THE PERCEPTIONS OF PREGNANT WOMEN REGARDING ANTENATAL CARE AND ITS RELATED FACTORS IN NAKHON PATHOM PROVINCE, THAILAND

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THE PERCEPTIONS OF PREGNANT WOMEN REGARDING ANTENATAL CARE AND ITS RELATED FACTORS IN NAKHON PATHOM PROVINCE, THAILAND

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ABSTRACT

A cross-sectional study was conducted to investigate the factors related to the perceptions of pregnant women regarding antenatal care (ANC) in Nakhon Pathom province, Thailand. 227 pregnant women participated in this study during data collection in January 2010. Chi-square test and Multiple Logistic Regression were used to identify the associations between the independent variables and the perceptions of pregnant women regarding ANC.

About 60 percent of the pregnant women had positive perceptions regarding ANC. The perception of pregnant women regarding ANC was found to have significant association (P-value <0.05) with education level, marital status, knowledge regarding ANC, family support, bringing the Maternal and Child Health (MCH) handbook to the ANC visits, reading the MCH handbook, using information from posters and brochures, and pregnancy intention. The result of the multiple logistic regression showed that both knowledge of pregnant women about ANC (moderate OR= 4.53, poor OR=9.30), and material support (OR=2.12) were related to the perceptions of the pregnant women. Knowledge was the strongest predictor variable of the perception of ANC by the pregnant women.

The findings of this study suggest that health staff should diligently provide information using the MCH handbook, posters and brochures about MCH including on family planning. In addition, family support should be strengthened to increase the percentage of pregnant women to get ANC visits and thereby improve the state of MCH.

KEY WORDS : PERCEPTION / ANTENATAL CARE / PREGNANT WOMEN

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LIST OF ABBREVIATIONS

ANC	: Antenatal Care
IMR	: Infant Mortality Rate
MCH	: Maternal and Child Health
MDG	: Millennium Development Goal
MMR	: Maternal Mortality Ratio
MOPH	: Ministry of Public Health
NHDP	: National Health Developing Plan
PHC	: Primary Health Care
STD	: Sexually transmitted disease
U5MR	: Under 5 Mortality Rate
UN	: United Nations
UNICEF	: United Nations Children's Found
VHV	: Village Health Volunteer
WHO	: World Health Organization

CHAPTER I
INTRODUCTION

1.1 Rationale and justification of the study

The World Health Organization (WHO) has suggested three major causes of maternal and infant deaths. Firstly, lack of access and utilization of essential obstetric services is a crucial factor contributing to maternal and infant deaths. Secondly, the low socio economic status of women is a fundamental determinant in some developing countries. Thirdly, improper diet contributes to poor maternal health, obstetric problems and maternal outcomes (1). However, many health problems of pregnant women are preventable, detectable or treatable through visits to trained health workers before birth to receive important services, such as tetanus vaccinations, screening and treatment for infections, and potentially life-saving information on warning signs during pregnancy (2).

Every year, many women and girls die as a result of complications during pregnancy, childbirth or within the six weeks following delivery. In 2005, the WHO estimated a total of 536,000 such deaths worldwide, 99% (533,000) of which occurred in developing countries. Maternal mortality is one of the most significant health indicators demonstrating the maternal mortality gap between the rich and the poor — both between countries and within them. Developed regions reported nine maternal deaths per 100,000 live births compared to 450 maternal deaths in developing regions; and 14 countries had maternal mortality ratios (MMRs) of at least 1,000 per 100,000 live births. Half of all maternal deaths (265,000) occurred in sub-Saharan Africa and another (187,000) in southern Asia. Together, these two regions accounted for 85% of all maternal deaths (3). WHO has estimated that 130 million infants are born each year worldwide. Four million die in the first 28 days of life and three-quarters of neonatal deaths occur in the first week, with more than one-quarter occurring in the first 24

hours. Neonatal deaths account for 40% of deaths under the age of 5 years worldwide. Therefore, efforts to achieve the United Nations' fourth Millennium Development Goal (MDG4) of reducing childhood mortality by two-thirds by 2015 are focused on reducing neonatal deaths in high-mortality countries. The causes of neonatal deaths were infection (36%), preterm birth (28%) and birth asphyxia (23%); 87% of neonatal deaths, therefore, are caused by 3 preventable problems which can be overcome using antenatal care (ANC) and delivery with the assistance of skilled birth attendants. The three delay model (delay in recognition of illness, delay in seeking and accessing care, and delay in the provision of care at a health facility) has helped in understanding neonatal and perinatal deaths, as well as maternal deaths (1).

ANC is a principal reproductive health care service to help ensure women have healthy pregnancies. Specifically, prenatal care allows for monitoring of pregnancy complications such as low weight which can lead to infant mortality and disabilities. ANC can reduce maternal death and mortality rates directly through the detection and treatment of pregnancy related illnesses, and indirectly by the identification of pregnant women at increased risk of delivery complications and ensuring that they deliver in a suitable facility. Most formal investigations of the effectiveness of ANC have concentrated on infant outcomes, prenatal mortality, preterm delivery and low birth weight (3).

The United Nations Children's Fund (UNICEF) and WHO recommend at least four ANC visits (4). In 1990, the World Summit for Children adopted ANC as a specific goal, namely access by all pregnant women to prenatal care, trained attendants during childbirth and referral facilities for high-risk pregnancies and obstetric emergencies (5).

Since the 1990s, the proportion of pregnant women in the developing world who have had at least one ANC visit has increased from about 64 percent to 79 percent. However, a substantially lower proportion of pregnant women receive the standard set of four visits recommended by WHO and UNICEF. The proportion of women who receive four or more ANC visits is still less than 50 percent in sub-

Saharan Africa and southern Asia and less than 60 percent in southeastern-Asia where the majority of maternal deaths occur (3).Women who live in urban areas are generally twice as likely as those living in rural areas to present for ANC. This is especially the case in Asian countries where 50 percent of women living in urban areas received ANC, while only 26 percent of women living in rural areas presented for ANC in 2002 (4).

Maternal and child health programs in Thailand started in 1964 and maternal and child health (MCH) in Thailand has improved greatly since then. The MMR and the Infant Mortality Rates (IMR) have fallen dramatically since 1974. Although the IMR for Thailand is lower than the global average, it is still higher than that for some other countries in the same region, such as Singapore and Malaysia. The major causes of infant mortality are low birth weight and perinatal asphyxia (7). Thai MMRs and IMRs by region are presented in Table1.1 below.

Table 1.1 Maternal and Infant Mortality Rates: by global and region in Thailand, 2002-2006

Region	2002		2004		2006	
	MMR	**IMR**	**MMR**	**IMR**	**MMR**	**IMR**
Global average*					400	49.0
Whole Kingdom	14.7	6.5	13.3	7.5	11.7	7.4
Central	6.1	5.7	11.3	7.1	14.7	6.4
Eastern	8.1	6.6	7.6	7.3	10.2	6.3
Western	9.8	7.0	9.0	7.2	6.9	6.8
North-eastern	9.7	5.9	12.2	7.5	11.2	7.6
Northern	19.0	6.6	19.3	7.4	13.1	7.5
Southern	27.8	7.3	20.4	8.0	18.7	8.4

MMR: maternal deaths per 100,000 live births /IMR: infant deaths per1,000 live births

Source: Thailand Public health 2008-2009. (8)
*UNFPA State of world population 2005 (9)

Nakhon Pathom province is a province located 20km west of Bangkok. According to data for this district, the information shows that it still has a serious problem compared with the Thailand as a whole and Bangkok, as shown in Table 1.2.

Table 1.2 MMR and IMR in Nakhon Pathom province

Region/Province	2003		2004		2005		2006	
	MMR	**IMR**	**MMR**	**IMR**	**MMR**	**IMR**	**MMR**	**IMR**
Whole Kingdom	13.7	7.2	13.3	7.5	12.2	7.6	11.7	7.4
Bangkok	10.6	7.5	6.8	7.5	8.8	7.9	8.1	7.9
Nakhon Pathom	**17.9**	**5.8**	**-**	**6.3**	**35.6**	**6.1**	**-**	**7.5**

Source : Thailand Public health 2008-2009 (8)

In Andersen and Newman's Framework of Health Services Utilization, the meaning of perception is explained that whether or not they judge their problems to be of sufficient importance and magnitude to seek professional help (10). Therefore, perceptions can influence acceptability and utilization of services. Increasing the positive perception of pregnant women regarding ANC may influence the percentage of ANC visits and improve the state of MCH. This research focused on the perceptions of pregnant women regarding ANC and factors related to the perceptions of pregnant women regarding ANC in Nakhon Pathom to indicate the nature of their disadvantage, to improve ANC, and to enhance the quality of life for mothers and children.

1.2 Research question

What are the factors affecting the perceptions of pregnant women regarding ANC in Nakhon Pathom, Thailand?

1.3 Research objectives

1.3.1 General objective

To identify the factors related to the perceptions of pregnant women regarding ANC in Nakhon Pathom, Thailand.

1.3.2 Specific objectives

1) To describe perceptions of pregnant women regarding ANC

2) To describe the independent variables, including predisposing factors, enabling factors, reinforcing forcing factors and need factors.

3) To identify the associations between the independent variables and perceptions of pregnant women regarding ANC.

1.4 Conceptual framework

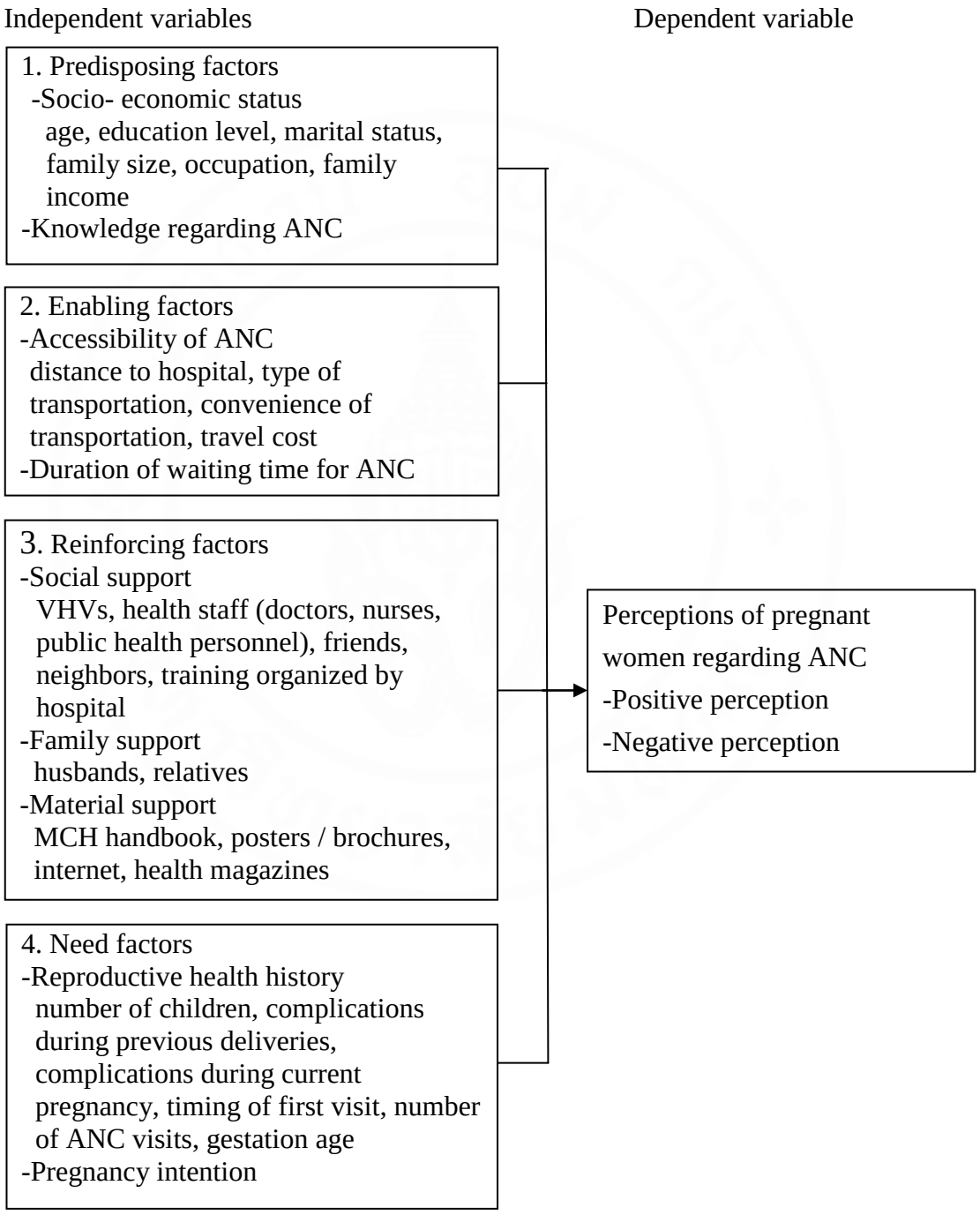

Figure 1.1 Conceptual framework (Based on PRECEDE-PROCEED model, Andersen and Newman's Framework of Health Services Utilization, and Health Belief Model)

1.5 Operational definitions of study

1 .5.1 Dependent variables

Perceptions of pregnant women regarding ANC means a pregnant woman's thinking about ANC and reactions to possible problems that may occur during pregnancy. It was measured in terms of benefits and barriers such as the content of ANC, ANC schedules, feelings of pregnant women about ANC, hospital instruments, and importance of ANC. In this regard, respondents were categorized into two groups, Negative perception or Positive perception.

Negative perception: refers to the negative feeling, thinking, understanding and belief related to barriers, in other words, a pregnant woman's opinion of the tangible and psychological costs of the advised action. It is applied to identify and reduce perceived barriers through reassurance, correction of misinformation, incentives and assistance.In other words, a perception that attending ANC would cause them trouble or inconvenience.

Positive Perception: refers to the positive feeling, thinking, understanding and belief related to benefit such as a pregnant woman's belief in the efficacy of the advised action to reduce risk or seriousness of complication impact.

1.5.2 Independent variables

1.5.2.1 Predisposing factors

Predisposing factors are those precedents to behavior that provide the motivation for the behavior.

Socio-economic status

Socio-demographic characteristics refer age, education level, marital status, occupation, family size, and family income.

-Age: refers to age of the respondents in complete years of age in this study.

-Education level: refers to the respondent's highest level of educational attainment.

-Marital status: refers to whether the respondents were married and living with a husband, married but living apart from a husband, not married and living with partner, divorced, widowed, or other.

-Family size: refers to the number of family members usually living with the respondent.

-Occupation: refers to the present job of the respondents.

-Family income: refers to the amount of money which was earned by the respondents and their husbands monthly in baht.

Knowledge of pregnant women regarding ANC: refers to the respondents' information and understanding about ANC such as the range of services, ANC schedules, preventable diseases, and benefits of ANC and available ANC.

1.5.2.2 Enabling factors

Accessibility of ANC: refers to the ease with which pregnant women can access ANC. It was assessed in terms of distance to the hospital, type of transportation, convenience of transport and travel cost.

-Distance to hospital: refers to the distance from a respondent's residence to the place for ANC (hospital).

-Type of transportation: refers to the kind of transportation that respondents use to take to the ANC visits.

-Convenience of transportation: refers to availability of transportation facilities from the residential area to the place for ANC (hospital).

-Travel cost: refers to the cost of transportation to ANC from the residential area.

Duration of waiting time: refers to the time that respondents spent receiving services, including time taken for registration, examination and treatment at the hospital.

1.5.2.3 Reinforcing factors: refers to assistance and encouragement to the pregnant women to visit ANC. It is characterized into three groups: social support, family support, material support.

Social support: refers to assistance, encouragement and advice to the pregnant women to visit ANC from Village Health Volunteers (VHVs), health staff (doctors, nurses, and other public health personnel), friends, neighbors, and participation in the training organized by hospital.

Family support: refers to support in terms of encouragement, advice and money for ANC from husbands and relatives (e.g. a respondent's mother, mother-in-law, or other)

Material support: refers to the information about ANC that the pregnant women receive from MCH handbook and other mass media such as health magazines, internet, posters and brochures.

1.5.2.4 Need factors

Reproductive health history: refers to the number of children, complications during previous deliveries, complications during current pregnancy, the timing of first ANC visit, the number of ANC visit.

-Number of children: refers to the total number of times women had already given birth.

-Complications during previous deliveries: refers to the nature of a respondent's previous deliveries: normal delivery and some problems such as abortion, premature, stillbirth, bleeding per vagina, neonatal death.

-Complications during current pregnancy: refers to medical illness and symptoms such as allergy, sexually transmitted diseases (STDs), and diabetes mellitus, anemia, and edema during current pregnancy.

-The timing of first visit: refers to the month in which a respondent accessed ANC for the first time.

-The number of ANC visits: refers to the number of time that a respondent had received ANC as at the time of interview.

-Gestation age: refers to the number of months from when a respondent became pregnant.

Pregnancy intention: refers to the intention of a respondent to become pregnant.

1.6 Limitation of the study

Data was only gathered by self-administered questionnaire, and the researcher was not able to follow up or communicate with the respondents in depth and may get indirectly from others.

CHAPTER II

LITERATURE REVIEW

The reviews in this chapter are divided into four parts as follows:

2.1 MCH

2.1.2 MCH worldwide

In 2000, 189 members of the United Nations (UN) signed the Millennium Declaration which set out MDGs for reducing the gaps in global income, social equality and human development. The MDGs represent a framework for achieving human development and for poverty eradication (11). The MDGs were formulated to encourage action to improve global health and specifically include MCH objectives, namely:

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

2) To reduce the MMR by three-quarters, between 1990 and 2015

The U5MR has declined steadily worldwide. Between 1990 and 2007, it fell from 93 deaths per 1,000 live births worldwide, to 67 in 2007. In 1990, more than 12.6 million young children died from largely preventable or treatable causes. This number has declined to around 9 million today, despite population growth. Nevertheless, every year almost 4 million infants do not survive their first month of life. Moreover, the gap between developing countries and developed countries has widened (12).

Figure 2.1 shows that progress of MDGs in 2009, for the developing regions as a whole, the U5MR dropped from 103 in 1990 to 74 in 2007. Nevertheless, many countries in sub-Saharan Africa and southern Asia have still made little or no progress at all. In sub-Saharan Africa, in 2007, about one in seven children died before the age of five. Sub-Saharan Africa and southern Asian attempts to reduce the U5MR to meet the MDGs have been intensified, and the prospects of improvement are very real. Across sub-Saharan Africa, recent survey data shows remarkable improvements in several key child-survival interventions which are expected to further reduce the U5MR over the next few years. (3).

Goals and Targets	Africa		Asia				Oceania	Latin America & Caribbean
	Northern	Sub-Saharan	Eastern	South-Eastern	Southern	Western		
GOAL 4 Reduce child mortality								
Reduce mortality of under-five-year-olds by two thirds	low mortality	very high mortality	low mortality	low mortality	high mortality	low mortality	moderate mortality	low mortality
Measles immunization	high coverage	moderate coverage	high coverage	moderate coverage	moderate coverage	moderate coverage	low coverage	high coverage
GOAL 5 Improve maternal health								
Reduce maternal mortality by three quarters *	moderate mortality	very high mortality	low mortality	high mortality	high mortality	moderate mortality	high mortality	moderate mortality
Access to reproductive health	moderate access	low access	high access	moderate access	moderate access	moderate access	low access	high access

Figure 2.1 Millennium Development Goals: 2009 progress chart
Source : UN. Millennium developing goals indicator; 2009 (11)

Every year, 536,000 women die as a result of complications during pregnancy, childbirth, or in the six weeks following delivery. Almost all of these deaths (99%) occur in developing countries. Developed regions report nine maternal deaths per 100,000 live births compared to 450 maternal deaths in developing regions, where 14 countries have a MMR of at least 1,000 per 100,000 live births. Half of all maternal deaths (265,000) occur in sub-Saharan Africa and another third (187,000) in southern Asia. Together, these two regions account for 85 percent of all maternal deaths (4). There, hemorrhages cause 34% of maternal deaths although many of these could be prevented or treated by good quality reproductive health services, antenatal care, skilled health workers assisting at birth, and access to emergency obstetric care. Since 1995, every region of the developing world has made some progress in improving the availability of skilled health personnel such as doctors, nurses or midwives, to assist in deliveries. Overall, the proportion of births attended by skilled health workers in developing regions has increased from 53 percent in 1990 to 61 percent in 2007. However, in southern Asia and sub-Saharan Africa, more than half of all births still take place without the assistance of trained personnel (13).

