Humanities & Social Sciences Communications

ARTICLE

https://doi.org/10.1057/s41599-021-01024-0 OPEN

Insufficient social support for fathers of children with developmental disorders

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Many parents carry exceptional burdens in childcare, especially while raising children with developmental disabilities (DD). Japanese local governments provide considerable support to mothers and their families, which indicates that such services are in high demand. However, similar assistance for fathers in the context of children with DD may be lacking. This study evaluated the social support status of fathers raising children with DD towards considering increased paternal support. Multiple-choice questionnaires on support for information (6 items), emotion (7 items), evaluation (3 items), and daily living (3 items) were completed by Japanese fathers ($n = 85$) and mothers ($n = 101$) of children with DD attending rehabilitation facilities. Regarding information support, fathers answered "spouse" as the main provider for all items, which differed significantly from mothers. For emotional support, fathers significantly more frequently received assistance from their workplace and spouse. Daily living support was also significantly more predominant for fathers in the workplace. Evaluation support sources were comparable between the respondent groups, with "spouse" being most frequently answered by fathers. These findings indicate a deficiency in external resources for fathers and support a need to consider increasing non-spouse resources and social support for fathers in raising children with DD.

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Introduction

Infancy and early childhood are periods in which all aspects of child growth and development change remarkably (Institute for Juvenile Education, 2004). Parental involvement is a factor in childrearing (Masaki et al., 2011). However, many parents carry exceptional burdens in childcare, especially for raising children with developmental disabilities (DD) (Jellett et al., 2015; Nishijima et al., 2019; Nomura et al., 2020; Dissanayake et al., 2019). DD is defined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, to include autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder characterized by hyperactivity, impulsivity, and inattention, and learning disabilities with impairments in the ability to hear, speak, and reason, although overall intellectual development is not delayed (American Psychiatric Association, 2013).

In Japan, the Sukoyaka Oyako 21 s revision guidelines aim to promote childcare and family health support towards a society in which children grow up healthily (Ministry of Health, 2015). Fatherhood involvement is described as taking care of children, performing household chores, sharing the joy of raising children, and sharing the worries of child-raising while providing mental and physical care for the partner (Ministry of Health, 2021). Japanese local governments generally provide considerable medical, instructional, and emotional support to mothers and their families for child-raising, which indicates that such services are in demand. In particular, the parents of children with DD have a higher burden of childcare and more anxiety than do parents of healthy children, children with other disabilities, and children with chronic diseases (Kanematsu, 2015; Tsuda et al., 2012; Nakayama et al., 2013; Rachel et al., 2015; Dabrowska and Pisula, 2010; Lee, 2019). Thus, the importance of specialized and commensurate support appears even greater for DD.

Paternal participation in childcare is now being considered increasingly necessary to improve the child's mental development (Murakami et al., 2013). Active childcare involvement following social networking service-based training programs for fathers raising children with ASD resulted in a significant decrease in child-rearing stress, an increase in self-affirmation of childcare, and a better relationship with the child (May et al., 2021). Other studies have shown that paternal involvement in raising children with ASD reduces maternal stress and increases maternal family adaptability (Rankin et al., 2019). Even in the case of fathers raising children with stereotyped development, Maehara found that active nurturing was essential for the child's growth (Maehara et al., 2018). However, studies on assistance for fathers in the context of family support for children with DD requiring special care are lacking. A survey conducted in 2014 revealed that mothers had distinct differences from fathers in terms of child-rearing situations, attitudes and thoughts, and anxieties on the upbringing of children in need of additional care. Moreover, the amount and kind of help required by Japanese fathers suggested a need to consider specific ways to support them that were different from those for mothers (Ishida et al., 2018).

The purpose of this study was to identify insufficiencies in social support for fathers towards considering increased assistance for the paternal care of children with DD.

