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博士論文

**The practice and evaluation of an educational
program on the promotion of Japanese fathers'
involvement in child rearing**

(日本の父親の育児参加を促す教育プログラムの実践と評価)

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Abstract

Objective: To develop a child rearing skill and education program for fathers, implemented through participatory child rearing seminars.

Design: A quasi-experimental survey-based study using pre-test, post-test, and follow-up test questionnaires to evaluate the effects of the program.

Setting: Kobe, Japan.

Participants: Thirty-five fathers of preschoolers.

Methods: Nineteen fathers completed the questionnaires and participated in the program; 16 served as controls, only completing questionnaires. Data were collected using the Stress Evaluation Scale, the Scale of Development Brought About by Becoming a Father and questions assessing the father's share of childrearing and level of independence in completing child rearing tasks.

Results: Participants who attended the program at least three times showed significant improvement in scores on the Stress Evaluation Scale, Scale of Development Brought about by Becoming a Father, and independence in performing daily parenting tasks. This group's post-test scores on items assessing the father's share of childrearing were also significantly higher than their pre-test scores; moreover, follow-up scores were significantly higher than both pre-test and post-test scores.

Conclusion: Our education program increased fathers' independence in performing daily parenting tasks, and increased their performed share of childrearing. The program also resulted in relief of fathers' stress and enhanced their sense of personal development.

Key words:

Child rearing, Educational program, Fathers of preschoolers, Japan

Introduction

Japan's fertility rate fell below the replacement level in 1997¹⁾. Today, the nation continues to be an aging society with ever-fewer children, and the decline in birthrate remains an important concern. The burden imposed on childrearing parents may be one of many factors responsible for Japan's declining birthrate²⁾. This burden comprises mothers' feelings of distress due to temporal limitations while raising children (e.g., not having enough time to work outside of the home or to do housework), leading to mothers carrying the psychological, physical, and financial burdens of care giving³⁾. Although fathers also carry these burdens, the time they allocate to childrearing is often limited, and is influenced by the norms of their social environment⁴⁾.

Fathers' involvement in childrearing has been reported to positively affect their personality development⁵⁾⁻¹²⁾ and ease mothers' childcare stress¹³⁾, mothers' childcare anxiety¹⁴⁾, and depression¹⁵⁾ while improving children's emotional development¹⁶⁻¹⁹⁾. Despite these reports, the percentage of men taking paternity leave remains low (2.63% in 2011;²⁰⁾, possibly indicating a lack of support for childrearing fathers²¹⁾. Recently, due to the increase in the number of nuclear families and insufficient support from neighbors and local communities²²⁾, fathers do not have positive role models about father involvement around them²³⁾. It is essential to implement a community-based approach where fathers can acquire caretaking skills, and provide a place for them to meet other childrearing fathers. In Japan, there are prenatal education programs and childcare consultants that provide parents (mainly mothers) with knowledge and advice about optimal parent-child interactions and dietary education. However, none of these programs are targeted toward teaching fathers daily caretaking skills and the knowledge necessary for childrearing. Therefore, by systematically incorporating childrearing skills, we developed and implemented a participatory education program for fathers (Table 1). Specifically, we evaluated fathers' shares of each childrearing task, independence levels in completing the tasks, stress, personality development, and feelings toward their baby (fetus/neonate) at three points: before the education program (pre-test), after the education program (post-test), and after the follow-up program (follow-up). This includes a follow-up program and assessment of the effects on fathers' participation in childrearing.

Materials and Methods

Subjects; Subjects were fathers residing in Kobe city, Hyogo Prefecture, Japan who had preschool children between 0 and 6 years of age. They were recruited from daycare centers, kindergartens, healthcare centers, maternity units, and birthing centers in Kobe city between February 2011 and June 2012. Of the 35 fathers who responded to our recruitment advertisements, 19 completed the questionnaire and joined the educational program (intervention group) and 16 completed the questionnaire but did not join the program (control group). All fathers understood the purpose of the study and agreed to participate. Data were collected from February 2011 to December 2012.