Contraceptive use has increased in all developing regions, generally accompanied by reductions in fertility. In almost all regions, well over half of the women who are married or in union were using some form of contraception in 2005. The major exception was sub-Saharan Africa, was still only 22 percent in 2005 (14).

2.1.2 MCH in Thailand

In Thailand, MCH has been important and has continually been declared as a top priority since the 3rd National Health Development Plan (NHDP 1972-1976) and remains a top priority. This plan set targets for maternal, newborn and child health (15).

For many years, the safe motherhood project has aimed at developing quality MCH services, strengthening health personnel efficiency, and at reducing maternal mortality and perinatal mortality. Under this project a number of specific initiatives have been implemented. These include the WHO/UNICEF 10 Steps for

breastfeeding; the baby-friendly hospital initiative; the action for safe motherhood program; the thallasemia prevention and control project; the reduction of birth asphyxia project; the prevention of mother to child transmission of HIV/AIDS; the nutrition and development corner and healthy day-care center project (16).

Various professional bodies, including the perinatal and neonatal societies, WHO, UNICEF and Joint United Nations Programme on HIV/AIDS (UNAIDS), promote neonatal health. Thailand has addressed effectively the challenge posed by HIV/AIDS. By adopting programs to prevent mother to child transmission, the perinatal transmission rates have declined. AIDS cases in children 0-4 years from mother to child transmission have fallen after reaching a peak in 1997. Thailand is constrained by a lack of national policy and a holistic approach towards neonatal health care. Further improvements will be possible by continuing to provide good quality curative care and a greater emphasis on prevention and promotional measures (17).

Approximately 97.9 percent of births in Thailand take place in hospital or an institution, and are assisted by trained health personnel such as doctors, nurses and midwives. Family planning services are well organized. Contraceptive usage by married women of reproductive age (15-44 years) continues to increase and was up to 77 percent in 2000-2006. The overall fertility rate has decreased nationwide to 1.85 (18). 66.6 percent of women with unplanned pregnancies were aborted by non-medical personnel. About 12% of abortions were performed by the pregnant women themselves using various techniques. The latest hospital-based survey in 1999 conducted by the MOPH found a total of 45,990 women were admitted for treatment for abortion complications; 71.5 percent from spontaneous and 28.5 percent from induced abortions.41.2 percent of all such admissions were in the age group 15-24. About 35 percent of the Thai population are thallasemia carriers, 1 percent have thallasemia and 5.5 percent of married couples have babies with severe thallasemia (15).

Figure 2.2 shows that the MMR has declined from 36.0 to 17.7 per 100,000 live births over 17years. MMR has declined from 36.0 to 17.7 per 100,000 live births for about 20 years.

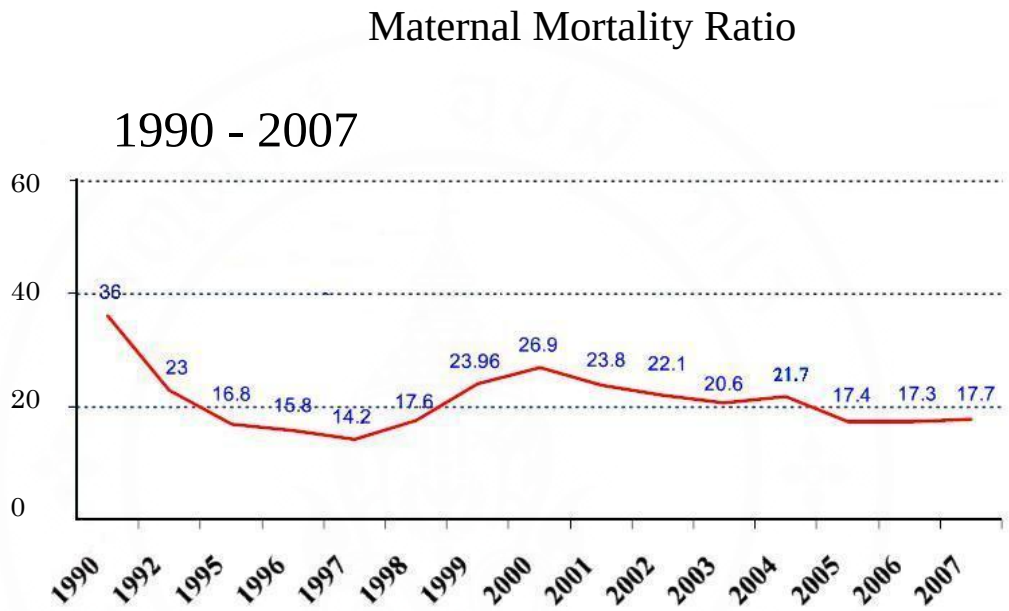

Figure 2.2 Thailand Maternal Mortality Rate

Source : MOPH Thailand,2008, The basic minimum needs and MNCH. (19)

Table 2.1 shows that a three quarters reduction of the MMR to 9.05 was considered not feasible. In Thailand, the MMR continues to fall and declined by about two thirds in the decade 1990-2000 from 36.2 to 14.2. The increase to 17.6 in 2001 and 24 in 2002 was a result of an endeavor to expand the coverage and improve the technical aspects of data collection. With this in mind, the MOPH set a target MMR of 18 by 2006 as an MDG Plus target (15).

Table 2.1 MDGs: Goal 5 MMR and proportion of births attended by skilled health personnel

TARGET 5 Reduce by three quarters, between 1990 and 2015, the MMR						
Indicator	**1990**	**2000**	**2002**	**2006**	**MDG Target**	
					2015	**status**
MMR per 100,000 live births	36.2	14.2	24.0	17.3	9.05	Unlikely to achieve
Proportion of births attended by skilled health personnel	90.8	-		98	-	-

Source : Thailand National health system profile 2005-2007(15)

In 1996, the top three causes of maternal mortality were hemorrhages (31.9%), indirect causes such as malaria or HIV/AIDS (21.3%), and unsafe abortions (14.9%), From 1995 to 2002, 99% of deliveries were assisted by skilled birth attendants, and most haemorrhage cases occurred on the way to hospitals or at home (16).

Figure 2.3 shows that the IMR has declined from 40.7 to 16.7 over the last 20 years, representing a drop of about one third. Progress was slightly more rapid in urban areas.

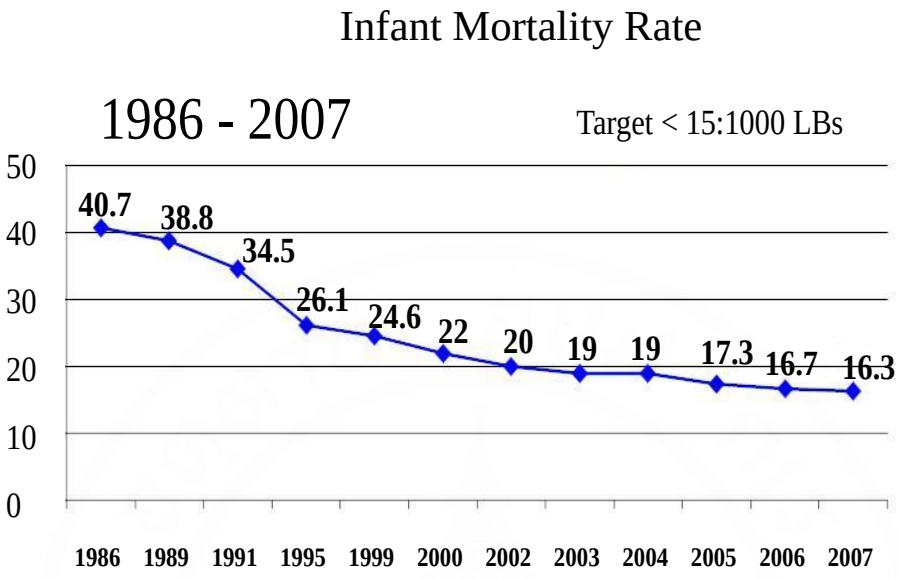

Figure 2.3 Thailand IMR

Source : MOPH Thailand,2008, The basic minimum needs and MNCH. (19)

Table 2.2 shows that Thailand has made great progress in reducing child mortality since 1990. However a two-thirds reduction of IMR is not considered feasible. According to available data, the U5MR declined from 12.8 to 11.6 between 1990 and 1995. The apparent increase of the U5MR in 1998 is believed to have been the result of technical changes in the method of data collection rather than a real increase (15).

Table 2.2 MDGs Goal 4 U5MR and IMR

TARGET 4 Reduce by two-thirds between 1990 and 2015, theU5MR					
Indicator	**1990**	**1995**	**2007**	**MDG Target**	
				2015	**status**
U5MR per 1000 live births	12.8	11.6	20.4	4.3	Unlikely to achieve
IMR per 1000 live births	38.8**	-	16.3*	13.8	-

Source : Thailand National health system profile 2005-2007(15) ** data for 1989

2.2 ANC

ANC comprises the health services provided for pregnant women by health professionals such as obstetricians, medical doctors, midwives, and nurses. The purpose of ANC is to prevent or identify any pre-existing factors that might increase the risks of pregnant women and their babies. Moreover, health professionals will give advice to pregnant women for achieving safe and healthy pregnancies (20).

ANC is designed to detect and manage problems during pregnancy and improve the chances of having a healthy baby by providing information and counselling. ANC reduces maternal and prenatal morbidity and mortality directly through the detection and treatment of pregnancy related or underlying illnesses, or indirectly through the detection of women at increased risk of delivery complications, by ensuring that they are cared for in a suitably equipped facility. The basic content of care at each visit has not changed substantially over the years, although modern technology has led to the introduction of several new elements in pregnancy surveillance (21).

The study of Trinh and Rubin (22) in 2006 revealed that ANC is widely established and provides an opportunity to inform and educate pregnant women about pregnancy, childbirth and care of the newborn. It is expected that this will assist the women in making choices that would contribute to good pregnancy outcomes. In 1788 in Paris, ANC began as a social service at two shelter homes for abandoned women. In 1919, in England, this service started with the midwifery service, home service, and home visiting by nurses. These services were popular from 1944 onwards. WHO established MCH care as one of four health care priorities of in 1984 (23).

2.2.1 ANC Worldwide

According to the latest estimates, 77 percent of women in the developing world receive ANC from a skilled health provider at least once during pregnancy. Figure 2.4 shows percentage of women aged 15–49 receiving ANC at least once time during pregnancy and the percentage receiving ANC at least four times in 2000 to

2007. In most developing countries, only about 30 to 40 percent of pregnant women make the minimum recommended four ANC visits. For example, in a subset of sub-Saharan African countries with available data, 72 percent of pregnant women received ANC at least once in 2000–2007, but only 42 percent received it at least four times (6).

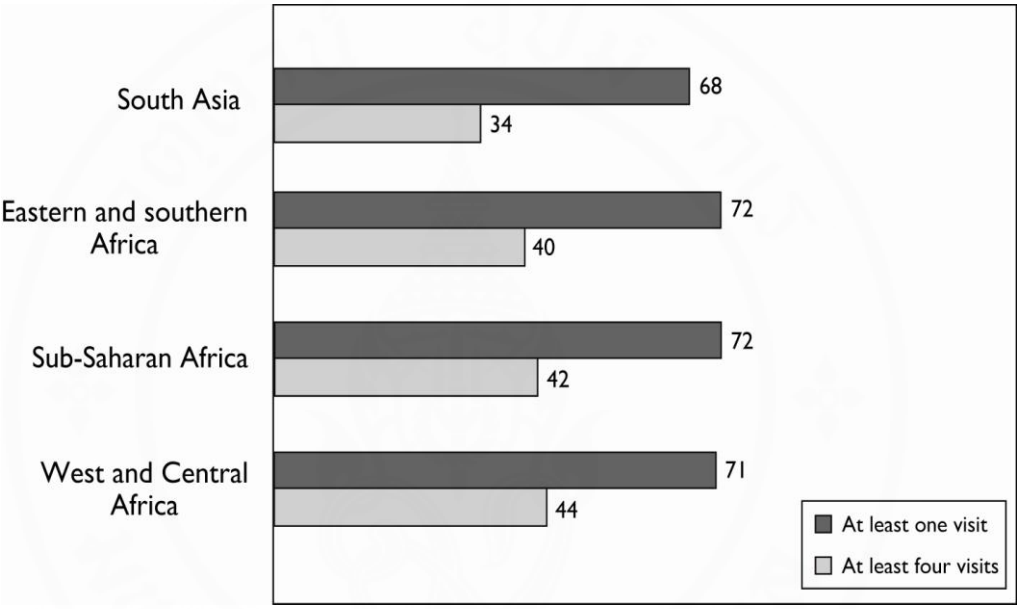

Figure 2.4 Percentage of ANC visit
Source : UNICEF global databases 2007 (6)

In developing countries, routinely recommended ANC programs are often poorly implemented and clinical visits can be irregular, with long waiting times and poor feedback to the women. According to WHO guidelines, ANC visits should include, at a minimum, the measurement of blood pressure, testing of urine for bacteriuria and proteinuria, and blood tests to detect STDs, severe anemia, and measurement of weight and height. Countries differ significantly on the content of the care. The most common element is measurement of weight and blood pressure, and the least common elements are blood and urine tests. According to research conducted in 14 developing countries by WHO and UNICEF after antenatal check-ups, less than half of the women received information about danger signs during pregnancy (4).

Accessing ANC at the beginning of a pregnancy is important for early detection, avoidance and treatment of potentially harmful pregnancy related outcomes because it allows health care providers the chance to find problems early so they can be treated as soon as possible (24).

Figure 2.5 shows that percentage of first ANC visit by month. In Latin America, the Caribbean, Middle East and North Africa, two thirds of pregnant women receive ANC in the first trimester, while only half do in Asia. In Sub-Saharan Africa, women tend to present for the first time for ANC in the second trimester and some women first visit in the third trimester. Pregnant women present for ANC early in pregnancy to allow enough time for essential diagnosis and treatment regimens for STDs (4).

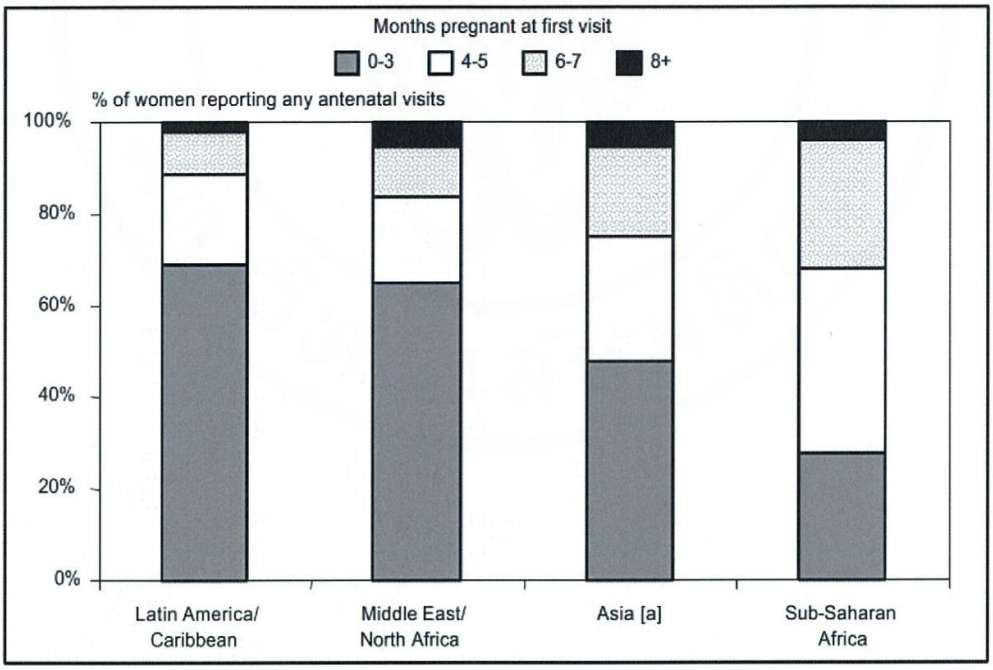

Figure 2.5 Timing of first ANC visit

Source : Department of Reproductive Health and Research WHO,1990-2001 (4).

2.2.2 ANC in Thailand

In 2000-2008, 98 percent of pregnant women made at least one ANC visit, and 74 percent of pregnant women made at least four times (23) in Khon Kaen Province, from 2004, a new ANC program has been implemented (25). The Ministry of Public Health (MOPH) prescribed that the new ANC system in Thailand should comprise at least five visits (at 12 weeks, 20 weeks, 26 weeks, 32 weeks, and 38 weeks) for healthy pregnant women. This is to motivate pregnant women to receive the ANC service. According to a national survey of pregnant women using the new ANC program, 70% of them are satisfied (4). In the standard model in use, women access ANC once a month for the first six months of pregnancy, twice a month for weeks 25 to 32, and then once a week until delivery. In this protocol, pregnant women make 12 ANC visits during pregnancy (26).

Most of the ANC is provided in hospitals and health centers by medical and health personnel such as doctors, nurses and midwives. Services provided at ANC clinics include routine physical examinations, voluntary counselling and testing for HIV and Thallasemia, Tetanus Toxoid vaccinations, health education, and the provision of folic acid and iron supplements. All pregnant women are given the MCH handbook and Pregnancy Pathway on their first ANC visit (15).

2.2.3 Nakhon Pathom

Nakhon Pathom province consists of seven districts: Muang district, Phuttamonthon district, Sam Phran district, Nakhon-Chai Si district, Bang Len district, Kamphaeng Saen district, and Don Tum district. The total area of these districts is 76,329 km^2, and the total population is 34,697 from 13,824 households averaging to 2.5 people per household. It is located about 20 kms west of Bangkok.

In the Nakhon Pathom district there are nine community hospitals which are all quite similar. The community hospitals are under the MOPH which is in charge of each district. Each hospital has 30 to 60 beds for the admission of patients, and total staff of about 100 including doctors, nurses, dentists, and pharmacists. The hospitals provide both primary and secondary health services.

2.3Theoretical models

2.3.1 PRECEDE-PROCEED model

The PRECEDE-PROCEED model was developed by Lawrence Green and Marshall Kreuter to provide a comprehensive structure for assessing health and quality of life needs, and designing, implementing and evaluating health education and health promotion programs. An underlying premise of this model is that health education depends on voluntary participation and cooperation of patients in a process, which allows personal behavioral practices. It also assumes that the degree of change in knowledge and health practice is directly related to the degree of active participation of the patient. Therefore, in this model, appropriate health education is considered to be the intervention for a properly diagnosed problem in a target population. This model is multidimensional, founded in the social-behavioral sciences, epidemiology, administration and education. As such, it recognizes that health and health behaviors have multiple causes which must be evaluated to assure appropriate intervention. The comprehensive nature of PRECEDE allows for application in a variety of settings such as school health education, patient education, community health education, and direct care settings.

PRECEDE stands for Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation, and aims to outline a diagnostic planning process. The framework recognizes the emergence and need for health promotion interventions that go beyond traditional educational approaches to change unhealthy behaviors. The administrative diagnosis is the final planning step to precede implementation. From there it proceeds to promote the plan or policy, regulate the environment, and organize the resources and services, as required by the plan or policy.

PROCEED stands for Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development, and is meant to guide the implementation and evaluation of programs planned according to the PRECEDE process. Therefore, PRECEDE and PROCEED function in a continuous cycle.

The purpose of the PRECEDE / PROCEED model is to direct initial attention to outcomes rather than outputs. Planners can begin the planning from the outcome point of view. In order words, program planning begins with the desired outcomes and works backward to determine what causes them. Intervention target the preceding factors result in the outcome. The planning process outlined in the model rests on two principles:

1. The principal of participation, which states that success in achieving change, is enhanced by the active participation of members of the target audience in defining their own high priority problems and goals, and in developing and implementing solutions. This principle is derived from the community development root theories and the empowerment education model exemplified by Ferrier.

2. The important role of environmental factors as determinants of health and health behavior such as media, industry, politics, and inequities (27).

<Description of models>

PRECEDE-The first 5 phases

Phase 1- Social diagnosis

Phase 2- Epidemiological diagnosis

Phase 3- Behavioral and environmental diagnosis

Phase 4- Education and organizational diagnosis

Phase 5- Administrative and policy diagnosis

PROCEED –The second 4 Phases

Phase 6- Implementation

Phase 7- Process evaluation

Phase 8- Impact evaluation

Phase 9- Outcome evaluation

Phase 1 - Social diagnosis

The focus of this phase is to identify and evaluate the social problems which impact the quality of life of a target population. This requires program planners

to gain an understanding of the social problems which affect the quality of life of particular interest groups of those populations see those problems. This is followed by the establishment of a link between these problems and specific health problems which may become the focus of health education. The link is essential in life and, in turn, how the quality of life affects social problems. Methods used for social diagnosis may include one or more of the following:

- Community forums
- Nominal groups
- Focus groups
- Surveys
- Interviews
- Central location intercept

Phase 2 - Epidemiological diagnosis

This phase helps determine health issues associated with the quality of life. It helps identify behavioral and environmental factors related to the quality of life issues. The focus of this phase is to identify specific health problems and non health factors which are associated with a poor quality of life. Describing these health problems can:

1) Help establish relationships between health problems, other health conditions, and quality of life;

2) Lead to the setting of priorities which will guide and focus program development and resource utilization;

3) Make possible the delineation of responsibilities between involved professionals and organizations and agencies. These priorities are defined as program objectives which define the target population (WHO), the desired outcome (WHAT), and HOW MUCH benefit the target population should benefit, and by WHEN that benefit should occur.

