

Development of an evaluation scale for health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability

メタデータ	言語: eng 出版者: 公開日: 2021-08-02 キーワード (Ja): キーワード (En): 作成者: 子吉, 知恵美, 塚崎, 恵子, 千原, 由香 メールアドレス: 所属:
URL	https://doi.org/10.24517/00063401

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Development of an evaluation scale for health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability

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Abstract

Aim: To develop an evaluation scale for health guidance to support disability acceptance by parents of preschool children with developmental disorders.

Method: A draft scale consisting of 34 items was constructed from semi-structured interviews with nine public health nurses who were providing support for children with developmental disorders. These interviews were conducted between March and August 2015 to examine how public health nurses were providing support tailored to the level of parental acceptance and local characteristics. The draft was self-administered as a written questionnaire to public health nurses across Japan who were recruited by snowball sampling, and 151 responses were analyzed.

Results: A maximum likelihood factor analysis with promax rotation revealed three factors consisting of 18 items. The three factors were named “support based on assessment of parents’ understanding of and feelings about their child’s developmental disorders”, “practice for connecting with support organizations”, and “parenting support and coordination of required support services”. Cronbach’s alpha for the whole scale was .921. Criterion validity was .742 for “sharing experience” and .873 for “insufficient sharing experience”. The goodness-of-fit indices for the model were GFI = .859, AGFI = .818, CFI = .922, and RMSEA = .070.

Conclusion: The reliability and validity of the scale developed in this study were statistically confirmed. This scale was shown to be an instrument that can evaluate public health nurses’ health guidance to support disability acceptance by parents of preschool children with developmental disorders.

KEY WORDS

public health nurse, developmental disorders, a health guidance practice evaluation scale, parental acceptance, preschool children

Introduction

The Act on Support for Persons with Developmental Disabilities, which came into effect in Japan in 2014, stipulates that attention should be paid to the early detection of developmental disorders¹⁾. Before the Act, if the parent did not have an understanding or knowledge of developmental disorders and the child

could not obtain support that suited each individual's characteristics, then the child would find it difficult to live and would fall into a state called secondary maladaptation. It is said that maladaptation due to developmental disorders is considered in the background of cases of school refusal, withdrawal, and crime. It has also been pointed out that difficulties

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in parenting caused by the child's developmental disorders exist in the background of child abuse¹⁻²⁾. The enactment of the Act on Support for Persons with Developmental Disabilities encouraged people to gain an understanding of developmental disorders.

Often early detection of children with developmental disorders occurs when parents notice the developmental differences between their children and other children when they enter a childcare center or kindergarten, consult with a childcare worker or kindergarten teacher, and connect to a counseling institution. In many cases, however, public health nurses may point out developmental differences at infant health checkups and connect them to a support organization³⁻⁴⁾. In Japan, based on the Maternal and Child Health Act, municipalities are required to carry out health checkups for 18-month-old children and 3-year-old children. According to the Ministry of Health, Labor and Welfare's "Community Health and Health Promotion Project Report" (FY2017), the participation rate is 96.2% for children aged 18 months and 95.2% for children aged 3 years⁵⁾. This maternal and child health system boasts a high participation rate. At the 18-month-old health checkup, public health nurses assess concerning issues such as speech delay, obsessions, or sleep problems through conversations with the parents. If it is not possible to connect them to support on the spot, they may cooperate with childcare workers and kindergarten teachers to connect them to support while observing the development of the child over time. Nurses also check the developmental growth at the 3-year-old health checkup, and if developmental delay is observed, encourage parents to access support services. Sometimes issues such as language and communication problems and hyperactivity are noticed for the first time at the 3-year-old health checkup. There are some areas where the local government independently provides 5-year-old health checkups and development counseling as an opportunity to provide support before entering school^{3,6)}. Public health nurses provide support through infant health checkups, directly or in collaboration with childcare workers, while observing the growth of children, the awareness of parents, and family circumstances^{4,7)}. It has been suggested that developmental screening at infant health checkups before school age and continuous support reduce future

school refusal behavior⁸⁻⁹⁾. Early intervention also reduces the burden on parents in parenting children with developmental disorders¹⁾.

In Japan, the Act on Support for Persons with Developmental Disabilities states that municipalities are responsible for the early identification of developmental disorders through infant health checkups and provision of early intervention¹⁾. Public health nurses play an important role in early identification of children with developmental disorders in municipalities¹⁾. Public health nurses are a major source of referrals for intervention at 18-month-old and 3-year-old health checkups and they are expected to play this role^{1,3)}. Some parents refuse to access support organizations such as therapy facilities when their child's developmental delay is pointed out to them at infant health checks or childcare centers¹⁰⁾. Whether preschool children receive therapy or not largely depends on their parents¹¹⁾. As has been reported, public health nurses are involved in the process of disability acceptance with compassion and as a support to parents¹⁰⁾. The ability to empathize is important for the implementation of support for parental acceptance. There have been many research programs that attempted to foster empathy in nursing education¹²⁻¹⁴⁾. Research on nurses showed that empathy also has a positive effect on basic communication skills¹⁵⁾. Public health nurses' empathy is essential to support parental acceptance of disabilities to enable early intervention for children with developmental disorders. Previous studies involving public health nurses suggested the importance of compassionate support for parents' feelings^{4,16)}. However, providing support at infant health checkups for parent's disability acceptance to enable early intervention requires not only the gauging of the child's developmental status, but also a comprehensive assessment of parenting and family situations. Currently there are no clear guidelines for how to provide support. The current situation in practice is that nurse support is reliant on the experience-based knowledge of local communities and individuals²⁾. Although it is the specialty of public health nurses to coordinate the practice and support for early intervention that connects to support organizations before school age, it is hard to gauge the development in early childhood from the health checkups alone. It is also necessary to monitor

development as the child grows. Follow-up is not just an opportunity to check changes in the situation, but an opportunity to provide support while assessing parents' anxiety¹⁷⁾.

