EFFECT OF MATERNAL AND CHILD HEALTH HANDBOOK ON MATERNAL AND CHILD HEALTH PROMOTING BELIEF AND ACTION

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ABSTRACT

A cross-sectional study was conducted to assess the utilization of a maternal and child health (MCH) handbook, and to analyse the relationship to mother's maternal and child health promoting belief and action. The data was collected from 224 mothers at Phanom Thuan district in Kanchanburi province, Thailand, from 16th January to 11th February in 2005. For analysing mother's belief, 216 cases were used. Pearson correlation method and stepwise multiple regression model were applied to analyze the relationship to mother's MCH promoting belief and action.

The utilization of MCH handbooks by mothers was mostly at the moderate level (59.8%), and there was a low rate of reading (only 14.3% had read all of the contents of handbook) and self-recording was remarkably (only 0.9% had self-recorded every part in the handbook). Multiple regression coefficients showed utilization of MCH handbook was related to both mother's MCH promoting belief ($p=0.001$) and action ($p=0.039$). This was the strongest predictor variable of mother's MCH promoting belief. Reading a large amount of the handbook was related to high confidence and benefits, also high performance on regarding MCH promoting action. Other factors which significantly related to MCH promoting belief were family income ($p=0.003$), age ($p=0.004$), and education ($p=0.039$). The factors related to mother's MCH promoting action were marital status ($p=0.01$), occupation ($p=0.031$) and age ($p=0.033$). Mother's marital status was the strongest predictor variable of mother's MCH promoting action. According to the findings of this study, for MCH promotion, mothers' belief and action can be inspired through utilizing MCH handbooks and comprehensive assessment.

KEY WORDS: MATERNAL AND CHILD HEALTH HANDBOOK/ HEALTH PROMOTING BELIEF/ HEALTH PROMOTING ACTION

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LIST OF ABBRAVIATIONS

ANC : Antenatal care

HBM : Health Belief Model

HPM : Health Promotion Model

IMR : Infant Mortality Rate

MCH : Maternal and Child Health

MMR : Maternal Mortality Ratio

MOPH : Ministry of Public Health

U5MR : Under 5 Mortality Rate

UNICEF : United Nations Children's Funds

WHO : World Health Organization

CHAPTER 1
INTRODUCTION

1.1 Rational and justification of the study

1.1.1 Maternal and child health (MCH)

The survival and well-being of mothers and children are strongly related to health of society. Since Alma-Ata declared, maternal and child health care has been one of the primary health care elements. In the year 2000, 'Millennium Summit' was held in New York and established goals and targets related with world development to be reached by 2015. Reduction of child mortality and improvement of maternal health are also indicated in those goals (1).

Both child mortality and maternal mortality represent some of the greatest disparities between developing and developed countries. Despite of decrease in child mortality, nearly 20% of total death was still under 5-year in 2002. Also, it estimates that 30 million women suffer ill-health or die which related to pregnancy or delivery every year in the world. Moreover, millions of children are left motherless and an estimated one million children die as a result of the death of their mothers (1).

1.1.2 MCH status in Thailand

The health status of maternal and child in Thailand is:

-Maternal Mortality Ratio (MMR): it was estimated 44.1 in 1995 and 44.3 per 100,000 live births in the year 1996.

-Infant Mortality Rate (IMR): it was dropped 40.7 per 1000 live births in the year 1984 to around 30 in 2000, but it was still higher than some other neighbour countries.

-Low birth weight (less than 2,500 gram): it was 10.2% in the year 1990 to

8.1% of live births in 2001. It was common to see this problem emerging in the underprivileged in particular those who in the group of under poverty line and unemployment (2, 3).

IMR and MMR are good indicators in identifying health status differences in various population groups in Thailand. IMR has dropped by half in the past twenty years, but the urban-rural differences are widening. Also, after agreement of Safe Motherhood project which has been recommended by WHO/UNICEF since 1987, the quality of care for pregnant women improve, but still have gap among difference regions. Table 1 shows disparities of IMR between municipal and non-municipal area, and Table 2 shows differences of MMR by regions (2, 3).

Table 1 IMR (per 1000 live births) in national, municipal and non-municipal area 1989~1996 in Thailand.

Year	National average	Municipal area	Non-municipal area	Municipal/ non-municipal
1989	38.8	23.6	41.4	1.75
1991	34.5	21.0	37.0	1.76
1995-1996	26.05	15.24	28.23	1.85

Source: MOPH in Thailand (2).

Table 2 Maternal Mortality Ratio in 1996 by regions.

Regions	MMR: 100,000 live births
Central	35.0
North	48.8
Northeast	37.5
South	76.3
Country	43.9

Source: MOPH in Thailand (3).

1.1.3 MCH promotion

Most deaths or disable during pregnancy, delivery and early childhood occur because of a failure to recognize the seriousness of problems and to make use of available services in good time, together with poor health infrastructure, and those loss and suffering are mostly preventable (4). Mothers who obtained antenatal care (ANC), family planning, breast feeding, and immunization for children are significantly well health for mothers and children compare with who did not obtain (5, 6).

The development of individual skills in applying health knowledge and understanding is one of the strategies for health promotion (7). If mothers aware MCH promotion, get information and social supports, mother's capability of skills for taking those action will improve. Further, their health status is promoting.

1.1.4 Maternal and child health handbook (MCH handbook)

Maternal records, child growth charts and immunization cards are used world wide today. WHO recommends keeping those records at home-based, because of increasing the referral rate, the use of ANC, attendance postpartum health checks and child immunization rates (4).

The concepts of MCH handbooks are:

1) recording health status of mother and child from pregnant, delivery to child development continuously
2) including MCH information and messages as an educational material
3) keeping at own home.

Nowadays MCH handbooks are distributed nationwide in several countries, for example Japan, Thailand, South Korea, and Netherlands (8). Japan has the longest history to use MCH handbooks in MCH activity. The first maternal handbook was prepared in 1942, and since 1948, 'MCH handbook' which as same as currently used, has been distributed nationwide. MCH handbooks are not only for keeping statistical records of mother and child, but also encourage mothers to attend

MCH services. During these five decades, IMR and MMR have been reduced dramatically in Japan (9). It can be assumed that a MCH handbook is one of the contributions to improving MCH status.

In Thailand, MOPH has developed MCH handbooks since 1982 with an objective to be used in Rural Poverty Elimination Project. Then, since 1985, the use of the handbook has been distributed nationwide. Although the MCH handbook can be a tool of early detection of risk-factors and improve the monitoring of health status for mothers and children and almost 94% of handbook holders stated that MCH handbook was very useful, the utilization of handbook was very low. Around 90% parents had never recorded and 36% of them had not read handbooks in one province, Thailand (10, 11).

1.2 Problem statement

In Thailand, accessibility of health centre is not equity between urban and rural area. In Bangkok Metropolitan, population to medical doctors was 1:793. On the other hand, other areas were 1:3,576~8,311 in the year 2000. Also the differences service utilization behaviour between urban and rural area was that in urban 67.3% people used health centre, in rural was 52% (2).

This research has done in Kanchanaburi province, which locates in the central region of Thailand, and around 130 km from Bangkok Metropolitan area. However this province is the third largest province in Thailand, around 57% of population engage in agriculture work. Phanom Thuan district is one district of Kanchanaburi province and only one public hospital locates on central district (12).

In rural area, accessibility of health facilities is not as same as urban area. Especially, mothers who live in rural area, have to strength their awareness of MCH promotion and taking action. The need to understand is that how mothers use MCH handbooks in that area, and how MCH handbooks affect to mother’s belief and action toward MCH promotion. This study would be conducted in order to use the

results as evaluation of MCH handbooks, moreover improve MCH care system, and mothers and children's quality of life in the future.

1.3 Research questions

1) How many percent of mothers use MCH handbooks in Phanom Thuan district, Kanchanaburi province, Thailand?

2) Do MCH handbooks affect to mothers' MCH promoting belief and action?

1.4 Research objectives

1.4.1 General objective

To assess the utilization of MCH handbooks, and to analyse the relationship between utilization of MCH handbook and mother's MCH promoting belief/action in Phanom Thuan district, Kanchanbuti province, Thailand.

1.4.2 Specific objectives

1) To assess the utilization of MCH handbooks, at Phanom Thuan district in Kanchanbuti province, Thailand.

2) To assess mothers' MCH promoting belief.

3) To assess mothers' MCH promoting action.

4) To analyse the relationship between utilization of a MCH handbook, mother's socio-demographic characteristics, child's socio-demographic characteristics, mother's social supports and mother's MCH promoting belief.

5) To analyse the relationship between utilization of a MCH handbook, mother's socio-demographic characteristics, child's socio-demographic characteristics, mother's social supports and mother's MCH promoting action.

6) To analyse the predict factors of mother's MCH promoting belief and action.

1.5 Hypothesis

The research literatures led following hypothesis:

1) There is a relationship between utilization of MCH handbook and mother's MCH promoting belief.

2) There is a relationship between mother's socio-demographic characteristics and mother's MCH promoting belief.

3) There is a relationship between child's socio-demographic characteristics and mother's MCH promoting belief.

4) There is a relationship between mother's social supports and mother's MCH promoting belief.

5) There is a relationship between utilization of MCH handbook and mother's MCH promoting action.

6) There is a relationship between mother's socio-demographic characteristics and mother's MCH promoting action.

7) There is a relationship between child's socio-demographic characteristics and mother's MCH promoting action.

8) There is a relationship between mother's social supports and mother's MCH promoting action.

1.6 Conceptual framework

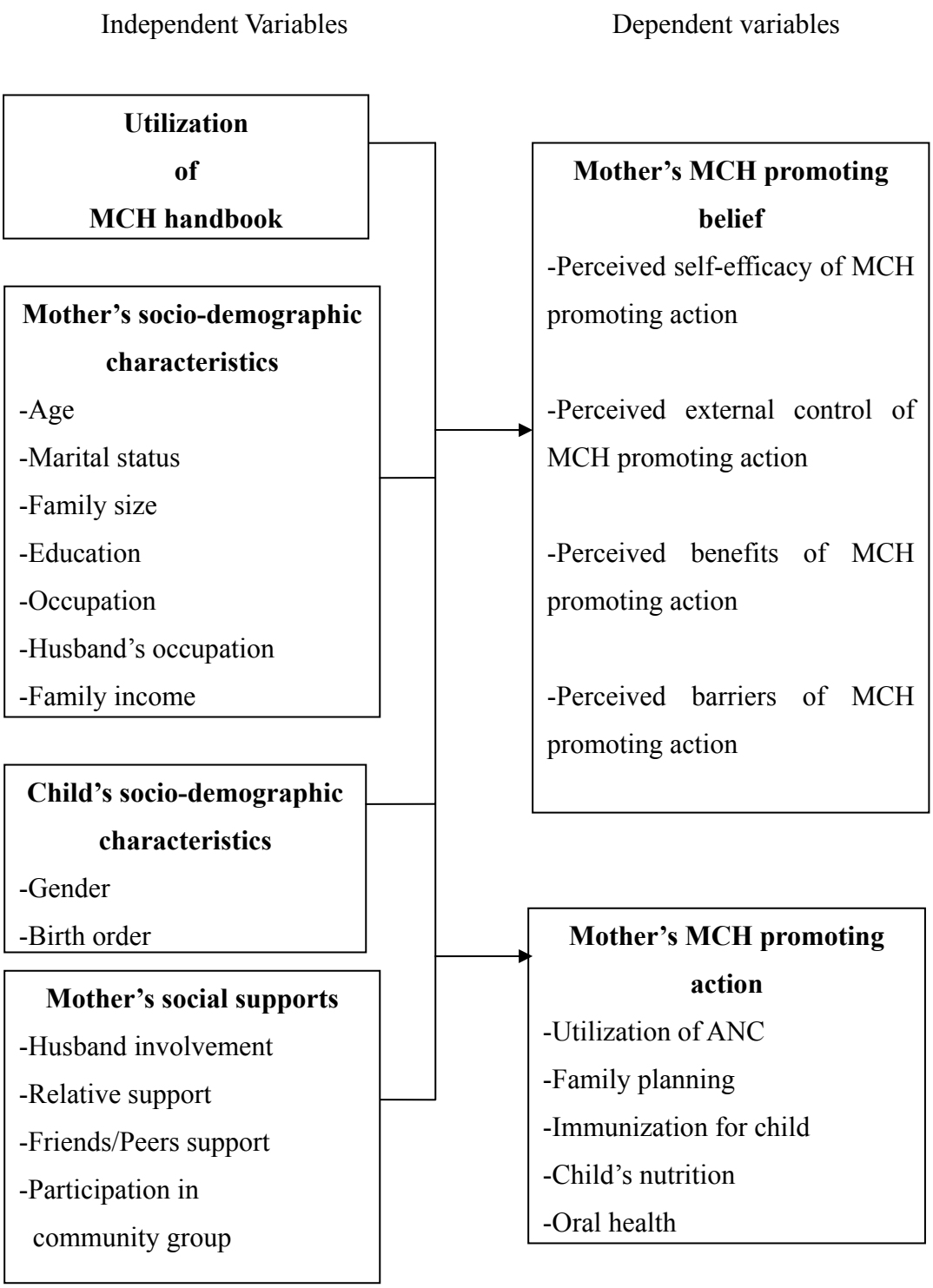


Figure 1 Conceptual framework

1.7 Operational definition

1.7.1 Mother's MCH promoting action

Mother's activities which are related to contents of the MCH handbook, such as: utilization of ANC, family planning, immunization for child, child's nutrition, and oral health. Each of the variables was scored.

-**Utilization of ANC**: ANC is also known as prenatal care, which refers to medical care provided during pregnancy. Utilization of ANC means regular practice on ANC service obtained by pregnant women during pregnancy less than 4 times, and 4 times or more in accordance with the criteria of ANC under the 8th Health Development Plan in Thailand (1997-2001) (10).

-**Family planning**: means mother who practice birth control for two-year pregnant interval or unwanted pregnant. This was classified into two groups; no practice, and at least one contraceptive method for practice.

-**Immunization for child**: means that mother's child had received vaccine properly. Refer to the recommendation of vaccination in Thailand and regarding to target child age (3 to 4 years old). This was divided two groups; incomplete and complete.

-BCG : 1dose at birth
-Hepatitis B (HBV): 3 doses at birth, 2 months and 6 months
-Polio : 3 doses at 2 months, 4 months, and 6 months
-DPT : 3 doses at 2 months, 4 months, and 6 months
-Measles or MMR : 1dose at 9 months.

-**Child nutrition**: was divided into two categories such as duration of breastfeeding and initiating time of complementary food. Duration of breast feeding was divided no breast feeding, less than 4 months, 4 to 6 months, and 7months or more. Initiating time of complementary food was divided less than 4 months, and 4

months or more. Both of these are recommended Thai government criteria, based on the MCH handbook.

-**Oral health**: means that mother helps or encourages her child to keep child's oral hygiene. This was classified into three groups such as: mother helped/encouraged her child to brush teeth, none, once a day, and two times or more in a day.

1.7.2 Mother's MCH promoting belief

MCH promoting belief means maternal cognitive for maintaining, preventing and promoting their child and own health, which are categorised:

-**Perceived self-efficacy of MCH promoting action**: maternal beliefs in her capability and confidence in performing MCH promoting action. For example of the statement, mother believes that for promoting baby's health, she can give breast milk easily.

-**Perceived external control of MCH promoting action:** maternal beliefs that healthy mother and child is a result of other's power (e.g., god, luck, health professionals or non-professional).

-**Perceived benefits of MCH promoting action**: maternal beliefs that specified health action has positive values for maternal and child health.

-**Perceived barriers of MCH promoting action:** maternal belief that specified health actions are negative value, particularly in terms of impediments or costs.

1.7.3 Utilization of MCH handbook

In this study, MCH handbook means a handbook which was given to mother from health facilities under MOPH and also is called 'Pink book' (it was published during the year 2000~2001).

Utilization of MCH handbook referred maternal performance which in the individual motivation to influence whether the mother would engage in MCH activities. Utilization of MCH handbook was classified into three levels such as high, moderate and low, according to total performance of bringing, recording, and reading by mother, herself.

1.7.4 Mother's socio-demographic characteristics

Refer to mother's socio-demographic characteristics which may influence on mother's MCH promoting belief and action, such as age, marital status, family size, education, occupation, husband's occupation, and family income.

-**Age**: referred mother's age who had 3 to 4 years old child and MCH handbooks in Phanom Thuan district, Kanchanaburi province, Thailand.

-**Marital status**: referred mother's marital status such as married/living together and other (include divorced, widow and living separate).

-**Family size**: referred number of the family members which living with every day at least one year.

-**Education**: means total duration of the attending educational institutions where mother graduated, and categorized to three levels such as grade6 and below, grade7 to 12, and above grade 12.

-**Occupation**: referred mother, who spends most of the time in a day and categorized into two groups; housewife and working group (e.g., farmer, employee in factory, employee in private company, civil servants, vendor and other).

-Husband's occupation: means mother's husband, whose main job, and classified into two groups such as: unskilled worker (farmer, employee in factory, vendor, labour, unemployed, and other) and skilled worker (employee in private company and civil servants).

-**Family income**: means the amount of money which was earned from mother and her husband's wages monthly and currency was baht. This was categorized, less than 5000, 5000~9999, 10,000~14,999, 15,000 or more.

1.7.5 Child's socio-demographic characteristics

Referred to child's socio-demographic characteristics, which may also influence on mother's health belief and action, such as child's gender and birth order.

-Gender: means mother's child who is male or female.

-Birth Order: means mother's child whose ordering of birth. When target mother had more than one child aged 3 to 4 years, the target child was the youngest one.

1.7.6 Mother's social supports

Social supports which may influence on mother's MCH promoting belief and action, such as: husband involvement, relative support, friends/peers support and participation in community group.

-**Husband involvement:** means that mother's husband advised to take a rest and helped house work during pregnancy, and shares the experience to take care of their child.

-Relative support: means that whether mother lives together with her mother/mother-in-low, and they and mother's relatives advise to mother's pregnant/child care or not.

-**Friends/Peers support:** mother who has other people for talking about situation related to their child care or pregnancy.

-Participation in community group: mother who joins some community

activities (e.g., mother group) during at least one month at data collecting time or not.

1.8 Limitation of the study

This cross-sectional study was conducted at one district in Kanchanaburi province, Thailand. It aimed to identify utilization of MCH handbooks and effect of MCH handbooks on mother's belief and action toward MCH promotion. The sample could not represent the whole mothers who lived in rural area and whole country in Thailand. In addition, this study was used only questionnaire, it made the researcher could not follow up and communicate in depth.

