THE IMPACT OF MATERNAL AND CHILD HEALTH HANDBOOK DURING PREGNANCY, DELIVERY AND CHILD HEALTH

母子健康手帳が妊娠、出産、小児の保健医療に与える影響

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Abstract

Background:

Maternal and Child Health Handbook (MCHHB) consists of health records of pregnancy, delivery, and child development, including immunization records and child growth charts. MCHHB has been utilized in Japan since 1947 and it is now introduced in more than 30 countries to ensure the continuum of care for mothers, newborns and children.

Through Ministerial Decree in 2004, the Ministry of Health Indonesia has tried to nationalize the use of MCHHB all over the country to replace Antenatal Cards. The Minister of Health Indonesia states that every child should be provided with an MCHHB and every health care worker should educate parents through the MCHHB.

The effectiveness of MCHHB needs to be evaluated to observe its impact on pregnancy, delivery and child health care. We also need to monitor the utilization of MCHHB among mothers and midwives at the district level to understand the challenges of the MCHHB.

Objective:

The objective of this research was to analyze the impact of MCHHB to maternal and child health services during pregnancy, delivery and child health care.

Methods:

Three studies on MCHHB were conducted.

(a) The Meta-analysis study was accomplished to make a systematic review all the previous researches. Among 57 documents for MCHHB, published between 1980 and October 2011, only 4 documents with 43 question items in Indonesia (1999 and 2001), Bangladesh (2003), the Philippines (2009) and Cambodia (2010) were analyzed by using odds ratios.

(b) Home-Based Records study utilized Indonesia Demographic Health Survey (IDHS) in 2002-2003, 2007 and 2012 to reveal the effect of home-based records in Indonesia including MCHHB and antenatal cards (AC) for children and pregnant mothers.

(c) The cross sectional survey on MCHHB was done to identify the impact of MCHHB to health providers and users at Tangerang Regency of Banten Province in Indonesia. The survey was used by both quantitative and qualitative methods and its targets were 207 midwives and 259 mothers at the village level.

Results:

The Meta-analysis study showed that the relationship between MCHHB and pregnancy care. Mothers who used MCHHB during pregnancy had higher level of knowledge (OR 1.44, 95% CI: 1.22-1.70) than whose did

not use MCHHB during pregnancy. The strong significant effects of MCHHB were observed in knowledge of antenatal care visit (OR 1.86, 95% CI: 1.59-2.18), and mother should consume more food during pregnancy (OR 1.97, 95% CI: 1.37-2.83). Mothers who got MCHHB during pregnancy had safer practice by skilled birth attendants (OR 1.12, 95% CI: 0.95-1.32) and delivered in health facilities (OR 1.31, 95% CI: 1.12-1.53). MCHHB showed the effect of knowledge of child health care (OR 1.22, 95% CI; 1.05-1.41). This study utilizing meta-analyses showed MCHHB had higher association with knowledge of mothers than practice in pregnancy and child health care

The HBR study revealed that, compared with the control group, the MCHHB or AC group had more knowledge and better practices during pregnancy, delivery, and child health care. The MCHHB or AC group knew how to solve the problems of complications during pregnancy and used skilled birth attendants for delivery. This study also found that husbands were involved in discussing the delivery location, finding transportation, and identifying a blood donor.

The study in Tangerang regency found that only 36.2 percent of all the examination results in MCHHB were written by midwives. The mothers, on average, read only 30 percent of MCHHB materials in the handbook. The low fulfillment of MCHHB by midwives may be related to individual and environment factors.

Discussions

These research revealed MCHHB is expected to improve the quality of service on maternal and child health care. The use of MCHHB in Indonesia is very important as an instrument to motivate mothers; the husbands and health providers to ensure the continuum of care, besides the handbook could be function as one single health records to replace the function of cards systems for treatment, immunization and antenatal care. The MCHHB could be a reference health handbook to mothers when they referred to the hospital for an emergency situation and filled the limitation of health records for mothers who changed the place for their antenatal care visit. With the information of health records in MCHHB, health provider can react quickly when the mother needs help. However, there were many difficulties to promote the proper utilization in the community level even in Indonesia, where MCHHB has been utilized for more than ten years. While the meta-analysis study showed the effects of MCHHB for improving the knowledge of mothers, it will take a long time to change the behaviors of mothers, fathers and the community.

Maternal Mortality Ratio (MMR), Neonatal Mortality Rates (NMR) and Under Five Mortality Rates (U5MR) are still important targets of The Sustainable Development Goals (SDGs). MCHHB will have a continuous role to promote the continuum of care during pregnancy, delivery and child health and to reduce MMR, NMR and U5MR in many developing countries.

