

Family and Community Capability Developing Model Efficacy in Promoting Early Childhood Development of Thailand

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Background: Childhood developmental delay problem is still a global crucial public health problem. Thailand has a high ratio of childhood developmental delay problem, even with the commitment and actions taken to date. Hence, family and community must participate in the childhood developmental intervention program developing model.

Materials and Methods: The present study was done to develop a family and community capability model for childhood developmental promotion. Forty-four children of primary age group, three to five years old, and 40 family caregivers/parents in Ban Tab-Moe Child Development Center (BTMDCDC) were tested by a trained person for knowledge related to child developmental delay. The developmental Surveillance and Promotion Manual (DSPM) was also applied. The intervention for the present research included four platforms as 1) training for developing capability of family and community personnel for childhood developmental intervention, 2) conference/seminar set for reflection about the lesson learned and advocated campaign, 3) expanded DSPM model applied to close friends of the mother (Mea Siow), 4) follow up by home visits. All collected data were statistically analyzed by using McNemar's test and paired sample t-test.

Results: Most primary child caregivers were parents, for 40%, mostly were female, at 92.5%, and over 55 years old for 30%. After implementing the model, they gained knowledge that enabled better care giving behavior changing the childhood developmental intervention with statistically significant difference ($p < 0.001$). The model was able to reduce the number of problem child development condition from eleven cases to one case ($p < 0.001$), with efficacy of family and community capability developed toward child developmental promotion ($p < 0.001$).

Conclusion: Childhood developmental promotion with family and community capability developing model could enhance positively the child development.

Keywords: Childhood developmental disorders (CDD); Family and community capability developing model; Primary child caregivers; Developmental Surveillance and Promotion Manual (DSPM)

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A crucial age for toddlers starts from infants to 5 years of age. During this time, they develop the physical, mental, moral, and socio-cognitive domains. Their brain develops to 80% of the adult's. This age group pertains to the fundamentals taken to improve the quality of life for growing up and developing. Therefore, the guardians of the child have a crucial responsibility in the child development⁽¹⁾.

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The World Health Organization statistical record reported that there is still 15% to 20% childhood global developmental delay (CGDD)⁽²⁾.

In 2008-2009, the fourth physical examination version of the Thai national primary childhood developmental delay survey revealed that there are 20.1% cases of CGDD⁽³⁾. By 2014, the number had increased to 27.5% of suspected cases and 58% of them had only one stage of childhood developmental disorder (CDD), and 43.4% of suspected CDD were detected in zone 10th regional health center, which included the five provinces of Ubonratchathani, Srisaket, Yasothon, Amnatcharoen, and Mukdahan⁽⁴⁾.

The three categories of factors affecting child development interventions are 1) genetic effect, 2) womb environmental factors, and 3) infant living environment⁽¹⁾. The two most significant factors identified in the theory of all factors are genetic and environmental factors⁽⁵⁾, which include children's

health, nutrition, illness, and raising. These also include the involvement of the health care system in family and community conditions.

Food and nutrition factors are especially important for the long-term well-being of infants in the early infantile stage. However, family plays a crucial role as an environment leads to child learning and becomes a better role model in an appropriated condition that affects child growing up to be a quality adult⁽⁶⁾. Child cultivate care is a significant research factor for the CDD problem, showing lack of caretaking and stimulated development⁽⁷⁾. As a result, current family caretaking is on the decline. Mothers who mostly should be caregivers, have children that are attending the child daycare development center because of the employment of parents. Furthermore, 53.3% of children aged 3 to 5 years received care from daycare centers and schools⁽⁸⁾, while mother or caregivers taking action with a child with reading may give a 6-point positive for fine motor⁽⁹⁾.

The Health Division of Thailand has launched a strategic problem-solving initiative for three issues, which can help the suspected CDD group improvement, 1) collaborative child developmental promotion between all levels of the public health services sector and all child care centers in all area sectors, 2) promotion to all family and child care centers taking care with an emphasis on “hold-eat-play-tell, reduced watching TV and game playing” with relationship establishment between children and caregivers to enhance faster child development, and 3) increasing child development accessibility⁽¹⁰⁾.

The current study aimed to establish the family and community capability to develop model and assess the effectiveness of the family and community capability developing model on caregivers’ knowledge and behavioral aspects of promoting early childhood development, as well as the developmental levels of young children.