Procedure; In order to develop the education program, keywords and phrases such as “father,” “childrearing,” “involvement/participation in childrearing,” “father’s share/role,” “gender role,” “parent’s role” and “support for childrearing/parenting” were used as search terms in the following Japanese database services within the designated time periods: Japan Medical Abstracts Society Ichushi Web service (1983–2009), J-Dream II (1981–2009), Medical Online (1980–2009), and CiNii (all). From the results obtained, we selected 116 studies and analyzed their aims and methods. Consequently, the following 9 factors were targeted as issues to be addressed on the fathers’ support for childrearing: (1) fathers’ long working hours, (2) fathers’ limited time available for childrearing compared to mothers, (3) fathers’ preference for playing with children over performing mundane daily care giving tasks, (4) gender divisions in childrearing tasks, (5) fathers’ stress and anxiety concerning childrearing/household chores, (6) positive effects of fathers’ involvement with childrearing on mothers and children, (7) the absence of role models for childrearing fathers in their communities, (8) changing images of fatherhood in society, and (9) establishment of various support systems to cope with changing lifestyles. To tackle the issues mentioned above, we developed a seven-session education program: six monthly sessions and one follow-up session six months after the completion of the program. Generally, Japanese fathers have long working hours and cannot allot as much time for childrearing as their mothers do, prefer playing with children rather than doing the daily childrearing tasks because they think childrearing is basically a mothers’ role, and feel stressful when doing it. The purpose of this program was to address these problems and improve fathers’ awareness and behavior toward childrearing by helping fathers acquire childrearing skills. We developed an education program including the following items: 1) daily caretaking skills involved in childrearing, 2) dietary education of children, 3) parent-child cooking experience/eating with family members, 4) parent-child interaction/applying discipline/playing with children, and 5) development of

common childhood diseases among babies and infants. Additionally, childrearing fathers these days are at a loss what to do because they cannot find a role model within their communities and do not know how to interact with their children. Although environments surrounding these fathers are not good, there is rising demand for fathers' involvement in childrearing. Establishing community-based approaches where fathers can meet other child rearing fathers and exchange information is essential. Thus we included 6) encourage networking among fathers and 7) update fathers with useful information related to child rearing. We selected health professionals and educational specialist as instructors, incorporated experiential learning such as exercises and discussions, and set aside some time for fathers for networking and talking about problems with childrearing. As described in Table 1, the issues were incorporated into the program.

Fathers were divided into three groups. We labeled those who attended the seminars three or more times the "3 or more group," once or twice the "1 or 2 group"; those who did not take part in the seminar constituted the control group. Evaluation was made by comparing the differences across the three groups. **Questionnaire Items;** The evaluation of the educational program focused on verifying fathers' personal development and their continuous involvement in child rearing. The following three points were specifically discussed: 1) Participation in the educational program encourages fathers' continuous sharing of child rearing tasks, 2) Experience of acquiring child rearing skills help fathers understand and sympathize with mothers who are engaged in childcare on a daily basis, 3) Child rearing which requires patience and perseverance, promotes fathers' personal development. We designed a questionnaire for fathers to evaluate the usefulness of the education program. Fathers provided demographic data including age, the length of the father's marriage, number of cohabiting family members, number of children, occupation, academic background, and children's age and gender. Fathers were also asked to rate, on a 5-point scale, whether they agreed or disagreed with the following statement: "I am willing to be more involved in childrearing" (1 = *strongly agree*, 5 = *strongly disagree*). Fathers were also asked to rate, on a 4-point scale, how often they discussed childrearing with their partner (1 = *often*, 4 = *never*), and whether there were other childrearing fathers they could talk to about their experiences (1 = *many*, and 4 = *none*). With reference to previous studies ²⁴⁻²⁵⁾, we evaluated "fathers' share of daily childrearing tasks" by asking how much fathers shared in each of the following 10 tasks: feeding, bathing, supporting toilet training, changing clothes, cuddling when crying, putting child to sleep, playing at home after work or on

holidays, taking care of child during sickness, taking child out on holidays, and disciplining child.

Fathers answered each item on a 5-point scale (5 = *all father* and 1 = *all partner*). Higher total scores indicated greater paternal involvement. Participants also answered questions evaluating “fathers’ level of independence in completing childrearing tasks.” Fathers were asked how they performed the 10 above-mentioned tasks. The 5-point scale (5 = *father alone* and 1 = *not able to do at all*). Higher total scores indicated higher levels of father independence in fulfilling childrearing tasks.

