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The Importance of Using Maternal and Child Health Books to Monitor Children's Growth and Development: A Health Education Program

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Abstract Childhood is a continuous process of growth and development. Every parent hopes that their child will grow and develop optimally. To meet these expectations, regular growth and development monitoring are required. In support of this, the Indonesian Ministry of Health provides expectant mothers with the Maternal and Child Health (MCH) book, containing comprehensive guidance on maternal and child health. The present health education program aimed to assess the adequacy of MCH book and its practical application. Health workers (n=50) and mothers (n=50) received guidance on using the MCH book and the importance of taking anthropometric measurements to monitor growth in early childhood. Forty-one mother and toddler pairs participated in the MCH book assessment using a validated and reliable questionnaire. Also, they participated in child health consultations and growth monitoring via anthropometric measurements. Categorical data were expressed as proportions, while factors associated with the completeness of the MCH book were analyzed using the chi-square test. Ten toddlers did not have an MCH book, while 18 (58.1%) had a book with a low level of completion. No statistically significant factors influencing the completeness of MCH books were identified. Within the MCH books, growth and immunization charts were most likely to be completed. During the program, we explained that mothers are encouraged to read the MCH book and can enter measurements themselves so that their children's growth and development are well documented. After the education and assessment sessions, mothers and health workers were aware of which pages of the MCH book should be completed when toddlers are brought to health facilities, whether healthy or symptomatic. This health education program benefited health workers and mothers as it improved their knowledge and ability to use and complete MCH books for monitoring children's growth and development.

1. INTRODUCTION

A principle of the Indonesian Tridharma of Higher Education is health education (Kementerian Pendidikan dan Kebudayaan RI, 2020). A health education program aims to aid a particular community with specific activities without expecting anything in return. The present health education activity aimed to implement evidence-based science and involved collaboration between students and the intended stakeholders (LPPM Universitas Sumatera Utara, 2023).

Children differ from adults in that they undergo a continuous process of growth and development. All children have the right to grow and develop optimally (Soetjiningsih, 2013). Children's growth and development

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can be regularly monitored using Maternal and Child Health (MCH) books (Kementerian Kesehatan RI, 2023a). The Ministry of Health of RI first introduced the MCH books in 1994. The books are designed to record the performance of maternal and child health services, as outlined by the Ministry of Health Decree number 284 in 2004. The MCH book is reviewed every five years and is currently in its third edition. Each revision expands the book's contents to make it more complete, improving its use by maternal and child health services (Kementerian Kesehatan RI, 2023a).

The third edition of the MCH book contains information that can be read and completed by both health workers and parents. The children's section records birth dates, birth history, growth charts for health cards, and dental health records. It contains information on neonatal health services, development checklists, parenting patterns, growth stimulation methods for use at home, immunization schedules, infant feeding and nutritional guidance, vitamin A administration, danger signs in newborns and children, environmental health and safety, child protection, care of children with disabilities, care for sick children, and disaster preparedness (Kementerian Kesehatan RI, 2023a).

Several studies have assessed the knowledge, attitudes, and utilization associated with the MCH book. Studies have indicated that the maternal knowledge of the MCH book is sufficient (59.3%) (Erawati et al., 2020) or good (57.8%) (Luana et al., 2023). However, while attitudes towards the MCH book appear to be good overall (97.8%), some studies have found the book is never (73.3%) (Luana et al., 2023) or infrequently utilized (52.6%) (Lestari et al., 2023). Most prior research on the completeness of MCH books has assessed the maternal health section during pregnancy and the postpartum period (Amalia & Windarti, 2020; Dharmawan, 2019; Zakiah et al., 2021), with evidence of its completeness during the toddler years being scarce. Therefore, this health education program was designed to assess the completeness of MCH books, with a particular focus on the toddler years.

2. METHOD

The Perintis Program of Health Education was designed by the Faculty of Medicine, USU, Indonesia, to encourage lecturers to implement one of the Tridarmas of Higher Education. The program was funded by the faculty (Dean's Decree no 07/UN5.2.1.1/SK/PPM/2023). The three lecturers involved in the program's development work with the Department of Pediatrics and the Department of Nutrition, Faculty of Medicine, USU, in collaboration with the Pematangsiantar City Government. The program delivery method used was direct education provision to health workers and mothers of toddlers.

The first step in establishing the program was contacting the Mayor of Pematangsiantar City Government. The mayor, who is also a pediatrician, welcomed the activity as it aligned with the objectives of the Pematangsiantar City Government, including the alleviation of stunted growth. As they provide growth monitoring charts and nutritional guidance, MCH books aid efforts to reduce stunted growth. The next step was a situation analysis, which revealed that almost all mothers were provided with MCH books but rarely completed.