Examples of epidemiological data:

• Vital statistics
• Years of potential life loss
• Disability
• Prevalence
• Morbidity
• Incidences
• Mortality

From phase 1, and 2, program objectives are created and also the goal or goals hoped to be achieved as a result of implementing a particular program.

Phase 3 - Behavioral and environmental diagnosis

This phase focuses on the systematic identification of health practices and other factors which seem to be linked to the health problems defined in Phase 2. This includes non-behavioral causes (personal and environmental factors) that can contribute to health problems, but are not controlled by behavior. These could include genetic predisposition, age, gender, existing disease, climate, workplace, and the adequacy of health care facilities. Also assessed are the behaviors which cause health problems in the target population. Another important component of this phase is the determination of the importance and relative changeability of each behavioral cause. It is critical that a behavioral diagnosis is completed for each health problem identified on Phase 2. This will allow all the planners to choose target behaviors which will become the focus of specific educational interventions.

-Behavioral diagnosis is the analysis of behavioral links to the goals or problems that are identified in an epidemiological or social diagnosis.

-Environmental diagnosis is a parallel analysis of factors in the social and physical environment other than specific actions that could be linked to behaviors.

-The behavioral matrix helps to identify targets where the most effective intervention measures can be applied.

Table 2.3 The behavioral matrix

	More important	Less important
More changeable	High priority Quadrant I	Low priority expect for political reasons Quadrant III
Less changeable	Priority for innovations Assessment crucial Quadrant II	No program Quadrant IV

*Behavioral objectives are created from Quadrant I, II. Quadrant III is used more for political reasons

Phase 4 - Educational diagnosis

This phase assesses the causes of health behaviors which were identified in Phase 3. Three kinds of causes are identified - predisposing factors, enabling factors, and reinforcing factors. The critical element of this phase is the selection of the factors which, if modified, will be most likely to result in behavior change. This selection process includes identifying and sorting. These factors divide into appropriate categories, prioritizing categories, and prioritizing categories themselves. Prioritization of factors is based on relative importance and changeability. Learning objectives are then developed which focus on these selected factors. This phase also pinpoints the factors that must be changed to initiate and maintain behavioral change. It is during this phase that specific intervention objectives are created and the intervention itself will be implemented. Educational and organizational diagnosis looks at the specifics that hinder or promote behaviors related to the health issue.

-Predisposing factors - any characteristics of a person or population that motivates behavior prior to the occurrence of that behavior

- Knowledge
- Beliefs
- Values
- Attitudes
- Perception

-Enablers - characteristics of the environment that facilitate action and any skill or resource required to attain specific behavior.

- Accessibility
- Availability
- Skills
- Laws (local, state, federal)

-Reinforcers - rewards or punishments following or anticipated as a consequence of a behavior. They serve to strengthen the motivation for behavior.

- Family
- Peers
- Teachers.

Phase 5 - Administrative and policy diagnosis

This phase focuses on the administrative and organizational concerns which must be addressed prior to program implementation. This includes the assessment of resources, budget development and allocation, development of an implementation timetable, organization or personnel within programs, and coordination of a program with all other departments, institutional organizations and the community.

-Administrative diagnosis - the analysis of policies, resources and circumstances prevailing organizational situations that could hinder or facilitate the development of a health program.

-Policy diagnosis - to assess the compatibility of program goals and objectives with those of the organization and its administration; whether it fits into the mission statements, rules and regulations.

Phase 6 - Implementation of the program

This phase is for implementing a health promoting program.

Phase 7 - Process evaluation is used to evaluate the process by which the program is being implemented.

Phase 8 - Impact evaluation measures the program effectiveness in terms of intermediate objectives and changes in predisposing, enabling, and reinforcing factors.

Phase 9 - Outcome evaluation measures change in terms of overall objectives and changes in health and social benefits or the quality of life. It takes a very long time to get results and it may take years before an actual change in quality of life can be discerned.

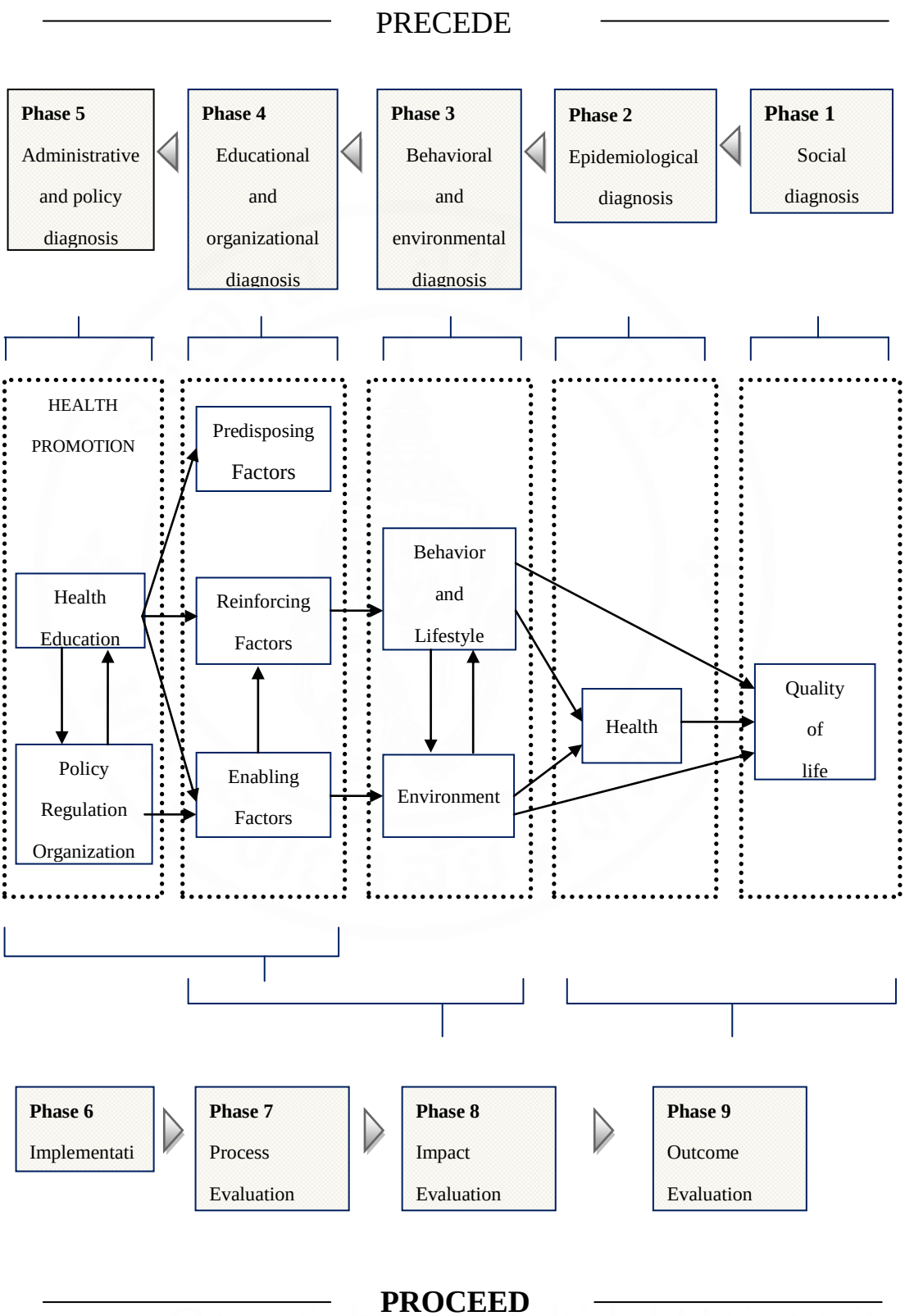

Figure 2.6 PRECEDE and PROCEED model

2.3.2 Andersen and Newman's framework of health services utilization

The purpose of this framework is to discover conditions that either facilitate or impede utilization. The goal is to develop a behavior model that provides measures of access to medical care. The framework was first developed in the 1960s and has since gone through four phases. Developed in the 1990s, the framework below represents the fourth phase (10).

An individual's access to and use of health services is considered to be a function of three characteristics:

1) Predisposing factors: The socio-cultural characteristics of individuals that exist prior to their illness.

- Social Structure: Education, occupation, ethnicity, social networks, social interactions, and culture;

-Health Beliefs: Attitudes, values, and knowledge that people have concerning and towards the health care system;

- Demographics: Age and Gender.

2) Enabling factors: The logistical aspects of obtaining care.

- Personal/Family: The means and knowledge to access health services, income, health insurance, a regular source of care, travel, extent and quality of social relationships;

-Community: Available health personnel and facilities, and waiting time;

-Possible additions: Genetic factors and psychological characteristics;

3) Need factors: The most immediate cause of health service uses. Perceived need will better help to understand care-seeking and adherence to a medical regimen, while evaluated need will be more closely related to the kind and amount of treatment that will be provided after a patient has presented to a medical care provider.

-Perceived: How people view their own general health and functional state, as well as how they experience symptoms of illness, pain, and worries about their health and whether or not they judge their problems to be of sufficient importance and magnitude to seek professional help.

-Evaluated: Represents professional judgment about a person's health status and need for medical care.

2.3.3 Health belief model

The Health belief model was developed by the social psychologists in the U.S Public Health Service in the 1950s. The Health belief model attempts to predict health-related behavior in terms of certain belief patterns. Emphasis is placed on the above described categories. The model is used in explaining and predicting preventive health behavior, as well as sick-role and illness behavior. The Health belief model has been applied to all study all types of health behavior. A person's motivation to undertake a health behavior can be divided into three main categories: individual perceptions, modifying behaviors, and likelihood of action. Individual perceptions are factors that affect the perception of illness or disease; they deal with the importance of health to the individual, perceived susceptibility, and perceived severity. Modifying factors include demographic variables, perceived threat, and cues to action. The likelihood of action discusses factors in probability of appropriate health behavior; it is the likelihood of taking the recommended preventive health action. The combination of these factors causes a response that often manifests into action, provided it is accompanied by a rational alternative course of action (28).

In conclusion, this study was structured according to the PRECEDE-PROCEED model, Andersen and Newman's framework of health services utilization model, and the health belief model.

Of all of the phases of the PRECEDE–PROCEED model, at the PRECEDE stage, only phase 3 and 4 were considered in this study. They were taken into account as independent variables. According to phase 4, knowledge was selected

from predisposing factors, accessibility was selected from enabling factors, and every reinforcing factor was applied. From Andersen and Newman's framework of health services utilization model, need factors were applied for this study in terms of reproductive health history and pregnancy intention. The health belief model was applied to identify and measure the dependent variable.

2.4 Related research

2.4.1 Perception related to MCH

Perception is the process by which organisms interpret and organize sensation to produce a meaningful experience of the world. Sensation usually refers to the immediate, relatively unprocessed result of stimulation of sensory receptors in the eyes, ears, nose, tongue, or skin. Perception, on the other hand, can also describe one's ultimate experience of the world and typically involves further processing of sensory input. In practice, sensation and perception are virtually impossible to separate, because they are part of one continuous process (28).

According to the health believe model, the perception of a personal health behavior threat is itself influenced by at least three factors: general health values, which include interest and concern about health; specific health beliefs about vulnerability to a particular health threat; and beliefs about the consequences of the health problem. Once an individual perceives a threat to his/her health and is simultaneously cued to action, and his/her perceived benefits outweigh his/her perceived barriers, then that individual is most likely to undertake the recommended preventive health action. There may be some variables (demographic, socio-psychological, and structural) that can influence an individual's decision (29).

The study of Adams V. and Miller S. (30) on safe delivery in Tibet showed that women did not have a positive perception regarding use of a hospital for delivery because they were afraid of the health personnel. They could not communicate well

with them or they were afraid of the care that they would receive at a hospital. Therefore, they did not utilize the hospital.

The study of Ambruoso L, et al. (31) showed that there was a significant association between women's perceptions and delivery care services as well as with the satisfaction of care, and the expectation of care. The study of women's perceptions indicated that the attitude of service providers was very important.

Perceptions of pregnant women regarding ANC

A study of Olufemi T., et al. (32) focused on perceptions of pregnant women about the quality of ANC at the primary care level in Nigeria. It revealed that there were significant associations between perceptions of the pregnant women about quality of ANC and characteristics such as age, being married, women's monthly income, ethnicity, employment status of husband, educational level, duration of pregnancy, frequency of antenatal visits, and previous use of ANC at the same centre.

2.4.2 Socio economic status

The study of Gustavo Nigenda, et al. (16) focuses on women's socio-cultural aspects related to their perception of the changes in ANC protocol. This, however, does not imply that socio-economic status might not play a key role in these perceptions.

Age

The study of Cockerham WC (33) showed that younger persons are more likely to participate in healthy life styles than older people. People seem to take better care of themselves as they grow older in a number of ways. As the report of Dat Van D (34) in general, younger women are more likely to accept modern health care practices. On the other hand, older people have empirical knowledge about maternal health care and therefore have more confidence about pregnancy and child birth. They may not depend on institutional care. However the study of P-Cuevas (35), et al. in 1999 found that older mothers were more aware of the utilization of MCH care rather than younger mother.

Education level

According to a UNICEF report, in Thailand average years of education attainment by the population aged 15 years and over was 7.2 years in the year 2000.More over 10 percent of female population did not attend school in 2000 (12).

Dat Van D. (34) showed that maternal education is positively and independently related to use hospital for childbirth in Ethiopia. Educated women are more likely to have better perceptions of maternal health services and benefits of using services. Education empowers women to have self confidence and make decisions to use health services.

The previous research that focused on MCH by Becker S. (36), education has been found to be an important predictor of prenatal care in urban and rural areas. Especially in rural areas, the effect of women's education was large.

The Figure 2.7 showed that educated women are more likely to access ANC and the likelihood of using ANC is associated with their education levels. Educated women also tend to report four or more ANC visits. Women with secondary education are two or three times more likely to access antenatal care than women with no education (4). The report of WHO revealed that education of mother was considered to have greater awareness of existence of maternal health care services and benefits in using services (24).

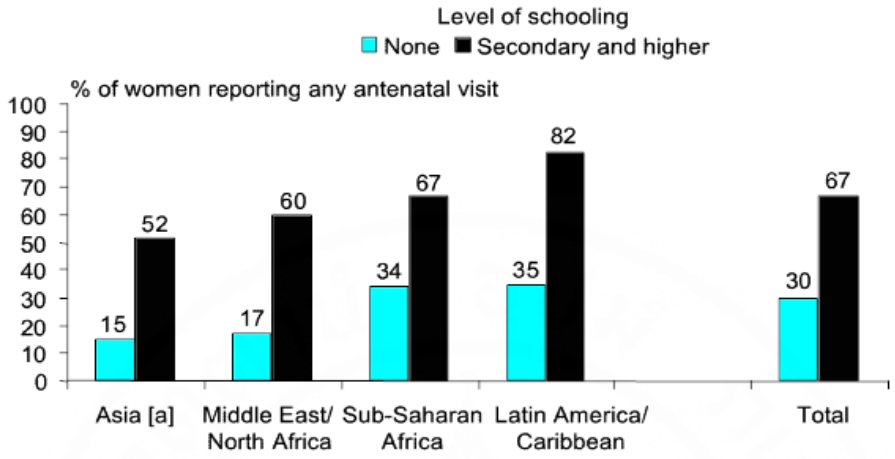

Figure 2.7 ANC and education level

Source : Department of Reproductive Health and Research WHO,1990-2001 (4).

Marital status

Bates AS., Wolinsky FD., (37) and Greertsen R. (38) found a significant relationship between marital status and health behavior. Fewer unmarried mothers took their children to immunization services than married mothers.

Family size

The report of Becker MH, Drachman RH, and Kirscht JP (39) showed that mothers of large families are likely to keep appointments with health facilities rather than mothers living with small families. In large families, someone can usually take care of the other children making it easier for mothers to utilize health services. On the other hands, the study of Greertsen (38) revealed that mothers living with small family had greater attention on child health than mothers living with large family. Both of studies was conducted that family size influenced both advantage and disadvantage on MCH promoting.

The study of Yoko A. (40) revealed that there was no significant association between MCH promoting belief and family size.

Occupation

The study of Greertsen R. (38) revealed that housewives tend to follow better health practices. Simoes, et al. (41) showed that occupational groups at risk of insufficient ANC included unskilled workers, trainees, students, and housewives. High rates of utilization were found for the categories “top management/executive position” and “skilled workers”. The rate of one or less consultations per pregnancy has declined significantly compared to 1998, but has increased again since 2000. Low utilization (2–5 consultations per pregnancy) has not decreased, showing rather constant differences between the occupational categories throughout the observed 6-year period. According to WHO report, the women who work outside home have low opportunity to take their children to take MCH services (18).

The study of Yoko A. (40) revealed that there was no statistically significant association between occupation and MCH utilization. Even women had barriers of time management in term of MCH promoting action, their partial responsibilities for their family to have benefit of MCH promoting action.

Family income

According to official statistics, in Thailand, in 2007, the average monthly family income was 18,660 baht (in municipal areas 28,005 baht / in non municipal areas 14.309 baht). The average monthly expenditure was 14,500 baht (in municipal areas 20.179 bath / in non municipal areas 11.854 baht). Of this expenditure, the average medical health care expenditure was 284 baht (42). The study of Gillis AJ (43) showed that family income is clearly associated with health behavior. The study of Yoko A. (40) showed that family income influenced perception of barriers, because of the cost of health promoting action.

The study of WHO and UNICEF showed that the utilization of ANC is heavily influenced by wealth in all regions. Women living in poor households use ANC much less than women living in rich households (4).

Knowledge of pregnant women about ANC

Rustam Effendi (44) showed a positive relationship between knowledge about pregnancy and the attitude or health practice of women. Pregnant women who had good knowledge about pregnancy were more likely to follow good health practices during pregnancy. Dat Van D. (34) also found that the pregnant women who had good knowledge about pregnancy had good health practice.

2.4.3 Enabling Factors

Accessibility of ANC

(distance to hospital, type of transportation, convenience of transportation, travel cost)

As the report of Siripakdee (45) showed, pregnant women who lived near a health center or hospital used ANC more than those who lived further away from health facilities. The report of Mubyazi GM., et al. (46) revealed that long travel for ANC visit to a hospital appears to be a major concern to pregnant women and a key factor influencing decisions whether to seek ANC services, and whether to register for ANC services early or late in pregnancy. The study of Charoenmuang Malee (47) also showed that there was a significant association between ANC attendance by pregnant women and distance from home to hospital.

Tomas, at el. (48) found that those who had a driver's license had 2.29 times more health care visits for chronic care and 1.92 times more visits for regular checkup care than those who did not. Respondents who had family or friends could provide transportation for them had 1.58 times more visits for chronic care than those who did not.

The study of Mubyazi GM., et al. (46) showed that the cost for ANC services and transportation to receive ANC impacted on the perceptions of pregnant women about ANC. According to WHO, a long distance from a pregnant woman's house to hospital, and lack of time, transportation and money to go to a hospital impacted on utilization of ANC (3). However the study of Charoenmuang Malee (47) revealed that the economic factor was less important for determining the use of ANC.

Duration of waiting time

The study of UNICEF showed that a long waiting time may limit the acceptability of services, especially in developing countries where women may only have limited time available (6).

Mubyazi GM., et al. (46) showed that waiting for ANC was considered a major problem satisfaction and perceptions of quality of health services. Moreover, pregnant women coming from far away found it particularly inconvenient and occasionally problematic when clinics opened later or closed earlier than officially announced. At times, clients missed ANC services due to such early closures of the clinics.

2.4.4 Reinforcing Factors

Social support

The UNICEF study showed that during pregnancy, delivery and child-bearing, women need social support and cannot easily manage or cope by themselves. Pregnancy, delivery and child-bearing cannot be solved by the women's individual performance alone: they also need social support (7).

The study of Sensnee Jirojwong (49) revealed that those who have high levels of social support are more likely to have better health behaviors, including the use of preventive health services, than those who have low levels of social support.

