Original Article

Effects of an Information-motivation-behavioral Skills Program on Grandparents' Behaviors to Promote Child Development among Young Children

Abstract

Background: Grandparents aiming to efficiently promote child development must first acquire the necessary knowledge, motivation, and skills. This study sought to examine the effects of an information–motivation–behavioral skills program on grandparents' promotion of child development among young children. **Materials and Methods:** This quasi-experimental study includes a sample of grandparents who serve as the primary caregivers of children aged 2–4 years at the child development center in Nakhon Ratchasima province, Thailand, which was conducted in 2023. Six child development centers were randomly assigned to experimental and control groups (three centers each), with 37 participants per group. The experimental group participated in a four-week program, while the control group received routine care from their centers. Data were collected using a questionnaire on child development promotion behaviors. Descriptive statistics, independent *t*-test, and Wilcoxon signed-rank test were used to analyze the data. **Results:** The mean (SD) of grandparents' behaviors to promote child development after the experiment in the experimental group, 58.49 (3.81), was higher than those of the control group, 47.73 (7.31), with statistical significance ($t_{54} = -7.94$, $p < 0.001$). Additionally, the experimental group's scores in child development promotion behaviors after participating in the program were statistically significantly higher than before they underwent the program ($z = -5.12$, $p < 0.001$). **Conclusions:** This study effectively encouraged grandparents to adopt appropriate behaviors that promote child development. Future studies should investigate the sustainability of grandparents' behaviors in promoting child development after program completion to inform reminder strategies and maintain behavioral efficiency.

Keywords: *Behavior, child development, grandparents*

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Introduction

Grandparents are playing an increasingly crucial role in child care and child development. Multiple indicator cluster surveys in Thailand in 2019 showed that 83.1% of children aged 0–4 years did not live with their mothers and had their grandparents as primary caregivers.[1] Children under the care of their grandparents, who primarily promote their development, were mostly found in rural areas. Most of these families (40.8%) are found in the northeast.[2] Currently, although children aged 2–4 years normally attend and thus receive care from child development centers during the day, they still require further care and development promotion at home, in which grandparents play an important role. However, grandparents suffer from deteriorating physical conditions, such as presbyopia,[3,4] poor eyesight,[5] poor balance, poor memory, and extreme fatigue,[3,6,7] which may prevent grandparents from engaging in child development activities. Research has also revealed inappropriate behaviors among some grandparents that poorly promote child development, such as allowing children to consume media from screens instead of telling them stories or playing with them,[8] failing to set time limits on children's media consumption,[9] and not engaging in book reading with children.[10] These shortcomings were due to the grandparents' lack of knowledge and skills for promoting child development. Grandparents usually perform child-rearing using knowledge from previous generations or their own experience. Some grandparents also believe that

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child development promotion is the responsibility of public health officials and teachers at child development centers.[11] In addition, a survey reported that only 44.2% of children aged 2–4 years lived in households with at least three children's books.[1] These demonstrate grandparents' lack of knowledge, skills, positive attitudes, and materials to promote child development. The literature review revealed the effect of programs that encourage parents, grandparents, and relatives to promote child development. These programs educate caregivers on child development based on the Developmental Surveillance and Promotion Manual (DSPM),[12,13] and provide child development training courses.[8,12-14] However, the literature also revealed that caregivers did not even use the DSPM. This is because grandparents find the manual difficult to use because of its rather small, hard-to-read text.[8] According to the literature review, it is quite clear that not many studies especially focused on grandparents. the child development promotion activities have to be appropriately adjusted to the context of the rural area and the deteriorated physical condition of grandparents. Therefore, the researchers are interested in studying the program, based on the concept of Fisher and Fisher (1992),[15] who proposed that by providing individuals with specific information that cultivates the appropriate behaviors, motivating them to develop positive attitudes, providing them with materials which encourage them to show the desired behaviors, and training them on related skills will allow such individuals to develop the appropriate behaviors more effectively. Accordingly, this study aimed to examine the effects of an information-motivation-behavioral skills program on grandparents' promotion of child development among young children.