Providing health guidance based on understanding of the development and progress of the child and the situation of the parents and family requires the ability to comprehensively understand the child and the parents in the infant health checkup. Furthermore, it is not easy for new public health nurses to practice health guidance while assessing the anxiety of parents. A scale of health guidance practice for early intervention for children with developmental disorders will contribute to providing a guideline to nurses with less experience-based knowledge. We propose that in order to support preschool children with developmental disorders it is useful to develop an evaluation scale for health guidance practice to support parents of those children with acceptance of their child's disability.

The aim of this research was to develop an evaluation scale for health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability.

Operational definition of terms

1) Health guidance practice is defined as the attitudes and behaviors necessary for a public health nurse to have in order to fulfill their professional responsibilities in supporting children with developmental disorders and their parents as well as implementation of support based on their specialized knowledge and skills. We felt that empathy is inseparable from practice like the EESR regards empathy as a process of mutual understanding, and empathy is not limited to understanding, but is inseparable from aid and its effects²²⁾.

2) Acceptance of disability is defined as a recognition of the children's disability¹⁸⁾ and adaptation to accept necessary support, rather than letting parents accept their child's disability.

Method

1. Creation of a draft of the scale

1) Establishment of an item pool

The item pool was a compilation of contents of semi-structural interviews with 9 public health nurses conducted between March and August 2015, in which

the nurses recalled support practices for cases where they had difficulties in connecting the parents and children to support services but managed to lead them to support before the children reached school age. "Childcare workers" in items are those who are regularly dealing with the parent and child. We used a draft item pool consisting of 34 items which were subcategories of modes of public health nurses' support extracted from the results of this survey¹⁹⁾. The process of creating this draft item pool was as follows.

In January 2015, we conducted a national questionnaire survey for empirical research on how public health nurses were providing support for children with developmental disorders at 5-year-old health checkups to enable early intervention and ongoing support. We enclosed a written request for interviews with the questionnaire. We conducted semi-structured interviews with 9 public health nurses who consented to the interview. The data obtained from the interviews were compiled into verbatim transcripts and analyzed using qualitative description. Focusing on the support provided by public health nurses for children with developmental disorders to connect to early intervention, we extracted contents related to such support in the smallest understandable unit, summarized as description examples, and qualitatively analyzed as 2099 data. The analysis revealed that there were two types of data: the current situation of available support surrounding children with developmental disorders and their families, and support by public health nurses. From the verbatim transcripts, the data were classified into 34 subcategories, 13 categories, and 4 core categories. Rigor and authenticity were ensured²⁰⁾. From the results, 34 subcategories were used as the draft scale for this study.

2) Assessment of content validity and revision of draft scale

To confirm content validity, we conducted a preliminary test of the draft scale by two researchers in this field who are experienced in supporting children with developmental disorders. In addition, we repeatedly examined whether the survey items representing support for children with developmental disorders by public health nurses were easy-to-understand and easy-to-answer expressions, and whether there were any duplications of meaning.

Finally, the wording of three items were revised, and with a consensus, the evaluation scale for health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability (draft) was established.

2. Main survey

1) Participants

The planned national survey was cancelled due to COVID-19 and 455 copies of the questionnaire were mailed to 118 locations selected by snowball sampling. The recipients were 118 public health nurses across Japan who agreed to cooperate with the interview survey mainly in the previously conducted empirical research on the modes of public health nurses' support at 5-year-old health check-ups to enable early intervention and ongoing support for children with developmental disorders. We sent out questionnaires based on the number of responses in the 2015 survey, the number of public health nurses in each municipality, and the required number of copies confirmed by telephone. The sample size was determined based on $\alpha = .05$ and power $(1-\beta) = .8$. The minimum sample size required to detect an effect size of .05 was calculated to be 134 by G*Power 3.1.9.2. Matsuo stated that the number of data should be about 5 times the number of items. Therefore the target sample size was set as 170 and a total of 455 surveys were sent out based on an estimated recovery of 35%.

2) Method

We conducted a self-administered questionnaire survey by mail from July to September 2020. We mailed multiple questionnaire sets consisting of a letter of request, a copy of the self-administered questionnaire, and a reply envelope to each public health nurse who responded to the 2015 survey and asked them to distribute the questionnaires. We requested that each person that received a questionnaire mail their response anonymously using the reply envelope.

3. Contents of survey

1) Characteristics of municipalities

The characteristics of the municipalities were prefecture where they are located, relevant authority, the number of public health nurses, the number of public health nurses who actually support children with developmental disorders, the number of births in

the past year, and the ages of infant health checkups, the number of people who are connected to support organizations per year, the existence of therapy institutions, the number of childcare centers, the number of kindergartens, and the number of childcare-kindergarten hybrid facilities.