Measurements; We used the Stress Evaluation Scale, a 5-point scale consisting of 27 items to assess the degree of father stress ²⁶⁾. “Father’s stress” was defined as the link between a father and his environment that poses difficulties and exerts pressure on the father. Fathers responded on a five-point scale, with higher scores indicating higher levels of stress. The Short-Form Scale of Egalitarian Sex Role Attitudes ²⁷⁾ was used to evaluate fathers’ egalitarianism in sex-role attitudes. The scale’s 27 items belonged to one of three domains: views on marriage/men and women, views on education, and views on occupations. Higher scores indicated more egalitarian views about sex roles while lower scores reflected more conservative views. The Development Brought by Becoming a Father Scale ¹¹⁾ measured fathers’ personality development after the birth of their child. Items concerned “affection for the family,” “responsibility and calmness,” “expansion of perspectives,” “perspectives on past and future,” and “loss of freedom.” Responses were on a 5-point scale, with higher scores indicating fathers’ perceptions of greater personality development following fatherhood. Feeling toward the baby (fetus or neonate) was used to measure both the positive (approach) and negative (avoidance) feelings the father had toward a baby ²⁸⁾⁻²⁹⁾. The scale included 14 positive and 14 negative adjectives associated with babies. Fathers rated the adjectives on a 4-point response scale to create a total approach score (aggregate of all the positive adjectives) and total avoidance score (aggregate of all the negative adjectives). We used reversed scoring for both the positive adjectives and negative adjectives to calculate the approach/avoidance score. Higher scores were indicative of fathers’ stronger approach /avoidance feeling toward babies.

We evaluated the data obtained from the self-administered questionnaires at three time points: before the education program (pre-test), six months after the completion of the program (post-test) in order to evaluate the effect of the program after finishing six sessions, and one year after the pre-test (follow-up) to determine the effect and continuity of the program.

Fathers' Opinions of the Program; Fathers in the intervention group were asked to write their opinions of the education program at the end of the post-test and follow-up questionnaires for analysis.

Statistical Analysis; Participants in all three groups responded to the questionnaire three times. Paired-sample *t* tests were used to compare the pre-test, post-test, and follow-up responses across all three groups.

Ethical Considerations; The study was approved by the Ethical Committees of Kobe University Graduate School of Health Science. Subjects were informed that participation in the study was voluntary and that they were free to withdraw at any time.

Results

Demographics; The mean age of fathers was 34.8 ± 4.3 (Mean \pm SD) years in the intervention group and 34.9 ± 5.7 years in the control group. The marriage period was 5.4 ± 2.6 years in the intervention group and 7.3 ± 3.3 years in the control group. The number of children in the intervention group was 1.3 ± 0.4 and in the control group was 1.4 ± 0.4 . The mean age of the firstborn child was 2.7 ± 2.0 years in the intervention group and 4.1 ± 3.3 years in the control group, while the mean age of second children was 1.2 ± 0.4 years and 3.1 ± 1.7 years, respectively. The number of cohabiting family members was 3.3 ± 0.4 in the intervention group and 3.5 ± 0.9 in the control group. In both groups, 80% or more fathers were full-time employees. Results showed that 89.4% of fathers in the intervention group and 68.7% in the control group had college or higher education background (Table 2). There is no significant in demographics between intervention group and control group.

Change in Fathers' Awareness of Childrearing; Fathers' willingness to be involved in childrearing; When asked whether they agreed or disagreed with the statement "I am willing to be involved in childrearing," fathers responding either "strongly agree" or "agree" accounted for 83.3% at pre-test, 100% at post-test, and 83.4% at follow-up in the 3 or more group; 71.4% at pre-test and post-test, and 57.2% at follow-up in the 1 or 2 group; and 87.5% at pre-test, 93.8% at post-test, and 87.6% at follow-up in the control group (Figure 1A). Discussions with spouse about childrearing; When asked to report on the frequency with which they discussed childrearing with their spouses, 91.7% of fathers in the 3 or more group responded either "often" or "sometimes" at pre-test, and 100% at post-test and follow-up. For the 1 or 2 group, "often" and "sometimes" were reported by 100% of the fathers at pre-test, 85.7% at

post-test, and 71.4% at follow-up. Finally, “often” and “sometimes” were reported by 87.5% of control group fathers at pre-test, and 75.0% at post-test and follow-up (Figure 1B). Presence of other child rearing fathers; Fathers were asked whether they had any other childrearing fathers to talk to about parenting. Fathers answering either “many” or “some” at pre-test, post-test, and follow-up accounted for 41.7%, 66.7%, and 75.0%, respectively, in the 3 or more group; 57.1% at all 3 time points in the 1 or 2 group; and 50.1% at pre-test and post-test, and 37.5% at follow-up, in the control group (Figure 1C). Fathers’ stress; Stress Evaluation Scale scores significantly decreased from a mean pre-test value of 86.0 ± 7.1 to a mean follow-up value of 79.8 ± 6.8 in the 3 or more group ($p < 0.05$), significantly increased from a mean pre-test value of 79.3 ± 5.9 to a mean follow-up value of 85.0 ± 6.0 in the 1 or 2 group ($p < 0.01$), and significantly increased from a mean post-test value of 85.8 ± 7.7 to a mean follow-up value of 89.3 ± 8.6 in the control group ($p < 0.05$) (Table 3). Fathers’ egalitarianism; There were no significant differences across the 3 groups in sex role attitudes over the course of the three time points (Table 3). Development brought about by becoming a father; In the 3 or more group, development due to fatherhood significantly increased over the three time points, rated as 112.9 ± 11.3 at pre-test to 122.1 ± 12.6 at post-test ($p < 0.05$), and 121.3 ± 13.4 at follow-up ($p < 0.05$). Mean pre-test, post-test, and follow-up values did not differ in the 1 or 2 group or control group (Table 3). Fathers’ feeling toward babies; No significant differences were found across the 3 groups in the mean values of feelings toward babies across the pre-test, post-test, and follow-up assessment (Table 3).