Materials and Methods

This study adopted a quasi-experimental. It was registered with the Thai Clinical Trials Registry (TCTR20230809002). design with pretest and posttest groups. The research sample consisted of grandparents of children aged 2–4 years from six child development centers in Nakhon Ratchasima province, Thailand, which was conducted in 2023. The child development centers were randomly grouped into experimental and control groups of three each. Sample size was calculated using power analysis with the G*Power application. This research used a similar study, Tohyusoh and Muksing (2020),[16] as a guideline. The researchers used the formula of Cohen (1992)[17] to calculate the effect size from the average of two groups, resulting in an effect size of 0.62. The data was analyzed by using the *t*-test method, with a statistical significance (Alpha) of 0.05 and a statistical power of 0.80, and the sample size was adjusted for a 10% dropout rate. Therefore, the experimental and control groups had 37 samples each. Inclusion criteria included grandparents who were no older than 74 years old and the primary caregivers of children who attend the child development centers, continually living in the same house as their grandchildren for at least 6 months, and able to communicate, read, and write in the Thai language. Grandparents over 60 with cognitive or physical impairments, mental difficulties, or caring for children with disabilities were excluded. A questionnaire on child development promotion behaviors, developed by the researchers. This questionnaire was based on the DSPM[18] and literature reviews.[8,9,12,19] This questionnaire contains 16 questions, and the answers are on a 5-point scale rating, with the score range between 0 and 64 points. Five experts verified the appropriateness and content validity of all research instruments. The questionnaire on child development promotion behaviors was tested for a Content Validity Index (CVI) of 0.98. The questionnaire was tested for reliability using the try-out method with 20 individuals of similar qualifications to the sample group. The test yielded a Cronbach's alpha coefficient of 0.73 as a result. The researchers also tested the reliability of the sample group of 74 samples and obtained the Cronbach's alpha coefficient of 0.80. The intervention in the experimental group was conducted by the researchers, who are pediatric nurses skilled in promoting child development. The intervention content was reviewed by five experts specializing in child development. The experimental group participated in the information-motivation-behavioral skills program [Table 1], which was based on Fisher and Fisher (1992),[15] for 4 weeks at the child development center, as follows: (1) first week (7–13 people per group, 90–120 minutes). The grandparents completed questionnaires on personal data and the child development promotion behaviors (pretest) that researchers developed based on the DSPM[18] and literature reviews.[8,9,12,19] The grandparents watched the PowerPoint presentation title "Child Development Promotion for Grandparents", engaged in the child development promotion activities using the child development promotion kit provided to them, watched the "Grandparents: Important Persons for Children" VDO presentation, and collaboratively planned the child development promotion activities that they would implement at home; (2) second and third weeks (2–3 people per group, 20–30 minutes). The researchers monitored the progress and obstacles and provided grandparents with support and encouragement while working with them to adjust the child development promotion activities; (3) fourth week (individual, 30–40 minutes) for monitoring the progress. At the end of this week, the grandparents completed the questionnaire on child development promotion behaviors (posttest). For the control group, as follows: (1) first week (individual, 30–35 minutes). The grandparents completed questionnaires on personal data and the child development promotion behaviors (pretest); (2) fourth week (individual, 30–35 minutes). The grandparents completed the questionnaire on child development promotion behaviors (posttest). Data were analyzed using an independent *t*-test, Chi-square test,

Fisher's exact test, Mann–Whitney U test, and Wilcoxon signed-rank test by Statistical Package for the Social Sciences (SPSS) version 26, which was developed by IBM Corporation. Statistical significance was set at 0.05. Data were not analyzed by matching.

Ethical considerations

The Ethical Review Committee for Human Research, Faculty of Nursing, Mahidol University (COA No. IRB-NS2023/758.0203) provided research approval date 2 March 2023. Participation in this study is voluntary for the samples. The researchers explained the purpose, process, risks, and benefits to be obtained. The samples who agreed to participate in the research signed their consent form. Their information would be kept confidential. This study was supported by the Faculty of Graduate Studies and the Graduate Studies of the Mahidol University Alumni Association. The authors extend their sincere thanks to the university and the grandparents who participated in this research.