2) Characteristics of participants

Personal characteristics were gender, age, educational background, qualifications, employment style, years of experience as a public health nurse, years of experience in maternal and child health, years of experience in support of children with developmental disorders, number of people who they helped to connect to support in one year, and type of support given.

3) Empathic Experience Scale Revised

We used the 20 items of the two subscales "sharing experience" and "insufficient sharing experience" from the Empathic Experience Scale Revised (EESR)²⁰⁾ with the consent of the developer of the scale.

4) Development of an evaluation scale for health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability

The draft of the scale is a compilation of contents of interviews with public health nurses recalling support practices for cases where they had difficulties in connecting the parents and children to support services but managed to lead them to support before the children reached school age. It was set as a total of 34 items consisting of 9 items related to system development based on local characteristics and 25 items related to support content and support strategies using a 5-point Likert scale. The answers were from "applies very well" to "does not apply at all" to "which is the closest to keep in mind when supporting children with developmental disorders and their parents?" as a practice to connect to support before school age. The scale was set so that the higher the score, the better was the self-evaluation of health guidance for preschool children with developmental disorders and their parents being practiced by the public health nurse. It is hoped that this scale will be used by public health nurses who have little experience in supporting children with developmental disorders to reflect on their health guidance practice with their seniors and improve future support provision.

4. Analysis method

SPSS Statistics Version 26 and Amos Version 26 Graphics were used for statistical analysis.

1) Item analysis

The kurtosis and skewness of each item score were checked. The scores were also examined for the possible ceiling effect ($\text{mean} + \text{SD} > 5$) and floor effect ($\text{mean} - \text{SD} < 1$). In addition, item-total correlation (I-T correlation) analysis was performed.

2) Assessment of validity

(1) Assessment of construct validity

Exploratory factor analysis was performed using the maximum likelihood method and promax rotation. The number of factors was determined based on the results of item analysis and the eigenvalues and the scree plot from exploratory factor analysis. Communalities, the pattern matrix and the total variance were checked, and the factors were named based on the interpretation of the subscale factors. We subsequently checked the factor structure by confirmatory factor analysis using structural equation modeling and calculated the goodness of fit of the model. GFI (goodness of fit index), AGFI (adjusted goodness of fit index), CFI (comparative fit index), and RMSEA (root mean squared error of approximation) were used as fit indices.

(2) Assessment of criterion validity

The draft of the scale is a compilation of contents of interviews with public health nurses recalling support practices for cases where they had difficulties in connecting the parents and children to support services but managed to lead them to support before the children reached school age. We regarded that such cases arose from compassion to parent's feelings (empathy). Also, based on the hypothesis that the higher the empathy, the more the health guidance practice by public health nurses will change, we verified the criterion validity of this scale and the EESR. The EESR is a scale for assessing an individual's type of empathy based on past experience. When both sharing experience and insufficient sharing experience are high, it is considered that one is capable of regarding oneself and others as independent, with high empathy, and with the ability to reflect on one's emotional experience²¹⁾. We chose this scale as the external criterion because we thought the relevance of empathy for parents to lead to intervention could be confirmed if both

sharing experience and insufficient sharing experience show a positive correlation in the settings of support practice for children with developmental disorders. In addition, we felt that empathy is inseparable from practice like the EESR regards empathy as a process of mutual understanding, and empathy is not limited to understanding, but is inseparable from aid and its effects²²⁾. Pearson's product-moment correlation coefficients were calculated for the total scores and scores of each subscale of the scale developed in this study and the EESR. Cronbach's alphas were calculated for the EESR and the reliability was examined by the split-half method in order to confirm the reliability of the criterion validity of the existing scale used in this study.

(3) Assessment of reliability

To assess internal consistency, reliability analysis was performed by calculating Cronbach's alpha for the whole scale and each subscale.

5. Ethical considerations

The participants were informed in writing of the purpose of the study and that participation was voluntary and refusing to participate would not result in any disadvantage. Participants were asked to send their response only if they consented to participate. The survey was conducted anonymously using an anonymous self-administered questionnaire. The completed questionnaire was mailed directly to the researchers. The survey was conducted with the approval of the Medical Ethics Committee of Kanazawa University (971-4).

Results

1. Characteristics of participants (Tables 1 & 2)

A total of 152 responses (response rate 33.4%) were received out of 455 copies of questionnaires mailed to 118 locations selected by snowball sampling. Of these, 151 responses were analyzed excluding one response which was missing many values. The "region" spanned the entire country from the Hokkaido region to the Kyushu region, and 136 (90.1%) of the "relevant authority" were municipalities. As for "gender", 149 (98.7%) were female. 56 (37.1%) participants were 31 to 40 years old and 52 (34.4%) participants were 41 to 50 years old. The average number of years of experience as a public health nurse was 16.27 ± 9.09

(mean \pm SD) years, and the average number of years of experience in providing support for children with developmental disorders was 9.64 ± 7.45 (mean \pm SD) years.