Methods

Research subjects. The study participants were fathers and mothers of children attending rehabilitation centers for disabled preschool children (age range: 2–5 years) from among 39 facilities in Nagano Prefecture, Japan. The investigation included 8 facilities following the approval of each facility director. A self-administered written questionnaire was mailed to participants after obtaining informed consent. Due to the young age of the children, only parental consent was obtained in this study. The survey period ranged from July to September 2016. This study was approved by our Institutional Ethics Committee (no. 4642) and was conducted in accordance with the Declaration of Helsinki.

Details of the investigation. The survey consisted of 19 items selected with reference to the Social Support Usage (contents and providers) items described by Ota (2010), the Code Matrix of Cases of Difficulties in Life for Mothers of Children with Developmental Disabilities reported by Yamashita (2013), and the Social Support Recognized by Mothers of Children with ASD items published by Fujita (2014). The 19 items were classified into four categories: information support (6 items), emotional support (7 items), evaluation support (3 items), and daily living support (3 items) (Table 1). Respondents were asked to indicate "yes" or "no" to sources of support among the four categories.

Statistical analysis. The survey results were subjected to chi-square testing between fathers and mothers. For items with an expected frequency of <5, Fisher's exact test was used to determine significance. A p-value of <0.05 was considered statistically significant. All analyses were performed using IBM SPSS Statistics version 22.0 for Windows (IBM, Chicago, IL, USA).

Ethical considerations. The purpose and voluntary nature of the study were specified in the questionnaire request form distributed to the subjects. Questionnaires were kept anonymous. No personal information other than basic attribute information was recorded. The respondents were assured that the survey results would be used for research purposes only.

Results

Response status. The surveys were sent to a total of 470 fathers and mothers. We received 186 completed questionnaires for a recovery rate of 39.6%. Since there were no omissions for any of the response items, all 186 surveys were included in the analysis. The respondents included 85 fathers and 101 mothers.

Participant attributes. The attributes of the participants are shown in Table 2. The 85 fathers were a mean age of 40.7 ± 8.8 years. The 101 mothers were a mean age of 37.7 ± 5.4 years. Over 80% of the respondents in both groups reported being in good general health.

Social support usage

Information support. The paternal respondents indicated their spouse as the main provider of information support for all 6 items (Table 3). For items 1–6, fathers primarily responded "spouse" and "welfare organizations". These rates were all significantly different from the responses of mothers ($p < 0.05$). Regarding item 3, fathers answered "spouse" and "biological mother" as the top 2 sources of information support, which were also significantly different from the answers of mothers ($p < 0.05$). The maternal respondents cited "welfare organizations", such as kindergartens and developmental disorder support centers, as the main provider of information support for all 6 items (Table 3). Secondary sources of information included "welfare institutions" (items 1, 2, 4, and 6; data not shown), "biological mother" (item 3), and "spouse" (item 5). Thus, the maternal caregivers tended to obtain child-raising information from a broader range of sources.

Emotional support. The paternal respondents answered "spouse" as the main provider of emotional support for all 7 items (Table 4). For items 1 and 2, fathers reported "spouse" and "welfare

Table 1 Types of support and questions in the survey.

Type	Questions	Category selections
1. Information support	1. Information on developmental disorders (symptoms, course, treatment, etc.) 2. Information and advice on medical care (how to deal with children) 3. General childcare information and advice 4. Information and advice on child care for children with developmental disabilities 5. Information and advice for balancing childcare of children with developmental disabilities and work 6. Information on systems and services for children with developmental disabilities	1. "Spouse" 2. "Biological mother" 3. "Mother-in-law" 4. "Colleagues or bosses at work" 5. "Welfare organizations"
2. Emotional support	1. Consultation on childcare for children with developmental disabilities 2. Consultation on medical treatment and education for children with developmental disabilities 3. Consultation on personal problems and relationships 4. Consultation on all aspects of life, excluding child care, nursing, and work 5. Availability of someone who can listen to anything 6. Availability of someone close who gives a sense of security 7. Availability of someone who gives encouragement	
3. Daily living support	1. Help with raising children with developmental disabilities 2. Housework assistance 3. Support for work and other duties	
4. Evaluation support	1. Acceptance of one's ideas on raising children with developmental disabilities 2. Acceptance of one's methods on raising children with developmental disabilities 3. Recognition of one's ideas and methods on raising children with developmental disabilities	

Table 2 Attributes of the respondents.