Changes in Fathers’ Childrearing Behavior; Fathers’ share of childrearing tasks; In the 3 or more group, scores significantly increased from a mean pre-test value of 23.3 ± 2.1 to a mean post-test value of 25.8 ± 3.4 ($p < 0.05$), and scores significantly increased from a mean pre-test value to follow-up value of 26.6 ± 3.1 ($p < 0.01$). Scores remained unchanged in the 1 or 2 group and the control group (Table 4). Fathers’ independence level in carrying out childrearing tasks; Pre-test scores in the 3 or more group significantly increased from a mean pre-test value of 40.8 ± 5.7 to a mean post-test value of 44.5 ± 3.7 ($p < 0.05$), pre-test value to a mean follow-up value of 46.4 ± 3.2 ($p < 0.01$); the mean post-test value increased significantly at follow-up to 46.4 ± 3.2 ($p < 0.01$). Again, scores remained unchanged in the 1 or 2 group and the control group (Table 4).

Fathers’ Opinions of the Program; Fathers in the intervention group were asked to write their views on the education program. Several themes were identified for each group; collected comments are listed in

Table 5. For the 3 or more group; the comments reflecting fathers' awareness toward childrearing were as follows: "I think I am a better father now," "I want to discuss childrearing with others," "I hope I can maintain this positive feeling that I have now after taking this education program," and "The education program gave me a good opportunity to rethink childrearing." The comments concerning support for childrearing were as follows: "I got to know other childrearing fathers and learned a lot from them," and "I was able to obtain useful information from other participants." The comments on the education program itself were as follows: "I enjoyed the education program," and "The seminar changed me in many ways." In the 1 or 2 group, a comment related to support for childrearing was "I would like to think about improving the environment surrounding our children." The comments on the education program were as follows: "The seminar was rewarding in that I was able to see how other fathers interact with their children," "It was a wonderful education program," "I enjoyed the seminar," and "I was a little nervous because I never had a chance to communicate with other fathers before" (Table 5).

Discussion

The purpose of the present study was to develop and implement a childrearing education program for fathers. We found that fathers were able to alleviate their stress, foster their personal development, increase their share of childrearing tasks, and raise their independence level for carrying out these tasks by participating in our education program.

To begin with, it is important to understand the sample of fathers who participated in the study. The majority of the fathers who participated in this study were in their middle thirties, with 1 or 2 children. Participants had nuclear families, and the fathers seeking childrearing support were those with children between 1 and 2 years of age. The significance of our study is undeniable. According to a report on Fathers' Roles in Childrearing in 6 Countries [Japan, Korea, Thailand, USA, France, and Sweden³⁰], in Japan, feeding and disciplining children is not highly rated by fathers, whereas being the breadwinner is rated as the top role. Japanese fathers are viewed as income providers rather than caretakers. However, it is essential that fathers are given the opportunity to acquire basic childrearing knowledge and skills, including feeding and discipline practices, basic interaction skills, and issues concerning common childhood diseases. In addition, the nuclear family has become the most prevalent family structure in

