



## THAILAND: Redesigning MCH Handbook to promote health literacy among pregnant women and early childhood caregivers in the digital era

### Background

Thailand has long used the Maternal and Child Health (MCH) Handbook as a key tool to promote maternal and child health since 1985. It enables mothers and health workers to record information relating to pregnancies, deliveries, and child development. However, recent evaluations found low utilization and comprehension rates among both mothers and caregivers as only 14.3% of mothers read all the contents, and fewer than 1% recorded data regularly. Challenges include outdated information, limited readability, and low user engagement. Recognizing these issues, the Department of Health at the Ministry of Public Health initiated a participatory project to redesign the MCH Handbook. The project used Lean Enterprise and Agile Network (LEAN) concept in a user-centered design approach to enhance health literacy and increase user satisfaction.

### LEAN concept approach

To improve the usability of the MCH Handbook and remove unnecessary content, the research team applied the LEAN concept approach, guided by the DOWNTIME framework (i.e., Defects, Overproduction, Waiting, Non-utilized talent, Transportation, Inventory, Motion and Excess Processing) and obtained the following suggestions for the new version: i) a more user-friendly layout with visual sections and easy navigation; ii) content organized in a logical order, with knowledge sections separate from recording sections; iii) some non-urgent information converted into QR code links to reduce the number of pages; and iv) stronger and more durable physical designs.

Based on these suggestions, the new MCH Handbook has been improved in the following ways. Firstly, the number of pages has been reduced from 80 to 64.

Secondly, the layout has been restructured so that the three sections have become nine categories: 4P for Pregnancy (i.e., Plan for pregnancy, Plan for antenatal care, Plan for delivery care, and Plan for postpartum care); 1 Knowledge section with QR codes, and 4D for Early Childhood (i.e., Disease prevention, Diet, Development, and Dental health). Thirdly, new features have been added such as maternal weight tracking graphs; expanded child health recording sections; allergy and chronic condition records; optional vaccine tracking; and basic life support guidance. Fourthly, a QR-based online evaluation has been created for continuous improvement.

### Key features of the new MCH Handbook

In response to the low usage frequency of the previous version, the new design aimed to improve visual appeal, ease of navigation, and practicality. Each section of the redesigned MCH Handbook presents concise, well-structured content with colorful illustrations and easy-to-understand messages. QR codes link to updated information, reducing the number of paper pages and ensuring flexibility and adaptability to new health guidelines. The design process involved multidisciplinary professionals, including obstetricians, pediatricians, nurses, and public health experts, as well as mothers and caregivers from four regions of Thailand to ensure local relevance and practicality.

### Action research for redesigning content

We could describe the entire revision process as a three-phase action research project. Firstly, a situation and needs assessment was conducted through surveys and in-depth interviews with 60 participants (20 from each of the three groups: pregnant women,



Maternal and Child Health Handbook, Thailand, 2025

▼ Table 1. Top five topics in the MCH Handbook identified as “to be retained”, “to be improved” or “to be removed” by co-design workshop participants (n=40)

Rank	Topics to be retained	% (n)	Topics to be improved	% (n)	Topics to be removed	% (n)
1	Current pregnancy history	95.0 (38)	Pregnancy nutrition	35.0 (14)	Recommendations for preventing COVID-19 during pregnancy	30.0 (12)
2	Pregnancy history and family health history; Next health check up	92.5 (37)	Pregnancy exercise; Dental record of childhood	32.5 (13)	Screening for Zika infection during pregnancy; Plan for delivery	22.5 (9)
3	Pregnancy and neonatal records	90.0 (36)	Recommendations for pregnancy nutrition; Recommendations for screentime during childhood	30.0 (12)	Recommendations for preventing injuries during pregnancy; The top childhood diseases	20.0 (8)
4	Delivery records	87.5 (35)	Recommendations for preventing COVID-19 during pregnancy	27.5 (11)	Infant bedtime training	17.5 (7)
5	Pregnancy vaccination history; Pregnancy oral health record; Intrauterine baby's movements record; Infant nutrition; Child's vaccination records	85.0 (34)	Recommendations for breastfeeding infants; The top childhood diseases; Recommendations for growth chart	22.5 (9)	Recommendations for preventing injuries during childhood; Abnormal stool color chart; Surveillance of childhood developmental delay; Recommendations for childhood parenting	15.0 (6)

▼ **Table 2. Comparison of health literacy scores before and after implementing the new MCH Handbook**

