	0.43	1.31	3.11[‡]
Psychopathology								
Somatization	0.97±0.79	0.66±0.66	0.73±0.68	0.47±0.42	3.94[‡]	4.57[†]	2.46	3.12[‡]
Obsession	1.05±0.89	0.71±0.58	0.76±0.57	0.63±0.48	4.68[†]	1.14	3.19[‡]	0.81
Interpersonal sensitivity	0.82±0.79	0.55±0.54	0.55±0.46	0.41±0.41	3.68[‡]	1.95	3.98[‡]	1.96
Depression	0.72±0.77	0.43±0.42	0.54±0.45	0.35±0.40	4.99[†]	3.93[‡]	1.43	1.05
Anxiety	0.65±0.71	0.29±0.37	0.35±0.40	0.31±0.44	9.21[§]	0.13	5.08[†]	0.11
Hostility	0.88±0.77	0.77±0.71	0.70±0.48	0.48±0.39	0.47	5.26[†]	1.79	7.08[†]
Phobia	0.51±0.58	0.28±0.49	0.26±0.43	0.21±0.29	3.84[‡]	0.37	5.55[†]	0.81
Paranoia	0.57±0.64	0.39±0.42	0.48±0.58	0.35±0.37	2.40	1.60	0.46	0.42
Psychoticism	0.49±0.54	0.27±0.42	0.43±0.56	0.29±0.37	4.33[†]	1.82	0.41	0.10
Additional symptoms	0.58±0.57	0.35±0.51	0.50±0.67	0.39±0.41	3.78[‡]	0.79	0.90	0.30
General symptom severity index	0.73±0.65	0.46±0.41	0.53±0.42	0.39±0.32	5.52[†]	2.78[‡]	3.34[‡]	1.42
Positive symptom total number	23.29±15.61	16.48±11.37	19.67±13.78	16.20±12.04	5.36[†]	1.45	1.46	0.03
Positive symptom distress index	1.41±0.43	1.29±0.35	1.23±0.56	1.07±0.40	1.87	2.20	2.61	9.89[§]

*Data presented as mean±standard deviation; [†]p<0.05; [‡]p<0.1; [§]p<0.01.

Table 3. Emotional and behavioral problems of children with DS, siblings and controls

T score	DS (n = 34) Mean ± SD	Sibling (n = 32) Mean ± SD	Control (n = 50) Mean ± SD	DS vs. sibling $F_{(1,29)}$	DS vs. control $F_{(1,79)}$	Sibling vs. control $F_{(1,77)}$
Aggressive behavior	50.94 ± 8.40	49.70 ± 11.04	51.28 ± 10.87	0.88	0.02	0.40
Anxious/depressed	46.77 ± 5.62	49.58 ± 10.37	51.34 ± 11.29	2.21	4.76*	0.51
Attention problems	67.52 ± 13.77	50.14 ± 11.35	50.78 ± 9.78	72.94†	42.50†	0.07
Delinquent behavior	55.16 ± 13.22	48.55 ± 8.88	51.42 ± 11.44	7.89†	1.90	1.45
Social problems	74.48 ± 14.60	50.06 ± 10.90	51.02 ± 10.07	101.42†	76.07†	0.17
Somatic complaints	58.84 ± 15.92	50.81 ± 11.42	50.90 ± 10.96	7.23*	7.33†	0.00
Thought problems	60.35 ± 18.15	49.96 ± 8.83	50.86 ± 11.55	12.00†	8.58†	0.14
Withdrawn	62.04 ± 16.95	53.82 ± 12.13	51.32 ± 11.36	7.49*	12.07†	0.90

*$p < 0.05$; †$p < 0.01$.