Japan in recent years (60% of all families), weakening social ties in the community. Fathers have fewer opportunities to meet other childrearing fathers and to exchange childrearing-related information, leading to the importance of implementing such educational programs. Indeed, our results indicate that participation in an educational program provides fathers with the necessary knowledge and skills to promote their involvement in childrearing. For instance, fathers who were in the 3 or more group significantly increased their responses of “strongly agree” or “agree” to statements about their willingness to be more involved in childrearing from pre-test to post-test. However, some fathers in the control group and the 1 or 2 group still responded “neither agree nor disagree,” or “disagree” to that statement. These results suggest that when fathers participated in the program more frequently, they became more engaged in childrearing. Moreover, when asked about the frequency with which they discussed childrearing with their spouses, fathers in the 3 or more group chose only “often” or “sometimes” at the pre-test assessment; these results did not change at follow-up. Thus, it seems that fathers who participated in the program continue to speak with their partner about childrearing on a regular basis. These behavioral changes in fathers showed a positive effect on mothers. Fathers were able to get to know other childrearing fathers through the education program. This was most prominent among fathers in the 3 or more group who attended the seminar multiple times, suggesting that the education program also served as an ideal meeting place for fathers. Fathers who participated in the educational program also reported decreased stress from pre-test to follow-up an important finding, since fathers in all three groups reported higher levels of stress than fathers of infants in a previous study. Iwata et al. reported stress scores of 183 fathers who had infants between the ages of two and five months ^{26]}. Since stress scores in that study are 15–20 points lower than our study scores, they may be associated with the children’s age. As children develop and expand their range of activities, caretakers must encourage their independence. Our education program had a substantial impact on fathers and alleviated their stress because it included components that dealt with various potentially stress-inducing features of childrearing. Morishita has indicated that fathers benefit when they take an interest in childrearing ¹¹⁾. Our results showed an increase in positive responses at post-test and follow-up on items representing change in fathers’ awareness toward childrearing in the 3 or more group. Similarly, significant increases were found for scores on items representing change in fathers’ behaviors. By attending the education program, fathers’ interest in

childrearing was enhanced, as was their personal development. We also found a significant increase in pre-test and follow-up values on fathers' participation in daily childrearing tasks for fathers in the 3 or more group. This suggests that fathers attending the seminar 3 times or more performed these childrearing tasks in their home more often after the education program. Since the subjects in our study were fathers who were willing to be involved in childrearing, we believe that once they were provided with the necessary knowledge and skills, they were inspired to put them into practice. Fathers' independence level in carrying out childrearing tasks also improved stepwise at pre-test, post-test, and follow-up for the 3 or more group. Our findings revealed that fathers with greater willingness and interest in childrearing had higher attendance rates for the education program. The increased level of independence in fathers with a high attendance rate suggests that the education program succeeded in exerting a beneficial effect on their participation in caretaking. It is important to consider our findings in the context of other studies. A report on 6 developed countries [Japan, Korea, Thailand, USA, France, and Sweden; ³⁰⁾] revealed that the average time fathers spend in the house with children per day in Japan was 3 hours 6 minutes. In contrast, fathers in Thailand spend 5 hours 54 minutes, and 4 hours 36 minutes in Sweden and the United States. In addition, at 51 hours and 24 minutes, Japanese fathers' reported working hours per week ranked as the longest among the 6 countries—closer to 15 hours than Sweden's 37.5 hours. Thus, education programs that meet the needs of Japanese fathers could be effective in promoting their involvement in childrearing, as was the case in our sample. In addition, fathers who participated in the educational program indicated in their comments that they were able to get to know other childrearing fathers. This was most noticeable among fathers in the 3 or more group, who attended the seminar multiple times, suggesting that the education program also served as an ideal meeting place for fathers. Our findings revealed that, among the evaluations performed at 3 time points for fathers' awareness and behavior toward childrearing, improvement was most prominent immediately after the education program (post-test). However, follow-up scores indicated fathers' continuous practice of the caretaking skills they acquired during our education program. Specifically, scores on development brought about by becoming a father, fathers' share of childrearing tasks, and father's independence level in carrying out the tasks all improved only in the 3 or more group at post-test, which indicates the positive effect of our education program in promoting fathers' involvement in childrearing. We also received feedback from the fathers in the

intervention groups about the educational programs. Their responses indicated they had a positive attitude toward childrearing (e.g., “I want to be a better father,” “I want to maintain this positive feeling that I have now after taking this education program,” “I want to create a better environment for my children”). Fathers also indicated that our education program successfully served as a community-based meeting place for childrearing fathers (e.g., “I got to know other childrearing fathers,” “I was able to hear other fathers’ experience and ideas on childrearing”).

The findings in our study are difficult to generalize because subjects were limited to highly educated fathers living in urban areas of Japan. Further research is needed in other settings (e.g., in rural areas) where fathers hold different employment status. In a rapidly aging society such as Japan, it is important to establish various support systems for fathers in order to promote their positive attitudes and understanding of childrearing. To further identify whether fathers’ involvement in childrearing buffers mothers’ stress and delivers a positive impact on the whole family, further investigation is needed, which should include both parents as participants.

Conclusions

In conclusion, we have demonstrated that our education program allowed fathers to alleviate stress, foster personal development, increase their contribution to childrearing tasks, and raise their independence level in carrying out these tasks. We developed this education program by systematically incorporating daily childrearing tasks and implementing a participatory childrearing seminar as a community-based meeting place for childrearing fathers.