CHAPTER 2
LITERATURE REVIEW

List of literature review is:

Part 1. MCH status

Part 2. MCH handbook

Part 3. Theory of this study

Part 4. MCH promotion

Part 5. Determinants of maternal belief and action

2.1 MCH status

2.1.1 Global trend of MCH status

Millennium Development Goals were set by United Nations in 2000, for concerned action to improve global health, and MCH was also consisted in these goals. As MCH is global issue today, the goals were set as:

1) To reduce by two-thirds between year 1990 and 2015 the under five mortality rate (U5MR).

2) To reduce by three-quarters, between year 1990 and 2015, the MMR (1).

In World summit for children which was held in 1990, several goals were also set. Table 3 shows some goals set in 1990 and the consequences in the year of 2000 (13). Despite progress in recent decades, more than 10 million children still die every year in the world, and newborn deaths had little progressed. Almost 4 million infants do not survive their first month of life every year, moreover the gap between and within developing and developed regions has widened. The majority causes of child death are:

-poor health and nutritional status in the mother

-absent or low quality of care during pregnancy and delivery

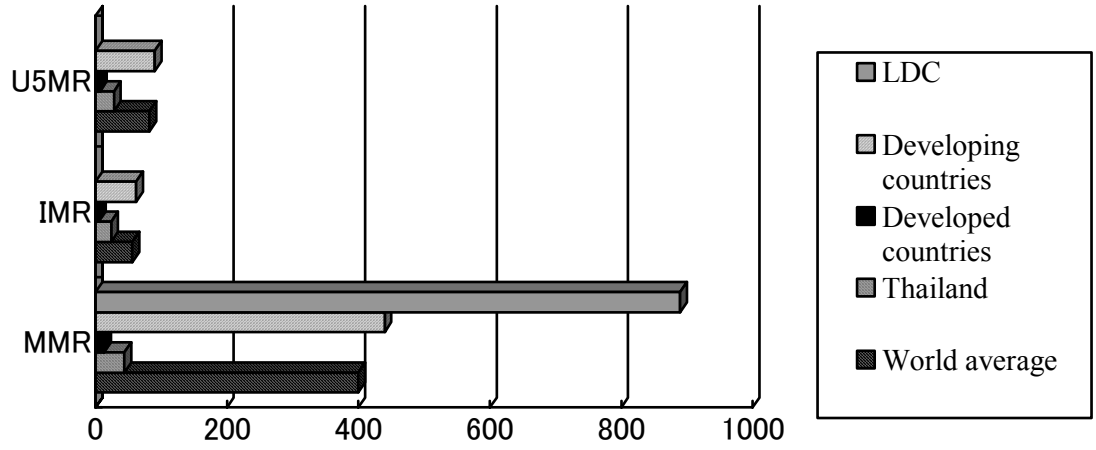
-inadequate basic cares of the healthy baby and management of the sick infants (1).

Table 3 Global trend of IMR, U5MR and MMR.

GOALS by the year of 2000	Consequences in the year of 2000
Reduction of IMR and U5MR by one third or 67%.	-Totally 11% reduced U5MR all over the world. -In developing countries, average annual rate of reduction in under five mortality, about 2.7% during 1960 to 1990, but only 1.4 % during 1990 to 1999.
Reduction of MMR by half.	-Some countries improved the reproductive care. -In developed countries, the average MMR was around 6 per 100,000 live births, on the other hands, some developing countries more than 450.

Source: UNICEF. Progress since the world summit for children –a statistical review. New York: UNICEF; 2001 (13).

The gap of MMR between developing and developed countries is also high. Figure 2 shows the discrepancies of MMR, IMR and U5MR among developed and developing countries. U5MR was estimated in the year 2002, and MMR was adjusted rate during 1995~2000 (15). Economic development influence on MCH status, *vice versa*, ill-ness, suffering and death of mothers and children impact on social and economic development. To estimate MMR is not easy because of insufficient birth registration system in some countries, however, it says that each year more than half a million women die from pregnancy-related causes, and 70% of all maternal deaths are caused by just five factors: haemorrhage (24%), infection (15%), unsafe abortion (13%), high blood pressure (12%), and obstructed labour (8%) (13, 14). Maternal and child deaths can be significantly reduced by the cause of evidence based maternal health interventions that are reliable, cost-effectiveness and feasible even in poor countries (1)



*LDC: Late developing countries, U5MR, IMR: per 1000 live births, MMR: per 100,000 live births.

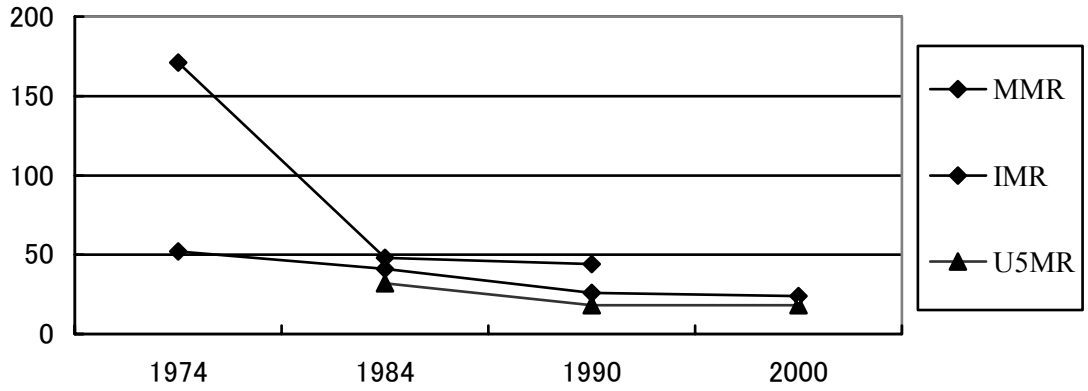
Source: UNICEF. The state of the world's children 2004. NY: UNICEF; 2003 (15).

Figure 2 The discrepancies of MMR, IMR and U5MR among developed and developing countries.

2.1.2 MCH status in Thailand

Since 1964, the MCH status in Thailand has progressed. Figure 3 shows trend of IMR, MMR and U5MR. According to the Figure 3, from 1974 to 1984, MMR reduced dramatically, but since 1984, three rates have been stable (2).

MMR has difficulty to estimate, because of using multiple resources and misclassification of death cause among reproductive aged women (15~49 year-old). However MOPH used information from hospital-based, the differential figures between MOPH and world organization was exist. According to the surveillance which used multiple resources regarding with MMR, in 1996 it was 44.3 per 100,000 live births (3).

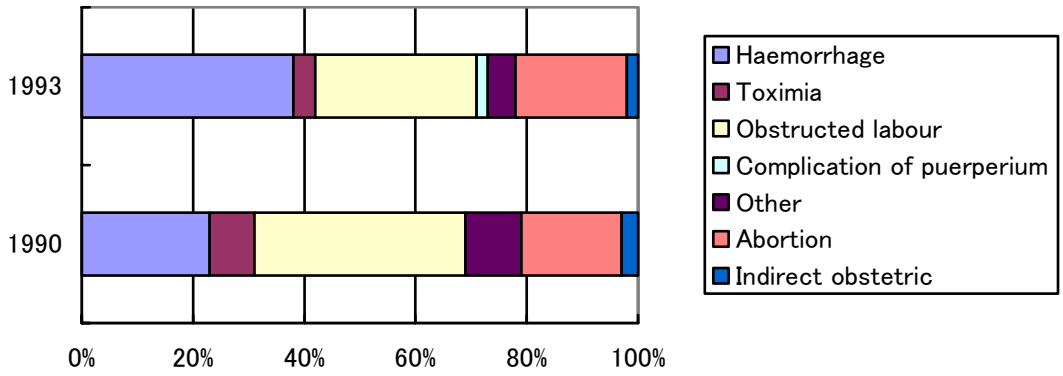


*IMR: per 1000 live births, MMR: per 100,000 live births and U5MR per 100 population.

Source: MOPH in Thailand (2).

Figure 3 Trend of IMR, MMR and U5MR in Thailand.

The top three causes of maternal mortality were haemorrhage (31.9%), indirect causes such as Malaria or HIV/AIDS (21.3%), and unsafe abortion (14.9%) in 1996. During 1995~2002, skilled birth attendant at delivery was 99% and very high percentage was indicated, but most of the haemorrhage cases were occurred on the way to hospitals or at homes. Further, those causes of distribution were differences among each region in Thailand. For example, in south region, not practicing family planning and deliver at own homes are still high proportion because of religious reasons. Unsafe abortion is majority in southern part, HIV/AIDS was in Central part, and Malaria cases were in Northern part of Thailand. Figure 4 shows the comparison of cause of maternal deaths which were occurred in hospital by the year 1990 and 1993 (3). Due to this figure, both year ‘haemorrhage’ was the major cause of maternal death and it had increased.



Source: Kanshana S. Maternal mortality in Thailand 1995-1990. MOPH; 1998 (3).

Figure 4 The comparison of causes of maternal deaths by the year 1990 and 1993.

IMR was 24 and U5MR was 28 per live births in 2002. Nutritional status of children is one of the important indicators of child health, and it has progressed in Thailand. Among under 5 years children, 6% of them suffered moderate to severe wasting, and 16% of them were moderate to severe stunning during the year 1995~2002 (15). By contrast, low birth weight (under 2,500 gram) has not much changed since 1990, it was 10.2% in 1990 and 8.1% in 2001 among infants (2).

UNICEF indicates an overview of how countries have fared in achieving six of the world summit's seven major goals for children and women in 2000. Table 4 shows status of end-decades on major world summit goals in Thailand (16). The reduction rate of U5MR was 30% during 1990~2000. Although primary school enrolment is compulsory in Thailand, primary school enrolment ratio, net, female was 85% during 1998~2002 (15). Considering points of these data, in Thailand, despite of economic growth during the past five years (GDP per capita average annual growth rate during 1990~2002 was 2.8%), IMR, MMR and U5MR has not reduced sufficiently. To set strategies for promoting MCH care in Thailand is important issue today.

Table 4 Status of end-decades on major world summit goals in Thailand.

Goal 1		Goal 2	Goal 3	Goal 4		Goal 5		Goal 6
IMR	U5MR	MMR	Child mal-nutrition	Safe drinking water	Sanitary Excrete Disposal	Net enrolment primary education	Reach grade 5	Adult literacy
N.A	N.A	N.A	U.C	A	A	N.A	A	A

* N.A: not achieved, A: achieved, U.C: uncertain.

Source: UNICEF. Shaping the future for children in East Asia and the pacific. Beijing: UNICEF; 2001 (16).

2.2 MCH handbook

2.2.1 MCH handbook

When people understand there is a risk of ill-ness or death, they are likely to cooperate in reducing those risks and participate in their own care (17). Individual growth charts are used world wide today, and this provides usefulness at level of early detection of abnormal child development (18).

MCH handbook has also benefits on MCH. The concepts of this handbook in common are keeping at mother's hands, and health record and information of MCH from pregnancy to child growth are arranged into one book. Nowadays, MCH handbooks are used nationwide in Japan, Thailand, South Korea and Netherlands etc. Some other countries for example, Indonesian and Vietnamese governments use MCH handbooks on a trial basis. MCH handbook encourage mothers to utilize health facilities for MCH (8)

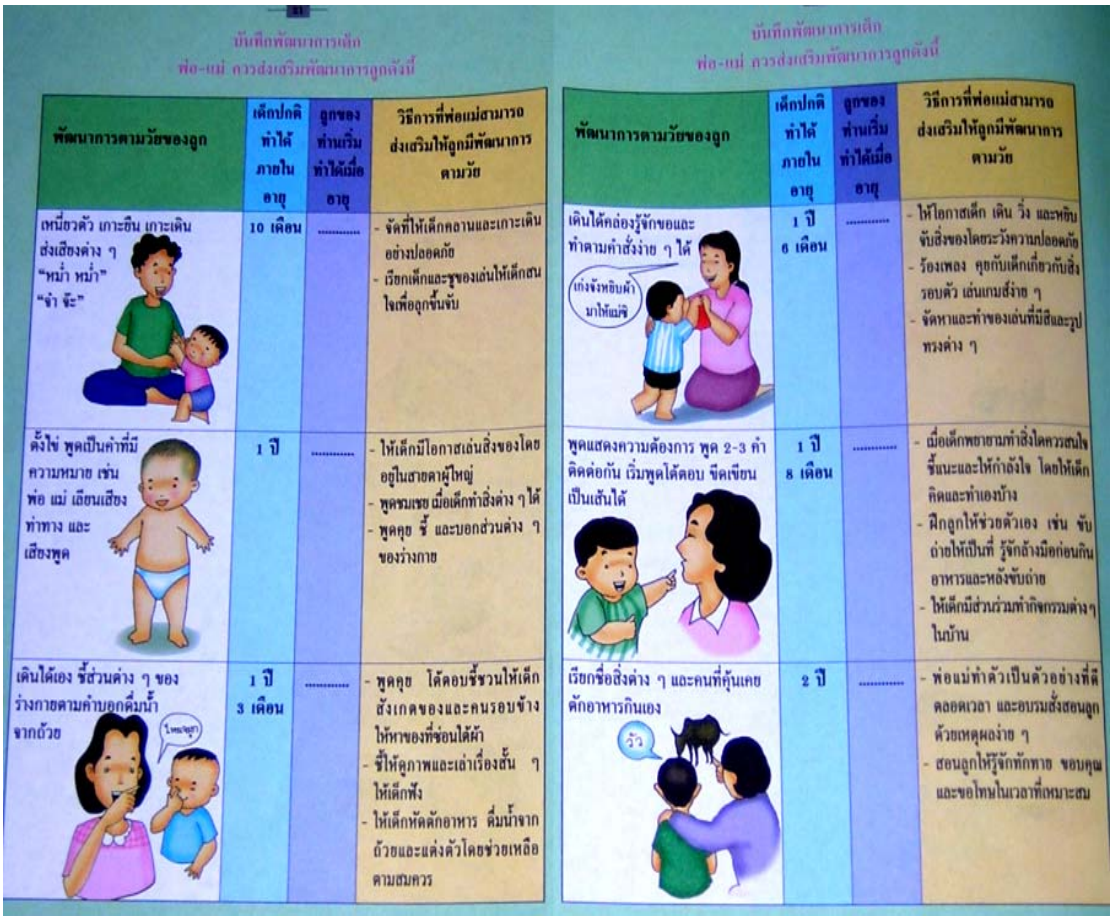
Japan has the longest history to use MCH handbooks for MCH activities, it was prepared in 1942. Since1948, MCH handbooks have distributed to mother who registered local government as pregnant. Japanese Ministry of Health, Welfare and

Labour considers this handbook has the core of MCH services. The aim to distribute MCH handbook is as form of pregnant/birth registration and help to improve the health status of the national population. The contents are record (such as: medical and parental observation) and information （i.e. administrative mass screening day, MCH and child care）. MCH handbooks are structured about 74 pages and local level governments can add local information by their own needs (19).

To promote utilization of MCH handbooks, mothers get incentives which provide practical health and nutrition, such as the necessary food and clothing fee (9). Nowadays these incentives are changed to free MCH check-up, also the detail of contents have been changing time to time. The latest version has used from the year 2000, and it was added necessary update information (e.g., delivery and child care for working mothers, or fathers participation in MCH) (19). Mothers also recognize the importance of MCH handbooks in MCH activities, because most of the parents keep MCH handbooks until their children get married (20). Japan has used MCH handbooks over five decades, and the IMR and MMR are dropped dramatically during this period. It may say that MCH handbooks contributed to MCH promotion.

2.2.2 MCH handbook in Thailand

In Thailand, the MOPH has developed the MCH handbooks since 1982 for rural project, and the use of the handbooks has been nationwide since 1985. Pregnant women are given the handbook when they obtain first ANC at a health care institution under the MOPH (10). The contents included in the handbooks are maternal care from pregnancy, delivery to postpartum, family planning, child nutrition, child growth curve, immunization, and general care for newborn to 5 year-old child. The contents have been revised several times, and the latest version of MCH handbook consists 48 pages (21). The example of contents in MCH handbook is shown in Figure 5. This is part of child development milestone, and mothers are able to know the standard development of child by the age, and they also record this part. In the MCH handbook, it explains to parents that the aims of recording this part are parents can observe their own child's development, moreover they can promote child's growth as physical, mental, emotional and social.



*child development milestone consists during 1 month to 6 years, and this figure shows guideline of aged 10 months to 2 years.

Figure 5 Contents of MCH handbook in Thailand (published during 2000~2001).

Isaranurug's study in Phrae province, Thailand, 100% of the health personnel stated that MCH handbook is very useful for giving essential information of MCH and self-assessment of own MCH, then they encouraged to mothers bring handbooks to health centres. The issue of utilizing MCH handbooks in Thailand is inefficient use among mothers. Study showed 91.1% of parents had never recorded in the handbook, and 35.7% of parents had not read any information from handbooks (11).

Table 5 shows the comparison of utilization of MCH handbooks, IMR and MMR between Japan and Thailand. The researches were conducted by Fujimoto et al. in Japan, 1999, and Isaranurug et al. in Thailand, 2001 (10, 20).

Table 5 Comparison of utilization of MCH handbook, IMR and MMR among Japan and Thailand.

Item/Country	Japan	Thailand
MCH handbook started in	1948	1985
Recording rate in 1999/2001		
-Antenatal history	95.9%	91.9%
-Delivery	98.5%	92.5%
-ANC check-up	98.6%	92.5%
-Child growth curve	78.4%*	56%*
-Developmental milestone	88.7-88.9%*	18.5%*
-Immunization	98.4%	98%
IMR (per 1000 live births) in 2002	3	24
MMR (per 100 000 live births)	6.5 in 2001	44 in 1996

*: High discrepancies of utilization among Japan and Thailand.

Source: Isaranurug et al. The satisfaction and systematic users of MCH handbook (10), Fujimoto et al. The utilization of MCH handbook in Japan (20).

According to this table, recording rate of during pregnancy was not differences, but the rates of child growth and development had big disparities. This inferred the utilisation rates of MCH handbook among both Japan and Thai health personnel were high, in contrast, the utilization among mothers were differences. Mothers in Thailand had poor performance on self-recording compared with Japanese study.

2.3 Theory of this study

Gochman defined that “health behaviour” is personal attributes such as beliefs, expectation, motives, values, perceptions, and other cognitive elements; personality characteristics, including affective and emotional status and traits; and overt behaviour patterns, actions and habits that relate to health maintenance, to health restoration and to health improvement (22).