Table 4. Parental attitude toward children with DS, siblings and controls

	DS Mean ± SD	Sibling Mean ± SD	Control Mean ± SD	DS vs. sibling F value	DS vs. control F value	Sibling vs. control F value
Mothers	(n = 40)	(n = 32)	(n = 50)	df = (1,29)	df = (1,85)	df = (1,77)
Affection	27.53 ± 4.31	26.85 ± 4.78	29.10 ± 4.27	2.00	3.00*	4.92†
Overprotection	8.03 ± 3.33	6.50 ± 4.13	7.84 ± 3.25	6.76†	0.07	2.67
Authoritarian controlling	6.71 ± 2.98	5.76 ± 2.80	7.10 ± 2.27	3.14*	0.50	5.64†
Fathers	(n = 37)	(n = 26)	(n = 50)	df = (1,22)	df = (1,79)	df = (1,67)
Affection	25.27 ± 4.40	25.07 ± 4.26	26.01 ± 5.19	0.02	0.48	0.60
Overprotection	9.65 ± 2.83	6.80 ± 3.19	7.89 ± 3.20	38.93‡	6.87†	1.91
Authoritarian controlling	7.43 ± 2.81	5.76 ± 2.68	6.58 ± 2.71	6.27†	1.97	1.52

*$p < 0.1$; †$p < 0.05$; ‡$p < 0.01$.

parental difference in authoritarian control for the DS group ($F_{(1,33)} = 1.99$, $p = 0.166$). Mothers of the controls displayed greater affection/care toward their children than their fathers ($F_{(1,43)} = 10.33$, $p = 0.002$). There was no difference in parental overprotection ($p = 0.993$) and authoritarian control ($p = 0.294$) for the control group. For siblings of DS children, there was no parental difference in parenting styles ($p = 0.149$–0.991).

Family functioning and parental marital relationships

Mothers of DS children reported a lower ideal family cohesion score than their normal counterparts ($F_{(1,82)} = 4.41$, $p = 0.039$). There was no difference in maternal reports on other subscales ($p = 0.238$–0.842) and paternal reports on all the subscales of the FACESIII between the two groups ($p = 0.126$–0.774). There was no difference in the marital relationship between the two groups ($p = 0.112$–0.883). There was no parental difference in reports on family functioning and marital relationship for both case ($p = 0.182$–0.744 for family functioning; $p = 0.242$–0.766 for marital relationship) and control ($p = 0.092$–0.948 for family functioning; $p = 0.467$–0.863 for marital relationship) groups, with the exception that mothers reported a more idealized family cohesion ($F_{(1,49)} = 6.47$, $p = 0.014$) and greater difference between ideal and current family cohesion than did the fathers ($F_{(1,49)} = 4.99$, $p = 0.030$) in the control families.

Discussion

The major findings suggest that rearing a child with DS is associated with increased emotional distress in both parents, and DS parents may have

a differential attitude toward their children with and without DS. Our findings support the suggestion that DS children demonstrate more behavioral problems. Regardless of disability, we found that the parental treatment of DS children was similar to that of the parents of normal children, except that fathers of DS children tended to overprotect these children. The unique finding of this study was that siblings of DS children obtained less overprotection from their mothers than DS children and less maternal care and control than normal children.

Consistent with Western studies,[42,43] our findings showed that mothers of DS children tended to take care of their children full-time, without employment. Similar to others,[4,14,15] this study found increased psychopathology in both mothers and fathers of DS children. Although these parents may suffer from more emotional distress,[7] our findings did not support the notion that having a child with DS causes an adverse effect on the family and marital functioning, as revealed by several other studies.[1,2,4] However, the differential reports of parents of DS children having more severe psychopathology and inappropriate parenting of their children, with and without DS, make the reports of harmonious family and marital interaction less convincing. Although the Taiwanese mothers, like their Western counterparts, play the major role in rearing DS children, and take major responsibility for their child's education,[44] consistent with some previous studies,[2,22] but not with others,[9,12] we did not find that mothers suffered from more severe psychopathology than fathers in the DS as compared with the control group.