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Figure Legend

Figure 1. Change in fathers' awareness and behavior.

A: I am willing to be involved in childrearing

B: How often do you talk about childrearing with your partner?

C: Do have other childrearing fathers to talk to about parenting?

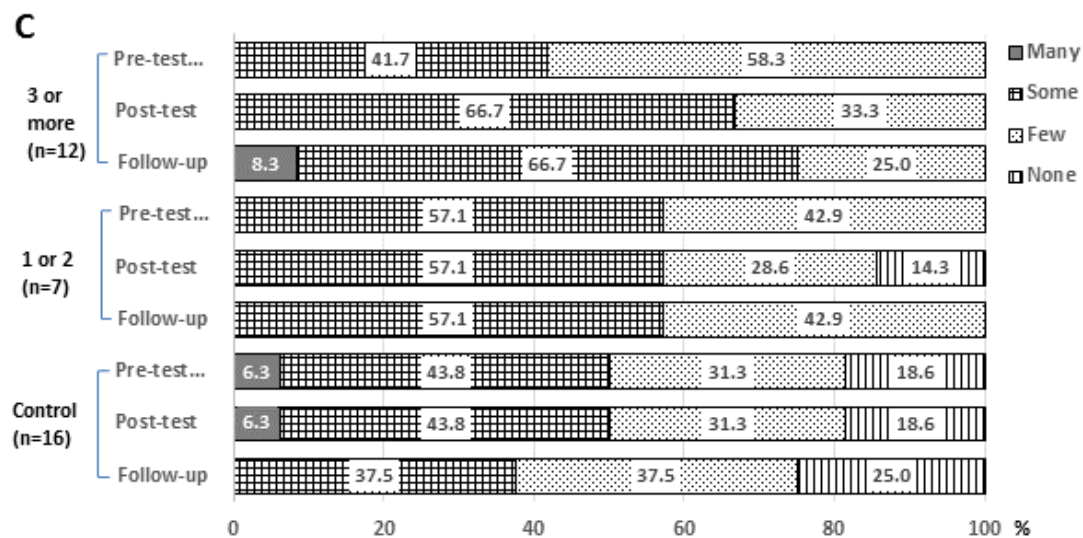
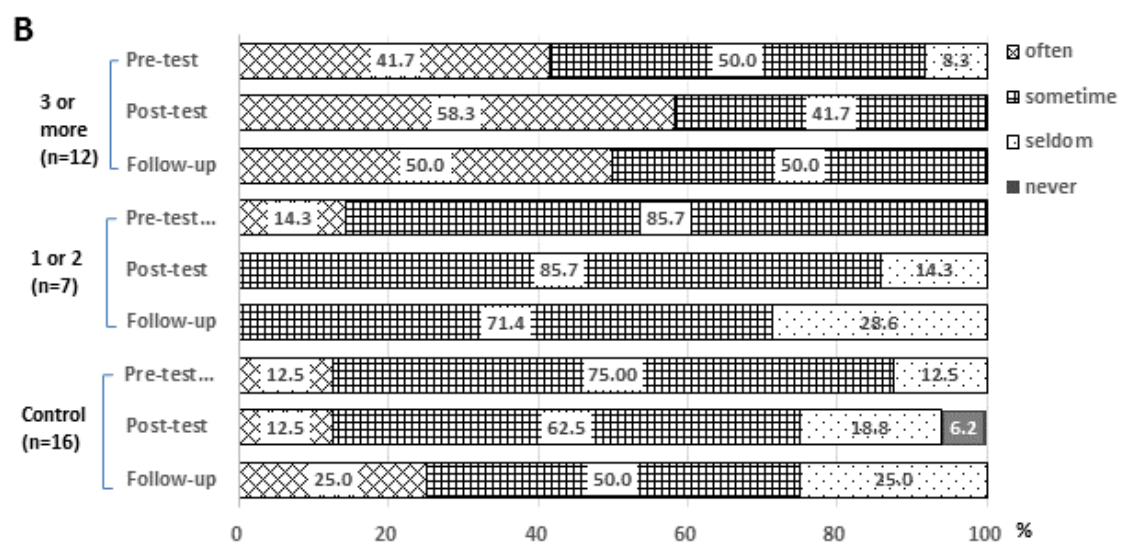
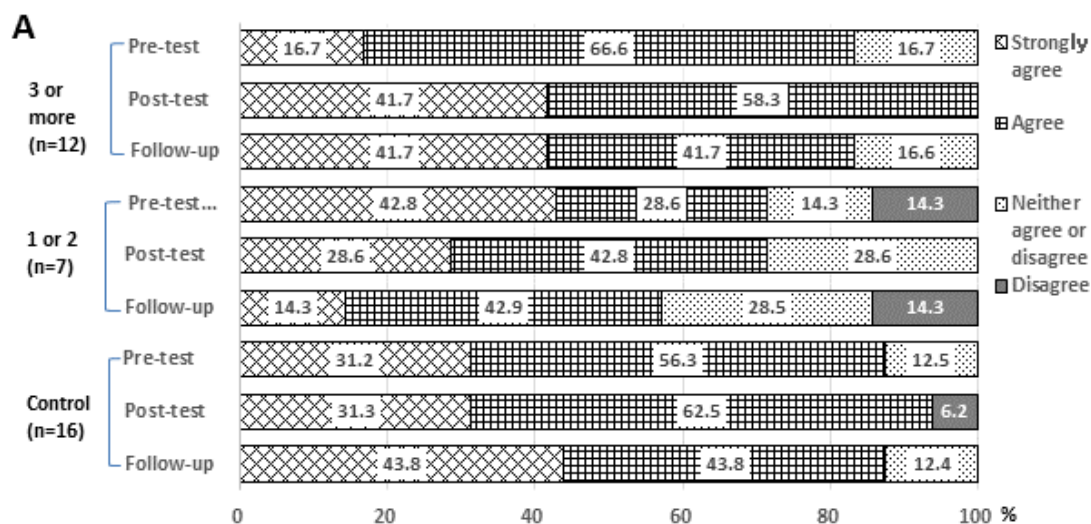


