

# Effectiveness of using DSPM Family-mediated Preschool Parenting Program (FMPP) in Single-district Hospital, Northern part of Thailand

Jirachayaporn Inpracha<sup>1</sup>, Wiwat Chiewsilp, MD<sup>2</sup>, Duangjai Chaisrisawas, MNS<sup>3</sup>, Paween Tangchitphisut, MD<sup>2</sup>



Jirachayaporn Inpracha  
6<sup>th</sup> year Medical Student

## Abstract

**OBJECTIVES:** To evaluate the effectiveness of Developmental Surveillance and Promotion Manual - Family-mediated Preschool Parenting Program (DSPM-FMPP) on Emotional Quotient (EQ) of early childhood subjects.

**MATERIALS AND METHODS:** This study is an experimental study using pre-post comparison. Data were collected from early childhood subjects between 3-6 years old at child development centers and schools in Phayamengrai District, Chiangrai Province. The samples consist of 30 children who participated in DSPM-FMPP from 1 February to 31 May 2020. Relevant data were gathered from medical records.

**RESULT:** The results reveal that after participating in the program, the mean EQ scores of the subjects were significantly higher than the mean EQ scores before participating in the program ( $42.40 \pm 3.18$  VS  $50.20 \pm 3.44$ ,  $p < 0.001$ ). The EQ scores were found to have increased by approximately 7.83 points ( $p < 0.001$ ). The levels of EQ achieved were normal or better for all 30 samples after having participated in the program ( $p < 0.001$ ).

**CONCLUSION:** The DSPM-FMPP might increase the EQ of children in early childhood. Parents should promote development and reinforce the positive discipline of early childhood regularly and continuously.

**Keywords:** early childhood, development, DSPM, family, emotional quotient

Promoting early childhood development is very important as early childhood is the most important period in a child's life. The first five years of life or pre-school age, often referred to as early childhood, is a period in which children rapidly develop their brains, language, and social, emotional and movement skills.<sup>1</sup> It is the period of building the foundation for growth and learning through life. Thus, investment in early childhood is very important to all families and nations. It has also been shown by Dr. Heckman JJ,<sup>2</sup> Nobel Laureate in Economics and an expert in the economics in human development, that investing in early childhood development is a cost-effective strategy for promoting economic growth and the return on investment can be 7 - 10% per year.

The Situation of Early Childhood Development in 2019 commissioned by the Department of Health focused on surveillance, screening, promotion and stimulating of early childhood development. In 2019,<sup>1</sup> the performance of health regions 1-12 showed that 25% of children were suspected to have delayed development. The obstacle of performance is a lack of awareness of early childhood development by the parents. In 2020, the Department of Health emphasizes that parents, teachers, guardians and the wider community play important roles in promoting and assessing child development.

Early childhood development is the responsibility of all parties. They have to promote development by being a good role model and creating a suitable environment for their children.<sup>3,4</sup> According to the early childhood development Act 2019, Section 7, both parents and guardians have a duty to promote the development of their children. According to

<sup>1</sup> Medical student, School of Medicine, Mae Fah Luang university, Chiang Rai, Thailand

<sup>2</sup> Department of Orthopaedics, School of Medicine, Mae Fah Luang university, Chiang Rai, Thailand

<sup>3</sup> Phayamengrai Hospital, Chiang Rai, Thailand

\* Address Correspondence to author:  
Jirachayaporn Inpracha  
Medical student, School of Medicine,  
Mae Fah Luang University,  
Chiang Rai 57100, Thailand.  
email: 5932101005@lamduan.mfu.ac.th

the early childhood development plan 2017-2021, every child has the right to receive care and help to survive, be protected, and to develop their potential and live their life happily.<sup>1</sup>

Phayamengrai District, Chiang Rai Province in Thailand is aware of nurturing and promoting child development accurately and continuously. Developing children's skills requires a good role model and practice through continuous activities.<sup>5</sup> The local hospital has applied the DSPM-FMPP, and guidelines of the Rajanagarindra Child Development Institute, Department of Mental Health, Ministry of Public Health, to practice in Maetum Sub-district, Phayamengrai District, Chiangrai Province in Thailand.

The researchers were interested in studying the effectiveness of DSPM-FMPP in Maetum Sub-district, Phayamengrai District, Chiangrai Province. The researchers expect that the results of this research will demonstrate the increasing of EQ of early childhood and increasing awareness of parents' role in promoting child development.