	Fathers	Mothers
Age, years[a]	40.7 ± 8.8	37.7 ± 5.4
Educational background[b]		
High school graduate	17 (20.0)	21 (20.8)
Graduation from vocational school or junior college	23 (27.1)	44 (45.6)
Graduation from college or higher	45 (52.9)	36 (35.6)
Employment situation[b]		
Full-time job	78 (91.8)	12 (11.9)
Part-time job	7 (8.2)	38 (37.6)
No job	0 (0.0)	51 (50.5)
Family structure[b]		
Parents and children	68 (80.0)	78 (77.2)
Living with biological parents	11 (13.0)	7 (6.9)
Living with parents-in-law	5 (5.8)	14 (13.9)
Other	1 (1.2)	2 (2.0)
Health condition[b]		
Good	76 (89.4)	83 (82.2)
Bad	8 (9.4)	2 (2.0)
Unsure	1 (1.2)	16 (15.8)

Total respondents: 186 (85 fathers and 101 mothers).
[a]Mean ± SD.
[b]Number (%).

organizations", which were significantly different from the responses of mothers ($p < 0.05$ and $p < 0.001$, respectively). For item 3, the top 2 paternal emotional support categories were "spouse" and "colleagues or bosses at work". These were significantly different from the answers of mothers ($p < 0.001$ and $p < 0.000$, respectively). For items 4–7, fathers and mothers reported "spouse" as the main source at comparable rates. The maternal respondents cited "welfare organizations" as the main provider of support for items 1 and 2 (Table 4). For items 3–7, mothers answered "spouse" as the main provider. The second most common source tended to be "biological mothers" (items 3–6).

Daily living support. Fathers frequently listed "spouse" as the primary provider of daily living support (Table 5). For item 1, The response percentage of "biological mother" was significantly lower than the answers of mothers ($p < 0.01$). Regarding item 2, the response frequency of "spouse" was significantly higher than the responses of mothers. The response percentage of "colleagues or bosses at work", which included such support as an understanding of flexible working styles and recommendations for taking time off, was significantly higher than the answers of mothers ($p < 0.000$). For item 3, the response percentage of "colleagues or bosses at work" was significantly more frequent than the replies of mothers. Mothers cited "spouse" ($p < 0.01$) as the main provider of daily living support for all three categories, followed next by "biological mother" (items 1 and 2) or "biological mother" and "colleagues and bosses at work" equally (item 3) (Table 5). Thus, both parents primarily received help with daily living for childcare and housework from their spouse and biological mother. In terms of support at work, fathers tended to receive additional help from colleagues and superiors.

Evaluation support. Fathers answered "spouse", followed next by "biological mother", as the main provider of support for all 3 items (Table 6). For all items, the response frequency of "biological mother" was significantly lower than the replies of mothers ($p < 0.01$ for items 1 and 2 and $p < 0.000$ for item 3). Regarding the mothers' answers for evaluation support, the top 2 sources for all 3 items were "spouse" and "welfare organizations" (Table 6). Taken together, fathers were more likely to receive support from family members, while mothers tended to consult their family as well as non-family welfare organizations.

Discussion

The present study examined for insufficiencies in social support for fathers raising children with DD. In contrast to mothers, fathers tended to receive support from a narrower range of sources that was restricted primarily to close family members. These findings suggest a need to consider increased assistance for fathers from experts and external sources, such as advice on childcare from nursery school or rehabilitation center staff and other specialists, as well as asking grandparents for help in raising the child.

Table 3 Information support survey results.