Participant Group	Pre-test Mean ± SD	Post-test Mean ± SD	t-value	p-value	Cohen's d	Effect Size
Pregnant women (n = 20)	14.4 ± 2.44	15.8 ± 2.26	2.17	0.043	0.48	Medium
Mothers of early childhood caregivers (n = 20)	14.6 ± 2.62	17.1 ± 1.45	3.97	0.0008	0.89	Large



Grand opening of new MCH Handbook at an event of the Ministry of Public Health

caregivers, and health workers) from four provinces (Chiang Mai, Saraburi, Nakhon Ratchasima, and Nakhon Si Thammarat). This assessment aimed to identify issues relating to usage, content clarity, and data recording. These provinces represent the country's four health regions. Secondly, participatory design and prototype development were conducted through co-design workshops to refine the content and layout in light of user feedback. These workshops involved 40 individuals (20 from health workers, and 20 from pregnant women or caregivers). Thirdly, the prototype was piloted and evaluated in the four provinces. The respondents were 20 pregnant women and 20 caregivers.

Table 1 summarizes the feedback from co-design workshops, in which 40 participants were asked to classify existing topics into three categories. Data were collected using a questionnaire developed by itemizing every component of the previous handbook. Participants were asked to evaluate each item by selecting one of three options: "to be retained"; "to be improved"; and "to be removed." The frequencies for each response were then tallied and ranked. The top five items in each category, to be retained, to be improved, and to be removed, were then listed for presentation.

### Result of the prototype evaluation

As part of the pilot evaluation, a health literacy assessment was conducted using a 20-item yes/no questionnaire (with a total score of 20) for the prototype of the new handbook. The assessment followed a pre- and post-intervention design to measure changes in the respondents' knowledge. Specifically, the pre-test was administered to respondents who were users of the previous version of the MCH Handbook. The post-test was subsequently conducted with the same respondents after they had utilized and read the newly redesigned version at home for six to eight weeks.

The statements assessed the respondents' knowledge on pregnancy, newborn care, development, safety, nutrition, oral health, and parenting practices. The results demonstrated a significant increase in health literacy among both pregnant women and early childhood caregivers, as measured by the pre- and post-test scores ( $t = 2.17$  and  $3.97$ ,  $p = 0.043$  and  $0.0008$ , respectively; Table 2). Although the scores for pregnant women and new mothers have indeed increased significantly, this increase is slight compared to that for caregivers. This may be due to differences in experience and time spent on childcare. Pregnant women may find it more difficult than caregivers to answer questions about childcare. User satisfaction ranged from 90–100%, with high ratings for readability, clarity of content, and usefulness for guiding self-care and communication with health workers. Respondents appreciated the QR code feature, which connected them to multimedia learning materials and interactive guidance.

### Lessons learned

The new MCH Handbook is intended to act as a bridge between families and health workers, supporting continuous maternal and child health monitoring and empowering caregivers to make informed health decisions. The participatory redesign process of the MCH Handbook, based on the LEAN concept, fostered ownership and responsiveness among users. This process highlighted the importance of simplicity, co-creation, and adaptability for the continued use of the handbook in MCH programs in the digital era. The principles that we applied were also in line with those set out in the WHO-UNICEF-JICA's implementation guide on home-based records published in 2023. This guide emphasizes user participation in the design process, simple content, and establishing a follow-up mechanism to ensure the records are used.

Furthermore, digital transformation was identified as a future direction. Developing a hybrid version, a digitally enhanced paper version featuring QR codes that provide access to digital information, would support long-term accessibility and behavioral change among new generations of parents.

### Conclusion

The case of Thailand's new MCH Handbook shows that integrating the LEAN production management concept with public health principles, such as user participation, in a user-centered design approach can effectively redesign such handbooks, thereby improving the health literacy and satisfaction of mothers and caregivers. Expanding the new handbook nationwide alongside digital integration, could strengthen the continuum of care from pregnancy through to early childhood, helping to achieve the national goal of providing equitable and quality maternal and child healthcare services.

This action research was reviewed and approved by the Ethics Committee of the Department of Health, Ministry of Public Health, Thailand, dated December 9<sup>th</sup>, 2024 (Protocol No. 795/2567).

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#### Further readings:

1. Isaranurug S. Maternal and Child Health Handbook in Thailand. *J Int Health*. 2009;**24**(2):61–66.
2. Pisawang S. A model development of Maternal and Child Health Handbooks to promote health literacy among pregnant women and early childhood caregivers in Thailand. *Thai J Health Promot Environ Health*. 2025; **48**(3):57–71.
3. Womack JP, Jones DT. *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*. New York: Free Press; 2003.