VHVs

In Thailand, most MCH services are provided throughout the country by government agencies at all levels of the health care system. At the village level there is the primary health care unit, where VHVs assist in giving advice and referring cases to health centers (16). The Thailand health profile 2005-2007 shows that VHVs are involved as community people as volunteers in government service development projects in Thailand. Their involvement was considered as a human resource development strategy. They were envisioned as a concretization of the principle of community participation in Primary Health Care (PHC), which would significantly

extend the coverage of basic health services in rural communities. People's health is greatly affected by the state of poverty, besides the lack of education and the resources. Through the activities of VHVs, health services in rural areas would be made available, accessible and acceptable to the majority of the population (18).

Health staff (doctors, nurses, and other public health personnel)

Previous study that focused on ANC, Sansnee Jirojwong (49) showed that only 10 percent of pregnant women identify that health personnel as providing support during pregnancy, and most pregnant women, therefore, may not recognize the support provided by health personnel as beneficial to them. On the other hand, the study of Cooke and Margaret (50) showed that the majority of pregnant women would like to have support from midwives and nurses related to physical and emotional health care.

Friends /Neighbors

The report of WHO shows that friends and community support encourage individual action and perceptions of MCH promotion (24).

Training organized by hospital

The study of WHO revealed that the community can play a particularly strong role in strengthening linkages with health services. Health promotions with community support can encourage pregnant women to adopt healthy pregnancy and childbirth practices (18).

Family support (husbands /relatives)

According to the WHO report, MCH promotion will be more effective if it engages and targets the whole family rather than mothers alone. Beneficial health practices are easier to sustain when entire families encourage, support and participate in the health activities (3).

The WHO study showed that health outcomes for pregnant women and newborns determined largely by their families. Healthy households increase the capacity and awareness of women. Moreover, the pregnant women use skilled care,

get support from partners and her family during pregnancy, birth and postpartum period (24). The study of Sansnee Jirojwong (49) revealed that spouses and relatives are important sources of emotional, instrumental, information and appraisal support, the four principal types. Husbands and relatives play an important role in giving advice to women.

The Oklahoma State Department of Health (51) studied intention related to ANC. It reported that the effect of the father's pregnancy intention and of how his feelings about a pregnancy may influence maternal behavior and birth outcomes is less certain. The study of Greertsen R. (38) revealed when family members support pregnant women or mothers through encouragement, good behaviours will be sustained more easily.

Material support

MCH handbook

The report of WHO showed that the MCH handbook is useful for keeping records at home and has improved ANC attendance, child immunization records, child development, and postpartum check-up rates (52). Shah, et al. (53) also showed in their study in eight countries, that the use of records kept regularly by mothers improves their health. Elbourne, et al. (54) also found that mothers keeping their own records were significantly more likely to feel in control of their ANC and found it easier to seek advice from health professionals. By contrast, those who did not have MCH handbook felt more anxious, helpless and less informed about MCH during pregnancy. Yoko A. (40) showed that there was a significant association between a mother's MCH promoting belief and utilization of MCH services. MCH handbooks include information and messages from health personnel which enhance MCH activities. In Thailand, in 1996, most parents (91.1 %) had never recorded anything in the MCH handbook, and 35.7 percent of parents had never read it (15). According to Yoko A. (40), in 2005, in Kanchanaburi province 84 percent of mothers had never recorded anything in the MCH handbook.

Posters and brochures, internet and health magazines

Samuel E Anya, et al. (55) showed that some pregnant women received information through the mass media. The radio, in particular, is an attractive and practicable communication medium. On the other hand, some pregnant women are unable to make optimum use of the information they have received from mass media. Mondal (56) revealed that mass media emerges as a significant factor in the utilization of anti-tetanus injections and iron / folic acid tablets at ANC services.

Stan Becker, et al. (36) showed that in an urban area of the Philippines, possession of a television was associated with use of traditional and modern contraception but that this association was not present in rural areas.

2.4.5 Need Factors: Reproductive health history

The number of children

Halder KA, et al. (57) showed that women who have never given birth utilized ANC more than those who had already had children. Women tend to take more care during their first pregnancy.

Figure 2.8 shows that parity is strongly associated with utilization of ANC. Women tend to give greater attention to their first pregnancy. On the other hand, women with higher parity are likely to be less concerned to access ANC (4). Boonyanurak P. (58) showed that pregnant women who did not use ANC had more children than those who had had no children. It found that there was a negative association between experience of pregnancy and use of ANC. The study of WHO also found that pregnant women without children were more likely to access ANC than those who had had children. However in sub-Saharan Africa, the percentage of utilization of ANC by first birth women is less than for women who have previously been pregnant (4).

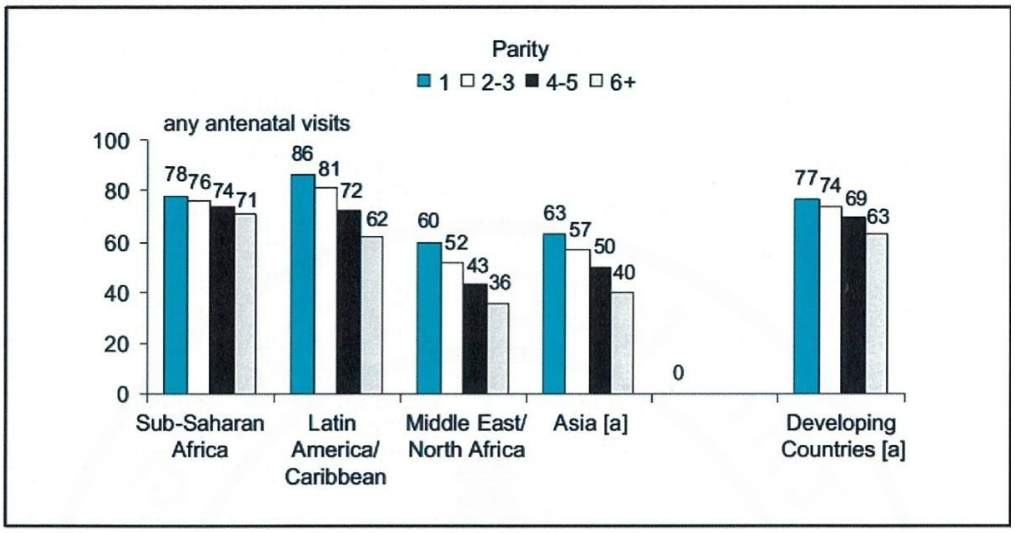

Figure 2.8 ANC visit by parity

Source : Department of Reproductive Health and Research WHO,1990-2001 (4).

Complications during previous deliveries

Malee Charoenmuang (47) showed that there was no statistically significant association between previous and present obstetrical complications and ANC attendance. The study of Trinh LTT, et al. (22) in Australian revealed women who had had a previous caesarean delivery were more aware of the risk of pregnancy complications and were, therefore, more likely to visit ANC early. On the other hand, the previous study that focus on ANC, has been showed in the research of Rustam Effendi (44) there was no significant association between complication of last delivery and awareness of benefit of ANC.

Complications during current pregnancy

The study of Boonyanurak P. (58) showed that those who were over 35 years old were more likely to suffer from chronic problems such as persisting hypertension or diabetes, and experience complications during pregnancy and delivery, and account for greater prenatal mortality. The study was focused on difference of between urban and rural regarding utilization of ANC conducted by Mosiur Rahman, et al. (59) revealed that there was strong significant association between complication of pregnancy and utilization of ANC in both urban and rural.

The timing of first ANC visit

The report of WHO and UNICEF, pregnant women should attend ANC as soon as they miss their menstrual period in order to allow enough time for essential diagnosis and treatment regimens such as treatment of STDs and management of anemia (4). The study of Trinh LTT, et al. (22) showed that the women who had some complications at previous deliveries were more likely to seek ANC early.

The number of ANC visits

The study of Kerri and Mory N. (20) showed that ANC can help keep pregnant women and their babies healthy. Babies whose mothers did not receive ANC are three times more likely to have a low birth weight and five times more likely die than those whose mothers receive ANC in middle east / north Africa and Asia.

The study of WHO and UNICEF revealed that there were marked differences between urban and rural in use of ANC. Women who lived in urban areas are generally twice as likely as those living in rural areas to report four of more ANC visit (10).

Pregnancy intention

As the report of Oklahoma State Department of Health (49) showed, the intentions of pregnant women have impacted on behaviors. Unintended pregnancy results in adverse health outcomes and bad behaviors for mothers and infants.

The study of Barrick L. and Michael A. (60) revealed that utilization of ANC was not found to be significantly associated with prospective pregnancy intention. Initiation of ANC visit was not delayed in unwanted pregnancies. Significant differences existed between the numbers of women who reported their pregnancy unwanted retrospectively compared with prospectively. These differences were not associated with the utilization of ANC or timing of care initiation. The exception to these findings were women who consistently reported their pregnancies unwanted both before and after conception, who were twice as likely to delay ANC initiation as women with consistently wanted pregnancies.

CHAPTER III
RESEARCH METHODOLOGY

This chapter describes:

3.1 Study design
3.2 Study population
3.3 Sample size estimation
3.4 Sampling technique
3.5 Research instruments for data collection
3.6 Pre-testing of the questionnaire
3.7 Data collection procedure
3.8 Data analysis procedure and statistical analysis

3.1 Study design

The research design is a cross-sectional descriptive study.

3.2 Study population

The target population was Thai pregnant women who had either experienced or not experienced a delivery and who attended ANC at a government community hospital in Nakhon Pathom province, Thailand, and agreed to participate in this research.

3.3 Sample size estimation

Based on the following formula developed by Cochran (59), the sample size was calculated as follows.

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

Where: n = sample size

z = standard normal score set at 1.96, corresponding 95 percent confidence interval (α=0.05)

p = from the pre-test of this study, out off 30 pregnant women, there were 16 pregnant women had negative perception=0.567

q = 1-p= 0.433

d = degree of accuracy desired, setting at 0.07 (7%)

$$n = \frac{(1.96)^2 (0.567) (0.433)}{(0.07)^2} = 192.5$$

According to the above calculation, it was necessary to include at least 193 pregnant women to serve as a sample group in order to analyze the data properly. To prevent information loss from incomplete data and withdrawal of participants from this study, the sample size was increased by about 20 percent. Therefore, the sample size in this study was 230 pregnant women.

3.4 Sampling technique

Multi-stage cluster sampling was used in this study. Two districts were randomly selected from the seven districts of Nakhon Pathom province, namely:

Phuttamonthon and Nakhon-Chai Si districts. Phuttamonthon district had only one Community Hospital, namely: Phuttamonthon Community Hospital. Therefore this hospital was included in the study. Nakhon-Chai Si district had three community hospitals, but only two community hospitals, namely: Nakhon-Chai Si Community Hospital and Huai phlu Community Hospital were randomly selected to participate in the study. All Thai pregnant women who visited these community hospitals during the data collection period and who were willing to participate in this study were included.

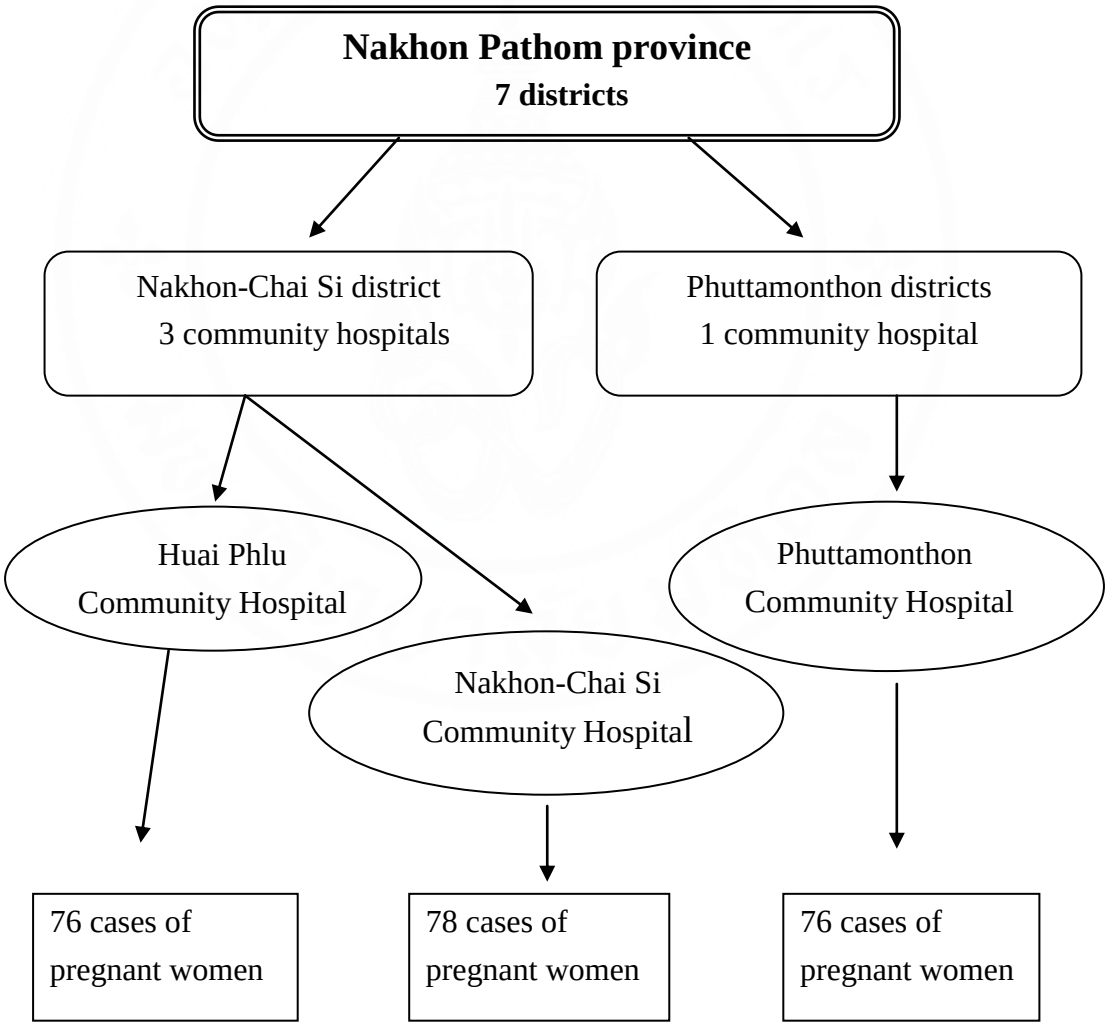

Figure 3.1 Multi-stage cluster sampling for data collection

3.5 Research instruments for data collection

A structure questionnaire was developed based on the conceptual framework, and used for data collection. The English version of the questionnaire was translated into Thai for ease of understanding and to collect data. The questionnaire consisted of the following five parts as follow.

Part1: Predisposing factors
Part 2: Enabling factors
Part 3: Reinforcing factors
Part 4: Need factors
Part 5: Perceptions of pregnant women

Part 1 : Predisposing factor

This part comprised 15 items, and addressed the socio-economic status of the respondents and their knowledge of ANC.

1-1. Socio-economic status

This part contained six questions about age, education level, marital status, family size, occupation, and family income. For data analysis, several variables were categorized as follows:

-Age: - Young high risk : <17 years old
- Proper child bearing care age: 17-35 years old
- Elder high risk : >35 years old

-Education level: no schooling, primary school, secondary school /high school, diploma, bachelor degree or higher

-Marital status: married and living with husband, married but not living apart from husband, not married and living with partner, divorced, widowed, or other

-Occupation: housewife, housekeeping cleaner, farmer, employee in a factory, vendor, civil servant, employee in a private company or other

-Family income: Low income: <18,000baht per month
High income: ≥18,000baht per month

1-2. Knowledge of ANC

The questions asked the respondents about information and activities of ANC. This part consisted of nine questions with a possible total score of 9 for measuring the knowledge.1 point was given for a correct answer and 0 point for an incorrect answer, do not know or no response. The maximum possible total score was 9 and the minimum possible score was 0. By applying Benjamin Bloom's criteria (60), the total score for knowledge of ANC was divided into three levels: high, moderate and low. In descriptive analysis, knowledge was divided into three levels as follows:

High: score >80% (7-9 points)
Moderate: score 60-80% (5-6 points)
Low: score<60% (0-4 points)

Part 2 : Enabling factors

This part contained five questions about accessibility of ANC services and waiting time for ANC.

2-1. Accessibility of ANC

The distance from a respondent's home to the hospital, the type of transportation used, and the cost and convenience of transportation were elicited by multiple choice questions.

The distance to hospital had four choices: Less than 5 kilometers, 6-10 kilometers, 11-15kilometers, more than 15 kilometers.

The type of transportation had choices as follows: own vehicle (bicycle, bike, and car), on foot, taxi, public transportation

2-2. Duration of waiting time for ANC

The question related to waiting time for ANC had the following three choices: <30minutes, 30-60minutes, >60 minutes.

Part 3 : Reinforcing factors

This part consisted of 28 items divided into three parts: social support, family support and material support. The details are as follows:

3-1. Social support

Thirteen questions were asked about social support that the respondents received from VHVs, doctors, nurses health personnel, friends, neighbors, and training organized by hospital in terms of information and encouragement. All questions were applied a four-item index as follows:

-A lot : 3 points
-Moderate : 2 points
-A few : 1 points
-Never : 0 points

To describe the overall scores of social support, they were divided into three classifications as follows:

-Good support : 26 to 39 points
-Moderate support : 13 to 25 points
-Poor support : 0 to 12 points

3-2. Family support

The questions were about support from within the family such as from husbands and relatives in terms of information, and encouragement that the respondents received. All questions were applied a four-item index, points were given as follows:

-A lot : 3 points
-Moderate : 2 points
-A few : 1 points
-Never : 0 points

The questions in this part had eight items. To describe the overall level of family support the scores were divided into three classifications as follows:

-Good support :16 to 24 points
-Moderate support : 8 to 15 points
-Poor support : 0 to 7 points

3-3. Material support

Seven questions were asked about material support such as the MCH handbook, posters and brochures, internet and magazines in term of information.

-MCH handbook: It is classified into three levels such as good, moderate and poor, according to total performance of bringing on ANC visits, recording, and reading by pregnant women, herself. 'Yes' was scored as 1 and 'No' was scored as 0. The total score was classified into three levels as follows:

-High : 6 -7 points
-Moderate : 3-5 points
-Low : 0-2 points

Part 4 : Need factors

This part consisted of two parts: reproductive health history and intention regarding pregnancy.

4-1. Reproductive health history

The questions were about the number of children, complications during previous deliveries, complications during the current pregnancy, the number of ANC visits, the timing of the first ANC visit, and gestation age. The variables were categorized as follows:

-The number of children: <2, ≥2

-Complications during previous pregnancies: normal delivery, some complications (abortion, premature, stillbirth, bleeding per vagina, neonatal death).

-Complications during current pregnancy: no complication, having a medical illness or complications (edema, anemia, allergy, STDs, diabetes mellitus, and nephritis) during current pregnancy.

-The number of ANC visits: ≤4, > 4 times

-Gestation age: <5months (<17 weeks)
5-7months (17-28weeks)
>7 months (>28 weeks)

-The timing of first ANC visit: First trimester: <13 weeks
Second trimester: 13-24 weeks
Third trimester: >24 weeks

4-2. Intention of having this pregnancy

: Planned, Unplanned, Unclear

Part 5 : Perceptions of pregnant women

This part of the questionnaire consisted of 15 questions about perceptions of ANC. A Likert scale was used, and scores were calculated as follows:

For the positive statements
-Agree : 3 points
-Not sure : 2 points
-Disagree : 1 point

For the negative statements
-Disagree : 3 points
-Not sure : 2 points
-Agree : 1 point

The maximum possible total score was 45 and the minimum possible total score was 15. The perceptions of ANC were classified into two groups according to the total score.

-Positive perception group: The total score was greater than the mean score.

-Negative perception group: The total score was equal to or less than the mean score.

3.6 Pre-testing of the questionnaire

The questionnaires were pre-tested at the Liang poh pern Community Hospital in Nakhon Pathom province, Thailand. 30 respondents were selected, and the reliability of the knowledge part and perception part were calculated by Kuder-Richardson formula 20 and Cronbach's alpha coefficient respectively. The reliability of knowledge and perception was less than 0.6 with first pre-testing. Based on the result of first pre-testing, one question was deleted from the knowledge part, and four

questions were modified in the perception part. With the second pre-test, the reliability of knowledge and perception were 0.64 and 0.74 respectively.

3.7 Data collection procedure

Data collection was undertaken after receiving permission of Mahidol University Institutional Review Board (COA.NO. MU-IRB 2009/ 293.2611) Ethics Committee as follows:

1) A formal letter from the director of the AIHD was sent to the directors of the relevant community hospitals seeking permission to collect data in those hospitals.