No.	Question	Parent	Response	"Spouse"			"Biological mother"			"Welfare organizations"		
				Number	%	*p*-value	Number	%	*p*-value	Number	%	*p*-value
1	Information on developmental disorders (symptoms, course, treatment, etc.)	Fathers	Yes	73	85.9	0.000***	17	20.0	0.282	49	57.6	0.000***
			No	12	14.1		68	80.0		36	42.4	
		Mothers	Yes	39	41.8		27	26.7		89	88.1	
			No	62	61.4		74	73.3		12	11.9	
2	Information and advice on medical care (how to deal with children)	Fathers	Yes	73	85.9	0.000***	17	20.0	0.056[a]	49	57.7	0.000***
			No	12	14.1		68	80.0		36	42.4	
		Mothers	Yes	39	38.6		27	26.7		89	88.1	
			No	62	61.4		74	73.3		12	11.9	
3	General childcare information and advice	Fathers	Yes	69	81.2	0.000***	44	51.8	0.863	26	30.6	0.000***
			No	16	18.8		41	48.2		59	69.4	
		Mothers	Yes	40	39.6		51	50.5		66	65.4	
			No	61	60.4		50	49.5		35	34.7	
4	Information and advice on child care for children with developmental disabilities	Fathers	Yes	72	84.7	0.000***	14	16.5	0.117[a]	39	45.9	0.000***
			No	13	15.3		71	83.5		46	54.1	
		Mothers	Yes	26	25.8		28	27.7		90	89.1	
			No	75	74.3		73	72.3		11	10.9	
5	Information and advice for balancing childcare of children with developmental disabilities and work	Fathers	Yes	43	50.6	0.000***	13	15.3	0.776	16	18.8	0.066[a]
			No	42	49.4		72	84.7		69	81.2	
		Mothers	Yes	25	24.7		17	16.8		34	33.7	
			No	76	75.2		84	83.2		67	66.3	
6	Information on systems and services for children with developmental disabilities	Fathers	Yes	60	70.6	0.000***	7	8.2	0.737	36	42.4	0.000***
			No	25	29.4		78	91.8		49	57.6	
		Mothers	Yes	17	16.9		7	7.0		85	84.1	
			No	84	83.2		94	93.1		16	15.8	

Total respondents: 186 (85 fathers and 101 mothers).
***$p < 0.001$.
[a]Fisher's exact probability test.

Support for obtaining necessary information for managing children with DD (category 1). In the case of fathers, the vast majority received information and advice on specialized knowledge and skills, such as understanding DD and child-raising methods, from their spouse, followed next by welfare organizations. The frequency of fathers who used specialized agencies as their primary information source was significantly lower than that of mothers. In their review of the literature on DD, Ishii et al. found that mothers who obtained reliable information exhibited a high degree of appropriateness in their child's disease management and behavior along with good mental health (Ishii and Asano, 2017). This may be missing among fathers based on the present study. Information provided from non-specialists can be imprecise and uncertain, which may lead to insufficient understanding and skill acquisition by the father about DD and complicate raising the child. Without a system providing reliable information, fathers may not be able to adequately respond to the needs of the child; this could raise the child's stress, reduce the father's interest in childrearing, increase the burden on the mother, and ultimately hinder the child's growth. Another possible reason for the minority of fathers receiving support from specialized institutions was the difficulty in finding the opportunity and time to visit centers due to work commitments. In considering the establishment of a paternity support system, it will be necessary to incorporate the circumstances and time limitations of fathers. Men in Japan typically work long hours, with frequent overtime and mandatory socializing with colleagues and customers (Ministry of Health, 2019; Nishida and Terashima, 2019). On the other hand, mothers primarily received support from specialists at welfare and medical organizations and presumably from contacts met through medical care and education, which indicated that they had access to a variety of useful and reliable sources. More than half of fathers received support from their spouses in obtaining information and counseling services to help them balance work and child-rearing responsibilities in the context of DD. However, few male respondents received support from their workplace or specialized institutions, indicating that they were unable to consistently get information from their company for raising their disabled child. Although the Japanese Work-Life Balance Charter 2008 states that society as a whole must support individuals and their families in order to achieve a proper work–life balance (Ministry of Health, 2007), the above findings suggest that such social systems have not yet been developed in terms of information support.