Table 1. Characteristics of municipalities n=151

	Item	n	(%)
Region	Hokkaido region	12	7.9
	Tohoku region	8	5.3
	Kanto region	26	17.2
	Chubu region	33	22.0
	Kansai region	18	11.9
	Chugoku region	21	13.9
	Kyushu region	31	20.5
	No answer	2	1.3
Relevant authority	Prefecture	2	1.3
	Ordinance-designated city, Core city	9	6.0
	Municipality	136	90.1
	No answer	4	2.6
Annual number of births	100 or less	36	23.9
	101 - 300	42	27.8
	301 - 500	20	13.3
	500 - 1000	23	15.2
	1001 - 1500	7	4.6
	1501 - 2000	5	3.3
	2001 - 2500	2	1.3
	2501 - 3000	0	0.0
	3001 or greater	7	4.6
	No answer	9	6.0
Existence of local therapy facilities	Existing	114	75.5
	Not existing	28	18.5
	No answer	9	6.0
Annual number of children who are connected to classes or therapy through infant health checkup	10 or less	22	14.6
	10 - 50	57	37.7
	51 - 100	11	7.3
	101 - 150	1	0.7
	151 - 200	2	1.3
	201 - 300	6	4.0
	No answer	52	34.4

* Therapy facilities are organizations and facilities where children with developmental disorders (DD) can receive therapy and education that are needed for development. These include support centers for persons with developmental disorders, therapy classes run by municipalities, private organizations and facilities, and medical organizations and language classes.

2. Item analysis (Table 3)

In carrying out the item analysis, it was confirmed that there were no items with score bias or small variance from the frequency distribution and descriptive statistics of each item. Next, the items were checked for the ceiling and floor effects. The items that exhibited the ceiling effect and hence were omitted are shown in Table 3. Based on these results, items were selected through assessment of the importance of the content with an academic with expertise in the training

Table 2. Characteristics of participants n=151

	Item	n	%
Gender	Male	2	1.3
	Female	149	98.7
Age	Below 31	17	11.3
	31 - 40	56	37.1
	41 - 50	52	34.4
	51 - 60	25	16.5
	No answer	1	0.7
	Less than 10	41	27.2
Years of experience as a public health nurse	10 - 20	52	34.4
	20 - 30	44	29.1
	Over 30	13	8.6
	No answer	1	0.7
Years of experience in providing support to children with ASD	Less than 10	82	54.3
	10 - 20	47	31.1
	20 - 30	16	10.6
	Over 30	3	2.0
	No answer	3	2.0
Employment style	Permanent	141	93.4
	Non-permanent	9	5.9
	No answer	1	0.7
Education	Vocational school	51	33.8
	Junior college	25	16.5
	College/University	72	47.7
	Graduate school	3	2.0
	Others	0	0.0
	No answer	0	0.0

* Abbreviation: DD, developmental disorders.

of public health nurses. A strong Item-Total correlation (I-T correlation) was observed for items other than item 8 and item 9 ($p < .001$).

3. Assessment of construct validity

1) Exploratory factor analysis and factor naming (Table 4)

The bias of the distribution was checked by item analysis and examination of normality and items 1, 3, 5, and 19 were omitted. Exploratory factor analysis (maximum likelihood method, promax rotation) was performed on the remaining items. The number of factors was decided to be 3 factors based on the screen plot and the eigenvalue being greater than one. Items 4, 6, 7, 11, 13, 15, 16, 18, and 20 which had a communality of less than .16 and a factor loading of less than 0.50 were eliminated and a second factor analysis was performed on the remaining items. Furthermore, changes in the item determination criteria were repeatedly checked to improve the accuracy of the scale. The item contents, the number of items, and the interpretability were examined and finally 3 factors consisting of 18 items that accounted for a cumulative percentage of 57.864 were adopted as the constituent factors of this scale.

Table 3. A draft of the evaluation scale for health guidance practice to support parents of preschool children with DD with acceptance of their child's disability, and items to be deleted n=151

	Item	mean	SD	I-T Correlation
	If the municipality does not have suitable support facilities for children with DD, refer them to support facilities in other municipalities and encourage sharing facilities	3.89	1.00	.271
*	Understand features of local medical and therapy facilities and use the knowledge in connecting parents with those service providers	4.24	.62	.456
	Provide support in collaboration with neighboring areas including other jurisdictions and related professionals	3.89	.84	.295
	Place value on liaising with doctors necessary for supporting children with DD	3.91	.89	.416
	Take opportunities of contact with physicians at health checkups for diagnosis of DD	3.76	.99	.152
	Conduct home visits while assessing family situations and parental recognition of their child's DD	4.47	.61	.528
	Educate parents to recognize signs of their child's DD	4.44	.59	.418
*	Assist childcare workers to be able to support children with DD	3.09	1.22	.332
*	Pass experience-based knowledge about support for children with DD onto junior nurses	3.70	1.05	.327
*	Provide support while making observations at different times and places	4.16	.64	.533
	Provide support customized to the children's characteristics, considering prospective multidisciplinary support	4.27	.61	.653
*	Assist parents to recognize their child's DD in cooperation with multiple professionals	4.37	.56	.659
	Inform parents that public health nurses are always available for consultation	4.68	.48	.423
*	Provide long-term support to connect parents with support organizations	4.41	.63	.597
	Assess parental recognition with knowledge of the child's behavior at kindergarten/daycare centre	4.21	.72	.479
	Assess parental recognition of the child's DD considering the parent's upbringing and life history	4.29	.65	.581
*	Provide support while identifying the differences between the child's actual developmental issues and those perceived by the parents	4.26	.64	.672
	Wait until parents notice signs of their children's DD	4.14	.71	.517
	Talk to parents at every opportunity	3.82	.87	.260
	Assist parents to gain accurate knowledge about DD so that they do not feel guilty about putting their children in therapy services	4.24	.62	.541
*	Maintain knowledge about the features of support organizations and convey the benefits of receiving support to parents	4.34	.61	.683
*	Use strategies to lower hurdles for receiving support	4.22	.61	.630
*	Connect to support services in a timely manner, while understanding the values of the parents	4.38	.56	.600
*	Know the parents' physical limitations and life issues and coordinate necessary	4.19	.62	.671
*	Provide support while assessing the degree of parents' understanding and level of acceptance of their child's DD	4.46	.53	.595
*	Provide support while understanding and acknowledging parents' feelings such as negative feelings about receiving support	4.43	.57	.585
*	Give specific advice on DD at each milestone such as infant health checkups	4.21	.66	.431
*	Assist parents to feel positive about receiving support by highlighting their child's growth as they receive support	4.39	.58	.692
	Provide support taking the power balance within families into account	4.15	.66	.674
*	Assess whether abuse is occurring and provide support needed for the child and parents	4.30	.57	.615
*	Consider the individual family circumstances and the level of parenting burden when providing support	4.38	.50	.720
*	Engage with parents while respecting their parenting style	4.31	.59	.426
	Help to create a common understanding of the child's developmental issues within the family.	4.03	.63	.398
	Provide support corresponding to the parents' values with an understanding of local characteristics	3.84	.80	.467