Materials and Methods

Study design and population

The present action research (AR) comprised of two groups as following:

1. Caregiver group: defined as father/mother or child responsible person, childcare teachers, Nonnamtang Subdistrict Administrative Organization responsible staff, responsible staff for child developmental promotion of Nonnamtang medical center, and Kamnoi Sub-district Health Promoting Hospital, Amnatcharoen related staff.

2. Primary childhood: defined as all 208 children

aged between 3 and 5 years at five child development centers (CDC) located in the responsibility area of Nonnamtang Subdistrict Administrative Organization.

Selection of participants

The required number of participants was obtained using the formula for calculating sample size in a single-group experimental design with directional hypotheses, measuring before and after intervention with a co-efficient value of 97.5% and a power of test of 90%. Then, referencing data from zone 10th regional health center⁽⁴⁾, which had the highest proportion of children with suspected developmental delays at 43.4%, and following the development of family and community capacities to promote early childhood development, which reduced to 20% according to the Ministry of Public Health’s target, the sample size was calculated to be 28.03 individuals. Due to the long-term follow-up period of the present study, a dropout rate of 20% was considered, resulting in a sample group size of 34 individuals. Therefore, Ban Tab-Moe Child Development Center (BTMCDC), which had 44 children with suspected developmental delays, was selected. Subsequently, one caregiver per household was included in the present study.

Research tools

The questionnaires were validated by three experts while a pilot study was trialed under reliability of 0.76, which collaborated with DSPM and consisted of:

- Part 1. Personal demographic characteristic questionnaire of 12 items with multiple choices and filled-up.

- Part 2. Knowledge examination checking for child developmental promotion (hold-eat-play-tell) for 20 items with right or wrong checking (KR-20= 0.64).

- Part 3. Rating 5 scale to evaluate child development promotion (hold-eat-play-tell) for 20 items (coefficient Cronbach alpha 0.64).

- Part 4. Child developmental promotion testing that comprised of 10 items of development test, with full score of 100 and 10 point each item following DSPM⁽¹¹⁾ (with sensitivity 96.4 and specificity 64.7).

Data collection

All data collected by standardized researcher and trained staff for tools utilization while subjects were informed about the research objective and gave

consent to join this research.

The data was conducted between December 2019 and September 2020, thus, ten months. Phase one involved studying changes in the potential families and communities in promoting early childhood development. This was done between December 2019 and March 2020, thus four months. Phase two involved studying changes in early childhood development and was done between April 2020 and September 2020, thus six months.

Model development

1. Situational study and analysis of the cause of the problem by using the developed research tools with DSPM and workshop meeting with 12 participants that included five suspected CDD caregivers/parents, four childcare teachers, one of Nonnamtang Subdistrict Administrative Organization related staff, one of Nonnamtang medical center staff, and one of Kamnoi Sub-district Health Promoting Hospital related staff.

2. Launch the model designed to develop capability of the family and the community with collaboration of the subdistrict administrative organization participation in four stages as:

Stage 1. Family and community capability development with following below:

1) Training caregivers/parents for child development promotion by arranging knowledge base learning with original successes with a model exchange experienced person for two days with collaboration of Nonnamtang Subdistrict Administrative Organization.

2) Assessing knowledge and skill for child development promotion with activity for (hold-eat-play-tell) for 80% passing of knowledge and passed all criterion of skill checklist for trainees.

Stage 2. Setting stage of conference/seminar: to exchange reflection, lesson learned, and advocated stimulation enhancing as following below:

1) Public relation posting for child development promotion by using family image/picture and model child in community.

2) Setting community stage with motto Khon Nonnamtang Rak Dekpratomb Wai Sai Jai Phattanakarn (Nonnamtang people love primary childhood focusing on development) for setting community regulation to join child development promotion.

3) Book travel activity by community health volunteer to bring success stories to home, rotating touring parents in community.

Stage 3. Expanding Mea Siow role model: determine the criterion to select the mother model (Mea Siow) that follows the caring child developmental promotion with activities as hold-eat-play-tell. Provide certificates and awards to mother's child for developmental promotion while stimulating the model family to be matched with CDD family to provide advice.

Stage 4. Home follow-up visits: home visits by the CDD group according to the Developmental Assessment for Intervention (DAI) manual with collaboration of the public health personnel and Nonnamtang Subdistrict Administrative Organization to analyze and plan the promotion of the family and community development success, done one time per case and follow up for efficacy after changes.