Emotional and evaluative support (categories 2 and 4). In the case of fathers, ~70% of respondents cited their spouse as the main source of emotional support for all 6 items in category 2. Such encouragement is critical in interpersonal relationships to decrease psychological stress via positive perceptions from others and the empathy described to be necessary for maintaining good relationships (Kato, 2002). The present survey indicated that fathers were most frequently empowered by their spouse's recognition of their parenting and their social life, including work. Apart from their spouse, fathers received limited emotional support from their biological mother (9.4–29.4% for all items) and welfare organizations (1.2–21.2% for all items). For item 3 in category 2 regarding consultations on personal problems and relationships, colleagues in the workplace were a notable source of support, cited by 47.1% of paternal respondents. In order to effectively raise children with DD, it is deemed essential to enhance the so-called empowerment of the family through cooperation within families, between specialists and families, and between local governments and families (Wakimizu et al., 2011). For fathers to become more actively involved in the upbringing of children with DD, in addition to support from the spouse and specialized institutions, interactions with other families having

Table 4 Emotional support survey results.

No.	Question	Parent	Response	"Spouse"			"Biological mother"			"Colleagues or bosses at work"			"Welfare organizations"		
				Number	%	*p*-value	Number	%	*p*-value	Number	%	*p*-value	Number	%	*p*-value
1	Consultation on childcare for children with developmental disabilities	Fathers	Yes	71	83.5	0.008**	13	20.0	0.000***	5	5.9	0.587	18	21.2	0.000***
			No	14	16.5		68	80.0		80	94.1		57	67.1	
		Mothers	Yes	67	66.3		56	55.5		8	7.9		84	83.2	
			No	34	33.7		45	44.6		93	92.1		17	16.8	
2	Consultation on medical treatment and education for children with developmental disabilities	Fathers	Yes	66	77.7	0.000***	8	9.4	0.000***	6	7.1	0.145[a]	31	36.4	0.000***
			No	19	22.4		77	90.6		79	92.9		54	63.5	
		Mothers	Yes	51	50.5		31	30.7		2	2.0		94	93.0	
			No	50	49.5		70	69.3		99	98.0		7	6.9	
3	Consultation on personal problems and relationships	Fathers	Yes	54	63.5	0.001**	14	16.5	0.361	40	47.1	0.000***	1	1.2	0.627[a]
			No	31	36.5		71	83.5		45	52.9		84	98.8	
		Mothers	Yes	40	39.6		22	21.8		19	18.8		3	3.0	
			No	61	60.4		79	78.2		82	81.2		98	97.0	
4	Consultation on all aspects of life, excluding child care, nursing, and work	Fathers	Yes	64	75.3	0.753	25	29.4	0.000***	16	18.8	0.011*,[a]	2	2.4	0.024*,[a]
			No	21	24.7		60	70.6		69	81.2		83	97.6	
		Mothers	Yes	74	73.3		59	58.4		5	5.0		13	12.9	
			No	27	26.7		42	41.6		96	95.0		88	87.1	
5	Availability of someone who can listen to anything	Fathers	Yes	64	75.3	0.642	24	28.2	0.001**	11	12.9	0.167	2	2.4	0.000***
			No	21	24.7		61	71.8		74	87.1		83	97.6	
		Mothers	Yes	73	72.2		53	52.5		7	7.0		22	21.8	
			No	28	27.7		48	47.5		94	93.1		79	78.2	
6	Availability of someone close who gives a sense of security	Fathers	Yes	66	77.7	0.946	18	21.2	0.000***	4	4.7	0.757[a]	3	3.6	0.000***
			No	19	22.4		67	78.8		81	95.3		82	96.5	
		Mothers	Yes	78	77.2		52	51.5		6	5.9		37	36.6	
			No	23	22.8		49	48.5		95	94.1		64	63.4	
7	Availability of someone who gives encouragement	Fathers	Yes	64	75.5	0.365	21	24.7	0.000***	12	14.1	0.505	3	3.6	0.000***
			No	21	24.7		64	75.3		73	85.9		82	96.5	
		Mothers	Yes	70	69.3		53	52.5		11	10.9		63	62.4	
			No	31	30.7		48	47.5		90	89.1		38	37.6	

Total respondents: 186 (85 fathers and 101 mothers).
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.
[a]Fisher's exact probability test.