Our hypotheses regarding more attention and behavioral problems among children with DS was supported.[11,6] This is one of the first studies to examine parenting style among children with a disability. Our findings suggest similar parenting between mothers of DS and normal children. However, unlike other studies that showed decreased parental involvement in the care of disabled children[1] or reporting a similar involvement in the child rearing of DS children,[45] fathers of children with DS tended to overprotect disabled children in this study.[46]

Consistent with a recent study,[11] we did not find that siblings of DS children suffered from more emotional/behavioral problems.[31] Our finding of differential parenting toward siblings of DS children was not only observed when compared with DS children, but also to normal children. Differential treatment of siblings is supposed to be multidimensional and complex, and does not necessarily correlate with children's negative adjustment and sibling relationships.[47] This unique finding should be interpreted in the context of cross-cultural differences. Families in Taiwan are strongly influenced by Confucian principles,[48] which emphasize that a set standard of conduct should be reinforced by parents to ensure the familial and societal goals of harmonious relations with others and the integrity of the family.[49] Therefore, children must show loyalty and respect to their parents, and parents must be responsible for teaching, disciplining and governing their children.[44] Hence, parental authoritarian control is the most important parental practice in Chinese culture.[44,50] Authoritarian parenting has been reported to be positively related to academic achievement among Chinese students, but is negatively associated with academic achievement among European-American students.[44,50] Cross-cultural studies on parenting have argued that, as a reflection of cultural differences, authoritarian or controlling parenting may have distinct implications for Chinese and European-Americans.[44,51] Therefore, in the context of Chinese families, a lower level of overprotection and authoritarian control over siblings may suggest inadequate parental care and monitoring.[50,52] The relative parental neglect of siblings of DS children can be explained in that parents may pay full attention to their disabled children and either leave the normal children alone, or give them responsibility for taking care of their disabled siblings.

Our results are contradictory to those of a recent study that showed a more negative parenting attitude toward disabled children than siblings.[53] Accordingly, despite the lack of increased

behavioral problems among siblings of DS children in this study, our findings indicate that the issues regarding the parenting and rearing of siblings of disabled children are no less important than those for disabled children.

The strengths of this study are that it is one of the first comprehensive studies to have multiple domains among DS children in a non-Western population, assessment of siblings of DS children, and inclusion of fathers in the study. Despite these strengths, this study is limited by the small sample size, potential selection bias of the controls, fewer fathers than mothers participating in the study, and lack of recruitment of children with other disabilities (e.g. autism) as a comparison group. To minimize the impact of this potential selection bias, both parents' educational levels and employment status were controlled in all the statistical analyses. Some of the fathers did not complete assessments either because they worked in China, a not uncommon phenomenon in Taiwan, during the study period, or because they thought that reports on their children's problems were their wives' responsibility. Moreover, this study was unable to test whether DS parents report fewer problems in their children and encounter less stress than parents of children with other disabilities,[3,10,17] which warrants further examination.

Findings from this study imply that in addition to the needs of DS children, parental and sibling psychosocial care should be equally evaluated, and that the siblings of DS children may receive relatively less attention from their parents since childhood. Therefore, parental counseling should focus not only on DS children, but also their siblings.

Acknowledgments

References

1. Bristol MM, Gallagher JJ, Schopler E. Mothers and fathers of young developmentally disabled and nondisabled boys: adaptation and spousal support. *Dev Psychol* 1988; 24:441–51.

2. Dyson LL. Fathers and mothers of school-age children with developmental disabilities: parental stress, family functioning, and social support. *Am J Ment Retard* 1997;102: 267–79.

3. Hauser-Cram P, Warfield ME, Shonkoff JP, et al. Children with disabilities: a longitudinal study of child development and parent well-being. *Monogr Soc Res Child Dev* 2001; 66:1–114.

4. Pelchat D, Ricard N, Bouchard JM, et al. Adaptation of parents in relation to their 6-month-old infant's type of disability. *Child Care Health Dev* 1999;25:377–97.

5. Sloper P, Knussen C, Turner S, et al. Factors related to stress and satisfaction with life in families of children with Down's syndrome. *J Child Psychol Psychiatry* 1991;32: 655–76.

6. Rehm RS, Bradley JF. Normalization in families raising a child who is medically fragile/technology dependent and developmentally delayed. *Qual Health Res* 2005;15: 807–20.

7. Ferguson PM. A place in the family: an historical interpretation of research on parental reactions to having a child with a disability. *J Spec Educ* 2002;36:124–30.