Especially, mothers a dominants and pivotal role in performing health activities for all family, and they have responsibility for promoting children's well-ness (23). Therefore, for improving MCH status, better understanding of mothers' beliefs is needed.

HPM was constructed by Pender in 1982, for conceptual framework for nursing, similar to Health Belief Model (HBM). The original HBM was proposed as a framework for exploring why some people who are illness-free take actions to avoid illness, whereas other fail to take protective actions. Mainly, in HBM emphasize prediction of preventive behaviour (24). On the other hand, HPM is used to predict engaging in behaviour that maintain or improve well-being, rather than prevent disease. In Pender's model, determinants of health promoting behaviour are categorized into cognitive-perceptual factors (individual perceptions), modifying factors and variables affecting the likelihood of action. Cognitive-perceptual factors are identified within the model as motivational mechanisms; those perceptions which predispose an individual to engage in health promoting behaviours. Included are the individual's perceptions regarding the importance of health, control of health, self-efficacy, definitions of health, health status, benefits and barriers to health promoting behaviour, and initial HPM illustrated as Figure 6 (25).

-Perceived self-efficacy

Perceived self-efficacy as defined by Bandura is 'the conviction that one can successfully execute the behaviour required to produce the outcome', and it added to HBM in order to increases its explanatory power. Another way for explaining of perceived self-efficacy is that a judgement of one's capability to accomplish a certain level of performance. These perceptions of self-efficacy contribute to how individuals judge their choice of and persistence in those behaviours. Highly efficacious individuals are more likely to initiate new behaviours and persevere in their attempts until mastery is achieved (26). For health promotion, beliefs about self-efficacy are important, because of influencing the adoption of healthful behaviours, and maintenance of these behavioural changes in the face of challenge and difficulty (24).

In HPM, 'perceived self-efficacy' is one of the strongest predictors for taking health behaviour. The studies of HPM reviewed that 86% provided support for the importance of self-efficacy as determinant of health-promoting behaviour (25). In this study, for example of self efficacy is that mother believes for promoting her baby's health, she can give breast milk easily.

According to the study of Strecher et al., self-efficacy is related to subsequent health behavioural change (27). Also, Buxton et al. in 1991 found that 27% of women with low maternal confidence in the prenatal period discontinued breast feeding comparison to only 5% of women with high confidence (p-value<.001) (28). Breast feeding is one of the MCH promoting behaviours, when mothers had high self-efficacy, they more likely to take high performance.

-Perceived control of health

Perceived control of health is the belief that health is self-determined (internal control), or is influenced by others power and/or the result of chance (external control), and also this is one of the cognitive mechanisms in HPM (25, 29).

The higher one's degree of beliefs in internal control health means, the greater the confidence which can lead to achievement of desired goals. Tinsley constructed 'Parental Health Belief Scales (PHBS)' for measuring parental locus of control, and study showed that mothers who believed in their own control over their children's health were more likely to take their children to immunization of well-child clinic (30). The considering point is that the statement of internal locus of control in PHBS is for example that: 'I can do a lot to my child be strong and healthy'. This statement has similarity of expression of mother's confidence to child care (31, 32). Moreover, Wallson examined health locus control based on self-efficacy concepts, that found who had higher self-efficacy internal control, engaged in higher amount of health promoting actions (33).

Further, Pender examined factors of HPM, the perception of control of health was supported 41% of significant relation to health promoting behaviour (25), and

‘perception of self-efficacy’ can measure the mothers’ belief of their ability to take MCH promotion, therefore, ‘internal control of health’ was excluded in this study.

On the other hand, ‘external control’ means that health is determined by other’s power (mainly health professionals or teachers), and/or chance (god). The examples of statement of external control in PHBS are that: ‘Only trained health professionals can influence to my child’s health’ (others power), and ‘Luck plays a big part in determining how healthy my child is’ (31, 32). According to these statements, the external control expresses opposite beliefs that mothers’ confidence.

Bates’s study also explained that lower of mother’s perceived health control indicated lower of immunization of children up to date, but this study was not explained what kinds of control influence to mothers behaviour (34). Therefore, the measuring belief of external control is needed, as measuring self-efficacy toward MCH promoting action.

-Perceived benefits /barriers of behaviour

Perceived benefits mean that a person’s belief that a specified health action has positive value (24), and are proposed directly motivating behaviour as well as indirect motivating behaviour in HPM. 61% of testing HPM studies support for the importance of this variable. Benefits of health behaviour are perceived because of the effectiveness of the various available actions in reducing disease threats, monetary rewards or please a family member (24). Anticipated benefits of action are mental representation of the positive or reinforcing consequences of behaviour (25).

On the contrary, perceived barriers of behaviour consist of concerning the unavailability, inconvenience, expense, difficulty, or time-consuming nature of a particular action (24). In relating health promotion, barriers may be imagined or real, but these perceptions usually arouse motives of avoidance in relation to a given behaviour, also it related with self-efficacy. High self-efficacy reduces perception of barriers. 79% of empirical studies which tested HPM support for importance for a determinants of health-promoting behaviour (25).

Bates's study in 1992 showed that perceived benefits of medical care and financial barriers were related with under vaccinated 2 years old children (34). Kviz et al. studied that there was significant relationship between mother's health belief and number of immunization, and the belief were dominated by perceived efficacy of immunization and benefits of well-baby services (35). To apply both perceptions of benefits and barriers are important for assessing what values or/and blocks exist in MCH promotion.

Other factors such as 'importance of health' (35% of empirical studies had significance) and 'definition of health' (47% of empirical studies had significance) were not highly supported for significance to related with health promoting behaviour, also 'perception of health status' was defined that self-evaluation of current health as a subject statement. However empirical HPM tests showed there was related to behaviour (52% of empirical studies had significance), in this study mother's MCH promoting behaviour was related to past action (25). It can be assumed that current health situation was not related with both mother's belief and action, therefore these cognitive factors were excluded in this study.

-Cue to action

In initial HPM 'cue to action' is influence to likelihood of taking action (25). 'Cue to action' also founded in HBM framework, and means either internal or external, that can trigger health related cognitive process or health action, and interact with an individuals' motivations such as media information, education or others' advices. Rosenstock et al. explained that there were not systematically studied, however, these cues may ultimately prove to be important (24).

In this study, MCH handbooks can be one of the educational, information and reminder sources of MCH activities, it is presumed that trigger of mother's cognitive and MCH action.

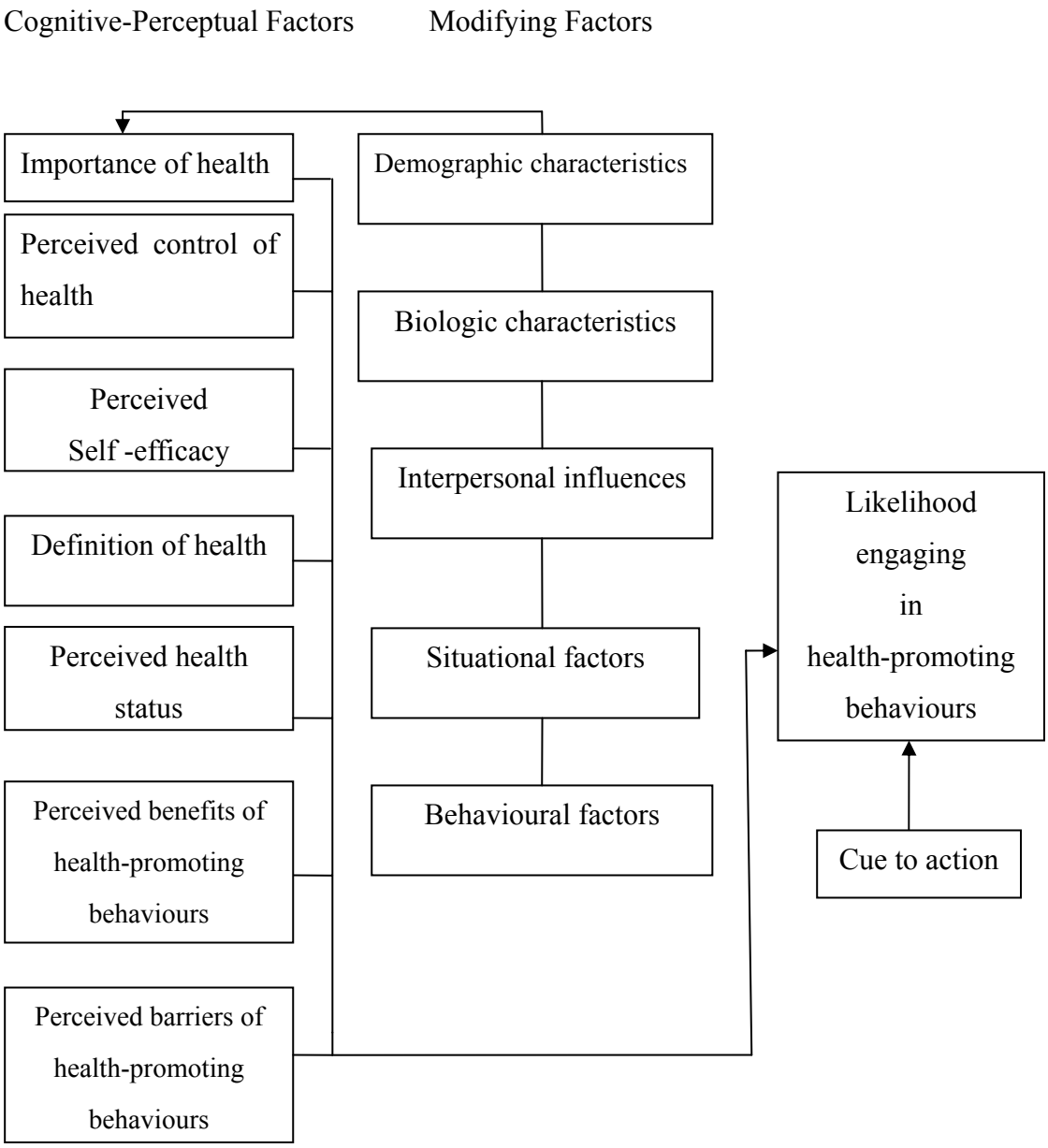
-Modifying factors

The cognitive-perceptual mechanisms in HPM are modified by:

-demographic characteristics (e.g., sex, education)
-biological characteristics (e.g., age, body weight)
-interpersonal influences (social support, interaction of health personnel)
-situational factors (the availability and ease of access to health facilities etc)
-behavioural factors (previous experience).

There are numerous factors existing in the nature and those influence to personal behaviour and belief (25). In this study, demographic characteristics, biological characteristics and situational factors (income or occupation of mothers) are combined into socio-demographic characteristics, and behavioural factors are related to pregnant experience, therefore it may assessed as the child's birth order.

HPM does not include 'fear' or 'threat' as a source of motivation for health behaviour, like HBM (36). In this study, mother's belief and action are related to MCH promotion, which is not rely on 'threat' of illness, but for 'well-being'. HPM can be a structure of theoretical framework for explaining mother's MCH promoting belief.



Source: Pender NJ. Health promotion in nursing practice. 4th ed. New Jersey: Prentic-Hall; 2002: p79 (25).

Figure 6 Initial version of HPM.

2.4 MCH promoting action

Complications of pregnancy and child birth are leading cause of death and disability among reproductive age of women, and also child death and disease are attributed to poor maternal health and poor quality of obstetric and newborn care (37). More than 6 million children could be saved each year, if they were reached by a small set of preventive and curative intervention (such as immunization), and home care (breast feeding/personal hygiene) (14). Moreover, improving maternal health during pregnancy is needed.

For surviving and well-being of MCH, preventive and promoting interventions are very important, such as ANC, immunization for children, adequate nutrition (i.e., breast feeding and complementary food), and avoid unwanted and short interval pregnancy.

2.4.1 ANC

Maternal health during pregnancy can affect the health of the unborn child in many ways. The elements of ANC are: 1) detection and management of existing diseases and conditions, 2) detection and management of complications and 3) prevention of ill-ness and complications (38). Also to promote MCH, this is important, because of an advantage for pregnant women and their fatal for physical assessment, teaching healthy practices for mothers and children. In Asia, and the near East and North Africa, nearly 60% of pregnant women received one or more visits from a skilled provider (5, 13). In Thailand, adjust rate during 1995~2000 of ANC coverage was 92% (15)

The variation of numbers of ANC attendance is made by individual woman, but number of ANC attendance is important. WHO began to advocate a minimum of four attendances is focused (38). Petrou et al. showed that there was association between the number of ANC visits and delivery of low birth weight baby (39). A meta-analysis of seven trials found that four ANC visits were not associated with an increase in negative perinatal outcomes compared to more frequent visits (38). In

Thailand, ANC attendance was recommended at least 4 times as WHO recommendation, and the study in Northeast part of Thailand by Isaranurug et al. showed around 95% of mother had attended to ANC 4 times or more (10).

2.4.2 Family planning

Too many births, births too close together, and births of adolescent girls or women over the age 35 endanger women's lives and account for approximately one third of all infant deaths (5). Inadequate family planning may lead many women seek abortion to avoid unintended births (40).

Obtaining family planning is not only improvement survival rates of mother and child, but also improve nutrition, and education status of them (6). However around the world, over 600 million married women are using contraception, many women still do not achieve their fertility goals; such as discrepancy of unwanted child number and real child number (40).

During 1995~2002, the prevalence of contraceptive (the percentage of women in union aged 15~49 years old, currently using contraceptive) was 79% in Thailand (15). In Isaranurug's study, it found that 14% of women did not practice family planning in Northeast part of Thailand (10).

2.4.3 Immunization

A child who completed immunization on time, it increases chance of survival (6). Vaccine-preventable diseases account for around 10% of the global burden of mortality in children age under five years (38). Also, immunization for children is good opportunities to check child's health by skilled health workers. The world summit for children set a goal of immunization as 90% of the world's children coverage, but in developing countries, the coverage of immunization rates are 46 to 85% (13). Moreover, it estimates that around 10 to 59% of drop-out rates, between the first and last vaccination are common in the world (38).

In Thailand, the immunization coverage rates were: BCG (89.4%), DPT

3doses (89.1%), OPV 3doses (89.3%), measles (83.1%), and hepatitis B 3doses (87.9%) in the year 2000, and these were not achieved a goal which was set by UNICEF (2). In contrast of these results, immunization coverage has progressed in 2003, the rates were BCG (99%), full immunized DPT (96%), OPV (97%), hepatitis B (95%) and immunized against measles (94%) (41).

2.4.4 Child's nutrition

Poor nutrition in the first two years can slow a child's physical and mental development for her/his life. Improving feeding practices could save 800,000 lives per year. Breast milk continues to be a source of key nutrients and to confer protection against infectious diseases, and also develop and grow infants more secure (5). The benefits of breast feeding are for both younger and older infants' lives. For instance, infants who stop any breast feeding between 9 to 12 months are 2.3 times more likely to die than infants continue at this time (40). Also, meta-analysis showed no breast fed babies were 5.8 times more likely to die than babies were breast fed (1).

Breast feeding in developing countries appear to improve since 1990. In Thailand, MOPH launched 'the Baby-Friendly Hospital Projects' for encouraging mothers to practice breast feed. The report of 2001 stated that the health centre certified by the projects at 92.8% (2). Around 87% of mothers continued breast feeding 12~15 months in Asia (40), by contrary, in Thailand 71% of children were breast fed 6~9 months, and 27% had continuous breast feeding 20~23 months during 1995 to 2002 (41). In Isaranurug's study found that 13.8% of mothers fed breast milk less than 4 months, and 19.3% was 4~6 months (10). In addition, it can be assumed that the availability of consuming artificial milk and increasing working mothers would make the reduction of breast feeding rate.

Breast milk continues to be a key source of rich nutrients for children, but for child development, it is not sufficient to meet nutritional requirements. WHO recommends starting at 6 months nutrients and energy rich complementary food, by contrast, Thai government recommend to start at 4months add to breast feeding. Previous study showed that complementary feeding was strongly associated with

reduction of child mortality rates (37).

The study was done in Thailand shows that the average of age in months of starting complementary food was around 3.7 months, and 15% of mothers delayed more than 4 months (10). 4% of children had exclusive breast feeding during the year 1995~2002 (41).

2.4.5 Oral health

Dental carries are not direct cause of child death, but current life styles make increasing dental carries among children. Especially dental carries likely to occur during childhood, and which on temporary tooth influence their permanent tooth, also. In Japan, encouraging mothers to check and keep their child teeth at local municipally level of health centre make succeed to reduce DMF (Decayed-Missing-Filled-Teeth) (19).

The contents of MCH handbook encourage mothers to care child oral health, however, in Thailand, the proportion of children who got dental carries during 2000~2001 was, 3 years old: 65.7% and 5-6 years old: 87.4% (42). Moreover, Sithan found that around 83% of mother practiced poor dental hygiene with preschool children at one province in Thailand, the year 2003 (43).

2.4.6 MCH promoting action

To reduce maternal and child mortality, health promotion concepts are required for MCH activities. WHO defined that health behaviour is any activity undertaken by an individual, regardless of actual or perceived health status, for the purpose of promoting, preventing or maintaining health, whether or not such behaviour in objectively effective towards that end.

'Health promotion' is defined as the process of enabling people to increase control over, and improve individual health by WHO. Taking health promoting action is not only direct to strength individual skills or capability, but also be changing social, environmental and economical conditions (7). When mothers or children die or sick,

their families, communities and nations suffer as well. Good MCH is imperative for economic and social development (14).

The needs for improving MCH care are not only changing the mother's behaviour, but also change the mother's awareness. For example, in Indonesia, 50,000 village midwives were trained, but they were continued under utilized. Awareness of activities of well MCH improves the demands of MCH services at community level. Therefore, the quality of MCH services is also improving (37).

2.5 Determinants of mother's MCH promoting belief and action

2.5.1 MCH handbook for MCH promotion

For health promotion, access to education and information is essential to achieving effective participants and empowerment of people (7). Keeping own health record makes us to get our own health information easily, then to have responsibility of own health, and to make decisions. WHO mentions about some benefits of home-based maternal records that it proved most useful to community health workers, traditional birth attendants and mothers, themselves. In addition, this record make increased the referral rate, the use of ANC, attendance at postpartum health checks, and childhood immunization rates. It was considered to be a suitable tool for promoting self-reliance and the participation of mothers in their own health care (5).