Table 1. The education program of childrearing seminars for fathers

Schedule	Theme and Activities
First month	<ul style="list-style-type: none"> • Orientation • Social background surrounding fathers' childrearing • Usefulness of fathers' involvement in childcare
Second month	<ul style="list-style-type: none"> • Father & child cooking experience • Decide on meal and snack and select the cooking ingredients • Prepare the meal • Taste the food with all family members • Clean up after a meal
Third month	<ul style="list-style-type: none"> • Communication with your children • Acquire effective listening skills • Have skin-ship. • Provide a good upbringing • Applying discipline. • Do not confuse spoiling with loving
Fourth month	<ul style="list-style-type: none"> • Childcare related to lifestyle and hygiene • How to lead a well-regulated life • How to put the children to sleep • How to brush teeth properly
Fifth month	<ul style="list-style-type: none"> • Field trip and cooking • Spend time with your children • Connect and network with other fathers and family members • Outdoor cooking • Decide a meal and select the ingredients
Sixth month	<ul style="list-style-type: none"> • How to deal with children's sickness or injury • Diseases children are susceptible to • How to handle injuries in children • How to avoid accidents
Follow-up	<ul style="list-style-type: none"> • Discuss requested theme from the participants • How to deal with whining and resisting parents' authority • How to lead a well-regulated life

Table 2. Demographics of subjects

	Intervention group (N=19)	Control group (N=16)
Age (y)	34.8 ± 4.3	34.9 ± 5.7
Marriage period (y)	5.4 ± 2.6	7.3 ± 3.3
Family members	3.3 ± 0.4	3.5 ± 0.9
Number of children	1.3 ± 0.4	1.4 ± 0.4
Children's age (y)		
First child	2.7 ± 2.0	4.1 ± 3.3
Second child	1.2 ± 0.4	3.1 ± 1.7
Children's sex		
Male	41.7 % (10/24)	58.3 % (14/24)
Female	54.5 % (12/22)	45.5 % (10/22)
Working status		
Full-time employee	84.2 % (16/19)	93.7 % (15/16)
Freelance	10.5 % (2/19)	6.3 % (1/16)
Self-employed	5.3 % (1/19)	0
Working hours	10.2 ± 1.5	10.0 ± 1.5
Education background		
High-school	10.6 % (2/19)	31.3 % (5/16)
College	5.3 % (1/19)	0
University	36.8 % (7/19)	56.2 % (9/16)
Graduate school	47.3 % (9/19)	12.5 % (2/16)