Table 5 Daily living support survey results.

No.	Question	Parent	Response	"Spouse"			"Biological mother"			"Mother-in-law"			"Colleagues or bosses at work"		
				Number	%	*p*-value	Number	%	*p*-value	Number	%	*p*-value	Number	%	*p*-value
1	Help with raising children with developmental disabilities	Fathers	Yes	71	83.6	0.677	32	37.6	0.007**	27	31.8	0.635	1	1.2	1.000[a]
			No	14	16.5		53	62.4		58	68.2		84	98.8	
		Mothers	Yes	82	81.2		57	56.4		30	29.7		2	2.0	
			No	19	18.8		44	43.6		71	70.3		99	98.0	
2	Housework assistance	Fathers	Yes	74	87.1	0.009**	17	20.0	0.221	18	21.2	0.564	1	1.2	-
			No	11	12.9		68	80.0		67	78.8		84	98.8	
		Mothers	Yes	29	28.7		28	27.7		18	17.9		0	0.0	
			No	72	71		73	72.3		83	82.2		101	100.0	
3	Support for work and other duties	Fathers	Yes	32	37.6	0.145	13	15.3	0.527	2	2.4	0.037	37	43.5	0.000***
			No	53	62.4		72	84.7		83	97.6		48	56.5	
		Mothers	Yes	29	28.7		19	18.8		10	9.9		19	18.8	
			No	72	71.3		82	81.2		91	90.1		82	81.2	

Total respondents: 186 (85 fathers and 101 mothers).
**$p < 0.01$, ***$p < 0.001$.
[a]Fisher's exact probability test.

children with DD will also be a major factor (Ibuki et al., 2005). Fathers need more father-to-father connections and learning as well (Ishida et al., 2018), suggesting that an inter-family support system may be beneficial. In the case of mothers, a higher frequency of respondents answered that they had consulted with welfare organizations and specialists regarding the childcare and nursing of children with DD in addition to receiving emotional support from their spouse and biological mother. It was also evident that they obtained advice and peace of mind regarding their overall life from a wider range of sources than did fathers. Receiving emotional support from their spouse reduces anxiety about childrearing and enables mothers to think positively about childcare and maintain a smooth mother–child relationship (Mihara and Matsumoto, 2012). According to Yamashita et al. (2016), the father's high appreciation of the mother's parenting behavior and utmost support for the child help develop the mother's self-confidence and sense of efficacy as a parent. Also in the present study, fathers appeared to give psychological support to their spouses, which might have provided empowerment.

There were significant differences between fathers and mothers in the sources of evaluative support. The fathers of children with DD were limited to their spouse and biological mother for shaping their views and attitudes towards childrearing. On the other hand, mothers were seen to receive more support from outside the family, such as from welfare organizations, in addition to their spouse and biological mother. The reason for this may be that fathers primarily play a role in supporting the family's economic base by working and have fewer opportunities to establish relationships with support organizations than do mothers. Moreover, since fathers have more limited chances to obtain recognition from specialists and supporters other than family members, it is possible that they have difficulty in correctly understanding and responding to DD. Indeed, fathers appeared less able to receive the benefits of peer support to instill good feelings towards the child, confidence in childcare, and reduced childcare stress since they had fewer opportunities to be recognized by friends and others (Shimada et al., 2019).

Direct support for daily life (category 3). The main source of childcare and housework support was the spouse for both parents, with assistance from the biological mother or mother-in-law in the remainder of cases. Less than half of fathers received direct support for work and other duties from their colleagues or bosses, such as flexible work schedules (e.g., flextime) and recommendations for taking days off (Ministry of Health, 2020). These results indicated that couples tended to primarily support each other with childcare and housework duties. As the minority of respondents received support from other family members or work connections, the household burden on families containing children with DD may be considered as a result of increases in the number of nuclear families in Japan and the reported weakening of social capital (Ueda and Okamoto, 2011). Regarding extra-household support, it will be necessary to improve administrative services and establish better systems in local communities. A recent nationwide survey from Japan found that while the need for paternity initiatives was high in many municipalities, there was a clear discrepancy between awareness and actual practice (Ozaki, 2016). Therefore, it appears urgent to establish formal continuous support programs for fathers to connect with each other and learn specific measures for raising children, especially youths with DD.