When patients had own medical record, they felt more 'control' in their health and more 'trust' on health professionals (44). The study of a maternal record and mother's emotion which was conducted in the U.K. in 1984 by Elbourne et al., also showed that holding mother's fulfil records were significantly more likely to feel in control of their ANC and easier to talk health professionals (45). Similarly, studies in Australia found that pregnant women hold own maternal record made improving communication level between mothers and health workers, by contrast, non-holders felt more 'anxious', 'helpless' and 'less information of MCH' during pregnancy (46, 47).

Moreover, Shah et al. evaluated home-based maternal records in eight countries, the results were utilising home-based maternal records improved mother's involvement in MCH (48). Conversely, Patterson et al. found in rural Australia (in 1998) that holding own maternal record was little impact on MCH care (49). Due to other studies, it can be assumed keeping own record may influence on maternal belief and action.

2.5.2 Mother's socio-demographic characteristics

-Age

Age is important in that older rather than younger persons are more likely to participate in healthy life style. People seem to take better care of themselves as they grow older in a number of behaviours (50).

P-Cueves et al. found that less than 25 years old mothers were less aware than older mothers (more than 34 years old) for utilizing immunization programme (51). Also, 11 studies tested relationship between age and health promoting behaviour, range of correlation coefficients were −0.34 to 0.58 (52). These results show in some studies found young aged people more likely to take health behaviour, by contrast, in some studies showed old age related to high performance on health. On the other hand, Mor et al. founded that there was no relationship between marital age and prenatal care use (53). Age is also important information source for when mothers deliver target children. This may related to argument of practicing family planning.

-Marital Status

Marital status is key variable for assessing whether mothers have their husbands' supports or not. In addition husbands' involvements are important for child development, because they can help house tasks when mothers are during pregnancy or breast feeding (5). Husband-wife households tend to engage in better health behaviours (54). On the contrary, unmarried status sometimes obstructs taking health behaviour and awareness. In Bates's study, there was significance that unmarried mothers did not take their child to immunization services compare with married mothers (34), and three studies found there was relationship between marital status

and health behaviour (52).

-Family size

In Isaranurg's study, the average of family size in rural area in Thailand, was around 5 members, and whole kingdom in the year 2001 was 3.6 (10, 55). The family size and health behaviour are correlated. Children in larger households made less frequent use of paediatrics services (54).

On the other hand, Becker et al. found that mother with large family members kept appoint day with health facilities rather than who lived small family members. In large households, someone available to stay and take care of other children, this makes easier to mothers utilize health facilities (56).

-Education

In Thailand, adult literacy rate of female as percent of male was 97%, and primary school enrolment of female as percent of male was 90%, also average year of education attainment of population aged 15 years and over was 7.2 years in the year 2000 (15, 55). Mothers' educational level is strongly related to MCH, for example, illiteracy mothers' children more likely to have higher risk to be born as low birth weight or mal-nutritional status (13).

In Becker's study, education of mother was significantly related to keeping the appointment to paediatrician (56). Also, P-Cuevas et al. mentioned that the lower education mothers do not fully participated well-child programme, and internal statistical reports have stressed that percentage of use of the well-child programme was below 50% (51). In addition, 10 studies for testing that relationship between education and health promoting behaviour, and there was significant relationship among them (52). Also, women's education affects fertility of them (40).

-Occupation

Maternal socio-economic variables such as education and occupation are clearly associated with children's health status, because of the mothers' education,

occupation and husbands' occupation influence on their social status. These factors strongly influence aspects of child development, mother-child interaction, maternal belief or/and attitude (23).

Mother's occupation also influence on MCH promotion. Mothers who work outside of house have low opportunities to take their children to immunization and practice breastfeeding (38).

-Family income

Family income is an important characteristic of the home environment. According to the National statistics in Thailand, whole kingdom, the average of monthly family income was 12,185 baht, and monthly expenditure was 10,025 baht in 2000 (55). Family income is also clearly associated with children's health status, and five studies found there was relationship between income and health behaviour (52). Moreover, considering fees or out-of-pocket costs are a significantly deterrent for family health seeking behaviour or leading delay of seeing out-side help, especially for children and pregnant women (14).

Mor et al. in 1995 found that low-income mother had taken their children to paediatricians or primary care providers, dentists, and immunization providers less often than higher-income mothers (53). Lower socio-economic status, lower educational attainment, and younger age were also predictors of duration of breast feeding (57). In addition, family income influence on perception of barriers, because of considering the cost of health promoting action.

-Husband's occupation

Husband's occupation is also clearly associated with mother's socio-economic status. The studies by Benetts et al. in 1997 showed comparison of women who had received ANC, more of the women who had not received ANC had partners were unskilled construction workers, and fewer of the women their partners had a semiskilled job in Thailand (58).

2.5.3 Child's socio-demographic characteristics

-Gender

In China, girls have 33 percent higher risk of dying than their male counterparts. This inequity is thought to arising from the preferential treatment of boys in family health care-seeking behaviour and in nutrition (1). It can be assumed that male children are more concerned than female children by their family.

-Birth order

Bates mentioned that the older children, those further along in the birth order, those from large families and poor educated receive fewer health care services (34). Further, child birth order is related to mother's prior experience, in Pender's HPM, prior experience is one of the determinants of health behaviour (25).

2.5.4 Mother's social supports (husband involvement /relative support/ friends, peers support /participation in community group)

WHO mentioned that the fastest way to improve MCH status was MCH care should be engaged not only mothers, but also be families and communities closely to mothers (1). In Pender's HPM, 'interpersonal influence' is one determinant as been proposed as affecting health-promoting behaviour as well as indirectly through social pressures or encouragement to commit to a plan of action, and 'social support' is one factor of interpersonal influences' (25). Three studies found that there was relationship between social supports and health behaviour (52). Moreover, a number of studies have shown that mothers living in environments characterised by high levels of stress and low levels of support are poor utilize of health services (55).

Husbands have pivotal role for both pregnant women and own children. UNICEF mentioned husbands can help meet the child's needs of affection or stimulation, also ensure the improve quality of education, nutrition or health care. Moreover, they can help ensure the safe of motherhood (5). Health behaviours are easier to sustain when other household members support the behaviours through encouragement or mutual participation (54).

In Bates's study, there was relationship between living with grandmother and vaccination status of children (34). On the other hand, Kuster at el. showed that social supports were not related with health promoting activities among ventilator assisted children's mothers (57).

Friends/peers support and community group also encourage to individual perception or action toward MCH promotion. Through peers counselling or mothers support groups, the frequency of exclusive breast feeding was increased (38). Pregnancy, delivery and child-baring can not be solved by mother's individual performances, also need social supports (5). For this study, to assess the relationship between social supports and maternal belief/action is necessary.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Study design

This study was a cross-sectional study.

3.2 Study population

Mothers who had 3 to 4 years old children, and were living in Phanom Thuan district in Kanchanburi province, Thailand. To avoid potential confounding influence to mother's belief and action, inclusion/exclusion criteria was set as below:

-To include, mother was willing to obtain this research, and living together with her child more than 6 months after delivery.

-To exclude, mother who did not have MCH handbook, not lived together with her child, or her child was in hospital at data collecting time.

3.3 Sample size

The sample size was calculated to the following formula.

$$n = \frac{Z^2_{\alpha/2} p(1-P)}{d^2}$$

Where:

Z=1.96, level of statistical significance in which, for this study it was set at α= 0.05 (two side test).

p =0.27*, anticipated population proportion which related pilot test in this study. (*Estimated from MCH handbook holders, who did low MCH promoting action in Kanchanburi province, Thailand).

1-p= 0.73.

d =0.06, the study population would be estimated the true population within 6%.

Then, n=211. Eligible mothers during data collection time were 224. Hence, total study population was 224 mothers.

3.4 Sampling technique

Sampling technique shows as Figure 7. There are 8 sub-districts, total 532 mothers who had 3 to 4 years aged children in Phanom Thuan district. According to inclusion/exclusion criteria of this study, the mothers who lived together with children at data collecting time were 397 in the whole district.

One sub-district was excluded for pre-test, therefore simple random sampling was done among 7 sub-districts, and 5 sub-districts were selected for data collection. The target mothers were all 224 mothers who were matched inclusion criteria (Figure 7).

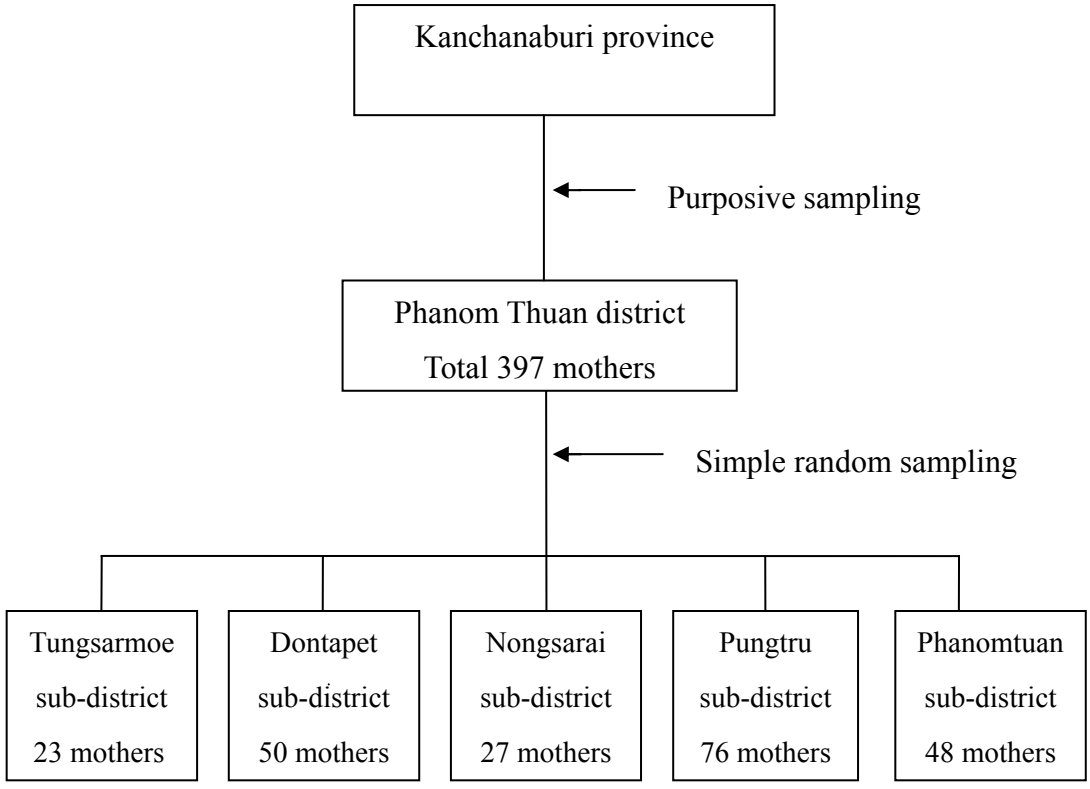


Figure 7 Sampling technique for collecting data.

3.5 Research Instruments

3.5.1 Instruments

A structured questionnaire was the tool in this study, and it was consisted with both close-ended questions and open-ended questions (Appendix A). All questionnaires were translated from English to Thai language by academic translator for data collection. The questionnaire was composed of five parts:

Part 1 : Socio-demographic characteristics of mother who has 3 to 4 year-old child and target child
Part 2 : Mother's social supports
Part 3 : Utilization of MCH handbook
Part 4 : Mother's MCH promoting belief
Part 5 : Mother's MCH promoting action.

Part 1 Socio-demographic characteristics of mother and child

This part included questions asking about socio-demographic characteristics of mother who had 3 to 4 years aged child such as age, marital status, family size, education, occupation, husband's occupation and family income, and socio-demographic characteristics of child such as gender and birth order. For analysing, several variables were coded as following:

-Marital status : 'living together' =1, and 'living separate' =0
-Mother's occupation : 'working group' =1, and 'housewife' =0
-Husband's occupation : 'skilled work' =1, and 'unskilled work' =0
-Gender of children : 'male' =1, and 'female' =0.

Part 2 Mother's social supports

This part included eight questions asking about mother's social supports such as husband involvement (3 questions), relative support (3 questions), friends/peers support and participation in community group (one question in each). All questions were either 'yes' (scored 1) or 'no' (scored 0). For descriptive statistics mother's social supports were classified into two levels with using total score, such as 'High'

and 'Low'. The mean score was used for cut-off point, such as:

High support: the true score ≥ the mean score

Low support : the true score < the mean score.

Part 3 Utilization of MCH handbook

This part included utilization of MCH handbook. In this study, MCH handbook was belonging to the youngest child, when target mothers had more than one child aged 3 to 4 years.

The utilization of MCH handbook was divided three categories such as; bringing (1 question), recording (4 questions) and reading (12 questions) by mothers. The questions were scored as 'Always/Every parts/In detail' = scored 2, 'Occasionally/Some parts/Skimming' = scored 1, and 'Never' = scored 0. The full score was 0 to 34. For the descriptive, total score was classified into three levels as 'High', 'Moderate' and 'Low'. The cut-off points for utilization of MCH handbook was that more than 80% of total score was 'High', 40 to 80% was 'Moderate' and less than 40% was 'Low'. Therefore the cut-off points were determined as follows:

High : the true score ≥ 28

Moderate : the true score = 15~27

Low : the true score ≤ 14.

Part 4 Mother's MCH promoting belief

This part included 'perceived self efficacy of MCH promoting action', 'perceived external control of MCH promoting action', and 'perceived benefits/barriers of MCH promoting action'. Questions were developed based on literature review, and three categories were consisted 10 questions each.

These beliefs were scaled 4 points Likert-agreement scale and scored as 1= strongly disagree, 2= disagree, 3= agree, 4= strongly agree for 'perceived self efficacy' and 'perceived benefit'. For 'perceived external control' and 'perceived barriers' were negative perception, therefore scored 1= strongly agree, 2= agree, 3= disagree and 4= strongly disagree. For descriptive statistics, MCH promoting belief

was classified two levels with total score, and the mean score was used for cut-off point. The classification was follows:

High perception: the true score ≥ the mean score

Low perception : the true score < the mean score.

Part 5 Mother's MCH promoting action

This part includes mother's action which recommended by MCH handbook, such as utilization of ANC, family planning, immunization for child, breast feeding, complementary food and oral health. This part was scored as following:

-Utilization of ANC: 'Less then 4 times' = 0, and '4 times or more' = 1

-Family planning: 'No practicing' = 0, and 'Practicing with at least one contraceptive method' =1. When mother did not live with her husband, the scoring was counted as '1'.

-Immunization for child: 'Incomplete' = 0, and 'Complete' = 1

-Breast feeding: 'No breast feeding' = 0, 'Less than 4 months' = 1, '4 months to 6 months' = 2, and '7 months or more' = 3

-Initiating month of complementary food: 'Less than 4 months' = 0 and '4 months or more' = 1

.

-Oral health: 'None' = 0, 'Once in a day' = 1, and 'Two times or more in a day' = 2.

For descriptive statistics, after calculating total, the mean score was used for classified two levels of MCH promoting action, such as:

High promoting action: the true score ≥ the mean score

Poor promoting action : the true score < the mean score.

3.5.2 Pre-test

Prior to the actual data collection, the researcher intended to pre-test to 30 mothers who had 3 to 4 years old children and hold MCH handbooks in Donjedee sub-district in Phanom Thuan district.

In the analysis of reliability for mother's belief, the reliability coefficient Alpha was 0.76 (Cronbach), and it was acceptable. During the pre-test some expressions were in terms of difficulties to understand for respondents, therefore those were revised before actual collecting data.

3.6 Data collection

Information about mother's belief was self-administrated, and other parts were face to face interviewed by trained Thai interviewers with constructed questionnaires from 16th January to 11th February in 2005.

3.7 Data analysis methods

Refer to this study's hypothesis, data was analysed below methods and calculations were performed using MINITAB statistical programme package.

Part 1 Descriptive statistics

To describe variables of interests, to assess the utilization of MCH handbook, mother's MCH promoting belief and action in Phanom Thuan district. Frequencies, percentage, mean, standard deviation and range were to describe variables of interests.

Part 2 Analysis of relationship between each of the independent variables and each of the dependent variables

To analyse the relationship between each of the independent variables such as; utilization of MCH handbook, mother's socio-demographic characteristics, child's socio-demographic characteristics and mother's social supports, and each of the dependent variables such as; mother's MCH promoting belief and action. This was

performed using Pearson correlation method.

Part 3 Multivariate relationship analysis and analysing predictability of independent variables on each of the dependent variables

To analyse the multivariate relationship and predictability of independent variables such as utilization of MCH handbook, mother's socio-demographic characteristics, child's socio-demographic characteristics and mother's social supports, on each of the dependent variables such as; mother's MCH promoting belief and action. This was performed using stepwise multiple regression model.

CHAPTER 4
RESULTS

The data collection process was conducted from 16th January to 11th February in 2005 at Phanom Thuan district in Kanchanburi Province, Thailand. 224 mothers who had 3 to 4 years aged children were eligible to be interviewed by trained Thai interviewers. Several questionnaires were incomplete in questions about mother's MCH promoting belief, and these data were excluded. Finally, 216 cases were used for analysis regarding to mother's MCH promoting belief, and others were used all 224 cases. The results of this study are presented in 8 parts as follows:

Part 1 Socio-demographic characteristics of mothers and children
Part 2 Mother's social supports
Part 3 Utilization of MCH handbooks
Part 4 Mother's MCH promoting belief
Part 5 Mother's MCH promoting action
Part 6 Relationship between mother's MCH promoting belief and each of the independent variables
Part 7 Relationship between mother's MCH promoting action and each of the independent variables
Part 8 Relationship between each of the dependent variables and independent variables by stepwise multiple regression.

To examine the relationship between independent variables and dependent variables were performed by Pearson correlation and multiple regression model, and significant level was set at 0.05 in this study.

4.1 Socio-demographic characteristics of mothers and children

4.1.1 Mother's socio-demographic characteristics

Table 6 shows about socio-demographic characteristics of mothers in this study. The average age of studied mothers was 31.1 years and the range was 19 to 50 years old. Almost half of the mothers were aged 30 to 39 years (46.0%). In contrast, 1.3% of mothers were aged less than 20 years and 11.7% were aged over 40 years. About marital status of studied mothers was that almost all of them lived with their husbands (91%). The average of family size was 5.2 members and the range was 3 to 13. While most (66%) of mothers had finished below or at grade 6 of education, with the average of duration of studying was 7.04 years. 4% of mothers had not enrolled primary schools. Most of the mothers were working (87.7%), and 23.7% were farmers. The highest frequency of mother's husband occupation was also farmer (25%). Family income varied from 1,500 to 60,000 baht per month with the average of 9,135 baht/month. Most of them earned 5,000 to 9,999 baht/month (40%), and 29% earned less than 5,000 baht/month.