Note: Items marked as * comprise health guidance practice competency evaluation scale to support parental acceptance to enable early intervention for children with developmental disorders (DD)
 Items with light grey shade were excluded in item analysis
 Items with dark grey shade were excluded in exploratory factor analysis
 Abbreviation: DD, developmental disorders.

The first factor included 5 items including “provide support while assessing the degree of parents' understanding and level of acceptance of their child's developmental disorders”. This factor was considered to

be support that is given with continuous assessment of the parents' understanding and circumstances until they accept that their child has developmental disorders. Therefore this factor was named as “support based on

Table 4. Exploratory factor analysis of the evaluation scale for health guidance practice to support parents of preschool children with DD with acceptance of their child's disability n=151

Variable	Factor loading		
	Factor 1	Factor 2	Factor 3
Factor 1: Support based on assessment of parents' understanding of and feelings about their child's DD ($\alpha=.872$)			
25 Provide support while assessing the degree of parents' understanding and level of acceptance of their child's DD	.911	.090	-.090
26 Provide support while understanding and acknowledging parents' feelings such as negative feelings about receiving support	.815	-.223	.191
28 Assist parents to feel positive about receiving support by highlighting their child's growth as they receive support	.704	-.266	.329
23 Connect to support services in a timely manner, while understanding the values of the parents	.581	.314	-.063
17 Provide support while identifying the differences between the child's actual developmental issues and those perceived by the parents	.366	.362	.088
Factor 2: Professional training and support to connect to support organizations ($\alpha=.826$)			
9 Pass experience-based knowledge about support for children with DD onto junior nurses	-.131	.649	-.082
8 Assist childcare workers to be able to support children with DD	-.105	.571	-.076
22 Use strategies to lower hurdles for receiving support	.468	.483	-.116
10 Provide support while making observations at different times and places	.119	.458	.030
12 Assist parents to recognize their child's DD in cooperation with multiple professionals	.047	.456	.252
21 Maintain knowledge about the features of support organizations and convey the benefits of receiving support to parents	.177	.441	.192
2 Understand features of local medical and therapy facilities and use the knowledge in connecting parents with those service providers	-.033	.407	.213
14 Provide long-term support to connect parents with support organizations	.179	.382	.215
Factor 3: Support for parenting and coordination of support services needed ($\alpha=.802$)			
30 Assess whether abuse is occurring and provide support needed for the child and parents	-.262	.170	.842
31 Consider the individual family circumstances and the level of parenting burden when providing support	.188	.004	.666
32 Engage with parents while respecting their parenting style	.057	-.092	.625
27 Give specific advice on DD at each milestone such as infant health checkups	.267	-.083	.442
24 Know the parents' physical limitations and life issues and coordinate necessary support services accordingly	.239	.213	.369
Rotation Sums of Squared Loadings			
	6.498	5.938	5.808
Cumulative %			
	44.213	51.747	57.864
Factor correlation			
Factor 1	—	.720	.693
Factor 2	.720	—	.653
Factor 3	.693	.653	—

Extraction method: Maximum likelihood method, Rotation method: Promax with Kaiser Normalization

Total variance explained : 55.470%

Cronbach's α coefficient for the scale = .921

* Abbreviation: DD, developmental disorders.

* "Childcare workers" refers to those who are regularly working with children with DD and their parents at local childcare centers.

* Support organizations refers to therapy providers, medical institutions, and organizations that offer support services needed such as language classes or play classes.

* Junior nurses refers to junior public health nurses who have little experience-based knowledge about support for children with DD.

assessment of parents' understanding of and feelings about their child's developmental disorders".

The second factor consisted of 8 items including "pass experience-based knowledge about support for children with developmental disorders onto junior nurses". This factor was interpreted as understanding characteristics of support organizations, giving appropriate information to parents, passing on how they support the parents to other public health nurses and childcare workers, and multi-disciplinary cooperation. This factor was named as "practice for connecting to support organizations".

The third factor included 5 items, such as "assess whether abuse is occurring and provide support needed for the child and parents". This factor was interpreted as providing necessary support while assessing the parenting burden and the parents' physical limitations, and was named as "support for parenting and coordination of support services needed".