8. Flynt SW, Wood TA. Stress and coping of mothers of children with moderate mental retardation. *Am J Ment Retard* 1989;94:278–83.

9. Beckman PJ. Comparison of mothers' and fathers' perceptions of the effect of young children with and without disabilities. *Am J Ment Retard* 1991;95:585–95.

10. Lam LW, Mackenzie AE. Coping with a child with Down syndrome: the experiences of mothers in Hong Kong. *Qual Health Res* 2002;12:223–37.

11. Stores R, Stores G, Fellows B, et al. Daytime behaviour problems and maternal stress in children with Down's syndrome, their siblings, and non-intellectually disabled and other intellectually disabled peers. *J Intellect Disabil Res* 1998;42:228–37.

12. Goldberg S, Morris P, Simmons RJ, et al. Chronic illness in infancy and parenting stress: a comparison of three groups of parents. *J Pediatr Psychol* 1990;15:347–58.

13. Antonarakis SE, Lyle R, Dermitzakis ET, et al. Chromosome 21 and Down syndrome: from genomics to pathophysiology. *Nat Rev Genet* 2004;5:725–38.

14. Miller AC, Gordon RM, Daniele RJ, et al. Stress, appraisal, and coping in mothers of disabled and nondisabled children. *J Pediatr Psychol* 1992;17:587–605.

15. Cheng P, Tang CS. Coping and psychological distress of Chinese parents of children with Down syndrome. *Ment Retard* 1995;33:10–20.

16. Shek DT, Cheung CK. Locus of coping in a sample of Chinese working parents: reliance on self or seeking help from others. *Soc Behav Pers* 1990;18:327–45.

17. Abbeduto L, Seltzer MM, Shattuck P, et al. Psychological well-being and coping in mothers of youths with autism, Down syndrome, or fragile X syndrome. *Am J Ment Retard* 2004;109:237–54.

18. Kasari C, Sigman M. Linking parental perceptions to interactions in young children with autism. *J Autism Dev Disord* 1997;27:39–57.

19. Ryde-Brandt B. Defence strategies and anxiety in mothers of disabled children. *Eur J Pers* 1991;5:367–77.

20. Fidler DJ, Hodapp RM, Dykens EM. Stress in families of young children with Down syndrome, Williams syndrome, and Smith-Magenis syndrome. *Early Educ Dev* 2000;11: 395–406.

21. Rodrigue JR, Morgan SB, Geffken GR. Psychosocial adaptation of fathers of children with autism, Down syndrome, and normal development. *J Autism Dev Disord* 1992;22: 249–63.

22. Krauss MW. Child-related and parenting stress: similarities and differences between mothers and fathers of children with disabilities. *Am J Ment Retard* 1993;97: 393–404.

23. Damrosch SP, Perry LA. Self-reported adjustment, chronic sorrow, and coping of parents of children with Down syndrome. *Nurs Res* 1989;38:25–30.

24. Gunn P, Berry P. The temperament of Down's syndrome toddlers and their siblings. *J Child Psychol Psychiatry* 1985;26:973–9.

25. Gibbs MV, Thorpe JG. Personality stereotype of noninstitutionalized Down syndrome children. *Am J Ment Defic* 1983;87:601–5.

26. Cuskelly M, Dadds M. Behavioural problems in children with Down's syndrome and their siblings. *J Child Psychol Psychiatry* 1992;33:749–61.

27. Carter JC, Capone GT, Gray RM, et al. Autistic-spectrum disorders in Down syndrome: further delineation and distinction from other behavioral abnormalities. *Am J Med Genet B Neuropsychiatr Genet* 2007;144:87–94.

28. Pueschel SM, Bernier JC, Pezzullo JC. Behavioural observations in children with Down's syndrome. *J Ment Defic Res* 1991;35:502–11.

29. Coe DA, Matson JL, Russell DW, et al. Behavior problems of children with Down syndrome and life events. *J Autism Dev Disord* 1999;29:149–56.

30. Dyson LL. Adjustment of siblings of handicapped children: a comparison. *J Pediatr Psychol* 1989;14:215–29.

31. Lavigne JV, Ryan M. Psychologic adjustment of siblings of children with chronic illness. *Pediatrics* 1979;63: 616–27.