Table 6 Frequency and percentage of the studied population by mother's socio-demographic characteristics.

Mother's socio-demographic characteristics	Number (n=224)	Percentage (%)
Age		
≤ 19	3	1.3
20－29	92	41.0
30－39	103	46.0
40 – 49	25	11.2
≥50	1	0.5
Mean ± SD= 31.1 ± 6.5 Min=19 Max=50		
Marital status		
Living together	204	91.1
Other (Divorce, Widow, living separate)	20	8.9

Table 6 (cont.)

Mother's socio-demographic characteristics	Number (n=224)	Percentage (%)
Family size		
3	26	11.6
4	68	30.4
5	55	24.6
6	36	16.1
≥7	39	17.3
Mean ± SD= 5.16 ± 1.7 Min=3 Max=13		
Educational level		
Grade 6 or below	148	66.1
Grade 7 to 12	63	28.1
Above grade 12	13	5.8
Mean ± SD= 7.04 ± 3.5 Min=0 Max=17		
Occupation		
House wife	50	22.3
Farmer	53	23.7
Employee in factory	15	6.7
Employee in private company	7	3.1
Civil servants	5	2.2
Vendor	39	17.4
Labour	14	6.3
Dress maker	10	4.5
Temporary worker	10	4.5
Other	21	9.3

Table 6 (cont.)

Mother's socio-demographic characteristics	Number (n=224)	Percentage (%)
Husband's occupation		
Farmer	56	25.0
Employee in factory	21	9.4
Employee in private company	23	10.2
Civil servants	13	5.8
Vendor	28	12.5
Labour	23	10.3
Carpenter	6	2.7
Temporary worker	9	4.0
Others	26	11.6
Uncertain (living separate)	19	8.5
Family income (bath/month)		
≤ 4,999	64	28.6
5,000 - 9,999	91	40.6
10,000 -14,999	30	13.4
≥15,000	39	17.4
Mean ± SD=9,135 ± 8,168 Min=1,500 Max=60,000		

4.1.2 Child's socio-demographic characteristics

Table7 describes about socio-demographic characteristics of children in this study. Gender of children was almost same proportion that 45% were male and 55% were female. Nearly half of the children were born as a first child (44.6%) with the average of birth order was 1.74. One of the children was born as seventh child, and 3.6% of children were born forth or more. Most of the children were aged 3 years (70%) with the average was 3 years and 4 months.

Table 7 Frequency and percentage of the studied population by child's socio-demographic characteristics.

Child's socio-demographic characteristics	Number (n=224)	Percentage (%)
Gender		
Male	101	45.1
Female	123	54.9
Birth order		
First	100	44.6
Second	93	41.5
Third	23	10.3
Forth or more	8	3.6
Mean ± SD= 1.74±0.85 Min=1 Max=7		
Age (n=222)		
3 years	157	70.7
4 years	65	29.3
Mean ± SD=3 years 3.5 months ± 4.3 months	Min=3.01 Max=4.11	

4.2 Mother's social supports

Mothers social supports were examined four variables such as: 1) husband involvement, 2) relative support, 3) friends/peers support, and 4) participation in community group. The full score was given as 8 points, and the mean score was 5 with the range was from 1to 8. 64% of mothers had high supports and 36% was low (Table 8). The frequency and percentage of mothers by each of the questions of are shown in Table 21 (Appendix B). Most of the mothers had supports from their husbands and relatives. On the other hand, 76% of mothers did not join any community group.

Table 8 Frequency and percentage of studied mothers by mother's social supports level.

Social supports level	Number (n=224)	Percentage (%)
High support (≥ 5)	143	63.8
Low support (< 5)	81	36.2
Mean ± SD=5 ± 1.7 Min=1 Max=8		

4.3 Utilization of MCH handbooks

4.3.1 Bringing of MCH handbooks

Table 9 shows the frequency and percentage of bringing MCH handbooks among studied mothers. About half of the mothers responded that they 'always' brought MCH handbooks', by contrast two mothers 'never' brought MCH handbooks.

4.3.2 Recording of MCH handbooks

The frequency and percentage of studied population by recording of MCH handbooks are shown in Table 10. There are 4 self-recording parts by mothers in the MCH handbook. 84%of mothers had never recorded anything in MCH handbooks by themselves and only two mothers (0.9%) self-recorded every part in the MCH handbook.

Table 9 Frequency and percentage of studied population by bringing MCH handbook.

Item of utilization of MCH handbook	Number (n=224)	Percentage (%)
Bringing		
Always	118	52.7
Occasionally	104	46.4
Never	2	0.9

Table 10 Frequency and percentage of studied population by recording of MCH handbook.

Recording items of MCH handbook (n=224)	Every part n (%)	Some parts n (%)	Never n (%)
Maternal and family history	8 (3.6)	10 (4.4)	206 (92.0)
Child development milestone	2 (0.9)	19 (8.5)	203 (90.6)
Child growth curve	2 (0.9)	19 (8.5)	203 (90.6)
Child history	7 (3.1)	4 (1.8)	213 (95.1)

4.3.3 Reading of MCH handbooks

There were variation of frequency and percentage in each of the reading parts in the MCH handbook (Table11). The highest rate of reading part in the MCH handbook was 'Immunization for child' (72%). More than half of mothers had read 'Complementary food', 'Child care', 'Oral health for child', 'Delivery and postpartum' and 'Breast feeding' in detail. In contrast, around half of mothers had never read 'Family planning and Pap smear', and 'Growth surveillance'. 14% of mothers had read whole reading part 'in detail', and 4.5% of mothers had never read any information in the MCH handbook.

4.3.4 Utilization level of MCH handbooks

According to the scoring of total utilization of MCH handbook, the mean of total score was 16.8, and the range was 1 to 34 points (full score was 34 points). The frequency and the percentage of studied population by the utilization level are shown in Table 12. With regard to utilization of MCH handbook criteria, more than half of the mothers utilized 'moderate'. The percentage of 'high' utilization was 3.6%.

Table 11 Frequency and percentage of studied population by reading of MCH handbook.

Reading items of MCH handbook (n=224)	In detail n (%)	Skimming n (%)	Never n (%)
Maternal risk assessment	87 (38.8)	91 (40.6)	46 (20.6)
Antenatal examination	110 (49.1)	71 (31.7)	43 (19.2)
Maternal nutrition	77 (34.4)	77 (34.4)	70 (31.2)
Delivery and postpartum	128 (57.1)	47 (21.0)	49 (21.9)
Family planning and Pap smear	58 (25.9)	44 (19.6)	**122 (54.5)**
Care for diarrhoea	95 (42.4)	52 (23.2)	77 (34.4)
Oral health	129 (57.6)	61 (27.2)	34 (15.2)
Complementary food	**137 (61.2)**	50 (22.3)	37 (16.5)
Growth surveillance	76 (33.4)	53 (23.7)	**95 (42.4)**
Child care	134 (59.8)	60 (26.8)	30 (13.4)
Breast feeding	120 (53.6)	56 (25.0)	48 (21.4)
Immunization for children	**162 (72.3)**	50 (22.3)	12 (5.4)

*Two highest parts in ‘in detail’ and ‘never’ parts were high lightened.

Table 12 Frequency and percentage of studied population by utilization level of MCH handbook.

Utilization level of MCH handbook	Number (n=224)	Percentage (%)
High (≥ 28)	8	3.6
Moderate (15~27)	134	59.8
Low (≤ 14)	82	36.6
Mean ± SD=16.8 ± 7.7 Min=1 Max=34		

4.4 Mother’s MCH promoting belief

Mother’s MCH promoting belief was assessed four categories, such as: 1) perception of ‘self-efficacy’ (Q1~10), 2) perception of ‘external control’ (Q11~20), 3)

perception of 'benefits' (Q21~25) and 4) perception of 'barriers' (Q26~30). The frequency and percentage of each of the questions of mother's MCH promoting belief were presented in Table 22 (Appendix B). Almost all of the questions about 'perception of self-efficacy' were agreed by studied mothers. According to the results of each of the questions, 'giving breast milk' and 'oral hygiene for children' were high self-efficacy in this study. 58% of mothers had strong confidence to give breast milk, or 44% keep good oral hygiene for their children. In contrast, 33% of mothers did have some anxiety for taking care of their children, and 22% disagreed that they have ability to detect risk of pregnant or child's ill-ness.

About 'perception of external control of MCH promoting action' was responded variety in each of the questions. Almost all of the mothers agreed with 'powerful of health professional'. On the other hand, about 80% of mothers did not agree with determinants of MCH were by 'luck' or 'god', and more than half of the mothers disagreed 'powerful of non-health professional'

The results of 'perception of benefits and barriers of MCH promoting action', more than 90% of mothers responded 'strongly agree' or 'agree' for the questions about 'perceived benefits'. Particularly, the questions about benefit of 'breast feeding' and 'brushing teeth' for children were strongly agreed by around 55% of the mothers. By contrast, the questions about 'perceived barriers' were responded as 'disagree' or 'strongly disagree' by about 90% of the mothers. Yet, around 20% of respondents felt that 'cost of child care' and 'time arrangement for attending ANC' were barriers.

Table 13 Frequency and percentage of studied population by level of mother's MCH promoting belief.

Perception level		Number (n=216)	Percentage (%)
High perception	(≥ 91)	114	52.8
Low perception	(< 91)	102	47.2
Mean ± SD=91 ± 7.6	Min=68 Max=113		

Table 13 shows the frequency and percentage of perception level. In some data were answered incompletely, hence 216 mothers were assessed as mother's MCH promoting belief. The mean score was 91 points (full score was 120), and 53% of mothers had 'high' perception, and 47% were 'low' perception.

4.5 Mother's MCH promoting action

Frequency and percentage of mother's MCH promoting action are described in Table 14. 93% of studied population had attended ANC 4 times or more, and three (1.3%) mothers had never attended after getting MCH handbooks. Both practicing of family planning and immunization coverage for children were high percentage (more than 96%). The average of duration of breast feeding was 12.2 months, and the range was 0 to 48 months. While 8% of mothers had never given breast milk to their children, 65.6% of mothers had given more than 7 months. In spite of recommendation of the MCH handbook, the initiating time for complementary food should be started at 4 months, half of the studied mothers started to give complementary food less than 4 months. About oral health, around half of mothers responded that they encouraged brush their children's teeth twice or more in a day, and 9% of mothers did not care child's oral hygiene.

Table 14 Frequency and percentage of studied population by mother's MCH promoting action.

MCH promoting action	Number (n=224)	Percentage (%)
ANC attendance		
Less than 4 times	16	7.1
4 times or more	208	92.9
Mean ± SD= 8 ± 2.9 Min=0 Max=15		
Family planning		
Yes	216	96.4
No	8	3.6

Table 14 (cont.)

MCH promoting action	Number (n=224)	Percentage (%)
Immunization for child		
BCG		
Complete	223	99.6
Incomplete	1	0.4
Polio		
Complete	220	98.2
Incomplete	4	1.8
Hepatitis B		
Complete	221	98.7
Incomplete	3	1.3
DPT		
Complete	221	98.7
Incomplete	3	1.3
Measles or MMR		
Complete	219	97.8
Incomplete	5	2.2
Breast feeding		
None	18	8.0
Less than 4 months	36	16.1
4 to 6 months	23	10.3
7 months or more	147	65.6
Mean ± SD= 12.2 ± 9.8 Min=0 Max=48		
Initiating time of complementary food		
Less than 4 months	112	50.0
4 months or more	112	50.0
Mean ± SD= 3.9 ± 2.2 Min=0 Max=14		

Table 14 (cont.)

MCH promoting action	Number (n=224)	Percentage (%)
Oral health		
None	21	9.4
Once in a day	95	42.4
Twice or more in a day	108	49.2
Mean ± SD= 1.0 ± 0.7 Min=0 Max=3		

Table 15 Frequency and percentage of studied population by the level of mother's MCH promoting action.

Action level	Number (n=224)	Percentage (%)
High promoting action (≥ 7)	158	70.5
Poor promoting action (< 7)	66	29.5
Mean ± SD= 7.0 ± 1.4 Min=2 Max=9		

Mother's MCH promoting action level is shown in Table 15. The mean of action score was 7 points and 70.5% of mothers were classified into 'high action' in the criteria.

4.6 Relationship between mother's MCH promoting belief and each of the independent variables

Relationship between mother's MCH promoting belief and each of the independent variables were analysed using with Pearson Correlation.

4.6.1 Relationship between mother's MCH promoting belief and utilization of MCH handbook

Table 16 shows correlation coefficient of utilization of MCH handbook and mother's MCH promoting belief, and there was positive relationship between belief and utilization of MCH handbook ($r=0.39$, p-value<0.0001).

4.6.2 Relationship between mother's MCH promoting belief and mother's socio-demographic characteristics

Correlation coefficients of each of the mother's socio-demographic characteristics are shown in Table 16. At 0.05 significant level, mother's MCH promoting belief had positive relation with family size ($r=0.14$, p-value=0.047), education ($r=0.38$, p-value<0.0001), and family income ($r=0.29$, p-value<0.0001), and negative relation with mother's age ($r=-0.19$, p-value=0.005).

4.6.3 Relationship between mother's MCH promoting belief and child's socio-demographic characteristics

In Table 16, correlation coefficients of child's socio-demographic characteristics are presented. Mother's MCH promoting belief had no significant relation with either child's gender (p-value=0.693) or birth order (p-value=0.156).

4.6.4 Relationship between mother's MCH promoting belief and mother's social supports

Mother's social supports included husband involvement, relative support, friends/peers support and participation in community group, and mother's MCH promoting belief was positively correlated with mother's total supports ($r=0.21$, p-value=0.002) (Table 16).

Table 16 Correlation between mother's MCH promoting belief and independent variables.

Independent variables (n=216)	r	p-value
Utilization of MCH handbook	.39	< .0001**
Mother's socio-demographic characteristics		
Age	-.19	.005**
Marital status	.01	.875
Family size	.14	.047*
Education	.38	< .0001**
Occupation	-.07	.286
Husband's occupation	.07	.285
Family income	.29	< .0001**
Child's socio-demographic characteristics		
Gender	.03	.693
Birth order	-.10	.156
Mother's social supports	.21	.002**

**: significant level <.01, *: significant level < .05

4.7 Relationship between mother's MCH promoting action and each of the independent variables

Relationship between mother's MCH promoting action and each of the independent variables were analysed using with Pearson Correlation.

4.7.1 Relationship between mother's MCH promoting action and utilization of MCH handbook

The correlation coefficient of utilization of MCH handbook was shown in Table 17. The result was marginal significant at 0.05 level (r=0.13, p-value=0.05).

4.7.2 Relationship between mother's MCH promoting action and mother's socio-demographic characteristics

In Table 17, correlation between mother's MCH promoting action and each variable of mother's socio-demographic characteristics was presented. Results showed mother's MCH promoting action had relationship with age (r=0.15, p-value=0.025), marital status (r=0.15, p-value=0.024) and mother's occupation (r=0.15, p-value=0.029).

4.7.3 Relationship between mother's MCH promoting action and child's socio-demographic characteristics

Correlation coefficients of child's socio-demographic characteristics were presented in Table 17, and mother's MCH promoting action had no relationship either child's gender (p-value=0.851) or birth order (p-value=0.269).

4.7.4 Relationship between mother's MCH promoting action and mother's social supports

Relation with mother's MCH promoting action and mother's social supports had no significant (p-value=0.957) as result shown in Table 17.

Table 17 Correlation between mother's MCH promoting action and independent variables.

Independent variables (n=224)	r	p-value
Utilization of MCH handbook	.13	.05
Mother's socio-demographic characteristics		
Age	.15	.025*
Marital status	.15	.024*
Family size	-.03	.618
Education	-.01	.928
Occupation	.15	.029*
Husband's occupation	.02	.822
Family income	.05	.506
Child's socio-demographic characteristics		
Gender	-.01	.851
Birth order	.07	.269
Mother's social supports	-.004	.957

*: significant level <.05

4.8 Relationship between each of the dependent variables and independent variables by stepwise multiple regression

4.8.1 Relation with mother's MCH promoting belief

Utilization of MCH handbook, mother's age, education, family size, family income and social supports were simply correlated with mother's MCH promoting belief. Next, stepwise multiple regression model was applied to analyse the relationship between mother's MCH promoting belief and predictor variables. Utilization of MCH handbook, age, education and family income were statistically significant, and utilization of MCH handbook was the strongest predictor variable of mother's MCH promoting belief (beta=0.24, p-value=0.001). Family income (beta=0.201, p-value=0.003), age (beta=−0.181, p-value=0.004) and education (beta=0.156, p-value=0.039) were following this (Table 18).

Table 18 Stepwise Multiple Regression analysis of mother's MCH promoting belief and independent variables

Independent variables (n=216)	R^2	B	beta	t	p-value
Utilization of MCH handbook	.153	.237	.240	3.40	.001**
Family income	.196	.0002	.201	3.02	.003**
Age	.217	-.21	-.181	-2.49	.004**
Education	.247	.34	.156	2.08	.039*
Adjusted R^2	.232				

**: significant level <.01, *: significant level<.05

4.8.2 Relation with mother's MCH promoting action

Three independent variables (such as mother's age, marital status and occupation) were simply correlated with mother's MCH promoting action (Table 17), and Table 19 showed mother's MCH promoting action stepwise regressed on independent variables. As shown in results, utilization of MCH handbook, mother's age, marital status and mother's occupation had relation to mother's MCH promoting action, and contributed to regression equation. Marital status was the strongest predictor variable of mother's MCH promoting action (beta=0.17, p-value=0.01). Mother's occupation (beta=0.143, p-value=0.031), age (beta=0.14, p-value=0.033) and utilization of MCH handbook (beta=0.135, p-value=0.039) were following this.

Figure 8 shows summary of multivariate relationship between controlled all independent variables and mother's MCH promoting belief/action.

Table 19 Stepwise Multiple Regression analysis of mother's MCH promoting action and independent variables.