## Materials and Methods

This study is a routine to research (R2R) study using experimental design with pre-post comparison. The participants are children who are well-developed without syndromic-appearance in early childhood, aged 3-6 years old, attending child development centers and schools in Maetum Sub-district, Phayamengrai District, Chiangrai Province, Thailand who participated in DSPM-FMPP during February 1 to May 31, 2020. The data was retrospectively reviewed and collected from medical records of Phayamengrai Hospital in June, 2020. The protocol of this study was approved by Mae Fah Luang Ethics Committee on Human Research (EC-20073-21).

This research follows and compares the EQ scores (before and after receiving intervention) of children who completely participated in the program. Therefore, the researcher asks for permission from the director of the hospital to access this data and analysis.

## Population

Children in early childhood, between 3-6 years old, at child development centers and schools in Maetum Sub-district, Phayamengrai District, Chiangrai Province, Thailand who completed their participation in DSPM FMPP from February 1 to May 31, 2020.

## The DSPM-FMPP<sup>6</sup>

This program is developed for parents to guide and promote child development through activities such as hugging, singing, playing, dancing, drawing, creating concentration, and creating positive discipline in order to have good physical, mental and emotional development. The results are adults growing up to be individuals who can live in society with pleasure. The objectives of the program were:

1. to promote skills for parents in nurturing their children and to create positive discipline during early childhood
2. to learn processes from activities among parents and guardians of children in early childhood
3. to provide parents with the knowledge and skills to promote positive discipline of children in early childhood

This program is suitable for early childhood between 3-6 years old and their parents, guardians, or caregivers.

There are four activities. The activities were arranged to be run as one activity per month. It took four months to participate in all activities. The teachers in child development centers and the nurses from the local hospital encouraged the parents and children to participate in all activities and also reassured them throughout the four months to ensure quality of the program is maintained.

The first month, "Developing relationships", and the second month, "Reinforcing positive discipline", include:

1. hugging
2. story telling
3. drawing
4. playing and dancing
5. meditation

The main objective of the first month helps parents and children to know how to engage in the program and to develop the relationship between parents, children, and teachers.

For the second month, positive discipline is reinforced using well-known how-to activities following the role of parents and children when taking part in activities.

The third month, "Creating intelligence No. 1", includes:

1. hugging
2. admiration creates pride
3. smart kids
4. playing or dancing
5. meditation

The final month, "Creating intelligence No. 2", includes:

1. hugging, admiration creates pride
2. hunger, tired, hot, cold and sick activities
3. one picture, ten pieces' activities
4. animal, clothing, food and fruit activities
5. playing or dancing
6. meditation

EQ tests for children aged 3-5 years,<sup>6</sup> were assessed by teachers at child development centers before participation in the program and at the end of the program. The 15 item EQ assessment consisted of 5 good feature items, 5 clever features items, 5 happy features items. Results of the EQ tests were recorded in the medical records of Phayamengrai Hospital.

### Statistical analysis

The data were verified for accuracy and recorded in information format via Microsoft excel program. The data were analyzed using STATA version 16.1 (StataCorp LLC, Texas, USA.). Categorical variables, including gender, order of children and level of EQ, were presented as frequency and percentage. Continuous variables, such as age and EQ score, were presented with mean and standard deviation (SD) or median and min-max, depending on the distribution of the data. Inferential statistics for dependent samples were selected for comparison of EQ level and the score between before and after participating in the program. Efficacy of the program was analyzed using generalized linear regression.

### Results

Forty-five children were identified in this program. The number of children who took part fully in this program was 30 (response rate = 66.67%). Most of them were female. Mean age was  $4.20 \pm 0.41$  years old. Most of the sample were first order, as shown in Table 1.

#### The effectiveness of program to EQ score

The DSPM-FMPP significantly increased the scores of EQ approximately 7.83 points (95% CI = 6.99-8.68,  $p < 0.001$ ).

The features which increased the most were clever features. The scores of clever features significantly increased by approximately 3.07 points (95% CI = 2.50-3.63,  $p < 0.001$ ), followed by good features. The scores of good features significantly increased by approximately 2.90 points (95% CI = 2.41-3.39,  $p < 0.001$ ). The scores of happy features significantly increased by approximately 1.87 points (95% CI = 1.44-2.29,  $p < 0.001$ ) see Table 2.

#### The effectiveness of program to EQ level

After participating in the program, all 30 of the participants achieved a normal or improved EQ level. The EQ levels significantly increased from before participating in the program ( $p < 0.001$ ) as shown in Table 3.