2) Confirmatory factor analysis (Figure 1)

Confirmatory factor analysis was performed using structural equation modeling to assess the construct validity of this scale. The fit indices of the model with

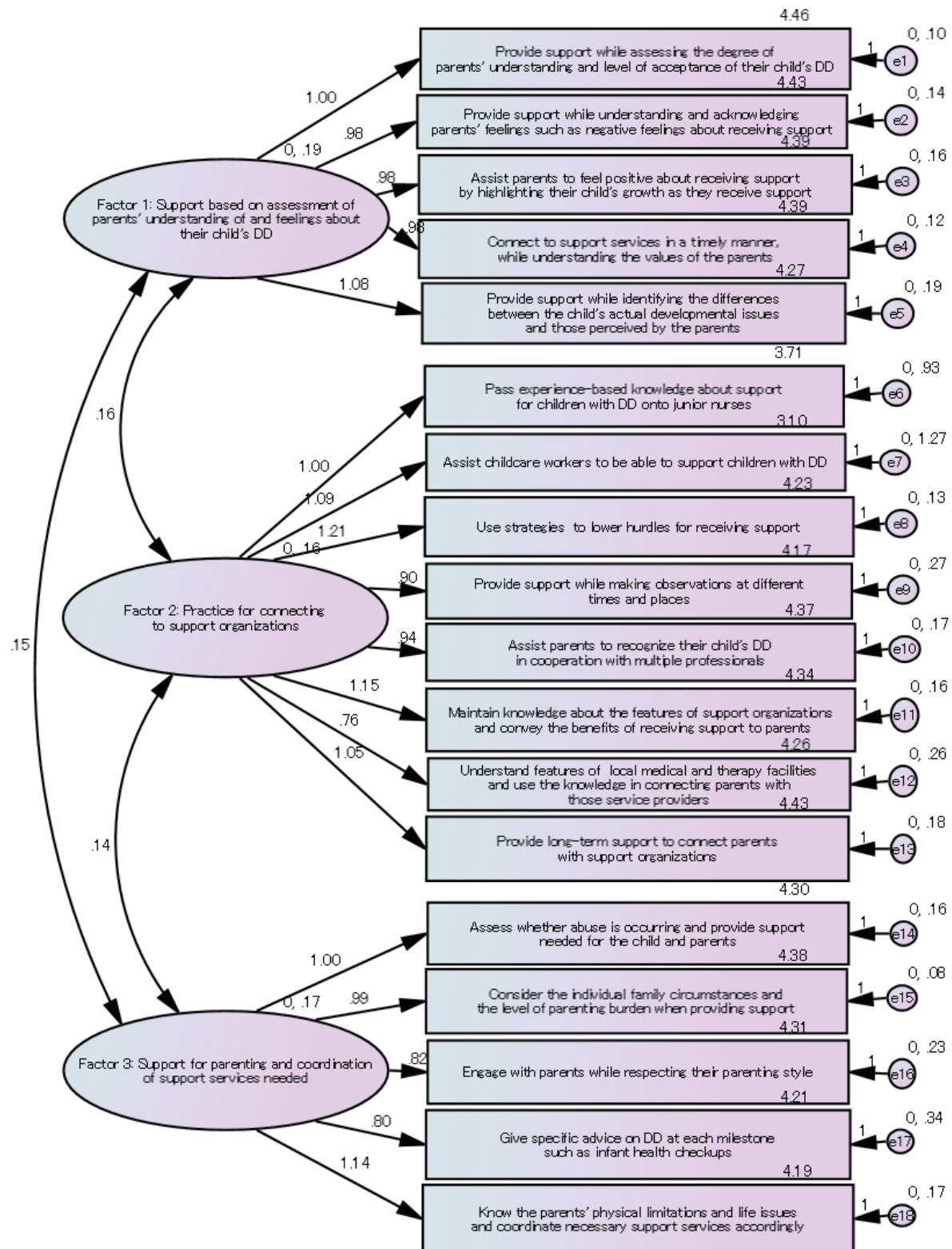


Figure 1. Confirmatory factor analysis of the evaluation scale for health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability

* Abbreviation: DD, developmental disorders.

3 factors consisting of 18 items converged at GFI = .859, AGFI = .818, CFI = .922, and RMSEA = .070 ($P = .000$). The path coefficients between each factor ranged from .82 to .89. The path coefficients between factors and their constituent items ranged from .39 to .82.

3) Assessment of criterion validity (Table 5)

The average scores were calculated for the items corresponding to the three subscales of the evaluation scale for health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability. The mean subscale scores for the first, second, and third factors were 4.38 (SD = .47), 4.07 (SD = .48), and 4.27 (SD = .43) respectively. Table 5 shows the correlation between the subscales. The three subscales showed a significant positive correlation with each other.

The α coefficient for the whole EESR was calculated to be .886 in this study. The Cronbach's alphas for the 10 "sharing experience" items and the 10 "insufficient sharing experience" items of the EESR were .909 and .955 respectively. The Guttman split-half reliability coefficients were .801 for the 10 "sharing experience" items, and .860 for the 10 "insufficient sharing experience" items. The Spearman-Brown reliability coefficients were .852 for the 10 "sharing experience" items and .932 for the 10 "insufficient sharing experience" items. These values demonstrated high degrees of internal consistency.