3. Model developing evaluation: by researcher developed tools and DSPM.

Statistical analysis

All questionnaires with coding manual were created. The quantitative data were recorded by two validators. The input data were compared for error prior to analysis with descriptive statistics and inferential statistic of McNemar's test to compare child development result and comparing the efficacy for child development promotion before and after the model development using the paired sample t-test.

Ethical approval

The present research proposal was approved by the Human Ethical Committee, Mahidol University (ref. No. MU-CIRB 2020/06-291).

Results

Demographical characteristic

The primary child caregivers were their parents in 40%, over 55 years old for 30%, female for 92.5%, married for 87.5%, and with three to five family members in 57.5%. The caregiver finished elementary school in 57.5%, were agriculturalists in 62.5%, had monthly income between 1,001 and 6,000 Baht for 60% but 67.5% experienced income uncertainty. Those caregivers had non-understanding diseases in 75%, had received caretaking of child developmental promotion advice from relatives or friends who had knowledge and experience for caretaking of child developmental promotion in 67.5%, and had never had CDD children's problems in 97.5%, as shown in Table 1.

Table 1. Demographical characteristic of the primary child caregivers at Ban Tab-Moe Child Development Center, Amnat Charoen Province (n=40)

Factors	n (%)	Factors	n (%)
Age (years)		Sufficiency of income	
<35	10 (25.0)	Enough income	11 (27.5)
35 to 44	11 (27.5)	In debt	2 (5.0)
45 to 54	7 (17.5)	Uncertain	27 (67.5)
≥55	12 (30.0)	Congenital disease	
Mean (standard deviation)	44.10 (11.57)	Diabetes	1 (2.5)
Min-max	25 to 63	Chronic kidney failure	1 (2.5)
Sex		Unknown	8 (20.0)
Female	37 (92.5)	None	30 (75.0)
Male	3 (7.5)	Number of family members	
Marital status		<3	3 (7.5)
Married	35 (87.5)	3 to 5	23 (57.5)
Widowed/divorced/separated	5 (12.5)	6 to 8	11 (27.5)
Education		≥9	3 (7.5)
Elementary	23 (57.5)	Mean (standard deviation)	4.93 (1.91)
Junior high school	6 (15.0)	Min-max	2 to 9
Senior high school	5 (12.5)	Relationship	
Diploma	6 (15.0)	Parents	16 (40.0)
Occupation		Grandparents	11 (27.5)
Agriculture	25 (62.5)	Relatives	13 (32.5)
General employee	9 (22.5)	Channels for receiving information	
Self-employed	3 (7.5)	Training and advice from public health officials	24 (60.0)
Unemployed	3 (7.5)	Television or radio programs	4 (10.0)
Income per month (Baht)		Advice from relatives or friends with knowledge and experience	27 (67.5)
≤1,000	8 (20.0)	Reading books, textbooks, manuals, or magazines	8 (20.0)
1,001 to 6,000	24 (60.0)	Having relatives or children with developmental delays	
6,001 to 11,000	7 (17.5)	None	39 (97.5)
≥11,001	1 (2.5)	Not known/not sure	1 (2.5)
Median [interquartile range]	4,000 [3,000]		
Min-max	600 to 17,000		

Childhood developmental promotion knowledge

The results of the 20 items questionnaire before the intervention given to the caregivers/parents showed that they answered right three items for all cases but only less than half of all cases provided a wrong answer for three items. Then after the intervention every caregiver increased their right answer to six items, and none gave the wrong answer.

Primary childhood developmental promotion behavior

Before the intervention, the 20 items of questionnaire showed that pertain behavior was at the high or highest level mostly in 14 items with highest level in eight items. After the intervention the high or highest level increased to 16 items and

highest behavior to 11 items.

The model for developing family and community capability

The model consisted of two parts, 1) characteristics of caregivers/parents, which comprised of two parts, prepared caregivers/parents, and unprepared caregivers/parents, which were those ready and responsible for caring for children or those who lack readiness or had limitations in caring for children, such as lack of knowledge in childhood development, nurturing skills to promote childhood development, and fostering love bonds. 2) Community-level support, such as promoting early childhood development centers use and instilling the values of “Community’s Beloved Children” in Figure 1.