Results

The comparison of general characteristics between the experimental and control groups revealed no differences in the caregivers' relationship with the children, and educational level ($p > 0.05$). Conversely, differences were observed in caregivers' ages and family monthly income between the two groups ($p < 0.05$) [Table 2]. The scores

Table 1: The information–Motivation–Behavioral Skills Program

Time	Type of Activity	Activities
1st week (90–120 minutes)	7–13 people per group	- The grandparents completed questionnaires on personal data and the child development promotion behaviors (pretest).
		- The grandparents watched the PowerPoint presentation titled "Child Development Promotion for Grandparents."
		- The grandparents engaged in the child development promotion activities using the child development promotion kit provided
		- The grandparents watched the "Grandparents: Important Persons for Children" VDO presentation
		- The grandparents and researchers collaboratively planned the child development promotion activities that they would implement at home
2nd-3rd week (20–30 minutes)	2–3 people per group	The researchers monitored the progress and obstacles and provided grandparents with support and encouragement while working with them to adjust the child development promotion activities
4th week (30–40 minutes)	Individual	- The researchers monitoring the progress.
		- The grandparents completed the questionnaire on child development promotion behaviors (posttest).

Table 2: General characteristics of caregivers in experimental and control groups

Characteristics of the Caregiver	Experimental Group (*n*=37)		Control Group (*n*=37)		df	*p*
	n (%)	Mean (SD)	*n* (%)	Mean (SD)		
Age (year)		59.14 (5.89)		54.95 (6.55)	72	0.005*
30–39	-		1 (2.70)			
40–49	1 (2.70)		4 (10.80)			
50–59	17 (45.90)		26 (70.30)			
≥60	19 (51.40)		6 (16.20)			
Caregivers' Relationship with the Children						0.865**
Paternal Grandfather	3 (8.10)		2 (5.40)			
Paternal Grandmother	14 (37.80)		12 (32.40)			
Maternal Grandfather	3 (8.10)		5 (13.50)			
Maternal Grandmother	17 (45.90)		18 (48.60)			
Educational Level						0.342**
Primary School	28 (75.70)		30 (81.10)			
Secondary School	6 (16.20)		7 (18.90)			
Vocational Education	3 (8.10)		-			
Family Monthly Income						0.027**
Adequate	21 (56.80)		11 (29.70)			
Inadequate	14 (37.80)		25 (67.60)			
Saving	2 (5.40)		1 (2.70)			

*Independent *t*-test, **Fisher's exact test. The Table 2 show the comparison of general characteristics between the experimental and control groups revealed no differences in the caregivers' relationship with the children, and educational level ($p>0.05$). Conversely, differences were observed in caregivers' ages and family monthly income between the two groups ($p<0.05$)

of grandparents' behaviors to promote child development before the experiment between the experimental and control groups showed no difference (z = −1.70, p = 0.089). Meanwhile, the mean scores (SD) of grandparents' behaviors to promote child development after the experiment in the experimental group, 58.49 (3.81), were higher than those of the control group, 47.73 (7.31), with statistical significance (t_{54} = −7.94, p < 0.001) [Table 3]. The scores of grandparents' behaviors to promote child development in the experimental group after receiving the program were higher than before receiving the program, with statistical significance (z = −5.12, p < 0.001) [Table 4].

Discussion

This study aimed to examine the effects of an information-motivation-behavioral skills program on grandparents' behaviors to promote child development among young children. The results supported the objective. During the four-week program, the control group received routine guidance, and teachers promoted child development by providing the children with a learning experience tailored to the curricula of the child development centers under the local administrative organizations.[20] However, teachers of children in the control group did not train the grandparents on child development promotion and monitor their child development promotion behaviors at home. For the experimental group, besides being guided by teachers of the child development centers, the grandparents also underwent the information-motivation-behavioral skills program. The program was found to cultivate proper understanding by educating grandparents using tailored content and a PowerPoint presentation as a tool, as well as appropriate behaviors that promote child development. These techniques also allowed the researchers to answer any questions from the grandparents. This result is consistent with Saithong (2018),[12] which revealed that the experimental group's mean scores in child development promotion behaviors after undergoing a child development promotion program were higher than before participating in the program (p < 0.001). In this study, the grandparents in the experimental group scored higher in child development promotion behaviors after engaging in the program than before they underwent the program, compared with the control group. This may be because the grandparents were allowed to practice child development activities. Moreover, the grandparents in the experimental group were provided with the child development promotion manual, which they could review at home, as well as the child development promotion kit, with which they could implement child development activities at home. The researchers also worked collaboratively with the grandparents in designing child development activities that were aligned with the context of the caregivers' family and physical condition. These allowed the grandparents to independently display child development promotion behaviors at home. This finding is consistent with Urharmnuay *et al*. (2021),[13] which examined the outcome of a child development promotion program for caregivers. In that study, 61.4% of the caregivers were grandparents, who underwent training courses to assess the development of their grandchildren and educate them on child development promotion. When the program concluded, the caregivers had significantly higher mean scores in behaviors that assess and promote child development after receiving the program (p < 0.001). One difference between Urharmnuay *et al*. (2021)[13] and this study is that the former trained the caregivers in both child development assessment and promotion. However, because the samples of this study were grandparents, the researchers focused on educating them using child development promotion activities that are easy to implement at home and assigned the assessment of child development to teachers instead. Additionally, Buathong (2025) found that caregivers' engagement in hands-on practice of child development promotion facilitates their learning and familiarity with the process before implementing it at home.[21] The researchers encouraged the grandparents to cultivate good attitudes toward child development promotion by asking them to describe the future they wish for their grandchildren and inviting them to watch a VDO depicting role models they can relate to. These role models hold positive attitudes toward child development promotion and appropriately encourage children's development according to developmental milestones, allowing them to grow and develop appropriately. The outcome achieved by role models in the VDO presentation was consistent with the grandparents' desired future for their grandchildren, that is, experiencing the appropriate growth and development for their age. Therefore, the VDO presentation successfully