Independent variables (n=224)	R^2	B	beta	t	p-value
Marital status	.023	.85	.17	2.60	.01**
Mother's occupation	.050	.49	.143	2.17	.031*
Age	.067	.03	.14	2.15	.033*
Utilization of MCH handbook	.085	.025	.135	2.08	.039*
Adjusted R^2	.068				

**: significant level ≤.01, *: significant level<.05

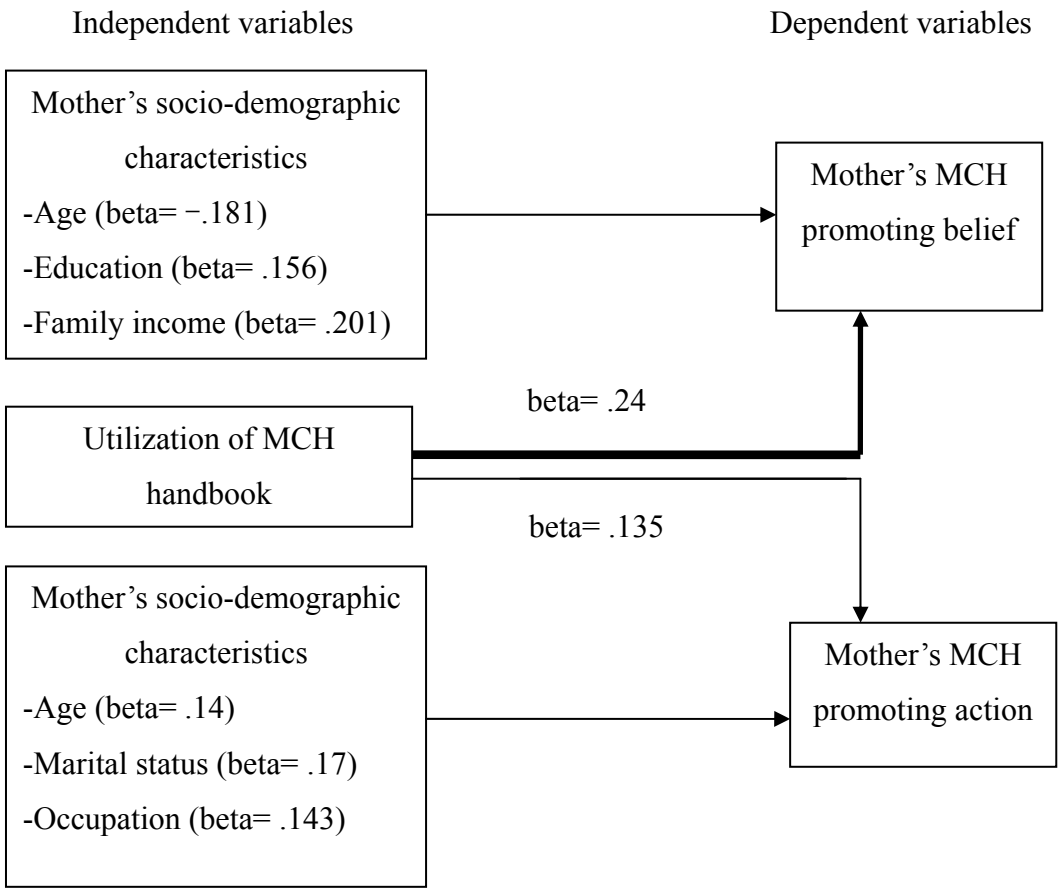


Figure 8 Summary of multivariate analysis of all independent variables and each of the dependent variables

CHAPTER 5
DISCUSSION

A cross-sectional study was conducted, aims to assess the utilization of MCH handbook and analyse the effect of MCH handbook on mother's MCH promoting belief and action at Phanom Thuan district in Kanchanaburi province, Thailand. In this chapter following parts are discussed based on hypothesis of this study.

Part 1. Characteristics of mothers in the studied area
Part 2. Utilization of MCH handbooks
Part 3. Mother's MCH promoting belief
Part 4. Factors related to mother's MCH promoting belief
Part 5. Mother's MCH promoting action
Part 6. Factors related to mother's MCH promoting action
Part 7. MCH promotion

5.1 Characteristics of mothers in the studied area

Phanom Thuan district, Kanchanaburi province was selected as one of the Thai rural area in this study. One health facility for MCH located on central district, and it was observed that most of the residences were surrounded by agricultural field. Around 57% of residents in whole Kanchanaburi province engaged in agricultural work in 2000 (12), and 23.7% of mothers and 25% of their husbands were also farmer and this percentage was the highest proportion in job category in this study.

With regard to socio-economic status here was that 66.1% of mothers finished at or below grade 6 (primary school) and the average duration of attendance to educational facilities was 7.04 years, compared with 7.2 years in whole kingdom. The duration of educational facilities attendance was not much difference between the studied area and whole country. However, 10% of female population did not attend school in Thailand (in 2000), and 7% was in central regions (in 2000), and 4% of

studied mothers did not enrol primary school (55). Most of the studied mothers worked and there was no unemployed husband. Yet, the average of monthly family income was less than whole kingdom, i.e., 9,135 baht/month in studied area and 12,185 baht/month in Thailand (55). Around 30% of mothers' family earned less than 5,000 baht/month.

Family size in the studied area was more than the average of both whole kingdom and whole Kanchanaburi province. 5.16 family members was the average of studied mothers, contrary to 3.6 in whole kingdom and 3.8 in whole province (12, 55). Despite of larger family size among studied mothers, the number of children was less than the average of whole country, i.e., 1.9 in the studied area and 2.1 in whole kingdom. About 60% of mothers lived with extended family, and it may say that most of the mothers lived with their relatives.

5.2 Utilization of MCH handbooks

Since 1985, the programme of distributing MCH handbooks was started in Thailand, with an objective used in rural area (11). The number of distributing MCH handbook in 2003 was 939,000 pregnant women, and the coverage was 98.9% (21). However it has been high coverage of MCH handbooks on pregnant women in Thailand, the utilization of handbooks was not efficient among mothers. The utilization of MCH handbooks in this study, 36.6% of mothers utilized low level, compare with 3.6% utilized high level (see Table 12).

Low utilization of MCH handbooks was shown particularly in 'recording' and 'reading' rates. MOPH indicated that around half of the mothers read and record in MCH handbooks (21). Table 20 shows the comparison of utilization of MCH handbooks by two studies in Thailand. Isaranurug's study showed that around 70% of mothers brought their MCH handbook 'always', compared with 53% in this study. Both two study found poor performance of self-recording, and more than half of the mothers had never recorded. Another study in 1996, Thailand showed 91% of MCH handbook holders had never recorded (10, 11).

Reading performance also insufficient results, that less than half of the mothers had read whole information in MCH handbook. The contents of MCH handbooks was revised several times, and in 2001, Isaranurug et al. found that high percentage of reading contents were 'Breast feeding' and 'ANC' with the low one was 'Maternal nutrition' (27.5% of studied population had never read) (11). The highest percentage of reading content in this study was 'immunization for children' (72.3%), by contrast, low percentages were 'family planning and Pap smear' (54.5%: never), and 'growth surveillance' (42.4%: never).

In this study, questions about satisfaction and usefulness of MCH handbook were not conducted, but in the several study showed that mothers were highly satisfied with MCH handbook (10-11, 21). Although high coverage and satisfaction of the MCH handbook, it was evident that low utilization has not changed during this decade in Thailand.

Table 20 Comparison of utilization of MCH handbooks with two studies.

Researcher	Isaranurug S. et al.	Aihara Y.
Year	2001	2005
Target population	Aged 1 to 2 years children's mothers	Aged 3 to 4 years children's mothers
Utilization of MCH handbook		
Bringing		
Always	70.5%	52.7%
Recording		
Do all	7.5%	0.9%
Some parts	35%	15.2%
Never	57.5%	83.9%
Reading		
Whole	26%	14.3%

5.3 Mother's MCH promoting belief

In this study, mother's perception of MCH promotion was assessed using with HPM. In Pender's HPM, there are seven cognitive-perceptual factors, and leading the literature review, 'perception of self-efficacy', 'perception of external control of health', and 'perception of benefit/ barrier of promoting health' were used for assessment of mother's MCH promoting belief (25), (see Table 22 in Appendix B).

'Perception of self-efficacy' is defined as 'the judgement of what one can do with whatever skills one possesses' by Bandura (26). This study found almost 90% of the mothers responded that they had confidence to promote MCH, particularly more than half of the mothers had strong confidence to 'give breast milk' for their children. Also, around half of the mothers had strong self-efficacy for 'keeping child's oral hygiene', and 'utilization of health facilities' for MCH promotion (see Table 22 in Appendix B).

With regard to 'perception of external control', which is defined as is one's health result of chance or other's power. 'Perception of external control' was related to religion or culture in own societies (32). However this study did not ask mother's main religion or cultural aspects, on the whole, mother's MCH promoting belief was not influenced by 'chance/god' or 'power of other non-professional people'. On the other hand, perception of powerful of health professional people was high among studied mothers. The statement of 'whenever my child gets sick, I take her/him to doctor right away' was agreed almost all of the mothers (98.2%), also 80% of mothers agreed 'health professionals keep their children from getting sick'. When target group had high perception of 'powerful of health professional', they perceived health professionals were important role in their health (31). It may conclude mothers had high self-reliance on their MCH, also health professionals influenced on MCH or mothers preferred to be advised regarding MCH from health professionals in this studied area.

Over all, almost all of the mothers perceived 'benefits of MCH promoting

action', and not perceived 'barriers of MCH promoting action'. Particularly, benefit of 'breast feeding' was perceived 57% of mothers. In Thailand, almost all of the health facilities encourage to mothers practise breast feeding (3). This project may influence on mother's belief of benefit of giving breast feeding. Also the perceived benefit of 'oral health' was high, more than half of the mothers strongly agreed. Although the study in the year 2000-2001 found high percentage of child's dental caries in Thailand, if mothers are encouraged to care child's teeth, this percentage would reduce (42).

5.4 Factors related with mother's MCH promoting belief

5.4.1 Utilization of MCH handbook

To keep own MCH record at home improve mother's self-reliance and control on MCH (4, 45-47). Phipps's study in 2001 showed not-holding own maternal record group felt more 'anxious', also study in same Australia by Webster et al. in 1996 found that maternal record holders were more likely to feel health service was personal and sharing the information, also led mother's satisfaction toward utilization of health facilities (47, 60). This study found utilization of MCH handbook had significant correlation with mother's MCH promoting belief (p-value<.0001). Moreover after control all independent variables, this was the still related and the strongest predict factor to MCH promoting belief (p-value=.001) (see Table 18). In addition, in the light of high proportion of reading 'breast feeding' and 'oral health' parts in the MCH handbook, mothers had strong confidence and benefits on breast feeding and oral care for children. In contrast, low performance on reading in 'growth surveillance' made low confidence to detection of pregnancy and child-illness risks (see Table 11). It may say, providing own MCH information improve mother's awareness of efficacy of MCH services. Also, mothers were more likely to have confidence on promoting action.

5.4.2 Mother's socio-demographic characteristics

Socio-demographic characteristics are one of the modifying factors of cognitive-mechanism in HPM (25), and age, education and family income had relation to mother's MCH promoting belief significantly.

-Age

P-Cuevas et al.'s study in 1999 found that older mothers were aware of utilization of MCH care rather than younger mothers (51). However there was a relationship between mother's age and mother's MCH promoting belief in this study, younger mothers more believed MCH promoting action rather than older mothers. Mother's age was related to number of children, and older mothers had more children. The interesting point was that even when younger mothers had less experience of child-bearing, they had high belief of MCH promoting action in this study. This study also found that younger mothers had more social supports, therefore it may say even mother have less experience for child-baring, their social supports lead to improve perception of self-efficacy or benefits of MCH promoting action.

-Education

Musaiger's study in 2001 found highly educated mothers felt more benefits of MCH activities the same as this study (61). It can be said that highly education was also related to highly perception of MCH promoting action. When mothers are more educated, they have more knowledge of health information or way to taking action. Hence this knowledge promotes their confidence or benefits of health promoting action. In addition, UNICEF mentioned illiteracy mothers had low MCH status (5). 10% of female population did not attend school in Thailand, in the year 2000 (55), and this study found 4% of mothers had not enrolled primary school. Despite of small proportion, to improve mother's MCH promoting belief this group cannot be neglected.

-Family income

Family income is quite related to socio-economic status, and the average of family income in this study area was 9,182 bahts/month compared with less amount of income than the average of whole kingdom (12,185 baht/month) (55). Tinsley explained low socio-economic status had related to mother's knowledge (23), and similar to educational factors, knowledge may improve mother's perception of benefit and confidence on MCH action. In addition, Bates's study in 1998 found low socio-economic status mothers had more likely to have barriers of immunization

(especially cost difficulties) (34). In this study, there was one question asking about barriers of cost, and 22% of mothers agreed MCH promoting action was problem of cost. This barrier may also influence on low level of mother's belief toward MCH promotion.

-Marital status/Occupation

Around 80% of mothers were classified into 'working group' and more than 20% of mothers felt 'arrangement of ANC had been difficult' compared with low perception of other barriers. Despite of this result, there was no significant relationship between mother's occupation and their MCH promoting belief. Mothers who live separate from their husbands, are enforced to work, however there was no significant related to MCH promoting belief either. Lutz's study (1998) showed when women shared with financial responsibilities with men were more likely to pay attention own health (62). Possible explanation is that even mothers had barriers for MCH promoting action (especially barriers of time arrangement), their partial responsibilities for their family improve their confidence or benefits of MCH promoting action.

-Family size

Greertsen explained when mothers live with large family size, attention on child health was less (54). On the other hands, Becker's study in 1974 showed large family size makes possibility to support mothers' attention on their or their children's health (56). Family size influenced both advantage and disadvantage on mother's MCH promoting, and bivariate analysing result showed that family size had positive relation with mother's MCH promoting belief. However, according to multivariate analysis showed no relationship. It may say other factors controlled mother's MCH promoting belief, hence family size did not influence on mother's belief.

-Husband's occupation

Husband's occupation is strongly related with their socio-economics status, and socio-economic status influence on health behaviour seeking (30). However, in this study found there was no significant relation between husband's occupation and

mother's MCH promoting belief. Family income influenced on mother's belief in this study, it may say mother's socio-economic status was important factor for assessing mother's belief. On the other hand, whether husband's occupation was 'skilled' or 'unskilled', this was not directly related to mother's MCH promoting belief.

5.4.3 Child's socio-demographic characteristics

In some societies, child's gender and birth order were determinants of mother's belief toward MCH (1, 34). In this study area, both child's gender and birth order were not related to mother's MCH promoting belief. It can be said that among studied mothers, they did not have any distinction of child's gender and birth order.

5.4.4 Mother's social supports

The components of mother's social supports were husband's involvement, relative support, friends/peers support and participation in community group. High level of social supports was influenced on low level of stress (54). According to simple correlation coefficient, mother's social supports were significantly related to mother's MCH promoting belief. Yet, the result of multiple regression coefficients of mother's MCH promoting action had no relationship. It can be said that other factors influenced mother's MCH promoting belief, therefore when be controlled all independent variables, mother's social supports did not related to mother's MCH promoting belief. In addition, this study also found high social supports related with higher utilize MCH handbook. Despite of no significant relation among mother's social supports and MCH promoting belief, social supports are still important for inspiring mother's belief.

5.5 Mother's MCH promoting action

5.5.1 ANC

ANC service has highly advantage on both mothers and children, and in Thailand, ANC coverage was 92% during the year 1995~2000. In contrast, in Kanchanburi province was 82.4% of mothers attended complete ANC service (i.e., to attend 4 times or more) in 2000 (12, 15). The percentage of recommended ANC

coverage was 92.9% and these figures are higher than whole Kanchanaburi cases.

5.5.2 Family planning

The indicators of contraceptive users were 79% in whole kingdom during the year 1995~2000, and 78.7% in Kanchanaburi province in 2000 (12, 55). Compare with these, mothers practiced family planning were higher (96.4%). However practice family planning was high percentage, classification of family planning was weak in this study. The criteria of practice group in this study included mothers lived separate from their husbands. Even if mother who had 7 children and had delivered aged over 35 years, she was included 'practice group' because of widow case. Moreover, according to results of mother's age, 1.3% of mothers were less than 20 year-old, and 11.7% was over 40 year-old. UNICEF mentioned adolescent and over the age 35 women have risk of MCH (5). In Kanchanaburi province, 18% of total birth in 2000 was aged less than 20 years mothers (12). Assessment of family planning was needed more consideration.

5.5.3 Immunization for children

UNICEF set the goal of immunization coverage was 90% of the world's children, and in whole kingdom, the coverage of immunization was progressed from 2001 to 2003 (3, 41). In this studied area, immunization coverage was very high and all types of immunization covered almost all of the children.

5.5.4 Child nutrition

Recommendation of exclusive breast feeding was more than 6months by WHO and UNICEF, and Thai government used to recommended at least 4 months exclusive breast feeding in MCH handbook (5, 38). 76% of studied population practiced breast feeding more than 4 months and 65.6% was more than 7 months. On the other hand, in spite of starting to give complementary food was recommended after giving exclusive breast feeding from 4 months, half of the mothers started to give complementary food before 4 months (The average: 3.9 months). One limitation of assessment of mother's promoting action was that questions about child nutrition were not recorded in the MCH handbook. Hence, some mothers might have recall

bias, and there was lack of accuracy.

5.5.5 Oral health

Oral health was also one of the important behaviours for MCH promoting action, and Sithan found 83% of preschool children's mothers practiced poor dental hygiene in Thailand, 2003 (43). In the MCH handbook, it was recommended that at least once in a day, mothers should swab or brush their children's teeth. This study found high percentage of mothers encouraged or helped to brush children's teeth more than once a day, and around half of studied population kept child's dental hygiene twice or more in a day.

5.6 Factors related with mother's MCH promoting action

5.6.1 Utilization of MCH handbook

Benefits of keeping own maternal record at own home made improvement of ANC attendance, child's immunization rate and postpartum check-up rate (4). Shah et al. also found in eight countries, when mothers hold own maternal record, mothers' involvement in MCH activities was improved (48). In this study, multiple regression coefficients showed mother's MCH promoting action was related to utilization of MCH handbooks positively (p-value=0.039). 'Child's immunization' part in the MCH handbook was the highest reading part among studied mothers, and also influenced high immunization coverage. The information of breast feeding and oral hygiene did also contribute to mother's high MCH promoting action. On the other hand, regarding to complementary food, even 61% of mothers read this part in detail, half of the mothers had started giving less than 4 months. Also, 'family planning' part was the lowest reading rates, despite of high practice birth control (see Table 11). Although mother's MCH promoting action is influenced several factors, MCH handbooks compose information and message from health professionals and these affect to promote MCH action.

5.6.2 Mother's socio-demographic characteristics

The results of analysis showed age, marital status and mother's occupation

were significantly related to mother's MCH promoting action.