Characteristics of caregivers/parents		
	A prepared caregivers/parents	An unprepared caregivers/parents
Enhancing knowledge in childhood development	<ol style="list-style-type: none"> Promote caregiving and development for children under 2 years old. Provide training to enhance knowledge in online media literacy to promote children's development. 	<ol style="list-style-type: none"> Promote caregiving and development for children under 2 years old in accordance with community practices. Provide training to enhance knowledge in development and promote development in line with community practices. Foster understanding of the risks of parenting with smartphones.
Nurturing skills to promote childhood development	Modern caregiving skills include: <ol style="list-style-type: none"> Selecting and reading stories for children. Choosing toys to promote childhood development. Engaging in age-appropriate play and activities. Steering interests. Addressing inappropriate behavior (aggressiveness, short attention span). 	Create an environment conducive to developmental promotion by: <ol style="list-style-type: none"> Community Development Volunteers (CDVs) serving as developmental promoters (volunteer storytellers at home). Organizing play areas in the community, providing age-appropriate developmental toys, with Youth Volunteers (teacher assistants) overseeing.
Fostering love bonds	Innovative communication with your child through online platforms (Line application)	A caregiver coach as a compassionate parent.
Community-level support measures		
Elevating early childhood development centers	Elevate to an Early Childhood Development and Family Center: <ul style="list-style-type: none"> - Parent orientation and guidance on collaborative developmental approaches. - Parent-child home activities. - Joint developmental assessment by public health officials, childcare providers, and parents. - Formulation of a Care Plan and continuous follow-up on outcomes. 	
Instilling the values of "Community's Beloved Children"	Establish a Community Early Childhood Development Promotion Committee: <ul style="list-style-type: none"> - Coordinate with local government, community networks, and parent representatives to form a committee for promoting early childhood development in the community. - Collaboratively analyze issues and develop community measures to promote child development. - Create a movement emphasizing "Every child in the community is everyone's child". - Implement a continuous monitoring system. 	

Figure 1. Family and community capability developing model.

Efficacy of family and community capability for the developmental promotion for childhood development

1. Effects on knowledge and caregiving behavior: there was a statistically significant difference in the increase ($p < 0.001$) of knowledge and behavior in primary childhood developmental promotion of caregivers/parents toward family and community capability developmental promotion with local administration organization participation, as shown in Table 2.

2. Effect of primary childhood development: the intervention for family and community capability

developmental promotion with local administration organization participatory to primary childhood developmental promotion found that 27.5% of suspected CDD at higher level in Ban Tab-Moe before the intervention was reduced to only one case after the intervention, thus, a statistically significant decrease ($p < 0.001$) (Table 3).

Discussion

Knowledge of primary childhood developmental promotion derived from 20 answered questionnaire items by caregivers/parents had three correct answers for everyone, but three incorrect answers for less

Table 2. Efficacy of family and community capability developmental promotion for Childhood development with local administration organization participation capacity toward primary childhood caregivers/parents

Variables of caregivers/parents	Mean (SD) of score		t	p-value
	Before	After		
Knowledge of primary childhood developmental promotion	14.82 (1.2)	17.43 (1.6)	7.75	<0.001
Behavior for primary childhood developmental promotion	72.98 (7.4)	80.40 (6.1)	10.81	<0.001

SD=standard deviation

Table 3. Effect of family and community capability developmental promotion with local administration organization participatory toward primary childhood developmental promotion

Development level	Number of children; n (%)		χ^2	p-value
	Before	After		
Normal child development	29 (72.5)	39 (97.5)	8.100	<0.001
Suspected CDD	11 (27.5)	1 (2.5)		

CDD=childhood developmental disorder

than half of them. This is different from the previous study. In that study, childcare teachers, family, and community had less knowledge especially about development and learning teaching as only 10.76% knew, but relationship with caregivers/parents found highest knowledge with 94.17%⁽¹²⁾. This corresponds to a study that child get opportunity to learn and build relationship with other by starting with close relative and far-distance defined as social-development is promoted. Additionally, all caregivers/parents understood to praise when child does the good thing and gave awards. Children perceived value of goodness such as by embracing/praising as warmth lovely awards given to them, this affected actual child development.

Behavior for primary childhood developmental promotion

The baseline of the 20 items derived before intervention showed mostly 14 items for actual behavior with high- or highest-level behavior, of which, eight items showed highest level behavior. The present study reflected that caregivers/parents played a role in the child life-skills promotion in general figure high level (mean 4.07)⁽¹³⁾.