Table 3: Grandparents' scores in child development promotion behaviors between the experimental and control groups

Behaviors	Mean (SD)				Statistics	df	*p*
	Experimental Group (*n*=37)		Control Group (*n*=37)				
Before experiment	47.14 (9.04)		44.35 (8.10)				
	Median=51	Q.D=6.50	Median=45	Q.D=5.50	-1.70**		0.089
After experiment	58.49 (3.81)		47.73 (7.31)		-7.94*	54	<0.001

Q.D.=Quartile Deviation, *independent *t*-test, **Mann-Whitney *U* test. Table 3 shows the scores of grandparents' behaviors to promote child development before the experiment between the experimental and control groups showed no difference (z=−1.70, p=0.089). Meanwhile, the mean scores (SD) of grandparents' behaviors to promote child development after the experiment in the experimental group 58.49 (3.81) were higher than those of the control group 47.73 (7.31), with statistical significance (t_{54}=-7.94, p<0.001)

Table 4: Experimental Group's Pretest and Post-test Scores in Child Development Promotion Behaviors

Behaviors	Experimental Group (*n*=37)		*z*	*p*
	Median	Q.D.		
Before receiving the program	51.00	6.50	−5.12	<0.001*
After receiving the program	59.00	2.00		

Q.D.=Quartile Deviation, *Wilcoxon Signed-Rank. The Table 4 show the scores of grandparents' behaviors to promote child development in the experimental group after receiving the program were higher than before receiving the program, with statistical significance (z=−5.12, p<0.001)

encouraged grandparents to foster the appropriate attitudes toward child development promotion. The findings were also in line with Tohyusoh, Muksing (2020),[16] which used mothers who were experienced in the proper way of promoting child development as role models to motivate participants. After undergoing the program, the mothers of the experimental group had significantly higher mean scores in child development promotion behaviors than before they participated in the program and higher than the control group. According to the study by Soiphet *et al*.[22] (2024), on child development promotion programs for caregivers in urban areas, it was found that caregivers' behaviors in promoting child development improved after participating in the program. If this program is to be implemented, it should be adapted to fit the specific context of each area, as different regions have varying geographical, religious, and cultural beliefs. In summary, this program has successfully encouraged grandparents in rural areas to adopt behaviors that promote child development. However, this study was conducted among grandparents in rural communities, where they are typically the primary caregivers. This may differ from urban settings, where nuclear families are more common, and grandparents may not play a primary caregiving role. Therefore, the generalizability of the findings to urban populations is limited.

Conclusion

As a result, grandparents of the experimental group who received the program exhibited a higher level of behaviors to promote child development than grandparents of the control group who did not receive the program. Moreover, the availability of appropriate activities and learning materials in the program allowed grandparents to cultivate more appropriate behaviors to promote child development after receiving the program, in comparison to before receiving the program. Nurses, professionals involved in child development promotion, and teachers at child development centers can utilize the activities provided in the program to help grandparents of children aged 2–4 years living in rural areas develop the appropriate behaviors to promote child development. The program should educate and train grandparents to organize child development activities at home, collaborate on tailored activities based on their physical abilities, and serve as role models to sustain these efforts. Future studies should investigate the sustainability of grandparents' behaviors in promoting child development after program completion to inform reminder strategies and maintain behavioral efficiency.

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Conflicts of interest

Nothing to declare.

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