2) After receiving permission to collect data from the community hospital directors, the major academic advisor acting as coordinator contacted the hospital coordinator in each community hospital, and explained the purposes and process of this study, the description of pregnant women and how their various rights would be respected and protected.

3) The hospital coordinators were asked to contact the respondents, and to arrange a time to meet the researcher and coordinator which would not affect or interfere with their ANC. The researcher and coordinator then met with each respondent and explained the purposes and process of this study and how their rights would be respected and protected.

4) If the pregnant women were willing to participate in the study, the coordinator distributed the participation information sheet, consent form, and questionnaire to them.

5) Each pregnant woman then signed her name to the consent form and answered the questionnaire. The time to complete this questionnaire was about 15 - 20 minutes.

6) The respondents were asked to return the participation information sheets, consent forms, and questionnaires to the researcher in separate boxes.

3.8 Data analysis procedure and statistical analysis

The data was edited, coded, recorded and summarized by using Epidata and MINITAB. The descriptive and inferential statistics were used to analyze. The presentations of the statistical results of this research were divided into two parts as follows:

1. Univariate analysis: Descriptive statistics such as frequency, percentage, mean, standard deviation were used to describe variables of interest.

2. Bivariate analysis: Inferential statistics

-Chi-square test for association between each independent variables and the perception of ANC.

-Multiple logistic regressions to determine an association between the independent variables and the perception of ANC.

CHAPTER IV
RESEARCH RESULTS

This research was conducted to evaluate the perceptions of pregnant women regarding ANC in Nakhon Pathom province, Thailand. The data collection process was conducted from 11th January to 26th January, 2010. The target population was pregnant women from three target community hospitals. Self-administered questionnaire were distributed to collect data from 230 pregnant women. Since three pregnant women did not consent to participate in this study, the total number of respondents was 227. The aims of this research were to describe the perceptions of pregnant women, predisposing factors, enabling factors, reinforcing factors and need factors. This research was also intended to identify the associations between the independent variables and the perceptions of pregnant women regarding ANC.

The results are presented in two parts: the first part set out the tables of frequency and percentage distribution of all variables. The second shows the associations between the various independent variables and the perceptions of the pregnant women regarding ANC. The results are presented in descriptive and analytic forms, as follows.

4.1 Description of independent and dependent variables

4.1.1 Predisposing factors: socio-economic status of pregnant women

Table 4.1 shows the frequency and percentage distribution of socio-economic status of the pregnant women. The average age was 24.71 years and the range was 14 to 41 years old. Most of the pregnant women (81.86%) were in the

proper child bearing age group (17-35 years old). Nearly 20 percent of the pregnant women were out of the proper age range. More than half of the pregnant women (59.47%) had secondary or high school education. Most of the pregnant women (65.20%) were married and lived with their husbands and 32.16 percent that were not married but living with their partners. More than 50 percent of the pregnant women (58.18%) lived in families that had four or fewer members. The average family size was four members. Most of the pregnant women (66.96%) were working outside, about 15 percent of them were working in factories (15.42%) or private companies (14.10%). Family income varied from 500 to 80,000 baht / month with an average of 11,164 baht / month. More than 80 percent (85.71%) earned 500 to 18,000 baht/month.

Table 4.1 Frequency and percentage by socio-economic characteristics

Socio-economic factors	Frequency	Percentage
Age (n=226)		
Younger age (<17 years old)	22	9.73
Proper child bearing age (17-35 years old)	185	81.86
Elder age (>35 years old)	19	8.41
Mean=24.71, SD=6.73, Min.=14, Max.=41		
Education level (n=227)		
No schooling	14	6.19
Primary school	58	25.66
Secondary / High school	137	60.62
Diploma	7	3.10
Bachelor degree or higher	10	4.42
No answer 1		

Table 4.1 Frequency and percentage by socio-economic characteristics (cont.)

Socio-economic factors	Frequency	Percentage
Marital status (n=227)		
Married and living with husband	148	65.20
Married but living apart from husband	3	1.32
Not married and living with partner	73	32.16
Divorced	1	0.44
No answer 2		
Family size (n=220)		
≤4	128	58.18
>4	92	41.82
Mean= 4, QD=1, Min.=1, Max.=12		
Occupation (n=227)		
Housewife	71	31.28
Housekeeping cleaner	16	7.05
Farmer	16	7.05
Employee in factory	35	15.42
Civil servant	5	2.20
Employee in private company	32	14.10
Vendor	28	12.33
Labour	20	8.81
Student	4	1.76
Family income (n=217)		
Low income (500-17,999 baht / month)	186	85.71
High Income (18,000-80,000 baht / month)	31	14.29
Median=9,000, QD=4,000, Min.=500, Max.= 80,000		

No answer: Missing value occurred as the participants had their right to skip some questions

4.1.2 Predisposing factors: knowledge of pregnant women regarding ANC

Table 4.2 displays the frequency and percentage distribution of pregnant women by knowledge regarding ANC. Data was elicited by nine questions and knowledge levels were classified using Benjamin Bloom's criteria as good, moderate or poor.

Over two-thirds of the pregnant women (68.28%) had good knowledge and 20.70 percent had moderate knowledge. Only 11.01 percent had poor knowledge. The mean knowledge score was 7.11 and standard deviation was 1.97. Minimum and maximum scores were 0 and 9 respectively.

Table 4.2 Frequency and percentage by knowledge of pregnant women about ANC

Knowledge of pregnant women about ANC	Frequency (n=227)	Percentage
Good	155	68.28
Moderate	47	20.70
Poor	25	11.01
Mean=7.11, SD=1.97, Min.=0, Max.=9		

Score: Good: >80%, Moderate: 60% to 80%, Poor: <60%

The frequency and the percentage distribution of pregnant women by correct answer by each question of knowledge is displayed in Table 4.3. The result shows that more than 70 percent of the pregnant women answered correctly on each question.

Most of the pregnant women answered correctly about regular ANC examination with 90.74 percent and the necessity of blood testing during ANC with 90.30 percent. However, the proper time to visit ANC was the issue that few of the pregnant women knew about, when compared with others.

Table 4.3 Frequency and percentage by correct answer questions of knowledge of pregnant women regarding ANC

Knowledge of pregnant women about ANC	Correct answer	
	Frequency (n=227)	**Percentage**
1. ANC is the provision of health services to pregnant women by doctors, nurses, midwives or other health care professionals	203	89.42
2. Pregnant women should visit ANC for the first time when they feel fetal movement	162	71.36
3. Pregnant women should attend ANC at least 2 times during pregnancy	160	70.48
4. Only pregnant women with complications should go to ANC	163	71.80
5. ANC consists of regular examinations to check the expectant mother's blood pressure, weight, fetal heartbeat, tetanus immunization, iron and folic supplementation	206	90.74
6. ANC is an opportunity to inform pregnant women about danger signs and symptoms	146	70.53
7. To protect baby from tetanus, pregnant women should take tetanus vaccination at ANC	185	81.49
8. Blood testing during ANC is necessary to assess the anaemia status during pregnancy	205	90.30
9. Pregnant women should attend ANC as soon as they miss their menstrual period	183	80.61

4.1.3 Enabling factors: Accessibility of ANC and waiting time for ANC

Table 4.4 shows the frequency and percentage distribution of the pregnant women in terms of accessibility of ANC. Nearly 40 percent (39.65%) of the pregnant women lived 6 to 10 kms from hospital. Most of them (81.86%) used their own

vehicle such as bicycle, car or bike to go to have ANC at a hospital. Nearly 90 percent of the pregnant women felt that their transportation to visit ANC from their home was convenient (93.39%) and inexpensive (88.99%). Only 10.57 percent of them felt that the cost of travel to access ANC was expensive. Nearly half of the pregnant women (48.67%) waited for ANC about 30 to 60 minutes.

Table 4.4 Frequency and percentage by level of accessibility of ANC and waiting time

Level Accessibility of ANC	Frequency	percentage
Distance to hospital (n= 227)		
< 6 kms	51	22.47
6-10 kms	90	39.65
11-15 kms	28	12.33
> 15 kms	56	24.67
No answer 2		
Type of transportation (n=227)		
Own vehicle (bicycle /car / bike)	185	81.86
On foot	1	0.44
Taxi	14	6.19
Public transportation	26	11.50
No answer 1		
Convenience of transportation (n=227)		
Convenient	212	93.39
Inconvenient	14	6.17
No answer 1		
Travel cost (n=227)		
Expensive	24	10.57
Inexpensive	202	88.99
No answer 1		

Table 4.4 Frequency and percentage by level of accessibility of ANC and waiting time (cont.)

Level of duration	Frequency	Percentage
Duration of waiting time (n=227)		
< 30 minutes	88	38.94
30-60 minutes	110	48.67
> 60 minutes	28	12.39
No answer 1		

4.1.4 Reinforcing factors: Social support

Table 4.5 shows the frequency and the percentage distribution of the pregnant women by level of social support. The total score of 13 questions was rated by Best' Rating Criteria as good, moderate or poor. Nearly half of the pregnant women (49.56%) had good social support and 42.04 percent had moderate social support. Only 8.41 percent got poor social support. The mean score was 25.54 and standard deviation was 8.02. Minimum and maximum scores were 0 and 39 respectively.

Table 4.5 Frequency and percentage by level of social support

Level of social support	Frequency (n=226)	Percentage
Good support	112	49.56
Moderate support	95	42.04
Poor support	19	8.41
Mean=24.54, SD=8.02, Min.=0, Max.=39		

Table 4.6 shows the frequency and the percentage distribution of level of social support by categories of social support, namely: support from VHVs, support from health staff such as doctors, nurses and health personnel; support from friends or neighbors; and support from training organized by hospital. Support from training organized by hospital had the highest proportion of good support (61.78%) in the

category of social support. Furthermore most of them got good support from health staff (57.52%), friends (45.58%), and neighbors (41.15%). On the other hand, only 14.16 percent of the pregnant women got good support from VHVs.

Table 4.6 Frequency and percentage of levels of social support by the one who give the support

Level of social support	Frequency	Percentage
VHVs (n=226)		
Good support	32	14.16
Moderate support	78	34.51
Poor support	116	51.33
Mean=2.451, SD=1.864, Min.=0, Max.= 6		
Health staff (doctors, nurses, public health personnel) (n=226)		
Good support	130	57.52
Moderate support	73	32.30
Poor support	23	10.18
Mean=11.588, SD=4.449, Min.= 0, Max.=18		
Friends (n=226)		
Good support	103	45.58
Moderate support	85	37.61
Poor support	38	16.81
Mean=4.155, SD=1.630, Min.= 0, Max.=18		
Neighbors (n=226)		
Good support	93	41.15
Moderate support	90	39.82
Poor support	43	19.03
Mean=2.467, SD=0.889, Min.=0, Max.=6		

Table 4.6 Frequency and percentage of levels of social support by the one who give the support (cont.)

Level of social support	Frequency	Percentage
Training organized by hospital (n=225)		
Good support	139	61.78
Moderate support	61	27.11
Poor support	25	11.11
Mean=3.925, SD=1.736, Min.=0, Max.=3		

4.1.5 Reinforcing factors: Family support

Table 4.7 indicates the frequency and the percentage distribution of the pregnant women by level of family support. The total score of eight questions was rated by Best' Rating Criteria as good, moderate or poor.

74.45 percent of pregnant women got good family support and 21.59 percent got moderate family support; only 3.08 percent got poor support from their families. The mean total family support scores was 17.99 and standard deviation was 4.65. Minimum and maximum scores were 0 and 24, respectively.

Table 4.7 Frequency and percentage by level of family support

Level of Family support	Frequency (n=225)	Percentage
Good support	169	74.45
Moderate support	49	21.59
Poor support	7	3.08
Mean=17.99, SD=4.65, Min.=0, Max.=24		

Table 4.8 shows the frequency and percentage distribution of level of family support by categories, namely: husband support and relative support. More than

70 percent got good support from their husbands and relatives (71.37% and 70.04% respectively).

Table 4.8 Frequency and percentage of levels of family support by the one in family to give support

Level of Family support	Frequency (n=225)	Percentage
Husband support		
Good support	162	71.37
Moderate support	51	22.47
Poor support	12	5.29
Mean=13.062, SD=3.998, Min.=0, Max.=18		
Relative support		
Good support	159	70.04
Moderate support	50	22.03
Poor support	16	7.05
Mean=4.9244, SD=1.4419, Min.=0, Max.=6		

4.1.6 Reinforcing factors: Material support

Table 4.9 indicates the frequency and the percentage distribution of the pregnant women by level of material support. The total score of seven questions was rated by Best' Rating Criteria as good, moderate or poor. Slightly over one-half of the pregnant women got good material support (51.11%) and only 3.56 percent of them got poor material support. The mean material support score was 6.71 and standard deviation was 3.24. Minimum and maximum scores were 0 and 45 respectively.

Table 4.9 Frequency and percentage by level of material support

Level of material support	Frequency (n=225)	Percentage
Good support	115	51.11
Moderate support	102	45.33
Poor support	8	3.56
Mean=6.71, D=3.24, Min.=0, Max.=45		

Table 4.10 shows frequency and percentage of utilization of MCH handbook. Most of the pregnant women (93.39%) always brought the MCH handbook to the ANC visits, and only 3.08 percent of pregnant women never brought it, or occasionally bought it. About three-quarters of the pregnant women (74.89%) read the MCH handbook in detail; only 4.41 percent of them never read it. More than half of them (56.39%) could record their condition by themselves.

Table 4.10 Frequency and percentage by level of utilization of MCH handbook

Item of material support from MCH handbook	Frequency	Percentage
Bringing (n=227)		
Always	212	93.39
Occasionally	7	3.08
Never	7	3.08
No answer 1		
Reading (n=227)		
In detail	170	74.89
Skimming	46	20.26
Never	10	4.41
No answer 1		
Recording (n=227)		
Yes	128	56.39
No	98	43.17
No answer 1		

Table 4.11 shows the different sources of MCH information. Most of the pregnant women (92.07%) used information from the MCH handbooks. About 70 percent (69.60%) used information from posters and brochures, and 51.41% of them read health magazines for information about MCH. However, only 14.1% of them got information from the internet.

Table 4.11 Frequency and percentage by using information from each sources

Source of information	Frequency	Percentage
MCH handbook (n=226)		
Yes	209	92.07
No	17	7.49
No answer 1		
Posters / Brochures (n=225)		
Yes	158	69.60
No	67	29.52
No answer 2		
Internet (n=226)		
Yes	32	14.10
No	194	85.46
No answer 1		
Health magazines (n=227)		
Yes	117	51.54
No	110	48.46

4.1.7 Need factors: Reproductive health history

Table 4.12 shows frequency and percentage by number of children of the pregnant women. Only 27.31 percent of the pregnant women had two or more children. The median of number of children was 1.00. Minimum and maximum were 0 and 4, respectively.

Table 4.12 Frequency and percentage by level of number of children

Number of children	Frequency (n=227)	Percentage
<2	165	72.69
≥2	62	27.31
Median=1, QD=1, Min.=0, Max.=4		

Table 4.13 shows the frequency and percentage distribution of complications during previous deliveries and complications during the current pregnancy. About two-thirds of the pregnant women (71.37%) had normal deliveries, while 28.63 percent had had some complications during previous deliveries. About one-third of the pregnant women (36.40%) had had some complications during current pregnancy.

Table 4.13 Frequency and percentage of complication during previous deliveries and during current pregnancy

Level of complications	Frequency	Percentage
Complications during previous deliveries (n=227)		
Normal delivery	162	71.37
Some complications	65	28.63
Complications during current pregnancy (n=227)		
Normal	145	64.16
Some complications	80	36.40
No answer 2		

Table 4.14 shows the frequency and percentage of complications during previous deliveries by category. Abortion was the most frequent complication during previous deliveries (14.98%) followed by premature delivery (7.49%).

Table 4.14 Frequency and percentage of level of complications during previous deliveries by category

Variables	Yes	
	Frequency	**Percentage**
Complications during previous deliveries		
Abortion	34	14.98
Premature	17	7.49
Stillbirth	3	1.32
Bleeding per vagina	16	7.05
Neonatal death	3	1.32
Others	6	2.67

Table 4.15 shows the frequency and percentage distribution of complications during the current pregnancy by category. About 30 percent (26.99%) had anemia. The result also showed that no one had STD.

Table 4.15 Frequency and percentage by level of complications during the current pregnancy by category

Variables	Yes	
	Frequency	**Percentage**
Complications during current pregnancy		
Edema	10	4.42
Anemia	61	26.99
Allergy	22	9.73
STD	0	0.00
Diabetes mellitus	1	0.44
Nephritis	2	0.88
Hyper tension	2	0.88

Table 4.16 displays the frequency and percentage distribution of reproductive health history and intention of having pregnancy. More than one- half of the pregnant women (61.54%) first visited ANC within 12 weeks, and 7.24 percent first visited ANC after 25 weeks. The median of first ANC visit was 12weeks and the quartile deviation was 4. Minimum and Maximum were 4 and 38 respectively.

Concerning the gestation age, nearly half of them (49.78%) were more than 28 weeks and 36.12 percent were 16 to 27 weeks at the time of collecting data.

Nearly 60 percent of the pregnant women (59.47%) visited ANC more than 4 times. The median number of ANC visits was 4 and the quartile deviation was 2. The minimum and maximum visit times were 1 and 12 respectively. Nearly two-thirds of the pregnant women (61.23%) planned to have this pregnancy but 20.26 percent did not.

Table 4.16 Frequency and percentage distribution of reproductive health history and pregnancy intention

Reproductive health history	Frequency	Percentage
The timing of ANC for the first visit (n=221)		
First trimester (<13 weeks)	136	61.54
Second trimester (13-24 weeks)	69	31.22
Third trimester (>24 weeks)	16	7.24
Median=12, QD=4, Min.=4, Max.=38		
The number of ANC visits (n=227)		
≤4	92	40.53
>4	135	59.47
Median=4, QD=2, Min.=1.00, Max.=12.0		

Table 4.16 Frequency and percentage distribution of reproductive health history and pregnancy intention (cont.)

Reproductive health history		Frequency	Percentage
Gestation age (n=227)			
<5 months	(<17 weeks)	32	14.10
5-7 months	(17-28weeks)	82	36.12
>7 months	(>28 weeks)	113	49.78
Median=7, QD=1.5, Min.=2, Max.=11			
Pregnancy intention (n=227)			
Unplanned		46	20.26
Planned		139	61.23
Unclear		42	18.50

4.1.8 Perceptions of pregnant women regarding ANC

Table 4.17 shows the frequency and percentage distribution of the pregnant women by level of perception of the pregnant women regarding ANC. The total score of 15 questions was classified into two categories (positive or negative perception) using mean as the cut-off point.

More than half of the pregnant women had positive perceptions about ANC. The mean perception score was 37.86 and standard deviation was 4.53. Minimum and maximum scores were 22 and 45, respectively.

Table 4.17 Frequency and percentage distribution by level of perception about ANC

Level of perception of pregnant women regarding ANC	Frequency (n=227)	Percentage
Positive	136	59.91
Negative	91	40.09
Mean=37.86, SD=4.53,Min=22,Max=45		

The percentage distribution of perception of pregnant women by each statement is presented in Table 4.18. Regarding the statements about benefits of ANC, the pregnant women had positive perceptions about most of the statements. Most of the pregnant women (91.19%) agreed that following the ANC schedule prevents health risks, and 87.22 percent of them agreed that pregnant women can get important information about pregnancy at ANC. However, nearly half of the pregnant women (43.17%) disagreed or were neutral about feeling comfortable when they meet other pregnant women during ANC visits.

On the other hand, regarding the statements about barriers to ANC, 86.34 percent of the pregnant women disagreed that pregnant women do not need to receive ANC unless they have problems. On the other hand, over 20 percent of the pregnant women agreed that there was not enough time for discussion with health personnel at ANC, and that low family income is an obstacle in going to get ANC (21.15% and 24.23% respectively).

Table 4.18 Percentage of each statement about perception of the pregnant women regarding ANC

No	Statement about perception of pregnant women	Scale of Agreement (n=227)		
		Agree (%)	**Neutral (%)**	**Disagree (%)**
	Benefit			
1	I can get important information about pregnancy at ANC	87.22	9.25	3.52
2	ANC can contribute to reducing health risks during the pregnancy and delivery.	82.38	11.89	5.73
3	I need to follow the ANC schedule to prevent health risks	91.19	4.85	3.96
4	I feel the instrument of hospitals for ANC is clean.	74.89	18.94	6.17
5	I feel comfortable when I meet other pregnant women during ANC visits	56.83	39.65	3.52
6	Early ANC during the first trimester results in preventing health risk	81.06	10.13	8.81
	Barrier			
1	I feel afraid of blood tests at ANC	19.82	70.93	9.25
2	If I do not have any problem, I do not need to receive ANC	8.81	4.85	86.34
3	There is not enough time for discussion with health personnel at ANC	21.15	29.96	48.90
4	Checking blood pressure for every visit ANC is useless	25.55	12.78	61.67
5	I feel it is difficult to understand what health personnel say to me about my health	10.13	31.72	58.15

Table 4.18 Percentage of each statement about perception of the pregnant women regarding ANC (cont.)