The most frequent practicing behavior in highest activities was on schedule vaccination by caretakers at 77.5%, admiration when child did the good thing and right practiced in the second, or sometime awarded for valued by goodness practicing at 65.0% which differed from some research that caretakers showed behavior in environment build and promote enable of learning in good relationship with children 91.5%⁽¹²⁾. This differed from each location such as Nonthaburi Kindergarten school shown highest

practiced for children doing activity to the other (mean 4.48), children get promotion for finding and self-create cognitive learning (mean 4.31), and open chance to children to do any thing (mean 3.42)⁽¹³⁾, respectively.

Then the least frequent activity done was teaching development promotion and learning in experiencing arrangement or more complex media utilization. Children were open to revise or repeat to achieve all activities above mentioned but was only done at 29.60%⁽¹²⁾. Less behavior was attempted to prohibit the use of mobile telephone or tablet, and children toy buying or toy making by using home material for enhance child development.

Efficacy of family and community capability developmental promotion for childhood development

After the intervention program, the family and community capabilities about developmental promotion for childhood development with the hold-eat-play-tell activity found that both knowledge in primary childhood developmental promotion and behavior of care-takers were statistical significantly increased ($p < 0.001$), affecting the CDD reduction from eleven to one case, with a statistically significant reduction ($p < 0.001$). This is in line with the study on Model development of child developmental promotion from one to three years old by participation of family and community case study “Ban-Yang Community Muang District, Burirum Province”. It found that high level of knowledge for child developmental promotion relates to practical good behavior for children one to three years at 92.5%⁽¹⁴⁾. It also demonstrated that the role of caretakers affected childhood developmental promotion and agreed

with various research that caretaker's competency promoted child developmental after they received the intervened program that showed child developmental promotion. Therefore, the role of the competent caretakers statistically significantly increased⁽¹⁵⁾, from CDD to actual child development⁽¹⁶⁾.

In-term of development, it showed that clear improvement in general figure due to caregivers/parents' continuous activity for embracing good nutrition, age-appropriate activity, playing, and tale/story telling from various source as tale book, travel book, elderly folk tale, supported and motivated by the local administration organization. Research have shown that playing Thai wisdoms and tale book affect and increase the child development with statistically significant difference⁽¹⁷⁾. Additionally, other research reported specific child development such as fine motor (FM), expressive language (EL), and gross motor (GM) that shows higher average score than control group with statistically significant difference at 0.05 and 0.001, respectively⁽¹⁸⁾. Tale/story reading continuously for 12 weeks makes child increase high score for EL, in both fluency and variety of vocabulary and words⁽¹⁹⁾.

The present research result illustrated that knowledge and appropriated behavior of caregivers/parents toward the child developmental promotion increased the child development in the same direction as caretakers and taking care behavior affected the child development⁽²⁰⁾. The public should be aware of the role of caregivers/parents in children health promotion, development assessing, and continuous self-solving problems for child development. Furthermore, the community should create a health policy and enhance collaboration between private and government sectors⁽²¹⁾.

Recommendation

Recommendation for development

1. Because the caregivers/parents have the most important role in the child developmental promotion with hold-eat-play-tell activity, based on the applicable efficiency and local wisdoms used, the developmental program for caregivers/parents of child developmental promotion should be more efficiency promoted.

2. Local Administrative Organization should also take an active role to support training activity for caretaker competency improvement and community advocacy campaigns. The role of local administration organization should emphasize participation for continuous child developmental promotion.

Recommendation for future study

1. Need to study and recruit to review local tale/story books, folk playing to apply for child developmental promotion use.

2. Should enhance higher efficiency of child developmental promotion for participatory role of caretakers at home, teacher at child development center, local administration organization, Citizen, and private sectors.

What is already known on this topic?

Caregiving is a crucial factor in promoting child development, particularly when it comes from caregivers other than parents, which is becoming more prevalent nowadays. Finding suitable caregiving models both at the family and community levels is a challenge that needs to be addressed.

What does this study add?

This study has proposed a model to enhance the capacity for early childhood caregiving among caregivers, aiming to elevate it, both at the family and community levels. It involves enhancing knowledge and caregiving behavior among caregivers, further promoting the well-rounded development of children.

Conflicts of interest

The authors declare no conflict of interest.

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