-Age

Similarly to health promoting belief, Cockerham explained that people as grow older seem to take better care of them (50). In this study older mothers performed MCH promotion rather than younger mothers (beta= .14), by contrast, younger mothers had higher perception on MCH promoting belief (beta= −.181). Cooper showed older mothers had longer duration of breast feeding than younger mothers (57). Even if older mothers had lower perception of MCH promoting action, their experience of pregnant and child-baring lead adequate action. One thing to indicate, this study found mother's MCH promoting belief and action were simply correlated (see Appendix C). Therefore, to promote mother's perception of self-efficacy and benefits, even younger mother can promote their action on MCH.

-Marital status

Bates's study in 1998 showed unmarried mothers had low performance on child's immunization (34), and this study also found that mothers who lived with their husbands performed high MCH promoting action rather than living separate group (p-value=0.01). When mothers are living with their partners, they need not full-responsibility for their families or they are supported by their partners. Therefore, they are able to pay attention on taking MCH promoting action rather than those who need to full-responsibility for their family. In addition, when mothers lived with their husbands, they had more husband involvement in MCH activities It may say husbands also have pivotal role in MCH promotion.

-Mother's occupation

Around 80% of mothers were classified into 'working group' in this study, and during data collecting time, researcher found most of the mothers were absent from their own house. WHO mentioned when mothers work outside of houses, they have low opportunities to take MCH promoting action because of lack of time (38). Despite of WHO's studying, this study found working mothers had high performance on MCH promotion. One assumption for explaining this result was that working mothers

had more opportunities to talk to other women, therefore they can access information of MCH promotion easier than non-working mothers. In spite of this result, the weakness of this study was that the criteria of occupation was whether mother had job or not, and not considered with 'outside work' or 'inside work'. Also 'absence from home during day time' was needed to assessment.

-Education/ Family income/Husband's occupation

Mother's education, family income and husband's occupation are strongly related to socio-economic status, and lower socio-economic status influenced lower utilization of health facilities (52, 53). Also, in Bangkok Metropolitan area, Benetts et al. (1997) found mothers did less utilize ANC when their partners were 'unskilled' or 'semi-skilled' workers (58). However, in this study there were no relationships between these variables and mother's MCH promoting action. In this studied area, mother's MCH activities may not be influenced by socio-economic status. Further, this study found there was relationship between these variables and utilization of MCH handbooks. It may say that even mothers within lower social class, other determinants influence on mother's MCH promoting action, such as utilization of MCH handbooks.

-Family size

Large family size made difficulties to mothers paying attention on only one child (54). In contrast Becker's study (in 1974) found when mother had many family members, they had more opportunities to get support from other family members for MCH action (56). More than half of the mothers had 5 or more family members and large family size compare with whole kingdom. However there had pros and cons of the relationship between family size and mother's action. In this studied area other factors were influenced on mother's MCH action, hence family size did not have relation.

5.6.3 Child's socio-demographic characteristics

Child's socio-demographic characteristics were not related to mother's MCH promoting action. Similar to relationship with mother's MCH promoting belief,

among studied population, there was no distinction of child's gender and birth order in taking MCH promotion.

5.6.4 Mother's social supports

Tinsley found mothers living with high level of supports performed high utilization of health service (23). Yet, this study showed no relationship between mother's social supports and mother's MCH promoting action. On the other hand, this study found higher mother's social supports related to more utilization of MCH handbooks. Here also, another determinant influenced on mother's MCH promoting action, therefore no significant relationship among mother's social supports and action. Although regression coefficient showed no significant relation, mother's social supports is still important for utilize MCH handbook. Moreover, MCH issue is not only the problem for mothers and children themselves, but also should partners, communities and societies take responsibility (1, 14).

5.7 MCH promotion

Health promotion represents the actions to strengthen the skills and capabilities of individuals, also to change social, environmental and economical conditions. 'Participation' of individual, group or community is one of the key words of health promotion (7). To promote mothers participation in MCH activities, mothers' belief and action should be improved. According to Pender's explanation, to enhance the 'self-efficacy' and 'benefits' is important for health promotion. Expanding the benefits or positive outcomes derived from behavioural change, and if positive consequences occur, the probability is high that the behaviour will occur again. Also, to cumulative perceptions of self-efficacy determines predisposition to undertake a given behaviour (25). Particularly inspiring mother's awareness may pivotal strategy for promoting MCH.

In this study, utilization of MCH handbooks had relationship with both mother's MCH promoting belief and action. Especially, this was the strongest predictor variable of mother's belief. To explore effectiveness intervention for

improving MCH, MCH handbooks is possible to be this. Further some mother's socio-demographic characteristics also influenced on mother's belief and action. WHO mentions to promote health, comprehensive approaches are the most effectiveness (7). To identify or assess individual's background should be taken.

CHAPTER 6
CONCLUSION AND RECOMENDATION

6.1 Conclusion

6.1.1 Background and objectives of this study

Millions of the lives of mothers and children are lost every year during childbirth or early childhood, none the less most of these are preventable. MCH promotion is one advocacy in our society, to implement effectiveness and efficient way for development individual skills and self-reliance on MCH is needed.

MCH handbooks have distributed in several countries. Own health records and information about pregnant to child development by age of 5 years are composed into one handbook, and mothers can keep at own home. This may improve availability of information and early detection for mothers, and MCH handbooks can be tool for promoting MCH. In Thailand, MCH handbooks have distributed for about two decades. Regarding to mal-distribution of health facilities between urban and rural, mothers who live in rural area, are needed to strength their self-reliance and action in MCH promotion. For health promotion, how MCH handbooks affect to mother's belief and action should be examined. This study was conducted aims to assess the utilization of MCH handbooks, and to analyse the relationship between utilization of MCH handbooks, and mother's MCH promoting belief and action.

A cross-sectional study was conducted at Phanom Thuan district in Kanchanaburi province, Thailand. 224 mothers who had aged 3 to 4 years children were assessed from January to February in 2005. The structural model in this study was based on literature review and researcher's own hypothesis. Pearson correlation method was applied to simple correlation between each of the independent variables and each of the dependent variables. Multiple regression model was used for analysing multivariate relation with mother's MCH promoting belief and action.

6.1.2 Utilization of MCH handbook and mother's MCH promoting belief

Inefficient utilization of MCH handbook was assessed as the levels of utilization were in low (36.6%) or moderate level (59.8%) among studied mothers. Especially, low percentages of recording (0.9%) and reading (14.3%) were prominent. Despite of these results, multiple regression coefficients showed MCH handbooks had relation with mother's MCH promoting belief (p-value=0.001). Particularly, reading a large amount of the handbooks was related to mother's self-efficacy and benefits of regarding action.

6.1.3 Mother's/ child's socio-demographic characteristics, mother's social supports and mother's MCH promoting belief

Mother's age, education and family income were related to mother's MCH promoting belief. Younger mothers had high perception rather than older mothers (p-value=0.004), on the other hand, education (p-value=0.039) and family income (p-value=0.003) were positively related to mother's belief. However almost all of the mothers did not perceive 'barriers of MCH promoting action', 'cost of child care' and 'arrangement of attending ANC' were exceptions of these. Mother's education and family income were related to their socio-economic status, and socio-economic status may influence especially on difficulties of cost or time arrangements. Although high husband involvement and relative supports among mothers, there was no relation between mother's social supports and mother's MCH promoting belief.

6.1.4 Utilization of MCH handbook and mother's MCH promoting action

MCH handbooks consist of information and messages regarding with MCH from health professionals. To promote MCH individually, this information is key source for mothers, and utilization of MCH handbooks had relation with mother's MCH promoting action (p-value=0.039). Similarity to the relationship between MCH handbooks and MCH promoting belief, high percentages of reading parts were related to high performance of MCH promotion. The highest reading part in the MCH handbook was 'immunization for child' and almost all of the children were immunized recommended vaccine on time. Except for 'complementary food', most of the mothers took high performance on MCH promoting action.

6.1.5 Mother/child's socio-demographic characteristics, mother's social supports and mother's MCH promoting action

Mother's age (p-value=0.03), marital status (p-value=0.01) and occupation (p-value=0.03) were positively related to mother's MCH promoting action. Contrary to mother's MCH promoting belief, older mothers performed MCH promoting action highly rather than younger mother, and when mothers were living separate from their husbands or not working, their MCH promoting action was poor. In addition, marital status and mother's occupation might be related to husband involvement or friends/peers supports. However there was no relationship between mother's social supports and action, for health promoting, partners, family and community supports are essential.

6.2 Recommendation

6.2.1 For utilization of MCH handbook

1. The bringing rate was overall high, even so few mothers had never brought and around half of the mothers brought occasionally. MCH handbook can be a communication tool among mothers and health workers or educational workers (i.e., nursery school teachers). For systematic using, both health workers and educational workers encourage mothers to bring MCH handbook whenever utilize health facilities or educational facilities.

2. The percentage of self-recording has not been changed as low utilization during two decades. However there are no complicated self-recording parts in the MCH handbook, it has not been adapted as 'own record' by mothers. To be utilized efficiently, health professionals should enlighten the importance of self-recording at health facilities, also need to understand what is the impediments of self-recording.

3. There were various results of each reading part in the MCH handbook. Although the contents have been revised several times, MCH handbooks have important source as an educational tool. About half of the mothers had never read 'family planning/ pap smear' and 'growth surveillance' parts, and one-thirds of

mothers never read ‘maternal nutrition’ and ‘care for diarrhoea’. The possible explanations of these results were mothers have already known this information or contents were not attractive for them. Therefore, mothers felt these bore for little impact on MCH promotion. To improve reading performance, mothers’ opinion should reflect to the contents of MCH handbook.

6.2.2 For inspiring mother’s MCH promoting belief

1. Health promotion need individual awareness of taking action, hence to promote MCH, provoking mothers’ MCH promoting belief is required. This study showed that when control all independent variables, MCH handbook was the strongest factors of improvement mother’s MCH promoting belief. To promote mother’s confidence or benefits of MCH promoting action, utilization of MCH handbooks can be an effectiveness tool. All stakeholders, such as national health policy makers, health professional groups and community group should encourage mothers’ self-reliance on MCH activities through utilization of MCH handbooks.

2. To inspire mother’s MCH promoting belief, mother’s age, education and family income should be considered. Particularly in rural area, mother’s socio-economic status (educational level/family income) is lower. To promote mother’s beliefs on MCH promotion, comprehensive assessment is important. In addition, while older mothers have more experience of child-baring than younger mothers, their confidence or benefits of MCH promotion should be encouraged continuously.

6.2.3 For promoting mother’s individual performance on MCH promotion

1. To utilize MCH handbooks have effectiveness for promoting mother’s performance on MCH promotion. Information and messages in the MCH handbook can be accessed easily, and empower both mother’s awareness and performance. To promote mother’s individual performance on MCH promoting action, at all level of health facilities should support mothers through utilizing MCH handbooks.

2. Mothers’ environments were also influenced mothers’ MCH promoting

action. Particularly, social supports were important. When those mothers with living separate from their husbands, young age, or not working, they need more support for taking action on MCH promotion.

6.2.4 For further studies

1. This study was done in one district in Thai rural area. To evaluate effects of MCH handbooks in Thailand, more evidences are needed. Similar studies should be taken in several circumstances (i.e., other rural settings or urban settings) in the future.

2. The objectives of this study were effect of MCH handbooks on mother's MCH promoting belief and action. The effects were only examined on mothers, however, MCH promotion is recommended to consider their partners, families and communities involvement. Effect of MCH handbooks on fathers, families or community should be also assessed.

3. To assess the utilization of MCH handbook, this study did use only constructed questionnaires. Therefore, the reasons why mothers had not utilized MCH handbook were not assessed. For practical use of MCH handbook in MCH activities, mother's opinion toward utilization of MCH handbook should be assessed in depth and qualitative research is recommended in the future studies.

4. For promoting MCH, comprehensive assessment of mothers, children and community are needed. In this study, independent variables were set based on previous studies and own hypothesis. For analysing the determinants of MCH promoting belief and action, more variables (e.g., the frequency of interaction of health personnel, availability and ease of access to health facilities or previous experience of pregnant/child-bearing) also should be examined for further studies.

REFERENCES

1. World Health Organization. World health report 2003 [Online]. Geneva: The Organization. 2003. Available from: www.who.int/whr/2003/ [Accessed 2004 Mar 16].
2. Thailand. Ministry of Public Health. Thailand health profile 1999-2000. Bangkok: The Ministy; 2002: 179-243.
3. Kanshana S, Amornweichet P, Kullerk N. Maternal mortality rate in Thailand 1995-1996. Bangkok: Bureau of Health Promotion Department, Ministry of Public Health; 1998.
4. World Health Organization. Home-based maternal records guidelines for development, adaptation and evaluation. Geneva: The Organization; 1994.
5. United Nations Children's Funds. Facts for life. 3rd ed. New York: The United Nations; 2002.
6. Showstack JA, Budetti PP, Minkler D. Factors associated with birth-weight: an exploration of the roles of prenatal care and length of gestation. Am J Public Health 1984; 74: 1003-1008.
7. World Health Organization. Health Promotion Glossary. Geneva: The organization; 1998.
8. Nakamura Y. Child health in developing countries. In: Japan Association for International Health, editor. Textbook of international health. Tokyo: Kyorin Shoin; 2002: p. 51-53.
9. JOICEFP. Maternal and child health handbook of Japan. Tokyo: JOICEFP Inc; 1992.
10. Isaranurug S, Sriamporn M. The satisfaction and systematic users of the maternal and child health handbook –experience from one province in Thailand. Bangkok: Department of Family Health, Faculty of Public Health, Mahidol University; 2001.
11. Isaranurug S. Maternal and child handbook in Thailand. In: Nakahara S, editor. International symposium for maternal and child health handbook

initiatives. Tokyo: Tokyo Print Inc; 1998: p. 30-36.

12. Population and reproductive health compendium. Country at a glance [Online]. Bangkok: Population and reproductive health compendium; 2001. Available from: www.unescape.org/esid/psis/population/databese/central/kanchanaburi.htm. [Accessed 2004 Dec 12].
13. United Nations Children's Funds. Progress since the world summit for children –a statistical review. New York: The United Nations; 2001.
14. World Health Organization. World health day-7 April 2005, make every mother and child count, a tool kit for organizers of activities [Online]. Geneva: The organization; 2004. Available from: www.who.int/world-health-day/2005/toolkit/en/whd_toolkit.pdf [Accessed 2004 Nov 4].
15. United Nations Children's Funds. The state of the world 's children 2004. New York: The United Nations; 2003.
16. United Nations Children's Funds. Shaping the future for children in East Asia and the Pacific. Beijing: The United Nations; 2001.
17. Mahomed K, Masou E, Warndorf T. Home-based mother's record: operational feasibility, understanding and usage in a rural community in Zimbabwe. Trop Doct 2000; 30(3): 155-159.
18. Chauliac M. The international child growth chart. Child Trop 1986; 160: 35-60.
19. Health and Welfare Statistics Association. Journal of health and welfare statistics 2003. Tokyo: Health and Welfare Statistics Association. 2003; 50(9): 97-123.
20. Fujimoto S, Nakamura Y. The utilization of maternal and child health handbook in Japan. Journal of Japanese public health association 2001; 48(6): 486-494.
21. Voramongkol N. Country report of Thailand. In: Nakamura Y, Isaranurug S, editors. 4th International Symposium on MCH handbook; 2004 Dec 11-13 at Salaya Thailand; Osaka: International Collaboration Division, Faculty of Human Science, Osaka University; 2004 Dec: 35-36.

22. Gochman DS. Health behaviour research. In : Gochman DS, editor. Handbook of health behaviour research I. New York: Penum Press; 1997: p. 3-20.
23. Tinsley BJ. Maternal influences on children's health behaviour. In: Gochman DS, editor. Handbook of health behaviour research I. New York: Penum Press; 1997: p. 223-239.
24. Strecher VJ, Champion VL, Rosenstock IM. The health belief model and health behaviour. In: Gochman DS, editor. Handbook of health behaviour research I. New York: Penum Press; 1997: p. 71-91.
25. Pender NJ. Health promotion in nursing practice. 4th ed. New Jersey: Prentice-Hall; 2002: 33-79.
26. Bandura A. Self-efficacy: toward a unifying theory of behavioural change. Psychological Review 1977; 84: 191-215.
27. Strecher VJ, DeVellis BM, Becker MH, Rosenstock IM. The role of self-efficacy in achieving health behaviour change. Health Edu Q 1986; 13(1): 73-92.
28. Buxton K, Gielen A, Faden R, Brown H, Paige D, et al. Women intending to breastfeed: predictors of early infant feeding experiences. Am Pre Med 1991; 7: 101-106.
29. Reich JW, Erdal KJ, Zautra AJ. Beliefs about control and health behaviours. In: Gochman DS, editor. Handbook of health behaviour research I. New York: Penum Press; 1997: p. 93-111.
30. Tinsley BJ, Holtgrave DR. Maternal health locus of control beliefs, utilization of childhood preventive health services and infant health. J Dev Behav Pediatr 1989; 10: 236-241.
31. DeVellis RF, DeVellis BM, Blanchard LW, Klotz ML, Luchok K et al. Development and validation of the parent health locus of control scales. Health Edu Q 1993; 20(2):211-225.
32. Pachter LM, Sheehan J, Cloutier MM. Factor and subscale structure of a parental health locus of control instrument (Parental Health Belief Scales) for use in a mainland United States Puerto Rican community. Soc Sci Med 2000; 50: 715-721.

33. Wallston KA. Assessment of control in health settings. In: Steptol A, Apples A, editors. Stress, personal control and health. New York: Wiley; 1989: p. 85-105.
34. Bates AS, Wolinsky FD. Personal, financial, and structural barriers to immunization in socioeconomically, disadvantage urban children. Pediatrics 1998; 101 (4): 591-596.
35. Kviz FJ, Dawkins CE, Ervin NE. Mother's health belief and use of well-baby services among a high-risk population. Res Nurs Health 1985; 8: 381-387.
36. Roden J. Revising the health belief model: nurses applying it to young families and their health promotion needs. Nurs Health Science 2004; 6(1): 1-10.
37. World Bank. Safety motherhood and World Bank –lessons from 10 years of experience. Washington D.C: World Bank; 1999.
38. World Health Organization. Family and community practices that promote child survival, growth and development, a review of evidence. Geneva: The organization; 2004.
39. Petrou S, Kupek E, Vause S, Maresh M. Antenatal visits and adverse perinatal outcomes: result from a British population-based study. European J of Obst Gynecol Reprod Biol 2003; 106(1): 40-49.
40. Bertrand JT, Rinehart W. Population report. Baltimore: The INFO project, Centre for Communication Programs, the Johns Hopkins Bloomberg School of Public Health; 2003. Population reports series M, no. 17.
41. United Nations Children's Funds. At a glance: Thailand, statistics. [Online]. New York: The United Nations. Available from: www.unicef.org/infobycountry/Thailand_statistics.html. [Accessed 2005 Mar 14].
42. World Health Organization. Oral health country data [Online]. Geneva: The organization. Available from: http://www.whocollab.od.mah.se/ [Accessed 2004 Nov 8].
43. Sithan H. Dental health preventive behaviour among mothers with preschool children in Nakhon Pathom province, Thailand. [M.P.H.M. Thesis in

Primary Health Care Management]. Nakhon Pathom: Faculty of Graduate Studies Mahidol university; 2003.