No	Statement about perceptions of pregnant women	Scale of Agreement (n=227)		
		Agree (%)	Neutral (%)	Disagree (%)
6	Low family income is an obstacle in going to get ANC	24.23	29.52	46.26
7	If I do not have Diabetes Mellitus, I do not need to have a urine test every time	11.01	14.98	74.01
8	I feel that only 1 visit is enough for ANC	12.78	11.45	75.77
9	I feel tired of waiting for ANC	16.74	49.34	33.92

4.2 Association between the perception of pregnant women and the independent variables

4.2.1 Association between predisposing factors: socio-economic variables and perceptions of the pregnant women

Table 4.19 shows the results of the Chi-square analysis of the socio-economic characteristics and the perceptions of the pregnant women. It reveals that there were significant association between dependent and some independent variables such as educational level (p-value=0.011), and family status (p-value=0.041).

Pregnant women with high education levels such as diploma, bachelor degree or higher (70.59%) had higher proportion of positive perception than other educational levels. About marital status, married pregnant women (64.24%) had more positive perceptions than those who were unmarried (50.00%).

Table 4.19 Association between socio-economic variables and perception

Socio-economic variables	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
Age (n=226)					0.731	0.134
Younger age (<17years)	10	45.45	12	54.55		
Proper child bearing care age (17-35years)	117	63.24	68	36.76		
Elder high risk (>35years)	9	47.37	10	52.63		
Educational level (n=226)					9.181	0.010*
≤Primary school	33	45.83	39	54.17		
Secondary/high school	91	66.42	46	33.58		
≥Diploma	12	70.59	5	29.41		
Marital status (n=225)					4.180	0.041*
Married	97	64.24	54	35.76		
Unmarried	37	50.00	37	50.00		
Family size (n=220)					1.933	0.164
<4	73	57.03	55	42.97		
≥4	61	66.30	31	33.70		
Occupation (n=227)					0.779	0.377
No job	48	64.00	27	36.00		
Others	88	57.89	64	42.11		
Family income (n=217)					2.889	0.089
Low income	108	58.06	78	41.94		
High income	23	74.19	8	25.81		

***Significant at P-value <0.05**

4.2.2 Association between predisposing factors: Knowledge of pregnant women regarding ANC and perception of the pregnant women

The association between levels of knowledge of the pregnant women regarding ANC and perception of pregnant women is presented in Table 4.20. There was a significant association between knowledge regarding ANC and perception of the pregnant women ($p<0.01$). The pregnant women who had good knowledge about ANC had the highest proportion of positive perception (74.19%). Those who had poor knowledge had the highest proportion of negative perception (84.00%).

Table 4.20 Association between level of knowledge of pregnant women regarding ANC and perception

Level of knowledge	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
Knowledge (n=227)					44.265	<0.001**
Good	115	74.19	40	25.81		
Moderate	17	36.17	30	63.83		
Poor	4	16.00	21	84.00		

****Significant at P-value <0.01**

4.2.3 Association between enabling factors: accessibility of ANC and perception

Table 4.21 shows the association between accessibility of ANC and perception of the pregnant women. There was no significant association between perception and accessibility of ANC such as distance to hospital, type of transportation to visit ANC, convenience of transport to visit ANC, or travel cost to visit ANC. There was also no significant association identified between waiting time for ANC and perception of the pregnant women.

Table 4.21 Association between accessibility of ANC, and waiting time for ANC and perception of the pregnant women

Accessibility of ANC	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
Distance to hospital (n=225)					0.048	0.827
≤10 kms	86	60.99	55	39.01		
>11 kms	50	59.52	34	40.48		
Type of transportation (n=226)					1.377	0.241
Own vehicle	108	58.38	77	41.62		
Others	28	68.29	13	31.71		
Convenience of transportation (n=226)					1.868	0.172
Convenient	130	61.32	82	38.68		
Inconvenient	6	42.86	8	57.14		
Travel cost (n=226)					0.405	0.525
Expensive	13	54.17	11	45.83		
Inexpensive	123	60.89	79	39.11		
Duration of waiting time (n=226)					0.085	0.771
≤30 minutes	54	61.36	34	38.64		
>30 minutes	82	59.42	56	40.58		

4.2.4 Association between reinforcing factors: Social support and perception

The Table 4.22 shows the association between social support and the perception of the pregnant women. There was no statistically significant association between social support and perception.

Table 4.22 Association between level of social support and perception

Level of social support	Positive perception		Negative performance		χ^2	P-value
	n	%	n	%		
Social support (n=226)					5.349	0.069
Good support	67	59.82	45	40.18		
Moderate support	62	65.26	33	34.74		
Poor support	7	36.84	12	63.16		

Table 4.23 shows the association between each category of social support and the perceptions of the pregnant women. There was no significant association between VHVs, health staff, heath personnel, friends, neighbors, or training organized by hospital, and the perceptions of the pregnant women.

Table 4.23 Association between social support and perception by categories of source

Social support	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
VHVs (n=226)					0.774	0.679
Good	18	56.25	14	43.75		
Moderate	45	57.69	33	42.31		
Poor	73	62.93	43	37.07		
Health staff (n=226)					1.722	0.423
Good	76	58.46	54	41.54		
Moderate	48	65.75	25	34.25		
Poor	12	52.17	11	47.83		

Table 4.23 Association between social support and perception by categories of source (cont.)

Social support	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
Friends (n=226)					1.264	0.532
Good	66	64.08	37	35.92		
Moderate	49	57.65	36	42.35		
Poor	21	55.26	17	44.74		
Neighbors (n=226)					2.190	0.335
Poor	60	64.52	33	35.48		
Moderate	54	60.00	36	40.00		
Poor	22	51.16	21	48.84		
Training organized by hospital (n=225)					3.306	0.191
Good	88	63.31	51	36.69		
Moderate	37	60.66	24	39.34		
Poor	11	44.00	14	56.00		

4.2.5 Association between reinforcing factors: Family support and perception

Table 4.24 shows the association between family support and the perceptions of the pregnant women. A statistically significant association was identified between level of family support and the perceptions of the pregnant women (p-value=0.036). Those who had good family support had the highest proportion of positive perception (62.72%).

Table 4.24 Association between levels of family support and perception

Level of family support	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
Family support (n=225)					6.637	0.036*
Good	106	62.72	63	37.28		
Moderate	29	59.18	20	40.82		
Poor	1	14.29	6	85.71		

***Significant at P-value <0.05**

Table 4.25 presents the association between the perceptions of the pregnant women and each category of family support, namely: husband support and relative support. There was no statistically significant association between husband support and perception, or relative support and perception regarding ANC.

Table 4.25 Association between family support and perception of pregnant women by categories of source

Family support	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
Husband (n=225)					0.715	0.699
Good	100	61.73	62	38.27		
Moderate	30	58.82	21	41.18		
Poor	6	50.00	6	50.00		
Relatives (n=225)					4.261	0.119
Good	103	64.78	56	35.22		
Moderate	25	50.00	25	50.00		
Poor	8	50.00	8	50.00		

4.2.5 Association between reinforcing factors: Material support and perception

A statistically significant association was identified between level of material support and the perceptions of the pregnant women (p-value=0.012). Material support had an impact on the perceptions of the pregnant women as shown in Table 4.26.

Table 4.26 Association between levels of material support and perception

Level of material support	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
Material support (n= 225)					8.833	0.012*
Good	80	69.57	35	30.43		
Moderate	53	51.96	49	48.04		
Poor	3	37.50	5	62.50		

***Significant at P-value <0.05**

Table 4.27 shows the association between perception of the pregnant women and each category of material support, namely: bringing the MCH handbook to the ANC visits, reading the MCH handbook, recording in the MCH handbook, using information of the MCH handbook, using information from posters/brochures, using information from the internet, and using information from health magazines.

The data indicated that there was a significant association between bringing the MCH handbook on ANC visits and the perceptions of the pregnant women (P-value=0.013). Those who always brought the MCH handbook on ANC visits had a higher proportion of positive perceptions (62.26%) than those who occasionally or never brought it (28.57%). Those who read the MCH handbook in detail had higher positive perceptions than those who read skimming or never (P-value=0.015).

Table 4.27 Association between utilization of MCH handbook and perception

MCH handbook	Positive perception		Negative perception		χ^2	P-value
	n (n=136)	%	n (n=90)	%		
Bringing					6.221	0.013*
Always	132	62.26	80	37.74		
Occasionally/Never	4	28.57	10	71.43		
Reading					5.872	0.015*
In detail	110	64.71	60	35.29		
Skimming/Never	26	46.43	30	53.57		
Recording					0.000	0.994
Yes	77	60.16	51	39.84		
No	59	60.20	39	39.80		

***Significant at P-value <0.05**

Table 4.28 shows the association between using information and perceptions of the pregnant women. There was a significant association between using information from posters/brochures and perception of the pregnant women (P-value<0.001). That is, those who used information from the posters and brochures had a higher proportion of positive perception (68.99%).

Table 4.28 Association between using information and perception

Source of information	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
MCH handbook (n=226)					2.769	0.096
Yes	129	61.72	80	38.28		
No	7	41.18	10	58.82		
Posters/Brochures (n=225)					16.196	<0.001**
Yes	109	68.99	49	31.01		
No	27	40.30	40	59.70		
Internet (n=226)					0.010	0.920
Yes	19	59.38	13	40.62		
No	117	60.31	77	39.69		
Health magazines (n=227)					0.323	0.570
Yes	68	58.12	49	41.88		
No	68	61.82	42	38.18		

****Significant at P-value <0.01**

4.2.6 Association between Need factors: Reproductive health history and perception

Table 4.29 shows the association between perception of the pregnant women, and each category of reproductive health history, namely: number of children, complications during previous deliveries, complications during current pregnancy, the timing of the first ANC visit, the number of ANC visits, frequency of ANC visits and intention of having this pregnancy. Concerning intention of having this pregnancy, there was a statistically significant association with the perceptions of the pregnant women (P-value=0.032).Those who planned to have their current pregnancy had the highest proportion of positive perception (65.47%).

Table 4.29 Association between reproductive health history, pregnancy intention and perception

Reproductive health history	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
Number of children (n=227)					1.373	0.241
<2	95	57.58	70	42.42		
≥2	41	66.13	21	33.87		
Complications during previous deliveries (n=227)					0.777	0.378
Normal delivery	100	61.73	62	38.27		
Some complications	36	55.38	29	44.62		
Complications during current pregnancy (n=226)					1.455	0.228
Normal	83	57.24	62	42.76		
Some complications	53	65.43	28	34.57		
The timing of ANC for the first visit (n=221)					1.349	0.510
First trimester	86	63.24	50	36.76		
Second trimester	40	57.97	29	42.03		
Third trimester	8	50.00	8	50.00		
The number of ANC visits (n=227)					0.632	0.427
<4	78	57.78	57	42.22		
≥4	58	63.04	34	36.96		

Table 4.29 Association between reproductive health history, pregnancy intention and perception (cont.)

Reproductive health history	Positive perception		Negative perception		χ^2	P-value
	n	%	n	%		
Gestation age (n=227)					1.889	0.389
<5 month (<17 weeks)	18	56.25	14	43.75		
5-7 month(17-28 weeks)	54	65.85	28	34.15		
>7 month (>28 weeks)	64	56.64	49	43.36		
Pregnancy intention (n=227)					6.901	0.032*
Unplanned	27	58.70	19	41.30		
Planned	91	65.47	48	34.53		
Unclear	18	42.86	24	57.14		

***Significant at P-value <0.05**

4.2.7 Significant predictors for perception

Table 4.30 shows the strength of association between factors and perception of the pregnant women regarding ANC. The significant factors identified by Chi-square test were further tested by multiple logistic regressions to determine which factors could be significant predictors for the perceptions of the pregnant women. The result indicated that level of knowledge was statistically significant associated with the perceptions of the pregnant women regarding ANC (P-value <0.01). Those who had poor or moderate level of knowledge were more likely to have negative perception compared with those who had good level of knowledge. After adjusting other factors, pregnant women who have poor knowledge about ANC they were 9.30 times more likely to have negative perceptions compared to those having good knowledge.

Material support was also found to be statistically significant associated with the perceptions the pregnant women regarding ANC (P-value <0.05). The odds

ratio shows that those who had moderate levels of material support were 2.12 times more likely to have negative perceptions compared with those who had good support levels.

Table 4.30 The strength of association between factors and perception of the pregnant women regarding ANC

Factors	Adj.Odds ratios	95% CI for OR		P-value
		Lower	Upper	
Educational level				
≤Primary school	1.00			
Secondary/high school	0.68	0.33	1.36	0.273
≥Diploma	1.16	0.28	4.75	0.834
Marital status				
Married	1.00			
Not married	1.30	0.64	2.60	0.467
Family income				
High	0.62	0.23	1.68	0.349
Low	1.00			
Level of knowledge				
Good	1.00			
Moderate	4.53	2.10	9.76	<0.001**
Poor	9.30	2.63	32.89	0.001**
Social support				
Good	1.00			
Moderate	0.93	0.47	1.85	0.838
Poor	0.88	0.22	3.46	0.852

Table 4.30 The strength of association between factors and perception of the pregnant women regarding ANC (cont.)

Factors	Adj.Odds ratios	95% CI for OR		P-value
		Lower	Upper	
Family support				
Good	1.00			
Moderate	0.44	0.17	1.11	0.082
Poor	2.76	0.26	29.11	0.397
Material support				
Good	1.00			
Moderate	2.12	1.03	4.38	0.042*
Poor	2.47	0.37	16.40	0.348
Intention of having this pregnancy				
Planned	0.66	0.28	1.54	0.333
Unplanned	1.00			
Unclear	1.54	0.56	4.26	0.407

***Significant at P-value <0.05 **Significant at P-value <0.01**

Note: CODE 1 for negative perception

0 for positive perception

CHAPTER V
DISCUSSION

This cross-sectional study was conducted to investigate the factors related to the perceptions of pregnant women regarding ANC in Nakhon Pathom province, Thailand. The self-administered questionnaire comprised 70 questions concerning predisposing factors, enabling factors, reinforcing factors, need factors and the perceptions of the pregnant women regarding ANC. The objective of this study was to identify the factors related to the perceptions of the pregnant women regarding ANC in Nakhon Pathom, Thailand. In this chapter, the discussion is presented as follows:

5.1 Methodological concern
5.2 Perception of the pregnant women regarding ANC
5.3 Predisposing factors: socio-economic status
5.4 Predisposing factors: knowledge regarding ANC
5.5 Enabling factors: accessibility of ANC
5.6 Enabling factors: duration of waiting time for ANC
5.7 Reinforcing factors: social support
5.8 Reinforcing factors: family support
5.9 Reinforcing factors: material support
5.10 Need factors: reproductive health history
5.11 Need factors: intention of having this pregnancy

5.1 Methodological concern

The study was a cross-sectional study which was appropriate for collecting primary source data. Self-administered questionnaires were distributed to 230 Thai pregnant women for collecting data. Since three pregnant women did not consent to participate, the total number of data was 227. Some of the pregnant women did not answer completely. This was their right if they felt uncomfortable or did not want to answer particular questions. The study population for this study was only Thai pregnant women. Therefore to exclude immigrant pregnant women, the researcher and coordinator confirmed the nationality of the pregnant women before distributing the questionnaire.

In this study, 6.92 percent of the pregnant women had not attended primary school and 25.66 percent of them had finished primary school level. It might be that some of the respondents could not read and write, therefore this study may get indirectly data from others.

Data was collected from the Huai Phlu Community Hospital, Nakhon-Chai Si Community Hospital, and Phuttamonthon Community Hospital. The number of cases from each hospital was not obtained as planned, because the proportion of pregnant women was different, and in Nakhon-Chai Si Community Hospital, there were more migrant pregnant women than the other two community hospitals.

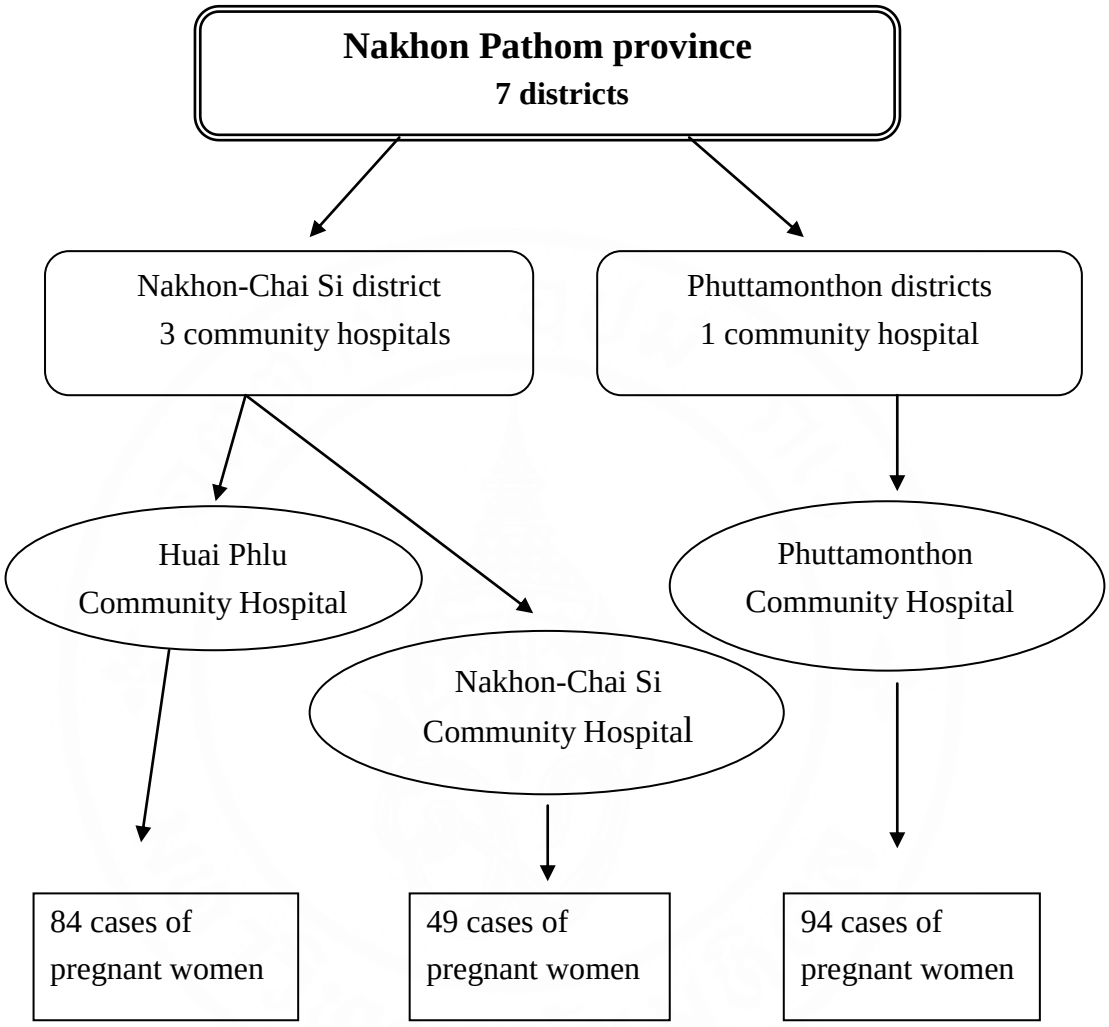

Figure 5.1 Data collection diagram

5.2 Perceptions of the pregnant women regarding ANC

Perception is explained to mean how people view their own general health and functional state, as well as how they experience symptoms of illness, pain, and worries about their health and whether or not they judge their problems to be of sufficient importance and magnitude to seek professional help in Andersen and Newman's Framework of Health Services Utilization mention (10). The reason is that

this research used previous research focused on utilization or access to health services to support and compliment this study.

In this study, more than half of the pregnant women (59.91%) had positive perceptions regarding ANC. Most of them (87.22% and 82.38% respectively) perceived that pregnant women can get important information about pregnancy at ANC, and that ANC can contribute to reducing health risks such as anemia, STDs, and abortion during the pregnancy and delivery. This is supported by the theory of Health Belief Model (28), that perception of personal behavior is influenced by threat and net benefits; perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. In other words, to feel that a negative condition can be avoided, to have a positive expectation that by taking a recommended action, and to believe success after recommended health action will conduct health action.