Subsequently, a letter of permission to carry out the health education program was sent from the Third Deputy Dean, USU, to the Mayor of Pematangsiantar containing the date of the activity, the methods to be used, the topics to be presented, and the intervention methods for any issues identified. Invitations to participate in the program were distributed with the assistance of the Pematangsiantar City Health Service to 50 mothers with toddlers and 50 health workers. Mothers with toddlers were chosen for inclusion because they possess MCH books but do not use them properly. Health workers were recruited as their role was to educate parents on the use of MCH books and encourage their completion.

The health education program was conducted on August 24, 2023, between 09.00 and 14.00 WIB in the meeting room of the Bappeda building in Pematangsiantar City, Indonesia. The session began with an opening speech by the moderator, welcoming remarks from the team leader, an opening statement by the Mayor of Pematangsiantar, and the provision of plaques and children's weighing souvenirs to the Pematangsiantar City Government.

The activity continued with a material presentation by the speaker, a question-and-answer session, the recording of children's anthropometric measurements, and an assessment of MCH book completeness. The assessment of the completeness was done using a questionnaire comprising 12 parameters. The questionnaire is valid and reliable, possessing a Cronbach's alpha of 0.676. The median questionnaire score was 26.5, with the lowest score 18 and the highest 53. Higher scores indicated greater MCH book completeness and more frequent use. Scores were divided into two categories: low (scores < 26.5) and high (scores ≥ 26.5).

Numerical data with normal distribution were expressed as means and standard deviations, non-parametric data were expressed as medians and interquartile ranges, and category data as proportions. Factors associated with the completeness of MCH books were analyzed using the chi-squared test. All data were analyzed using the Statistical Package for the Social Sciences (SPSS) program version 23. The threshold for the statistical significance was $p < 0.05$.

3. RESULT AND DISCUSSION

The program aimed to encourage mothers and health workers to use and complete the MCH book to support them in monitoring children's growth and development. Approximately 100 mothers and health workers attended the session. All educational material presented was derived from the MCH book. The audience listened well, and no questions were asked during the seminar (Figure 1).

During the one-on-one toddler health consultations, mothers extensively questioned the health education team regarding the MCH book and their children's health, particularly regarding the appropriate complementary feeding practices. Incomplete MCH book completion

and growth problems were addressed by providing direct education to the mothers, as shown in Figure 2.

Figure 1 . Education for health workers and mothers

Figure 2 . Mother and toddler consultations were used to obtain anthropometric measurements, assess growth and MCH book completeness, and provide counseling documentation

Figure 3 . Complementary feeding guidance (Kementerian Kesehatan RI, 2023a)

The health education team explained to the mothers how to use and complete the MCH book and overcome nutritional issues, particularly regarding complementary feeding (Figure 3). Follow-up monitoring was carried out online by sending photos of the MCH book. Additionally, the health workers continued to educate the mothers regularly during the Posyandu schedule.

Following the education session, the mother and toddler pairs attended child health consultations during which anthropometric measurements were collected, and MCH completeness assessment book were conducted. Of the 41 mother and toddler pairs who participated in the session, 31 toddlers had MCH books, and the others (10/4.4%) did not. This proportion of toddlers without MCH books was higher than in the cities of Malang (9.2%), Surabaya (11.7%), and Pasuruan (22.8%) but lower than in Sidoarjo (27.7%) (Hargono et al., 2020). These differences can be attributed to variations in the number of participants. The reasons given for not having an MCH book included loss due to flooding, frequent change of residence, and forgetting to bring it. Table 1 shows the demographic characteristics of the toddlers and MCH book completeness.

Table 1 . Demographic characteristics of the toddlers and MCH book completeness

Characteristics	Toddler (n=31)	%
Age (months), mean ± SD	23.7±16.6	
Gender		
Male	13	41.9%
Female	18	58.1%
Birth order		
First child	12	38.7%
Second or subsequent child	19	61.3%
Growth interpretation		
Weight for age		
Severely underweight	2	6.5%
Underweight	8	25.8%
Normal	21	67.7%
Length/ height for age		
Severely stunted	6	19.4%
Stunted	5	16.1%
Normal	20	64.5%
Weight for length/ height		
Risk of being overweight	5	16.1%
Normal	2	6.5%
Wasted	24	77.4%
Head circumference for age		
Microcephaly	5	16.1%
Normal	26	83.9%
Completeness of MCH book		
Low	18	58.1%
High	13	41.9%

Most toddlers who participated were female (18; 58.1%), and 19 were second or subsequent children (61.3%). The average age was 23.7 months. Ten toddlers were underweight or severely underweight for their age (32.3%), and 11 had stunted or very stunted growth (35.5%). Regarding weight for height, 29 were wasted or at risk of being overweight (93.5%). Microcephaly was observed in five toddlers (16.1%).