**Table 1:** Participants' characteristics

	n (%)
Gender	
Male	11 (36.67)
Female	19 (63.33)
Age (year) (Mean $\pm$ SD)	$4.20 \pm 0.41$
Order	
First	16 (53.33)
Second	10 (33.33)
Third	4 (13.33)

**Table 2:** The effectiveness of DSMP-FMPP to EQ score

EQ Score	Before	After	$p^*$	$\Delta^{**}$	95% CI	$p$
Good feature	$13.73 \pm 1.41$	$16.60 \pm 1.40$	$< 0.001$	+ 2.90	2.41-3.39	$< 0.001$
Clever feature	$14.20 \pm 1.63$	$17.27 \pm 1.66$	$< 0.001$	+ 3.07	2.50-3.63	$< 0.001$
Happy feature	$14.47 \pm 1.41$	$16.33 \pm 1.45$	$< 0.001$	+ 1.87	1.44-2.29	$< 0.001$
Total score***	$42.40 \pm 3.18$	$50.20 \pm 3.44$	$< 0.001$	+ 7.83	6.99-8.68	$< 0.001$

\*Paired t-test

\*\* Cluster-robust standard error for Linear regression, used before score as reference.

\*\*\*Total score= Good feature+ Clever feature+ Happy feature

**Table 3:** Comparison of percentages of the levels of EQ of early childhood

	Under normal level n (%)	Normal level n (%)	Above normal level n (%)	$p$
Good feature				0.030
Before	1 (3.33)	29 (96.67)	0	
After	0	24 (80.00)	6 (20.00)	
Clever feature				0.011
Before	3 (10.00)	27 (90.00)	0	
After	0	24 (80.00)	6 (20.00)	
Happy feature				0.082
Before	3 (10.00)	27 (90.00)	0	
After	0	28 (93.33)	2 (6.67)	
Total				0.018
Before	1 (3.33)	29 (96.67)	0	
After	0	23 (76.67)	7 (23.33)	

McNemar's test

## Discussion

This research is an experimental study using pre-post comparison aiming to evaluate the effectiveness of DSPM-FMPP on EQ of children in early childhood. The results reveal that after participating in the program, the mean EQ scores of the subjects were significantly higher than the mean EQ scores before participating in the program. The mean of EQ scores increased in all features including good, clever, and happy features. After participating in the program, all samples achieved normal or better level of EQ.

The DSPM-FMPP can increase the EQ of children in early childhood. This program is created by Rajanagarindra Institute of Child Development.<sup>1</sup> It is different from other programs because it does not only provide training for teachers and parents but it also trains the parents to play with their children during their participation in the program. Trained teachers give advice to parents so the parents can practice with their children at home more effectively. According to a research by Yawinchan C, et al.<sup>7</sup> which studied the effectiveness of development EQ and positive reinforcement, to improve discipline in early childhood programs based on family participation in Pua district, Nan province, it was found that the knowledge of promoting positive discipline in parents and grandparents is higher after participating in the program. In addition, Tantithara C.<sup>8</sup> studied the effects of using a positive discipline program on executive function in young children. The researcher found that teaching positive discipline techniques allowed children to adjust and control their emotions better.

The activities in DSPM-FMPP are improving children's EQ in 6 aspects.

- The first aspect is known as a capacity for delay of gratification that involves many activities such as storytelling, drawing, smart kids, one picture/ten pieces' activities, and animal/clothing/food/fruit activities.
- The second aspect, "empathic understanding", is included in the admiration creates pride activity.
- The third aspect is a sense of sharing. This aspect is included in hugging, storytelling, and drawing activities.
- The fourth aspect is called forgiveness and is included in the story telling activity.
- The fifth aspect is personal and emotional control and is included in meditation activity.
- The sixth and last aspect is problem-solving skills. Not only are the activities of this aspect included in the first aspect but also include hunger, tired, hot, cold, and sick activities.<sup>6</sup>

Children with good EQ can understand themselves and others. They are able to manage and express their emotions properly, are optimistic, adaptable, and are happy to live with others.<sup>9</sup> These characteristics are very important and useful to child development. A child's EQ can be reinforced during their childhood. Improving EQ consists of

1. Psychosocial development skills. Letting the children learn to control their emotions by themselves.
2. Discipline training skills. Parents set up rules and a consistent daily routine. Let the children know what they should do, what they should not do. If the children do well, parents should show appreciation such as smiling or hugging.
3. Problem solving skills. Parents should allow the children space and time to consider and solve problems by themselves.
4. Emotional coaching skills.