Table 3. Change in fathers' awareness toward childrearing

Measurement Scales	Group	Total (n)	Pre-test (Mean±SD)	Post-test (Mean±SD)	Follow-up (Mean±SD)	Pre - Post p- value	Post-Follow up p- value	Pre-Follow up p- value
Fathers' stress	3 or more	12	86.0 ± 7.1	83.8 ± 7.5	79.8 ± 6.8	0.26	0.07	0.01*
	1 or 2	7	79.3 ± 5.9	82.6 ± 5.2	85.0 ± 6.0	0.12	0.47	0.00**
	Control	16	86.8 ± 5.6	85.8 ± 7.7	89.3 ± 8.6	0.40	0.01*	0.09
Egalitarian sex role attitude	3 or more	12	52.4 ± 7.2	52.5 ± 10.7	52.1 ± 7.2	0.52	0.85	0.75
	1 or 2	7	48.1 ± 10.5	47.9 ± 7.5	49.7 ± 8.3	0.92	0.54	0.47
	Control	16	52.3 ± 10.1	51.6 ± 9.9	53.0 ± 8.2	0.66	0.46	0.61
Development brought by becoming a father	3 or more	12	112.9 ± 11.3	122.1 ± 12.6	121.3 ± 13.4	0.03*	0.75	0.04*
	1 or 2	7	117.4 ± 16.7	116.0 ± 13.8	112.7 ± 16.7	0.20	0.48	0.16
	Control	16	113.6 ± 20.5	111.9 ± 18.5	116.8 ± 18.1	0.49	0.08	0.20
Feeling towards the baby /Positive aspect	3 or more	12	27.2 ± 4.7	29.7 ± 8.5	27.8 ± 6.8	0.34	0.20	0.81
	1 or 2	7	30.6 ± 6.5	28.6 ± 8.0	29.1 ± 6.7	0.74	0.77	0.23
	Control	16	26.2 ± 8.2	25.8 ± 6.9	27.8 ± 5.4	0.71	0.64	0.61
Feeling towards the baby /Negative aspect	3 or more	12	31.8 ± 5.3	31.7 ± 5.2	33.5 ± 4.0	0.97	0.07	0.23
	1 or 2	7	33.0 ± 6.2	30.4 ± 8.2	29.9 ± 9.6	0.09	0.70	0.10
	Control	16	36.9 ± 3.7	34.7 ± 4.7	35.1 ± 4.1	0.73	0.72	0.13

Paired-sample t test; ** Significant (p <0.01), * Significant (p <0.5)

Table 4. Change in fathers' behavior about childrearing

Questionnaire Items	Group	Total (n)	Pre-test (Mean ± SD)	Post-test (Mean ± SD)	Follow-up (Mean ± SD)	Pre - Post <i>p</i> - value	Post-Follow up <i>p</i> - value	Pre-Follow up <i>p</i> - value
Fathers' share of childrearing tasks	3 or more	12	23.3 ± 2.1	25.8 ± 3.4	26.6 ± 3.1	0.04*	0.51	0.00**
	1 or 2	7	29.3 ± 9.4	28.0 ± 7.1	27.3 ± 10.4	0.50	0.75	0.09
	Control	16	23.1 ± 2.8	25.0 ± 4.3	23.9 ± 5.0	0.05	0.31	0.13
Fathers' independent level in carrying out childrearing tasks	3 or more	12	40.8 ± 5.7	44.5 ± 3.7	46.4 ± 3.2	0.02*	0.00**	0.00**
	1 or 2	7	43.7 ± 4.9	43.1 ± 6.6	42.7 ± 5.6	0.76	0.80	0.63
	Control	16	43.2 ± 6.0	44.8 ± 4.4	44.0 ± 4.9	0.09	0.50	0.59

Paired-sample t test; ** Significant ($p < 0.01$), * Significant ($p < 0.5$)

Table 5. Subjects of fathers on the education

3 or more group	
Father 1	I was able to learn many things at this seminar. After attending the seminar, I try to be a better father every day.
Father 2	I would like to talk about children's respect toward their parents.
Father 3	I got to know other childrearing fathers and learned a lot from them.
Father 4	I was much inspired by other fathers who were involved in childrearing. It gave me a good opportunity to think about how to interact with children.
Father 5	I was able to obtain useful information from other participants. The education program changed me in many ways. I expect to have a similar program targeted to fathers with grade school and junior high school students.
Father 6	It was a precious experience because seminars for fathers on childrearing are not so common. The sessions were very rewarding and made me want to attend them every time. I enjoyed learning about childrearing.
Father 7	It gave me an opportunity to reflect myself. Wonderful education program.
1-2 group	
Father 1	It was a very nice seminar.
Father 2	I always wanted to know how other fathers spend time with their children, so the seminar was extremely informative.
Father 3	I enjoyed the seminars. I was a little nervous because I never had a chance to communicate with other fathers.
Father 4	After becoming a father, I feel responsible about my family and my life is fulfilled. I would like to think about improving the environment surrounding our children.