Table 2 . Overview of MCH book completeness

No.	General information	Category		
1	Age	**<2 years**	**2-3 years**	**>3 years**
		16 (51.6%)	7 (22.6%)	8 (25.8%)
2	Filling commenced	**Not since birth**		**Since birth**
		24 (77.4%)		7 (22.6%)
3	Filling intensity	**Sometimes**	**Often**	**Always**
		29 (93.5%)	2 (6.5%)	0 (0%)
No.	**Children's health information**	**Category**		
		Incomplete	**Partially complete**	**Complete**
1	Child's identity	27 (87.0%)		4 (13.0%)
2	Description of birth	27 (87.0%)		4 (13.0%)
3	Neonatal services	27 (87.0%)	2 (6.5%)	2 (6.5%)
4	Immunization records	5 (16.2%)	25 (80.6%)	1 (3.2%)
5	Stimulation, Detection, and Early Intervention of Growth and Development	30 (96.8%)	1 (3.2%)	
6	Nutrition and feeding advice	30 (96.8%)		1 (3.2%)
7	Vitamin A capsule administration	28 (90.3%)	2 (6.5%)	1 (3.2%)
8	Growth chart or 'Towards Healthy Card'	3 (9.7%)	15 (48.4%)	13 (41.9%)
9	Developmental checklist	28 (90.3%)	3 (9.7%)	

The prevalence of stunted toddlers was higher (35.5%) than that in North Sumatra Province (21.1%) in 2022 (Kementerian Kesehatan RI, 2023b). Based on the memories of the mothers, most stunting cases began with low body weight due to inadequate feeding practices. Such practices include providing more servings of vegetables, preparing smooth food for children aged 12 months, giving large volumes of snacks, and allowing screen time during feeding.

Average MCH book completeness was low (58.1%). However, this is higher than a previous study in Temanggung Regency, Indonesia, which reported an average completeness of 45.3% and found that of the 13 sections of the MCH book, ten sections were less than 50% complete (Dharmawan, 2019).

Most toddlers who attended with MCH books were younger than two years old, with filling in beginning after birth. Most MCH books were filled in "sometimes". The nine children's health sections of the MCH book were related to growth and development monitoring. Of these, immunization records (25; 80.6%) and the growth chart or 'Towards Healthy Cards' section (15; 48.4%) were the most partially completed sections (Table 2). This is in line with a similar study of MCH books in the Temanggung Regency, which reported that 72.6% of childhood immunization records and 40.9% of growth charts were partially completed (Dharmawan, 2019). When toddlers are brought to health centers for immunization, they are always weighed first, followed by health workers completing the immunization and growth chart records. The assessment of the remaining seven sections showed that most were incomplete. The lowest completion rate was 27 (87.0%) for the child identity, description of birth, and neonatal services sections. At the same time, nutrition and feeding advice and stimulation, detection and early intervention of growth, and development had the highest (30/96.8%). This is in concordance with the findings in Temanggung Regency, which reported the lowest completeness for stimulation, detection and early intervention of growth and development (3.2%), followed by children's health notes (5.7%) and nutrition and feeding advice (6.5%) (Dharmawan, 2019). Most mothers and health workers reported that they forgot to fill in sections other than immunization and growth charts.

Table 3 . Overview of MCH book completeness

Variable	MCH Book Completeness		p-value
	Low	High	
Gender			
Male	7	6	0.686
Female	11	7	
Age			
<2 years	11	6	
2-3 years	3	3	0.711
>3 years	4	4	
Birth order			
First child	8	4	0.484
Second or subsequent child	10	9	
Filling intensity			
Sometimes	17	12	1.000
Often	1	1	
Filling commenced			
Not since birth	16	8	0.099
Since birth	2	5	

No factors significantly influenced the completeness of the children's section of the MCH books; however, differences are substantially significant. Most toddlers with "sometimes" books filled in where filling did not start when they were born had low MCH book completeness (Table 3). This finding is not in agreement with a previous study in West Kotawaringin Regency, Indonesia,

where several factors were found to significantly influence MCH book completeness, including the availability of tools and facilities (p=0.025) and monitoring and evaluation by coordinating midwives (p=0.035) (Zakiah et al., 2021). This difference occurred because the present study limited the assessment of MCH book completion to the children's section, and maternal data was collected.

4. CONCLUSION

This health education program could benefit the broader community of Pematangsiantar City, Indonesia, particularly mothers with toddlers and health workers. Providing health education improves mothers' understanding that they can complete sections of the MCH book themselves without needing health workers. It also ensures they understand that the book is a source of children's health information. This, in turn, indirectly helps health workers to monitor child growth and development. Mothers and health workers should remind each other to complete the MCH book. This collaboration could be carried out periodically during Posyandu activities.

Both mothers and health workers should monitor the maternal and child health book's completeness. We suggest that the health education program from the Faculty of Medicine at USU should be continued. Doing so will make mothers and health workers more enthusiastic about using MCH books to monitor children's growth and development. Mothers will be more able to monitor their children's growth and development independently, and it will be easier for health workers to communicate the children's health information in the MCH book.

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CONFLICT OF INTERESTS

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