5.3 Predisposing factors: Socio- economic factors

Socio-economic characteristics are one of the modifying factors of cognitive-mechanism in health promotion model (33). Education level and marital status each had a significant association with perceptions of the pregnant women regarding ANC.

5.3.1 Age

The study of Cockerham and the study of Dat Van D. (34) found that younger women were more likely to participate in health care practice. However, there was no statistically significant association between the age of the pregnant women and their perceptions regarding ANC.

Even though there was no statistically significant association, in this study, the proper child bearing age group (17-35 years old) and the older age group (>35 years old) had higher levels of positive perception rather than the younger age group.

This may be because most of the proper child bearing age group (71.35%) and older age group (89.47%) had had experience of pregnancy and delivery, and had experienced ANC. This study also found that the proper child bearing age group and older age group had more social and family support than the younger age group.

5.3.2 Education level

The result showed that highly educated pregnant women were more likely to have a positive perception about ANC than poorly educated pregnant women. This may be because that those with high education levels understood about ANC better than those with low education levels. They could better consider the benefits of ANC for their health and their babies.

This result is supported by the research of Dat Van D. (34), Becker et al. (36), and WHO (18), both of which revealed that educated women are more likely to have better perceptions of maternal health services and their benefits. In conclusion for previous result, educational level had an impact on the perceptions of the pregnant women regarding ANC.

5.3.3 Marital status

This research identified that nearly two-thirds of the pregnant women (66.52%) were married, and 64.24 percent of the married pregnant women had positive perceptions, and 50.00 percent of the unmarried pregnant women had negative perceptions. There was a significant association between marital status and the perceptions of the pregnant women regarding ANC. Married women were more likely to have positive perception. It might be that married pregnant women can receive more support from their families: husbands and relatives. It may make them have positive perceptions.

The result is consistent with the research of Greertsen R (38) who identified significant associations between marital status and health behavior regarding MCH activities.

5.3.4 Family size

The report of Becker M H, et al. (39) showed that mothers of large families are more likely to keep appointments with health facilities than mothers living with small families. On the other hand, the study of Greertsen (38) revealed that mothers living with small families had greater attention to child health than mothers living with large families. Both studies were showed that family size influenced MCH promoting, but the result were contradictory.

However, there was no significant association between family size and occupation in this study. The finding of this study was supported by the study of Yoko (40) that there was no significant association between family size and MCH promoting belief. It might be because living with relatives did not affect relative support in this area.

5.3.5 Occupation

In this research, there was no significant association identified between occupation and the perceptions of the pregnant women. The study was supported by the study of Yoko A. (40) that revealed that there was no statistically significant association between occupation and MCH services utilization. This may because each ANC had some own program such as providing service on weekends, whole day, or twice a week for working pregnant women who have barriers of time arrangement in this study area. The reason why there was no significant association between occupation and the perceptions of pregnant women might be that these own services in each ANC helped working women.

However, many previous studies Greertsen R (38), Simoes, et al. (41), and WHO (5) have found differently from this result. Utilization of ANC or health services identified a significant association between occupation and utilization of ANC or health services.

5.3.6 Family income

The average family income in this study (11,164 baht/month) was less than the Thai average (18,660 baht/month). 31.78 percent of the households earned less than 6000 baht/month (42). About one-quarter of the pregnant women (24.23 %) perceived that low family income is an obstacle in going to get ANC.

However, there was no statistically significant association between family income and the perceptions of the pregnant women regarding ANC. Previous studies conducted by Gillis (43), Nguyen Viet Hung (63), Yoko A. (40), and WHO and UNICEF (4) also revealed that pregnant women who had higher family incomes utilized ANC more than those who had lower incomes. Pregnant women had to spend some money for transportation and some medical expense. In Thailand they paid about 855 baht for the first ANC visit, and then about 200 baht per time for medical expenses depending on the type of health insurance.

5.4 Predisposing factors: Knowledge regarding ANC

Most of the pregnant women (74.19 %) had good knowledge about ANC, nearly one third of them (36.17%) had moderate knowledge, and 16 percent had poor knowledge. The good knowledge group had high level of positive perception (74.19%), and the poor knowledge group had high levels of negative perception (84.00%). The result also shows a significant association between knowledge about ANC and perception regarding ANC (P-value <0.001).The pregnant women with moderate or poor knowledge levels were 4.53 times and 9.30 times respectively more likely to have negative perceptions compared with those with good knowledge levels. This might suggest that knowledge of the pregnant women was a determinant factor and strongly influenced their perception of ANC.

The result was similar to the finding from previous study about the attitudes and health practices of pregnant women conducted by Rustam Effendi (44)

which showed a significant association between health attitude and knowledge. High knowledge women knew the benefits of ANC for their health and their babies' health.

5.5 Enabling factors: Accessibility of ANC

5.5.1 Distance to hospital

Concerning distance to hospital, the finding of this study showed that there was no statistically significant association between distance to hospital and the perception of the pregnant women regarding ANC. However, the study of Mubyazi GM., et al. (46) showed that distance to ANC was a key factor influencing decisions about ANC visits.

This study showed that those who lived in more than 11 Km from a hospital (59.52%) had more negative perceptions than those who lived within 10 kms (60.99%). This is consistent with a study by Siripakdee K. (45) which revealed that pregnant women who lived near a health center or hospital used ANC more than those who lived further away from health facilities. On the other hand, a previous study of Malee Charounmuang (47) that the pregnant women who lived more than 20 kms from a hospital had the most adequate ANC visits and the pregnant women who lived less than 6 kms away from the hospital had the most inadequate ANC visits.

5.5.2 Type of transportation

Most of the pregnant women (81.86 %) visited ANC by their own vehicles such as bicycle, car or bike. In this study there was no significant association between type of transportation and the perceptions of the pregnant women regarding ANC.

However, it is contradicted by with the study of Thomas, et al. (48) which showed that there was strongly significant association between type of transportation and utilization of health services. They found that those who had a driver's license had 2.29 times more health care visits for chronic care and 1.92 times more visits for

regular checkup care than those who did not, and public transportation had 4 more chronic care visits per year than those who did not.

The reason why there was difference might be the condition of the study area. In this research, most of the pregnant women (74.35%) lived within 15kms of the hospital. More than 90 percent of the pregnant women (93.39%) felt transportation to go to hospital for ANC was convenient.

5.5.3 Convenience of transportation

Most of the pregnant women (93.39 %) answered that transportation to visit ANC was convenient. There was no statistically significant association between convenience of transportation and perceptions regarding ANC. This might be because convenience of transportation was not a strong obstacle to the perception of the pregnant women. It was supported by the report of Babu Ram Gautam (64) revealed that there was no significant association between convenience of transportation and ANC visits.

5.5.4 Travel cost

In this study, there was no statistically significant association between travel cost and the perceptions of the pregnant women regarding ANC. Most of the pregnant women (88.99 %) answered that it was not expensive to visit ANC. The reason might be that less than 20 percent of the pregnant women (17.69%) used taxis or public transportation such as a bus. Most of them used their own vehicle or went on foot.

Similarly a previous study about utilization of ANC did not identify any significant association between travel cost of ANC and regular utilization of ANC, conducted by Rustam Effendi (44). However, the WHO and UNICEF report showed that travel cost to visit ANC impacted on utilization of ANC (4).

5.6 Enabling factors: Duration of waiting time for ANC

In each community hospital where this research was conducted, ANC was available at once or twice a week and 40 to 60 pregnant women including about 10 new cases attended each time. It was provided by 6 to 7 health staff. Therefore, pregnant women had to wait for ANC.

This study showed that over 60 percent of the pregnant women waited more than 30 minutes for ANC. Nearly two-thirds of them (66.08%) perceived that they were tired of waiting for ANC. 33.92 percent of the pregnant women did not perceive to be tired of waiting time, 16.74 percent of them did.

There was no significant association between duration of waiting time and the perceptions of the pregnant women. The result was the same as the study of Malee Charoenmuang (47) which revealed no correlation between the duration of waiting for ANC and accessing ANC.

However, the report of Bamisaiye, et al., (65) and Godfrey M Mubyazi et al. (46) showed that long waiting times limit the acceptability of services because of limited time. On the other hand, the study of Effendi R. (44) revealed that pregnant woman who only had a short wait might be more satisfied and more willing to visit ANC regularly.

5.7 Reinforcing factors: Social support

The result of this study found that social support had no significant association with the perceptions of the pregnant women regarding ANC. Nearly half of them (49.56%) had good social support, 8.41 percent had poor social support. This result was contrary to that reported by Tinsley BJ's (66) which showed that the women who had good social support performed high utilization of health services.

5.7.1 VHVs support

In Thailand, most MCH services are provided by government in the community, health centers and hospitals. At the village level, there are primary health care units, where VHVs assist in giving advice and referring cases to the health centers. Through the activity of VHVs, health services in rural areas are made available, accessible and acceptable to the majority of the population (16).

In this study, there was no statistically significant association between support from VHVs and the perceptions of the pregnant women regarding ANC. Nearly two-thirds (65.49%) answered that they ‘never’ or ‘a few’ had encouragement from VHVs to receive ANC, and 25.99 percent of them never get information about ANC from VHVs.

A significant association between VHVs support and perceptions of the pregnant women regarding ANC in this research might be due to the fact that most of the pregnant women of this research did not have any inconvenience accessing ANC.74.12 percent of the pregnant women lived less than 15 kms away from a hospital; 81.50 percent of them used their own vehicles; and 93.39 percent answered that transportation to visit ANC was convenient. Therefore when the pregnant women needed support, they could receive it at hospital.

5.7.2 Health staff (doctors/nurses/public health personnel)

There was no statistically significant association between support from health staff and the perceptions of the pregnant women regarding ANC. More than half of the pregnant women (57.32%) had good support from health staff. Nearly 90 percent of them got information about ANC from doctors and nurses. (89.83% and 89.38% respectively). The approximately two-thirds had a lot of encouragement to receive ANC from doctors and nurses. (61.95% and 67.15% respectively).

This result was similar to a previous study conducted by Sansnee Jirojwong (49). It has only 10% of pregnant women to identify that health personnel provided support during their pregnancy, and most pregnant women, therefore, may

not recognize the support provided by health personnel as beneficial to them. On the other hand, the study of Cooke (50) showed that the majority of pregnant women would like to have support from midwives and nurses related to physical and emotional health care.

Most ANC was provided by nurses, midwives and health personnel. Pregnant women who did not have any complications were examined by doctors twice during pregnancy. Therefore, pregnant women have a better opportunity of receiving support from nurses than doctors.

More than half of the pregnant women (51.11%) perceived that there was not enough time for discussion with health staff, and 41.85 percent of them perceived that it was difficult to understand what health staff said to them about their health condition during ANC visits. In this research area, 40 to 60 pregnant women including about 10 new cases attended ANC each time. It was provided by 6 to 7 health staff. Therefore it might be the health staff were too busy to discuss with each of pregnant women, and also health staff may use medical words that the pregnant women cannot understand during ANC visits.

5.7.3 Friends

There was no statistically significant association between support from friends and the perceptions of the pregnant women regarding ANC. However, 64.08 percent of those who had good support from friends had positive perceptions. This was more than those who had moderate or poor support (57.65%, and 55.26% respectively). 83.19 percent of the pregnant women got a lot or moderate information about ANC from their friends. Nearly two-thirds (71.68%) had a lot or moderate encouragement to receive ANC from their friends. According to the WHO report, friends and community support encourage individual action and perceptions of MCH promotions (24).

5.7.4 Neighbors

There was no statistically significant association between support from neighbors and the perceptions of the pregnant women regarding ANC. Most of the

pregnant women (78.74 %) had a lot or moderate amount of information about ANC from neighbors. Over two-thirds of the pregnant women (68.93%) had a lot or moderate encouragement to receive ANC from neighbors. No previous study has focused on neighbor support.

5.7.5 Training organized by hospital

There were the training organized by hospital such as parent school and mother's club provided by midwives, nurses and health personnel in each community hospital or health center. At this school or club, there were several activities such as discussion about diet, lifestyle during pregnancy, and exercise for pregnant women.

There was no statistically significant association between training organized by hospital and perceptions of the pregnant women regarding ANC. However, those who had good support from their services (63.31%) had positive perceptions more than those who had poor support (44.00%).

In this study, a question about the pregnant women's participation in training organized by hospital was not included, but some questions show that the pregnant women had support from training organized by hospital. One-thirds of the pregnant women (61.78%) got 'a lot 'of information about ANC from parent school or mother's clubs. On the other hand, 8.00 percent of them never had any information. One-quarter of the husbands (26.22%) participated in training organized by hospital, 64.00 percent of them participated a lot or moderate.

5.8 Reinforcing factors: Family support

Chi-square test (P-value=0.036) as shown in Table 4.24 found that family support had a significant association with the perceptions of the pregnant women regarding ANC. When testing this association using multiple logistic regression analysis, it was found that family support was not associated with negative perception about ANC when adjusted for other factors in the model, as shown in Table 4.30.It

may be other factors could affect the association between family support and the perceptions of pregnant women. MCH is not only an issue for pregnant women and mothers, but also for their whole family.

5.8.1 Husband support

There was no statistically significant association between family support from husbands and the perceptions of the pregnant women regarding ANC. More than 60 percent of the pregnant women received a lot or moderate support from the husbands in terms of advising for regular check-ups (89.78%), and sharing information of ANC (94.67). However, a quarter of the pregnant women's (26.22%) husbands had never participated in training organized by hospital, and 11.11 percent of the husbands had never accompanied their wives or partners to ANC. It might be that it is difficult to participate in training organized by hospital or accompany because of luck of time or timing.

This result was consistent with the study of Babu Ram Gautam (64) and Rustam Effendi (44) which revealed that there was no relationship between utilization of ANC and social support from husband.

However, the study of the Nguyen Viet Hung (63) found a relationship between utilization of ANC and family support from husbands. The Oklahoma State Department of Health (51) showed the effect of the father's pregnancy intention and of how paternal feelings about pregnancy may influence maternal behavior and make birth outcomes less certain.

5.8.2 Relative support

There was no statistically significant association between family support from relatives and the perceptions of the pregnant women regarding ANC. Nearly 70 percent of pregnant women had a lot of support in term of encouragement to receive ANC.

Sansnee Jirojwong (49) showed that relatives are important sources of emotional, instrumental, information and appraisal support.

5.9 Reinforcing factors: Material support

Table 4.26 shows that material support had a significant association with the perceptions of the pregnant women regarding ANC by Chi-square test (P-value=0.012). When testing this association using multiple logistic regression analysis, it was found that pregnant women with moderate or poor levels of material support about ANC were 2.12 times and 2.47 times respectively more likely to have negative perceptions compared with those with good support levels. Therefore material support for the pregnant women may be a determinant factor which can strongly influence perceptions of ANC.

5.9.1 Utilization of MCH handbook

Significant associations between bringing the MCH handbook or reading the MCH handbook, and perceptions of the pregnant women regarding ANC were identified (P-value=0.013 and 0.015respectively). Two-thirds of the pregnant women who always brought MCH handbook (62.26%) had high perception, and 64.71 percent of those who read the MCH hand book in detail had positive perceptions. However, there were no statistically significant association between self-recording in the MCH handbook and the perceptions of the pregnant women regarding ANC. It might be that education level impacted on self-recording in the MCH handbook. Highly educated pregnant women recorded more than those who had low education levels.

Shah et al. (53) and Elbourbe (54) found that pregnant women keeping their records felt in control of their condition and found it easier to seek advice from health personnel. The WHO record also showed that the MCH handbook is useful for keeping records at home and has improved ANC attendance, child immunization records, child development, and postpartum check-up rates (52).

The study of Yoko A. (40) in Kanchanaburi province, Thailand in 2005 showed that the utilization of MCH handbooks by mothers was not effective. However there was a significant association between utilization of MCH handbook and MCH promoting belief.

Table 5.1 compares three Thai studies regarding utilization of the MCH handbook. In this study most of the pregnant women (93.93%) brought the MCH handbook on ANC visits. On the other hand, the study of Isaranurug S et al. (67) and Yoko A. (40) was 70.50 percent, and 52.7 percent respectively. 74.89 percent of the pregnant women read the MCH handbook in detail in this study. On the other hand, the study of Isaranurug S et al. (67) and Yoko A. (40) were 26 percent and 14.3 percent respectively. Concerning self-recording in the MCH handbook, 56.39 percent of the pregnant women recorded in this study. The study of Isaranurug and Yoko were 42.5 percent and 16.1 percent respectively. However this study used self-administered, therefore self-recording pages were not checked by researcher and coordinator as other two studies. Although the coverage of the MCH handbook was 98.9 percent (68), reading and self recording was still not efficient among the pregnant women.

Table 5.1 Comparison of utilization of MCH handbook with three studies

Researcher	**Isaranurug S.et al**	**Yoko A.**	**Yuka I.**
Year	2001	2005	2010
Target population	Children's mother	Children's mother	Pregnant women
Bringing (Always)	70.50%	52.7%	93.93%
Reading (In detail)	26%	14.3%	74.89%
Recording (Yes)	42.5%	16.1%	56.39%

5.9.2 Using information

There was a statistically significant association between using information from poster and brochures and the perceptions of the pregnant women regarding ANC (P-value<0.001). However, with using information from the MCH handbook, internet or health magazines there was no such association. Most of the pregnant women

(92.07%) used information from the MCH handbook and approximately 70 percent of them (69.60%) of them used information from posters and brochures. On the other hands, 85.46 percent of them did not use information from the internet. In this research area, each hospital displayed posters about MCH such as the schedule of ANC, and preparation for delivery. It might be that necessary and reliable information was easier to find in posters, brochures and the MCH handbook than in health magazines or the internet. Moreover in this study, over 30 percent of the pregnant women (31.85 %) was low educated (no schooling or primary school) and 85.71 percent of them was low income group. It might be that they did not have potential to access internet and health magazine. The questions about utilization of information from radio and TV were not conducted. However TV and radio may be more popular item to get information for pregnant women.

In similar research, some previous studies conducted by Mondal (56), Stan Becker et al. (36) have focused on mass media and utilization of ANC or contraception in urban areas, and identified an association between mass media and utilization of ANC or contraception. By contrast, Samuel E Anya et al. (55) showed that some pregnant women received information from the mass media. It is an attractive and feasible communication medium.

5.10 Need factors: Reproductive health history

This study found that social support had no significant association with perceptions of the pregnant women regarding ANC.

5.10.1Number of children

Slightly less than a quarter of the pregnant women (27.31%) had more than two children. There was no statistically significant association between number of children and perception of the pregnant women regarding ANC. In 1997, the MOPH, Thailand, published the National Reproductive Health Policy, which includes family planning and MCH. This policy recommended that each couple have two children or

fewer (15). The reason why there was no significant association in this study might be that there was narrow range of number of children among the pregnant women.

However, according to a WHO survey, parity is strongly associated with utilization of ANC; Women tend to give greater attention to their first pregnancy. On the other hand, women with higher parity are less likely to be concerned to access ANC (4). Halder KA et al. (57) and Boonyanurak P. (58) showed that there was a negative association between experience of pregnancy and the use of ANC.

5.10.2 Complications during previous deliveries

Nearly a quarter of the pregnant women (28.63 %) had had complications during previous deliveries. Nearly 15 percent of them (14.98%) had had an abortion and 7.49 had experienced a premature birth. This study showed no statistically significant association between complications during previous deliveries and the perceptions of the pregnant women regarding ANC.

Malee Charoenmuang (47) and Rustam Effendi (44) showed that there was a significant association between complications and ANC attendance, and awareness of benefit of ANC.

5.10.3 Complications of the current pregnancy

The finding showed that there was no statistically significant association between complications of the present pregnancy and the perceptions of the pregnant women regarding ANC. This finding was supported by Babu Ram Gautam (64) who showed there was no relationship between utilization of ANC and complications of this pregnancy. Over one-third of the pregnant women (36.40 %) had had complications during their current pregnancies, and nearly a quarter of them (26.99 %) suffered from anemia, and no one had STDs.

However a study which focused on utilization of ANC in urban and rural areas conducted by Mosiur Rahman et al. (59) revealed a significant association between complication during current pregnancy and utilization of ANC in both urban and rural districts.

According to the health belief model (28), the perception of personal health behavior threat is itself influenced by beliefs about the consequences of the health problem. In other words, individual perceptions are factors that affect the perception of illness or disease, they deal with the importance of health to the individual, perceived susceptibility, and perceived severity.