4. Assessment of reliability

The Cronbach's alpha of the scale developed in this study was found to be .921. The Cronbach's alphas for

individual factors 1, 2, and 3 were .872, .820, and .802 respectively.

Discussion

This study was based on the responses from public health nurses nationwide sampled by snowball sampling. The participants' characteristics found from the answers were similar to the age and rank distributions published by the Japanese Nursing Association²³⁾, and in this respect, we believe that a certain degree of representativeness was secured.

1. Constituents of the evaluation scale for health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability

It was shown that the scale developed in this study had a 3-factor structure consisting of "support based on assessment of parents' understanding of and feelings about their child's developmental disorders", "practice for connecting to support organizations", and "support for parenting and coordination of support services needed". The first factor, "support based on assessment of parents' understanding of and feelings about their child's developmental disorders", is a type of support based on public health nurses' experience-based knowledge. Public health nurses provided such support while assessing how the parents understood their child's developmental disorders at the time and provided support that was appropriate at that time. Research on the experience of empathy of nurses showed that nurses who treated patients with awareness of their own emotions were trying to experience and share the patients' emotions²⁴⁾. These

Table 5. Correlation between the evaluation scale for health guidance practice to support parents of preschool children with DD with acceptance of their child's disability and the EESR
n=151

The evaluation scale for health guidance practice to support parents of preschool children with DD with acceptance of their child's disability				
	Total score	Factor 1	Factor 2	Factor 3
Empathic Experience Scale Revised				
Factor 1				
Sharing experience	.742**	.519**	.828**	.510**
Factor 2				
Insufficient sharing experience	.873**	.794**	.788**	.716**

* Pearson's correlation coefficient **: $p < .001$

* Abbreviation: DD, developmental disorders.

suggest that public health nurses were practicing support for children with developmental disorders with empathy to their parents' feelings and with a reflection on their own emotional experiences²¹⁾. It affects the perceived social support and quality of life of parents of children with developmental disorders²⁵⁾. This factor can be considered as the fundamental content among health guidance practices provided in various family circumstances. The second factor, "practice for connecting to support organizations", represented that public health nurses were professionally coordinating with various occupations so that children with developmental disorders and their parents were able to receive appropriate types of support that were needed at that time. It has been reported that, in Canada, communication, collaboration and coordination of health care information in the primary care environment improves the health of people with developmental disabilities²⁶⁾. Public health nurses' coordination with other professionals so that the children with developmental disorders and their parents can receive the necessary support when needed is similar to the practice in Canada. In addition, it is the ability to communicate and coordinate for healthcare in the primary environment, and this second factor is considered to be one of the professional practical competencies of a public health nurse to connect patients to support when needed. The third factor, "support for parenting and coordination of support services needed" is related to parenting situations such as the possibilities of child abuse or single-handed negotiation of parenting responsibilities. We believe that this is also important in preventing abuse in families of children with developmental disorders that arises from difficulties in parenting such children. Hues et al. reported a disproportionately high risk of childhood abuse with people with developmental disorders in "the relation of abuse to physical and psychological health in adults with developmental disabilities, the experience of childhood abuse of people with developmental disabilities"²⁷⁾. Child abuse by single mothers has also been reported²⁸⁻²⁹⁾. These observations are consistent with the significance of the third factor which may have the effect of preventing abuse of children with developmental disorders. It is likely that the content of the third factor will lead to providing support when

there are difficulties parenting.

2. Validity and reliability of the scale

As an assessment of the construct validity, the I-T correlation of this scale was checked and the values were found to be 0.3 or greater for all items³⁰⁾, which meant there were no items with low relevance, and 18 items of the entire scale were unique. Furthermore, according to the results of confirmatory factor analysis conducted to verify the construct validity, the fit indices GFI and AGFI were .859 and .818 respectively, which demonstrated a good fit. The CFI was .922 and the RMSEA was .070 which was in a gray zone, however, both indicated a statistically acceptable fit³¹⁻³²⁾. Factor correlations ranged from .653 to .720 which were medium to strong positive correlations. Correlation between constructs was confirmed.

In the verification of criterion validity, a strong correlation was found between the total score of the external criterion, the EESR, and that of the scale developed in this study. In addition, the correlation coefficients between the subscales were found to be in the range of .510 to .828, and in particular, strong correlations were observed between "insufficient sharing experience" of the EESR and the first and third factors of this scale, which were "support based on assessment of parents' understanding of and feelings about their child's developmental disorders" and "support for parenting and coordination of support services needed". Strong correlations were also found between "Sharing experience" and "insufficient sharing experience" of the EESR and the second factor of this scale "practice for connecting to support organizations". This suggests that that this scale included the viewpoint of empathy experience, and the criterion validity was confirmed.

Participant's total scores of this scale were high in both the scale of sharing experience (SSE) and scale of insufficient sharing experience (SISE), which indicated ambiversion, and highest empathy. They are thought to trust the interpersonal world, be moderately impressionable, and have the ability to reflect on their own emotional experiences²¹⁾. Also, the first and third factors' high correlation with SSE indicates that public health nurses were potentially trying to engage with others while controlling themselves to remain objective in practicing support such as "support based on assessment of parents' understanding of and

feelings about their child's developmental disorders" and "support for parenting and coordination of support services needed"²¹⁾. As professionals, public health nurses are not just empathizing, but staying objective even when trying to engage while practicing factors 1 and 3. Factor 2 showed ambiversion with high SSE and SISE, and was considered to be delivered by well-balanced health guidance practice through both engagement and objectivity²¹⁾.