Parents should observe and perceive the children's emotion and comfort their children when they are in bad mood. Parents play the most important role in improving these skills and help their children to grow properly.<sup>10</sup>

Promoting EQ early in childhood might be not necessary for the well-developed child. However, in our society we see an increasing trend in rising suicides rate, social bullying, cyberbullying, and violence. One of the causes is improper EQ. Therefore, promoting EQ in early childhood may have multiple benefits, improving baseline EQ, and as a result reducing social problems of the future.<sup>11</sup>

Our small sample size and single institute study were major limitations of this study. This study was pre- and post-single program evaluation study that had no comparison with any control group or another intervention. This program has a questionnaire to evaluate parent's skills of increasing children's discipline and development but this study has not evaluated this. Furthermore, the caregivers who engaged in this program might not be the same person throughout, so the evaluation may contain errors. Randomized controlled trials using multicenter or larger sample sizes should be considered as a study design to compare DSPM-FMPP and other interventions in further study. The efficacy of this program might change due to variation in children-, parents- or teacher characteristics, compliance, local culture, and ethics.<sup>12</sup>

## Conclusion

The DSPM-FMPP tends to increase the EQ scores of children in early childhood in all its features. EQ levels of all samples were normal or improved after participating in the program. When parents participate in promoting development and positive discipline regularly and continuously, the EQ, including the good, clever, and happy features of early childhood also increases.

## Conflict of Interest

The authors declare that they have no conflict of interest.

## Acknowledgements

This study was grant supported by Mae Fah Luang University. The authors would like to thank the staff of

Phayamengrai Hospital, including, Amphawan Srikrutranun, MD. for facilitating the data collection. The authors would also like to express their gratitude to Dr. Roger Callaghan, MD. and Dr. Poom Chompoosri, MD. (Department of Psychiatry,

School of Medicine, Mae Fah Luang University) for English language advice as well as Dr. Kanogorn Jangjaroonroj, MD. (Department of Pediatrics, Bangkok Metropolitan Administration General Hospital) for child development and scientific advice.

## References

1. National Institute of Child Health, Department of Health, Ministry of Public Health. The situation of early childhood development in 2019. [Internet]. 2019. (Accessed September 9, 2019, at [http://nich.anamai.moph.go.th/ewt\\_dl\\_link.php?nid=349](http://nich.anamai.moph.go.th/ewt_dl_link.php?nid=349)).
2. Hackman JJ, Seong HM, Pinto R, et al. The rate of return to the HighScope Perry Preschool Program. *J Public Econ* 2010;94(1-2):114-28.
3. Loft L, Waldfogel J. Socioeconomic status gradients in young children's well-being at school. *Child Develop* 2021;92(1):e91-e105. doi: 10.1111/cdev.13453
4. MAL-ED Network Investigators. Early childhood cognitive development is affected by interactions among illness, diet, enteropathogens and the home environment. *BMJ Glob Health* 2018;3(4):e000752. doi: 10.1136/bmjgh-2018-000752.
5. Silvera RB, Measelle JR, Armstrong JM, et al. The impact of parents, child care providers, teachers, and peers on early externalizing Trajectories. *J Sch Psychol* 2010;48(6): 555-83. doi: 10.1016/j.jsp.2010.08.003
6. Ministry of Public Health. Department of Mental Health. Rajanagarindra Child Development Institute. DSPM Family-mediated Preschool Parenting Program; 2019.
7. Yawinchan C, Khantamool W, Netthip R. Effectiveness of Development Emotional Quotient and Reinforce Positive to Improve Discipline in early childhood programs base on family participation in Pua district, Nan province. *J Health Sci Scholar* 2019;6(1):70-85. (Accessed September 9, 2019, at <https://he01.tci-thaijo.org/index.php/johss/article/view/194039/137374>)
8. Tantitara C. Effects of using a positive discipline program on executive function in young children. [Thesis] Bangkok: Chulalongkorn university; 2016. (in Thai)
9. Chutabhakdikul N, Thanasetkorn P, Lertawasdatrakul O, et al. Tools Development and Normative Criteria for Assessment of Executive Function in Early Childhood. [Thesis] Bankok: Mahidol University; 2017. (in Thai)
10. Witoonchart C. How to nurture children to have good EQ. [Internet]. 2010. Accessed September 9, 2019, at <https://www.si.mahidol.ac.th/sidoctor/e-pl/articledetail.asp?id=684>).
11. Konkaew P, Seree P, Kiatrungrit K, et al. The effects of parent management training program on knowledge, attitude, and child caring for the children with learning disability. 2020. (in Thai) (Accessed August 30, 2021, at <https://so03.tci-thaijo.org/index.php/RSjournal/article/view/249047/167723>).
12. Melhuish E. Research on early childhood education in the UK. In: Stamm M., Edelmann D. (eds) *Handbuch frühkindliche Bildungsforschung*. Springer VS, Wiesbaden. 2013:211-21. [https://doi.org/10.1007/978-3-531-19066-2\\_15](https://doi.org/10.1007/978-3-531-19066-2_15)