44. Baldry M, Cheal C, Fisher B, Gillett M, Huet V. Giving patients their own records in general practice: experiences of patients and staff. Br Med J 1986; 292: 596-598.
45. Elbourne D, Richardson M, Chalmers I, Waterhouse I, Holt E. The Newbury maternity care study: a randomised controlled trial to assess a policy of women holding their own obstetric records. Br J Obst Gynaecol 1987 July; 94: 612-619.
46. Homer CS, Davis GK, Everitt LS. The introduction of a woman-held record into a hospital antenatal clinic: the bring your own records study. Aust NZ J Obstet Gynaecol 1999; 39(1): 54-57.
47. Phipps H. Carrying their own medical records: the perspective of pregnant women. Aust N Z J Obstet Gynaecol 2001; 41(4): 398-401.
48. Shah PM, Selwyn BJ, Shah K, Kumar V. Evaluation of the home-based maternal record: a WHO collaborative study. Bull WHO 1993; 71(5): 535-548.
49. Patterson K, L Sinclair P. Continuum of care and the antenatal record in rural New South Wales. Australian Journal of Rural Health 2003; 11(3): 110-115.
50. Cockerham WC. Lifestyles, social class, demographic characteristics, and health behaviour. In: Gochman DS, editor. Handbook of health behaviour research I. New York: Penum Press; 1997: p. 253-265.
51. P-Cuevas R, Reye H, Pego U, Tomé P, Ceja K et al. Immunization promotion activities: are they effective in encouraging mothers to immunize their children? Soc Sci Med 1999; 49: 921-932.
52. Gillis AJ. Dterminants of a health-promoting lifestyle: an integrative review. J Adv Nurs 1993; 18: 345-353.
53. Mor JM, Alexender GR, Kogan MD, Kieffer EC, Husley TC. Determinants of prenatal care use in Hawaii implications for health promotion. Am J Prev Med 1995; 11(2): 79-85.
54. Greertsen R. Social attachments, group structures, and health behaviour. In:

Gochman DS, editor. Handbook of health behaviour research I. New York: Penum Press, 1997: p. 267-288.

55. National Statistics Office Thailand. Household Census 2000 [Online]. Bangkok: National Statistics Office; 2001. Available from: www.nso.go.th/eng/stat/ [Accessed 2005 Feb 1].
56. Becker MH, Drachman RH, Kirscht JP. A new approach to exploring sick-role behaviour in low income. Am J Public Health 1974; 64: 205-16.
57. Cooper PJ, Murrary L, Stein A. Psychosocial factors associated with the early termination of breastfeeding. J of Psychosomatic Res 1993; 37: 171-176.
58. Benetts A, Inneam B, Krajangthong R, Bhengsri S, Jetsawang B, et al. HIV-infected women delivering without antenatal care in a large Bangkok hospital 1997. Southeast Asian J Trop Med Public health 2000; 31(1): 15-20.
59. Kuster PA, Badr LK, Chang BL, Wurerker AK, Benjamin AE. Factors influencing health promoting activities of mothers caring for ventilation assisted children. J Pediatr Nurs 2004; 19(4): 276-287.
60. Webster J, Forbes K, Foster S, Thomas I, Griffin A, Timms H. Sharing antenatal care: client satisfaction and use of the ‘patient-held record’. Aust NZ J Obstet Gynaecol 1996; 36(1): 11-14.
61. Musaiger AO, Abdulkhaleb N. Maternal comprehension of home-based growth chart in Bahrain. Trop Doct 2001; 31(3): 161-165.
62. Lutz ME. Women, work, and preventive health care: an explanatory study of the efficacy of HMO membership. Women and Health 1989; 15(1): 21-33.

APPENDIX

APPENDIX A
QUESTIONNAIRES

EFFECT OF MATERNAL AND CHILD HEALTH HANDBOOK ON MATERNAL AND CHILD HEALTH PROMOTING BELIEF AND ACTION

Respondent's Information
Respondent's Identification Number: _____.
*Interviewer's Name:*_____.
*Interviewing Date:*_____. _____. *2005.*

Please put the answer in the blank space or put a tick ☑ in the space, the most appropriate answers of respondent's current status.

Part 1 Socio demographic characteristics of mother and child

1 How old are you? _____year-old

2 What is your current marital status?
☐1 Living together ☐2 Divorce ☐3 Widow ☐4 Other(specify)_____

3 How many family members living together? _____persons

4 How many years did you study at educational facilities?(from primary school)
_____ years

5 What is your occupation?
☐1 Housewife ☐2 Farmer ☐3 Employee in factory ☐4 Civil servants
☐5 Employee in private company ☐6 Vendor ☐7 Others (specify)_____

6 What is your husband's occupation?
☐1 Farmer ☐2 Employee in factory ☐3 Civil servants
☐4 Employee in private company ☐5 Vendor ☐6 Unemployed
☐7 Others (specify) _____

7 How much is your family income approximately per month? _____Bahts

8 How old is your target child? _____years _____months

9 What is your youngest child's gender? ☐1 Male ☐2 Female

10 What is your target child's birth order?
_____from, total _____children

Part 2 Social Supports

11. Did your husband suggest you to take a rest during pregnant?
☐1 Yes ☐2 No

12. Did your husband help house work during your pregnant?
☐1 Yes ☐2 No

13. Does your husband take care of your child well?
☐1 Yes ☐2 No

14. Does your/your husband's mother live in the same house?
☐1 Yes ☐2 No

15. Does your/your husband's mother advice on your pregnancy or child care?
☐1 Yes ☐2 No

16. Do you have relatives whom you can talk about your pregnancy or child care?
☐1 Yes ☐2 No

17. Do you have friend/peer whom you can talk about your pregnancy or child care?
☐1 Yes ☐2 No

18. Do you join some community group such as mother's group, women's group at least one month? (at current situation)
☐1 Yes ☐2 No

Part 3 Utilization of MCH handbook

1 Do you bring MCH handbook when your take your child to health facilities?

☐ Always ☐ Occasionally ☐ Never

2 Do/did you record below parts of MCH handbook? **(Please check handbook also)**

1) Maternal and Family history (p.2) ☐Every space ☐Some parts ☐Never
2) Child growth curve (p.15~16) ☐Every space ☐Some parts ☐Never
3) Child development milestone (p.17~24) ☐Every space ☐Some parts ☐Never
4) Child history (p.30) ☐Every space ☐Some parts ☐Never

3 Do/did you read below parts of MCH handbook?

1) Maternal risk assessment (p.3~4)
☐In detail ☐Skimming ☐Never
2) Antenatal examination (p.5)
☐In detail ☐Skimming ☐Never
3) Maternal nutrition (p.6~8)
☐In detail ☐Skimming ☐Never
4) Delivery and postpartum (p.9)
☐In detail ☐Skimming ☐Never
5) Family planning and Pap smear (p.10)
☐In detail ☐Skimming ☐Never
6) Care for diarrhoea (p.11)
☐In detail ☐Skimming ☐Never
7) Oral health (p.12~13)
☐In detail ☐Skimming ☐Never
8) Child nutrition/breast feeding (p.14)
☐In detail ☐Skimming ☐Never
9) Growth surveillance (p.15~16)
☐In detail ☐Skimming ☐Never
10) Child care (p.17~25)
☐In detail ☐Skimming ☐Never
11) Breast feeding (p.26)
☐In detail ☐Skimming ☐Never
12) Immunization (p.28)
☐In detail ☐Skimming ☐Never

Part 4 Mother's MCH promoting belief

(Note: Please tick by respondent herself)

Belief	SDA	DA	A	SA
1 I can do a lot to prevent my child from getting hurt.				
2 I can take healthy diet for me and my baby's health				
3 For healthy mother and child, I can go health facilities				
4 For healthy baby, I can give breast milk				
5 For healthy mother, I can practice birth control				
6 I can talk to health professionals about my/ my child's health easily				
7 I can brush my child's teeth for good for my child				
8 I do not have any anxiety for taking care of my child				
9 I have a confidence to promote my child health				
10 I have the ability to detect risk of pregnant and child ill-ness				
11 God will decide what will happen my child's health				
12 Luck plays a big part in determining how healthy my child is				
13 Health professionals keep my child from getting sick				
14 Keeping my pregnant well was just luck of me				
15 I did not have any choices to keep my health during pregnancy				
16 Whenever my child gets sick, I take my child to doctor right away				
17 There is nothing I can do to keep my child from getting sick				
18 The only way I can make my child stay healthy is to do what other people tell me to do				
19 If my child feels sick, I have to wait for other people to tell me what to do				
20 Only the dentist can take care of my child's teeth				

Part 4 Mother's MCH promoting belief (Cont.)

Belief	SDA	DA	A	SA
21 Taking my child to health facilities can keep a good for child health				
22 Obtaining ANC keep my heath good during pregnant				
23 Most child illness can be prevented by immunization				
24 Giving breast milk can promote my child well				
25 Brushing teeth can make good health for my child				
26 It is difficult for me to take my child to health facilities				
27 It was problem that giving breast milk consume my time				
28 The cost of caring my child health is problem				
29 It was difficult to arrange my time for attending ANC				
30 Taking care of my child is difficult for me				

*SDA: Strongly disagree, DA: Disagree, A: Agree, SA: Strongly agree.

Part 5 Mother's MCH promoting action

1 How many times did you participate in antenatal care?
(Please check handbook also) _____times

2 After delivering target child, do you practice birth control (any methods)?
☐At least one method for practicing _____years
☐None. Specify any reasons_____

3 Your child complete below immunization? (Please check handbook also)
1) BCG ☐Yes ☐No

2) Hepatitis B ☐3 doses ☐Incomplete ☐Never

3) Polio ☐3 doses ☐Incomplete ☐Never

4) DPT ☐3 doses ☐Incomplete ☐Never

5) Measles/MMR ☐Yes ☐No

4 How long have you breastfed to your child? _____ months

5 When did you start to feed complementary food _____months

6 How many times do you help or encourage to child brushing teeth in a day?
_____times

Thank you very much.

APPENDIX B
ADDITIONAL TABLES

Table 21 Frequency and percentage of studied population by mother's social supports.

Mother's social supports	Number (n=224)	Percentage (%)
Husband advised take a rest during pregnancy		
Yes	144	64.2
No	80	35.8
Husband helped house work during pregnancy		
Yes	162	72.3
No	62	27.7
Husband takes care of children		
Yes	186	83.0
No	38	17.0
Grandmother lives together		
Yes	133	59.4
No	91	40.6
Grandmother advises pregnancy and child care		
Yes	156	69.6
No	68	30.4
Relatives whom talk about pregnancy/child care		
Yes	161	71.9
No	63	28.1
Friends/peers whom talk about pregnancy/child care		
Yes	125	55.8
No	99	44.2
Participation in community group		
Yes	53	23.7
No	171	76.3

Table 22 Frequency and percentage of studied population by mother's MCH promoting belief.

Beliefs	SA	A	DA	SDA
	n (%)	n (%)	n (%)	n (%)
I can do a lot to prevent my child from getting hurt. (n=223)	51 (22.9)	140 (62.8)	27 (12.1)	5 (2.2)
I can take healthy diet for me and my baby's health (n=224)	75 (33.5)	146 (65.2)	1 (0.4)	2 (0.9)
For healthy mother and child, I can go health facilities. (n=224)	92 (41.1)	124 (55.4)	5 (2.2)	3 (1.3)
For healthy baby, I can give breast milk.(n=224)	130 (58.1)	87 (38.8)	5 (2.2)	2 (0.9)
For healthy mother, I can practice birth control. (n=224)	60 (26.8)	141 (62.9)	19 (8.5)	4 (1.8)
I can talk to health professional about my and child's health easily. (n=223)	40 (17.9)	170 (76.3)	11 (4.9)	2 (0.9)
I can brush my child's teeth for good for my child's health. (n=223)	99 (44.4)	113 (50.7)	9 (4.0)	2 (0.9)
I do not have any anxiety for taking care of my child. (n=222)	35 (15.8)	113 (50.9)	69 (31.1)	5 (2.2)
I have a confidence to promote my child's health. (n=223)	66 (29.6)	146 (65.5)	11 (4.9)	0 (0)
I have the ability to detect risk of pregnant and child's ill-ness. (n=223)	37 (16.6)	136 (61.0)	45 (20.2)	5 (2.2)
God will decide what will happen my child's health (n=222)	1 (0.5)	36 (16.2)	113 (56.9)	72 (32.4)
Luck plays a big part in determining how healthy my child is. (n=223)	5 (2.2)	49 (22.0)	121 (54.3)	48 (21.5)
Health professionals keep my child from getting sick. (n=224)	46 (20.5)	132 (58.9)	44 (19.6)	2 (0.9)
Keeping my pregnant well was just luck of me. (n=222)	10 (4.5)	43 (19.4)	106 (47.8)	63 (28.4)
I did not have any choices to keep my health during pregnancy. (n=223)	7 (3.1)	37 (16.6)	126 (56.5)	53 (27.8)

*SA: strongly agree, A: agree, DA: disagree, SDA: strongly disagree

Table 22 (cont.)

Beliefs	SA	A	DA	SDA
	n (%)	n (%)	n (%)	n (%)
Whenever my child gets sick, I take my child to doctor right away. (n=224)	130 (58.0)	90 (40.2)	4 (1.8)	0 (0)
There is nothing I can do to keep my child from getting sick. (n=224)	22 (9.9)	86 (38.6)	96 (43.0)	19 (8.5)
The only way I can make my child stays health is to do what other people tell me to do. (n=224)	5 (2.2)	64 (28.6)	127 (56.7)	28 (12.5)
If my child feels sick, I have to wait for other people to tell me what to do. (n=223)	4 (1.8)	5 (2.2)	125 (56.1)	89 (39.9)
Only the dentist can take care of my child's teeth. (n=224)	28 (12.5)	78 (34.8)	105 (46.9)	13 (5.8)
Taking my child to health facilities can keep a good for child's health. (n=224)	62 (27.7)	149 (66.5)	13 (5.8)	0 (0)
Obtaining ANC keep my health good during pregnant. (n=224)	81 (36.2)	137 (61.1)	4 (1.8)	2 (0.9)
Most child ill-ness can be prevented by immunization. (n=223)	74 (33.2)	131 (58.7)	16 (7.2)	2 (0.9)
Giving breast milk can promote my child well. (n=224)	128 (57.1)	93 (41.5)	3 (1.3)	0 (0)
Brushing teeth can make good health for my child. (n=224)	121 (54.0)	101 (45.1)	2 (0.9)	0 (0)
It is difficult for me to take my child to health facilities. (n=224)	7 (3.1)	22 (9.8)	136 (60.7)	59 (26.3)
It was problem that giving breast milk consumes my time. (n=224)	7 (3.1)	22 (9.8)	124 (55.4)	71 (31.7)
The cost of caring my child health is problem. (n=224)	3 (1.3)	47 (21.0)	133 (59.4)	41 (18.3)
It was difficult to arrange my time for attending ANC. (n=224)	6 (2.7)	47 (21.0)	125 (55.8)	46 (20.5)
Taking care of my child is difficult for me. (n=224)	5 (2.2)	17 (7.6)	116 (51.8)	86 (38.4)

*SA: strongly agree, A: agree, DA: disagree, SDA: strongly disagree

APPENDIX C
RELATION BETWEEN MOTEHR'S MCH PROMOTING BELIEF AND MOTHER'S MCH PROMOTING ACTION

In Pender's HPM, 'perception of self-efficacy', 'perception of control of health', 'perception of benefits/ barriers of health promoting behaviour' are also determinants of health promoting action (25). However in this study conceptual framework is developed based on HPM, analysis of the relationship between mother's MCH promoting belief and mother's MCH promoting action was excluded in the main objectives. For better understanding of mother's MCH promoting action, to analysis of relationship of mother's belief and mother's action was also applied. The analysis was used as total score of mother's MCH promoting belief and total score of each perception, and total score of mother's MCH promoting action. The analysis was performed using Pearson correlation method and significant level was set at 0.05.

The result is shown in Table 23. Incomplete questionnaires were excluded, therefore 216 mothers were analysed in here. There was positively related among mother's MCH promoting belief and action (r=0.152, p-value=0.025)). Next to analyse the relationship between mother's MCH promoting action and each of the perceptions, and 'perception of self-efficacy' (r=0.155, p-value=0.022) and 'perception of benefits' (r=0.199, p-value=0.003) were related to mother's total action.

-Perception of self-efficacy

The cumulative perception of efficacy determines predisposition to undertake a given behaviour (25). Previous study found high confidence in giving breast milk was related to continuous breast feeding rate (28). This study also found when mothers had high confidence in MCH promoting action, they were more likely to perform MCH promoting action.

Table 23 Correlation between mother's MCH promoting belief and mother's MCH promoting action.

Mother's perception (n=216)	r	p-value
Total belief	.152	.025*
Perception of 'self-efficacy'	.155	.022*
Perception of 'external control'	-.045	.504
Perception of 'benefits'	.199	.003**
Perception of 'barriers'	-.119	.077

**: significant level <.01, *: significant level <.05

-Perception of external-control

Among working groups, Pender et al. showed low perception of 'chance' and high perception of 'power of others' influenced to high health promoting activity (25). In this study, there was no significant relation between external control and mother's MCH promoting action.

-Perception of benefits

When person perceived that a specified health action has positive value, this may directly motivate to health behaviour (24, 25). This study found most of the mothers believed benefits of MCH promoting action, and this was related to performance of MCH promotion.

-Perception of barriers

Perception of barriers obstructed people to take health behaviour because of unavailability, inconvenience, difficulties or costs of undertaking (25). However to understand the barriers of MCH promoting action was needed, there was no relation with mother's action.

Understanding the determinants of MCH promoting behaviour is important for health workers to apply effectiveness health interventions. However in this study, structural framework for analysing the relationship between mother's MCH

promoting belief and action was not constructed, overall, to promote mother's self-efficacy and benefits of MCH promotion were important factors for improve their performance.

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