As to the verification of the content validity, this study was based on participants who consented to have interviews in the empirical study of the modes of supporting public health nurses for early support and continuation of support for children with developmental disorder at the 5-year-old health check-ups conducted in Japan in 2015. In addition, many participants answered "strongly agree" or "agree" to the items that exhibited the ceiling effect (items 12, 14, 21, 23, 25, 26, 30, and 31). This suggests that these strategies were being employed by many of the public health nurses who provided support to children with developmental disorders. As an assessment of the reliability of the entire EESR, the Cronbach's alphas of the entire EESR, sharing experience, and insufficient sharing experience were .886, .909, and .955 respectively, which confirmed the reliability of the existing scale in this study.

As an assessment of reliability, the present scale was shown to meet the acceptable criteria for a sound instrument because the Cronbach's alpha, the Guttman split-half coefficient and the Spearman-Brown coefficient were all above .800³³⁾, hence the internal validity was confirmed. The Cronbach's alpha decreases as the number of items decreases, however, it was shown that this scale had a sufficient reliability with $\alpha = .921$ for the whole scale. Furthermore, when the changes in the item determination criteria were repeatedly checked, it was confirmed that the reliability coefficient was above .800 in all cases, which proved the reproducibility and stability of the scale.

3. Assessment of the practicality of the scale

It was confirmed that the items of this scale were instruments that could evaluate health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability. Visualization of public health nurses' support practice for children with developmental disorders helps

in the review of daily health guidance practices. In addition, health guidance tailored to the level of parental acceptance relies on experience-based knowledge that is difficult to teach by verbal communication. This scale was created based on the contents obtained from interviews about support practices based on such experience-based knowledge. The scale verbalized such support practices, and we believe that it may help novice public health nurses to notice hints in exercising health guidance. The scale developed in this study allows evaluation and visualization of health guidance practice in the form of scores of each subscale or the entire scale. We believe that it is a practical tool to evaluate support practices and it can also be used as a tool to explore challenges. Furthermore, it can be expected to be used as one of the performance measures for the training of new public health nurses in practicing such health guidance. The scale is useful not only for self-evaluation of individual public health nurses with little experience-based knowledge in support for children with developmental disorders but also for their on-the-job training to improve practical abilities for health guidance.

4. Issues and limitations of the current study

The survey covered all regions across the country, however, the planned national survey could not be conducted due to the coronavirus pandemic and instead the snowball sampling method was used. Therefore, it is undeniable that there may have been a sampling bias in the region or among participants. The limitations of this study were the lack of cross-validation and only presenting assessment of reliability from cross-sectional data. Furthermore, it cannot be denied that there may have been items that were highly biased in item analysis or items that had a low factor loading in factor analysis, but were excluded due to lack of discriminability, even though they were considered to be important as support practices by public health nurses. In addition, since the target areas of the survey used in the draft scale were rural areas, the described support practices were on a small scale. They may not apply to the support practices in urban areas. Therefore, there is a limit to the interpretation of this scale to be a guideline for public health nurse's health guidance practice to support the acceptance of their child's disability by parents of preschool children with

developmental disorders. However, it was constructed from data obtained through interviews with public health nurses who had practical experience connecting those children to support services before they reached school age, and we believe that it is a useful tool for exploring the scale of health guidance practices. For future studies, it will be important to assess the reliability and validity with consideration of the sample size in national surveys to refine the items of the scale.

Conclusion

Development of an evaluation scale for health guidance practice to support parents of preschool children with developmental disorders with acceptance of their child's disability was composed of 3

factors “support based on assessment of parents' understanding of and feelings about their child's developmental disorders”, “practice for connecting to support organizations”, and “support for parenting and coordination of support services needed” consisting of 18 items. The reliability and validity of this scale were statistically confirmed.

Acknowledgments

We wish to express our gratitude to all participating Public Health Nurses and institutions for their cooperation with this study. This study was supported by a Grant-in-Aid for Challenging Exploratory Research by JSPS KAKENHI (Grant Number JP17K12533. 2020).

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就学前発達障害児の保護者の障害受容を支える保健指導実践評価尺度の開発

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要 旨

目的：就学前発達障害児の保護者の障害受容を支える保健指導実践評価尺度の開発である。

方法：保健師に半構成的面接を実施し作成した 34 項目からなる原案を用いた。全国の保健師に機縁法にて自記式質問紙調査を行い, 151 件を解析対象とした。

結果：最尤法プロマックス回転による因子分析の結果, 3 因子 18 項目が採択され【保護者の子どもの発達障害への理解や思いを捉えた上での支援】【支援機関につなげるための実践】【子育て支援と必要な支援のコーディネート】と命名された。また, 信頼性, 妥当性を確認した結果, 尺度全体の Cronbach's α 係数 .921, 基準関連妥当性は, 共有経験では .742, 共感不全経験では .873, モデルの適合度は, GFI=.859, AGFI=.818, CFI=.922, RMSEA = .070 であった。

結論：本尺度の信頼性, 妥当性は, 統計量的に確認され, 就学前発達障害児の保護者の障害受容を支える保健師による保健指導実践を評価できる用具であることが確認された。