5.10.4 The timing of ANC for the first visit

In this research, nearly two-thirds (61.54%) of the pregnant women received their first ANC for their current pregnancy in the first trimester (≤12 weeks); one-third of them (31.22%) received their first ANC in the second trimester (13-24 weeks); and 7.42 percent in the third trimester (≥25 weeks).

According to the WHO and UNICEF report, pregnant women should attend ANC as soon as they miss their menstrual period in order to allow enough time for essential diagnoses and treatment regimens for such conditions as STDs and the management of anemia (4).

There was no statistically significant association between the timing of the first ANC visit and the perceptions of the pregnant women regarding ANC. On the other hands, the study of Trinh LTT et al. (22) showed that women who had had some complication during a previous delivery were more likely to seek ANC early. However, over half of the pregnant women (52.31%) who had had some problem during a previous delivery received their first ANC in the third trimester in this research.

Nearly 40 percent of those who were in the younger age group (40.91%) or the elder group (36.84%) received their first ANC visit in the second trimester. In addition, two-thirds of those who were married (67.35%) received their first ANC in the first trimester, and nearly one-half of the unmarried pregnant women (48.62%) received first ANC in the second or third trimester. It might be that age, and marital status influenced the timing of receiving first ANC.

5.10.5 The number of ANC visits

There was no statistically significant association between the number of ANC visits and perception of the pregnant women regarding ANC. It might be because this study had different gestation age. Minimum was 2 months, and Maximum was 11 months. The median number of ANC visits was 4; the maximum number of visits was 12.

The study of Kerri and Mory N (20) showed that babies whose mothers did not receive ANC were three times more likely to have a low birth weight and five times more likely die than those whose mothers received ANC. The WHO and UNICEF study revealed that there are marked differences between urban and rural areas in the use of ANC. Women who live in urban areas are generally twice as likely as those living in rural areas to report four or more ANC visits in the Middle East, north Africa and Asia (4).

According to WHO, the New ANC protocol has reduced the number of visits to health personnel, rationalized the application of technology, and improved the provision of information to women in relation to the traditional protocol (23). In addition, there were no significant differences in secondary outcomes for either women or infants, including the rates of eclampsia and maternal and neonatal death. Both the pregnant women and health personnel were generally satisfied with new ANC. WHO emphasized the basic component of the new ANC protocol is intended only for the management of pregnant woman who do not have evidence of pregnancy-related complications, medical conditions or risk factors related to health (4). However some pregnant women, especially those in developed countries, expressed dissatisfaction with the reduced number of ANC visits (13).

Since 2004, the new ANC has been implemented in Khon Kaen province Thailand. The MOPH prescribed new ANC in Thailand is at least five visits (12weeks, 20 weeks, 26 weeks, 32 weeks, and 38 weeks) for healthy pregnant women. This is to motivate the pregnant women to use the ANC service. According to a national survey, of the pregnant women who are using the new ANC, 70 percent are satisfied (25).

According to the study of Gustavo Nigenda et al. (16), some of pregnant women expressed anxiety with only five visits. Experience with the new program seems to have reduced the initial sense of insecurity felt by women when they started with the modified protocol. The information received from providers is an important issue for women.

5.10.6 Gestation age

In this research nearly half of the pregnant women (49.78%) were more than 28 weeks pregnant. There was no statistically significant association between gestation age and perception of the pregnant women regarding ANC.

This research also found that more than two-thirds of the pregnant women (72.57%) who were more than 28 weeks pregnant had good levels of knowledge and 10.62 percent of them had poor levels. There was also a relationship between material support and gestation age. Nearly half of the pregnant women who were less than 15 weeks pregnant (49.57%) had good material support, and 49.76 percent of them used information from the MCH handbook. On the other hand, 62.50 percent of those who were less than 15 weeks pregnant got poor material support, and only 12.44 percent of them used information from the MCH handbook. It might be said that the pregnant women gained knowledge with support as their pregnancies developed.

5.11 Need factors: Pregnancy intention

About 61 percent of the pregnant women had intended their current pregnancy, and 20.26 percent of them had not. There was a statistically significant association between intention to become pregnant and perception regarding ANC by Chi-square test as shows in Table 4.29 (P-value=0.032). When testing this association using multiple logistic regression analysis, it was found that pregnancy intention was not associated with negative perception about ANC when adjusted for other factors in the model, as shown in table 4.30. It may be that other factors could have affected the association between family support and the perceptions of the pregnant women.

The study was supported by the report of Oklahoma State Department of Health (51) which revealed that unintended pregnancy results in adverse health outcomes and bad behaviors for mothers and infants.

CHAPTER VI
CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The objective of this study was to identify the factors related to the perceptions of pregnant women regarding ANC in Nakhon Pathom, Thailand. The research aimed to describe the perceptions of pregnant women regarding ANC; to describe the independent variables including predisposing factors, enabling factors, reinforcing factors and need factors; and to identify the associations between the various independent variables and the perceptions of the pregnant women regarding ANC.

A cross-sectional study was conducted at three community hospitals in Nakhon Pathom province, Thailand, which were chosen by cluster sampling from nine community hospitals. 227 pregnant women were assessed between 11th and 26th January, 2010. Those data were analyzed by the Minitab program. Univariate analysis was used to provide summaries for the descriptive component of the study. Chi-square tests were used to assess any significant associations between the independent variables and the perceptions of pregnant woman regarding ANC. Multiple logistic regression analysis was used to evaluate the magnitude and significance of predictive independent variables.

In this research, more than half of the pregnant women (59.91%) had positive perceptions regarding ANC, and 40.09 percent had negative perception. Most of the pregnant women agreed that following the ANC schedule prevents health risks, and that pregnant women can get important information about pregnancy at ANC. However, half of them perceived difficulty in understanding the

explanations from the health personnel at ANC, and in lack of time to discuss with health personnel at ANC.

Regarding the independent variables in this study, about 80 percent of the pregnant women were proper child age (17-35 years old), and nearly 60 percent of them had secondary or high school education. However, 6.19 percent of them had not attended primary school. More than 30 percent of the pregnant women were not married and the mean family size was four. Nearly 70 percent of them worked outside and about 85 percent earned less than the Thai average.

Considering their knowledge, over 70 percent of the pregnant women had good knowledge about ANC, and 16 percent had poor knowledge. Each question of knowledge about ANC was correctly answered by more than 70 percent of the pregnant women. More than 90 percent of the pregnant women answered correctly about ANC regular examination and the necessity of blood testing during ANC. However, the proper time to visit ANC was an issue that few of the pregnant women knew about, compared with other issues.

More than 60 percent of the pregnant women lived less than 10 kms from hospital, and used their own vehicle to go to the ANC at a hospital. Therefore, nearly 90% of the pregnant women felt that their transportation to visit ANC from their home was convenient and inexpensive. Nearly 60 percent of the pregnant women waited for ANC more than 30 minutes.

About half of the pregnant women had social support from VHVs, health staff, health personnel, friends, neighbors, and parent school and mother's clubs. Support from parent school and mother's clubs had the highest proportion of good support (61.78%) of all categories of social support. Furthermore, half of them had good support from each category.

One-quarter of the pregnant women had moderate or poor family support from their husbands and relatives. Nearly 90 percent of them had support

from husband in terms of advising for regular check-ups, and sharing ANC information. However, a quarter of the husbands had never participated in the training organized by hospital.

Most of the pregnant women always brought the MCH handbooks on ANC visits, and more than 70 percent read them in detail. On the other hands, less than half of them did not keep proper records of their condition by themselves. Most of the pregnant women used information from the MCH handbook, and posters and brochures, and half of them used health magazine, and less than 20 percent used the internet.

Regarding their number of children, over 70 percent of the pregnant women had less than two children. The median of number of children was 1.Nearly 30 percent of them had had some complications during previous deliveries such as an abortion or premature birth. Two-thirds had had some complications during the current pregnancy. Over one quarter had anemia.

Concerning their reproductive health history, more than half of the pregnant women first visited ANC within the first 12 weeks of pregnancy, and 7.24 percent first visited ANC after 25 weeks. The median first ANC visit time was 12weeks. Nearly two-thirds of the pregnant women planned to have their current pregnancy, but 20.26 percent did not.

Based on Chi-square test, education level and marital status were each found to have a statistically significant association with the perceptions of the pregnant women regarding ANC. About 70 percent of the highly educated pregnant women were more likely to have a positive perception about ANC than the more poorly educated pregnant women. With regard to marital status, it was found that nearly two-thirds of the married pregnant women had positive perceptions.

A significant association was identified between the knowledge of the pregnant women about ANC and their perceptions (P-value<0.001). When testing

for the association for the final model using multiple logistic regression analysis, the study identified statistically significant predictors of negative perceptions of pregnant women about ANC. The result showed that the pregnant women with moderate or poor knowledge levels were 4.53 times and 9.30 times respectively more likely to have negative perceptions compared with those with good knowledge levels.

Significant associations were found between family support (P-value=0.036) and perception and material support (P-value=0.012) and perception. Nearly two-thirds of the pregnant women who had good family support (62.72%) had positive perceptions, and most of the pregnant women who had poor family support (85.71%) had negative perceptions. Approximately 70 percent of the pregnant women who had good material support (69.57%) had positive perceptions, but 62.50 percent of those who had poor material support had negative perceptions. When testing this association using multiple logistic regression analysis, it was found that the pregnant women with moderate or poor material support levels were 2.12 times and 2.47 times respectively more likely to have negative perceptions about ANC compared with those with good support levels. Considering each category of material support, significant associations between bringing the MCH handbook to the ANC visits, and reading the MCH handbook, and using information from posters and brochures and perceptions regarding ANC were identified (P-value=0.013 and 0.015 respectively).

Pregnancy intention had a significant association with perception of pregnant women and intention (P-value=0.032).

6.2 Recommendations

6.2.1 Recommendations for implementation

Based on the findings of this study, some recommendations might be beneficial in improving the impact of ANC and MCH.

6.2.1.1 Recommendation for health staff

Firstly, the result of this study shows that knowledge impacted on the perception of pregnant women regarding ANC. Therefore health staff should provide information diligently. Educational materials such as the MCH handbook, posters and brochures about MCH and specifically about pregnancy are useful to explain more clearly or give more information about MCH.

Secondly, nearly half of the pregnant women perceived that there was not enough time for discussion with health staff, and that it was difficult to understand what they were saying about health at ANC. Therefore, it is recommended to keep enough time for such discussions, especially on the first ANC visit and for pregnant women with complications. Improved education programs might also be appropriate.

Thirdly, pregnancy intention was found to be significantly associated with perception about ANC. Therefore it is recommended to improve family planning programs to prevent unplanned pregnancies.

Fourthly, regarding family support, husbands and relatives have an influence on the perceptions of pregnant women. Therefore health education should also be provided to family members. To motivate family members to be involved in training organized by hospital such as parent school, they should be given not only on weekdays but also on weekends.

Finally, VHVs play an important role to encourage pregnant women to receive ANC, and provide information about MCH and ANC in every community. Therefore, health staff should strengthen their collaboration with VHVs. Training for VHVs could be offered to improve their ability to support pregnant women.

6.2.1.2 Recommendation for VHVs

Firstly, only 14.16 percent of the pregnant women had good support from VHVs. However, the role of VHVs in terms of informational support and emotional support is very important for pregnant women. VHVs are recommended to make home visits to pregnant women to help them follow ANC schedules and provide information about ANC. This research showed a significant association between education level, and marital status, and perception of pregnant women regarding ANC. Therefore, VHVs need to be especially concerned about pregnant women with low education or unmarried pregnant women for follow-up.

Secondly, regarding the timing of the first ANC visit, half of the pregnant women attended first ANC in the second or third trimester. To encourage them to attend ANC in the first trimester, stronger VHVs support might be expected to encourage more pregnant women to attend ANC in first trimester.

6.2.1.3 Recommendation for family

Husbands are recommended to support pregnant women to have positive perception regarding ANC and to promote MCH with encouragement to follow ANC schedule, sharing information about MCH. Reading the MCH handbook and participating in training organized by hospital are appropriate means to share information.

6.2.2 Recommendation for further research

Firstly, this study was conducted in one province in Thailand. Future research to evaluate what affects the perception of pregnant women regarding ANC should be undertaken in other provinces in Thailand.

Secondly, a follow-up study should be conducted to identify pregnancy outcomes of ANC.

Finally, qualitative research such as in-depth-interviews should be utilized for further study to acquire a more complete understanding of the factors related to the perceptions of pregnant women regarding ANC.

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APPENDIX

APPENDIX

QUESTIONNAIRES

THE PERCEPTIONS OF PREGNANT WOMEN REGARDING ANTENATAL CARE AND ITS RELATED FACTORS IN NAKHON PATHOM PROVINCE, THAILAND

The objective of this study

This questionnaire will be used to study the factors related to the perceptions of pregnant women regarding antenatal care in Nakhon Pathom province, Thailand. This study aims to improve the quality of life of mothers and children, and make antenatal care (ANC) more efficient.

Introduction about responses

Please answer the following questions. The information collected from this questionnaire will only be used for my thesis as a student at the ASEAN Institute for Health Development, Mahidol University. Your answers will be kept completely confidential and not used for any other purpose. If you feel uncomfortable or unhappy due to some questions, you have the right not to reply or to withdraw from this study. Thank you for your kind cooperation.

YUKA IINO
AIHD, Mahidol University

PART1 PREDISPOSING FACTORS

Please answer in the blank space or put a tick (√) in the appropriate box ☐.

1-1: Socio economic status

1. How old are you? …….years (completed years)

2. What is your education level?
   ☐1. No schooling
   ☐2.Primary school
   ☐3. Secondary/High school
   ☐4.Diploma
   ☐5.Bachelor degree or higher
   ☐6.Other (specify)

3. What is your marital status?
   ☐1.Married and living with your husband
   ☐2.Married but living apart from your husband
   ☐3.Not married and living with partner
   ☐4.Divorced
   ☐5.Widow
   ☐6.Other (specify)…….

4. How many people live together in your family? ……persons

5. What is your occupation?
   ☐1.No job
   ☐2.Housekeeping cleaner
   ☐3.Farmer
   ☐4.Employee in factory
   ☐5.Civil servant
   ☐6.Employee in private company
   ☐7.Vendor
   ☐8.Other (specify)…….

6. How much is your family income approximately per month? …….Baht

1-2: Knowledge of pregnant women about ANC

Please select only one answer that corresponds with your understanding.

T=True, F=False, and DK=Do not Know

No	STATEMENT	T	F	DK
7	ANC is the provision of health services to pregnant women by doctors, nurses, midwives or other health care professionals			
8	Pregnant women should visit ANC for the first time when they feel fetal movement			
9	Pregnant women should attend ANC at least 2 times during pregnancy			
10	Only pregnant women with complications should go to ANC			
11	ANC consists of regular examinations to check the expectant mother's blood pressure, weight, fetal heartbeat, tetanus immunization, iron and folic supplementation			
12	ANC is an opportunity to inform pregnant women about danger signs and symptoms			
13	To protect baby from tetanus, pregnant women should take tetanus vaccination at ANC			
14	Blood testing during ANC is necessary to assess the anemia status during pregnancy			
15	Pregnant women should attend ANC as soon as they miss their menstrual period			

Part 2 ENABLING FACTORS

Please answer in the blank space or put a tick (√) in the appropriate box ☐.

2-1: Accessibility of ANC

16. How far is your house located from the hospital?

☐1.Less than 5 kilometers ☐2. 6-10 kilometers

☐3. 11-15 kilometers ☐4. More than 15 kilometers

17. How do you come to the hospital?

☐1.Your own vehicle (Bicycle/car)

☐2. On foot

☐3.Taxi

☐4. Public transportation

☐5.Other (Specify)…….

18. Is it convenient for you to get to hospital?

☐1.Yes ☐2.No

19. Is it expensive for you to travel from your house to the hospital?

☐1.Yes ☐2.No

2-2: Duration of waiting time

20. How long have you been waiting for ANC?

☐1. <30minutes ☐2. 30-60minutes ☐3. >60 minutes

PART 3 REINFORCING FACTORS

3-1. Social support

Please select one answer that corresponds most closely to your opinion.

1=A lot 2=Moderate 3=A few 4=Never

No	STATEMENT	1	2	3	4
21	Do you get any information about ANC from village health volunteers?				
22	Do you get any information about ANC from doctors?				
23	Do you get any information about ANC from nurses?				
24	Do you get any information about ANC from public health personnel?				
25	Do village health volunteers encourage you to receive ANC?				
26	Do doctors encourage you to receive ANC?				
27	Do nurses encourage you to receive ANC?				
28	Do public health personnel encourage you to receive ANC?				

No	STATEMENT	1	2	3	4
29	Do you have friends with whom you can talk about your pregnancy?				
30	Do you have neighbors with whom you can talk about your pregnancy?				
31	Do your friends encourage you to receive ANC?				
32	Do your neighbors encourage you to receive ANC?				
33	Do you get any information about MCH from the training organized by hospital?				

3-2. Family support

Please select one answer that the most closely corresponds to your opinion.

1=A lot 2=Moderate 3=A few 4=Never

No	STATEMENT	1	2	3	4
34	Does your husband give information about ANC?				
35	Does your husband encourage you to follow ANC guidelines?				
36	Does your husband advise you to use ANC for regular check- ups?				
37	Does your husband accompany you to visit ANC?				
38	Do you share the information you get at ANC with your husband?				
39	Do you have relatives with whom you can talk about your pregnancy?				
40	Do your relatives encourage you to receive ANC?				
41	Does/Did your husband participate in the training organized by hospital about ANC?				

3-3. Material support

Please put a tick (√) in the appropriate box ☐.

42. Do you bring MCH handbook with you when you receive ANC?

☐1.Always ☐2.Occasionally ☐3.Never

43. Do/Did you read the MCH handbook?

☐1. In detail ☐2. Skimming ☐3.Never

44. Do/Did you complete the Pregnancy Pathway section (page 5, 6)?

☐1.Yes ☐2.No

45. Do you use information about ANC from the MCH handbook to practice?

☐1.Yes ☐2.No

46. Do you get any information about ANC from the posters or brochures?

☐1.Yes ☐2.No

47. Do you get any information about ANC from the internet?

☐1.Yes ☐2.No

48. Do you get any information about ANC from health magazines?

☐1.Yes ☐2.No

PART4 NEED FACTORS

Please answer in the blank space or put a tick (√) in the appropriate box ☐.

4-1: Reproductive health history

49. How many children do you have? …….

50. Did you ever have any the following past obstetric complications?

1. Abortion	☐1.Yes	☐2.No
2. Premature	☐1.Yes	☐2.No
3. Stillbirth	☐1.Yes	☐2.No
4. Bleeding per vagina	☐1.Yes	☐2.No
5. Neonatal death	☐1.Yes	☐2.No

6. Other (specify) ……

51. Have you ever had any the following diseases during this pregnancy?

1. Edema	☐1.Yes	☐2.No
2. Anemia	☐1.Yes	☐2.No
3. Allergy	☐1.Yes	☐2.No
4. STD.	☐1.Yes	☐2.No
5. Diabetes mellitus	☐1.Yes	☐2.No
6. Nephritis	☐1.Yes	☐2.No
7. Others (specify)…….		

52. When did you receive first ANC for this pregnancy? ……..weeks (Gestational age)

53. How many times did you receive ANC for this pregnancy? ……times

54. When are you due? Month……..2010

☐1.January	☐2.Febrary	☐3.March	☐4.April
☐5.May	☐6.June	☐7.July	☐8.Augast
☐9.September	☐10.October	☐11.November	☐12.December

55. Do you intend to have this pregnancy?

☐1.Unplanned ☐2.Planned ☐3.Unclear

PART 5: PERCEPTION ABOUT ANC

Please select one answer that corresponds most closely to your opinion.
A=Agree N=Neutral DA=Disagree

No	STATEMENT	A	N	DA
56	I can get important information about pregnancy at ANC			
57	I feel afraid of blood tests at ANC			
58	ANC can contribute to reducing health risks during the pregnancy and delivery.			
59	If I do not have any problem, I do not need to receive ANC			
60	I need to follow the ANC schedule to prevent health risks			
61	There is not enough time for discussion with health personnel at ANC			

No	STATEMENT	A	N	DA
62	I feel the instrument of hospitals for ANC is clean.			
63	Checking blood pressure for every visit ANC is useless			
64	I feel it is difficult to understand what health personnel say to me about my health			
65	Low family income is an obstacle in going to get ANC			
66	If I do not have Diabetes Mellitus, I do not need to have a urine test every time			
67	I feel comfortable when I meet other pregnant women during ANC visits			
69	Early ANC during the first trimester results in preventing health risk			
70	I feel tired of waiting for ANC			

Thank you for your kind cooperation.

BIOGRAPHY

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