32. Lobato D, Barbour L, Hall LJ, et al. Psychosocial characteristics of preschool siblings of handicapped and non-handicapped children. *J Abnorm Child Psychol* 1987;15: 329–38.

33. Chen YY, Lee MB, Lee YJ, et al. Psychiatric morbidity and associated psychosocial characteristics of women with pregnancy loss. *Taiwanese J Psychiatry* 1998;12:194–206.

34. Lee MB, Lee YJ, Yan LL, et al. Reliability and validity of using a Brief Psychiatric Symptom Rating Scale in clinical practice. *J Formos Med Assoc* 1990;89:1081–7.

35. Achenbach TM. *Manual for the Child Behavior Checklist/ 4–18 and 1991 Profile.* Burlington: Department of Psychiatry, University of Vermont, 1991.

36. Shang CY, Gau SSF, Soong WT. Association between childhood sleep problems and perinatal factors, parental mental distress and behavioral problems. *J Sleep Res* 2006;15:63–73.

37. Parker G. Parental characteristics in relation to depressive disorders. *Br J Psychiatry* 1979;134:138–47.

38. Cox BJ, Enns MW, Clara IP. The Parental Bonding Instrument: confirmatory evidence for a three-factor model in a psychiatric clinical sample and in the National Comorbidity Survey. *Soc Psychiatry Psychiatr Epidemiol* 2000;35:353–7.

39. Gau SS, Shen HY, Chou MC, et al. Determinants of adherence to methylphenidate and the impact of poor adherence on maternal and family measures. *J Child Adolesc Psychopharmacol* 2006;16:286–97.

40. Olson DH. Three-dimensional (3-D) Circumplex Model and revised scoring of FACES III. *Fam Process* 1991;30: 74–9.

41. Spanier GB. Measuring dyadic adjustment: new scales for assessing the quality of marriage and similar dyads. *J Marriage Fam* 1976;38:15–28.

42. Curran AL, Sharples PM, White C, et al. Time costs of caring for children with severe disabilities compared with caring for children without disabilities. *Dev Med Child Neurol* 2001;43:529–33.

43. Warfield ME. Employment, parenting, and well-being among mothers of children with disabilities. *Ment Retard* 2001;39:297–309.

44. Chao RK. Beyond parental control and authoritarian parenting style: understanding Chinese parenting through the cultural notion of training. *Child Dev* 1994;65:1111–9.

45. Ricci LA, Hodapp RM. Fathers of children with Down's syndrome versus other types of intellectual disability: perceptions, stress and involvement. *J Intellect Disabil Res* 2003;47:273–84.

46. Holmbeck GN, Johnson SZ, Wills KE, et al. Observed and perceived parental overprotection in relation to psychosocial adjustment in preadolescents with a physical disability: the mediational role of behavioral autonomy. *J Consult Clin Psychol* 2002;70:96–110.

47. McHale SM, Pawletko TM. Differential treatment of siblings in two family contexts. *Child Dev* 1992;63:68–81.

48. Bond MH, Huang KK. *The Social Psychology of Chinese People*. Hong Kong: Oxford University Press, 1986.

49. Lau S, Cheung PC. Relations between Chinese adolescents' perception of parental control and organization and

their perception of parental warmth. *Dev Psychol* 1987; 23:726–9.

50. Pearson E, Rao N. Socialization goals, parenting practices, and peer competence in Chinese and English preschoolers. *Early Child Dev Care* 2003;173:131–46.

51. Chao RK. Extending research on the consequences of parenting style for Chinese Americans and European Americans. *Child Dev* 2001;72:1832–43.

52. Zhang D, Wehmeyer ML, Chen LJ. Parent and teacher engagement in fostering the self-determination of students with disabilities: a comparison between the United States and the Republic of China. *Remedial Special Educ* 2005; 26:55–64.

53. Beck A, Daley D, Hastings RP, et al. Mothers' expressed emotion towards children with and without intellectual disabilities. *J Intellect Disabil Res* 2004;48:628–38.