Limitations and further research. The number of subjects included in this survey was small and might have been

Table 6 Evaluation support survey results.

No.	Question	Parent	Response	"Spouse"			"Biological mother"			"Welfare organizations"		
				Number	%	*p*-value	Number	%	*p*-value	Number	%	*p*-value
1	Acceptance of one's ideas on raising children with developmental disabilities	Fathers	Yes	64	75.3	0.757	31	36.5	0.003**	2	2.4	0.347
			No	21	24.7		54	63.5		83	97.6	
		Mothers	Yes	78	77.2		59	58.5		6	6.0	
			No	23	22.8		42	41.6		95	94.1	
2	Acceptance of one's methods on raising children with developmental disabilities	Fathers	Yes	59	69.4	0.296	29	34.2	0.002**	2	2.4	0.457[a]
			No	26	30.6		56	65.9		83	97.6	
		Mothers	Yes	77	76.3		59	58.4		5	5.0	
			No	24	23.8		42	41.6		96	95.0	
3	Recognition of one's ideas and methods on raising children with developmental disabilities	Fathers	Yes	57	67.1	0.635	27	31.7	0.000***	1	1.2	0.401[a]
			No	28	32.9		58	68.2		84	98.8	
		Mothers	Yes	71	70.3		62	61.4		3	3.0	
			No	30	29.7		39	38.6		98	97.0	

Total respondents: 186 (85 fathers and 101 mothers).
**$p < 0.01$, ***$p < 0.001$.
[a]Fisher's exact probability test.

insufficient to consider all childcare situations; larger studies are needed to reduce possible selection bias and further identify other paternal challenges and information support needs. Future investigations should also aim to clarify the ideal family role for fathers of children with DD, the obstacles for not seeking support in some cases, and possible tailored assistance programs for fathers from experts and the government. Lastly, the findings in this report were obtained in Japan in reference mainly to pre-COVID-19 studies and may not be directly applicable in other countries and circumstances. Especially with increases in remote working and limitations in public services due to the global COVID-19 pandemic, future studies will need to consider the rapidly changing face of working and childcare (Hirai and Watanabe, 2021).

Conclusion

In the upbringing of children with DD, Japanese fathers reported fewer social support sources as compared with mothers and were primarily dependent on their spouses. Consequently, a lack of adequate measures for understanding DD, such as the acquisition of appropriate coping methods and follow-up to maintain mental health, likely hinders the involvement of the father in raising children with DD. In addition to considering the development of a parenting support system for fathers and increased peer support, more detailed surveys are warranted on the actual condition of fathers' work–life balance and inter-family relationships to promote more concrete father support measures, empower fathers, and enhance paternal roles in raising children with DD.

Data availability

The datasets generated during and/or analyzed during the current study are not publicly available due to institutional confidentiality regulations but are available from the corresponding author on reasonable request.

Received: 20 August 2021; Accepted: 18 December 2021;
Published online: 07 January 2022

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Acknowledgements

The research reported in this publication was supported by The Japan Society for the Promotion of Science (Young Research) award number 19K19669. The authors would like to thank Trevor Ralph for his English editorial assistance.

Competing interests

No authors reported any financial or other conflicts of interest in relation to the work described. The authors declare no competing interests.

Ethical approval

This study was approved by the Ethics Committee of Shinshu University (no. 4642) and was conducted in accordance with the Declaration of Helsinki.

Informed consent

Informed consent from the parents in this investigation was obtained by an opt-in method via the distribution of an explanatory letter (including the study's significance, purpose, methods, and expected results) and a questionnaire, which was voluntarily completed by each participant. Due to their young age, informed consent was not obtained from the children in this study.

Additional information

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