Keywords: Meta-Analysis, Maternal and Child Health Handbook, Home-Based Records Indonesia Demographic and Health Survey.

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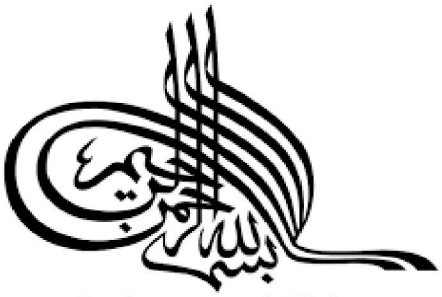


In the name of Allah,
the Most Beneficent,
the Most Merciful

Chapter 1
Introduction

1.1 Indonesia`s Health Systems

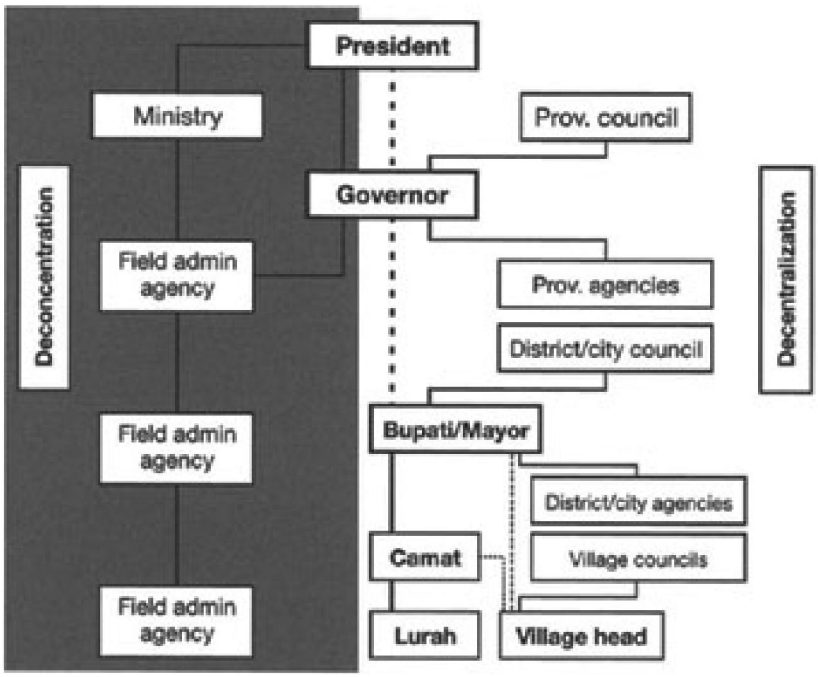
Indonesia is a middle-income country which is also ethnically diverse. It consists of more than 668 languages. The government creates Bahasa Indonesia as the country's official language to unify its heterogeneous linguistics and ethnic composition (Okten & Osili, 2004). The Gross Domestic Product (GDP) per capita hierarchical was 108th out of 210 countries in 2008. Indonesia is one of the biggest and most populous nations in the world, in which more than two-thirds of the population live in Java. The nation is a wealthy country with various resources, it is the world's largest producer of palm oil, which is used for biofuels, food, and cosmetics. Indonesia has about 40% of the world's geothermal potential, but only 4% is used, it has the world's third-biggest forest (120 million hectares). The country is also containing a large amount of natural gas, coal, and various metals which are scattered throughout the island, it also benefits from a very diverse fauna and flora (OECD Economic Surveys : Indonesia 2010, 2010).

The first established Indonesian's government, led by Soekarno, had experimented decentralizing systems throughout the nation. However, because there were many rebellions in the local area, Soekarno issued a presidential decree in 1959 to change the various political systems into a centralized one. The second president, Soeharto, followed the system until 1998. With this, the government could focus on political stability rather than political freedom. In 1999, law 22 was introduced to move political systems into decentralizing authority to local governments; this policy limited national government into five affairs:

international affairs, monetary policy, defense, religion and the judiciary (Erb, Maribeth, Sulistiyanto, Priyambudi, 2015). See figure 1.1 description of the structure of the Indonesian government.

Indonesia consists of approximately 17,000 islands, included five large islands; Sumatra, Java, Kalimantan, Sulawesi, and Papua. The BPS (Badan Pusat Statistik or Indonesian Statistics) (2013) described that nearly 80 % of Indonesian's territory covered by water is located between Asia and Australia, the

Figure1.1. Structure of Indonesia government according law no. 22/99.



Note: Adapted from Regionalism in Post-Suharto Indonesia. P.25 by Erb, Maribeth, Sulistiyanto, Priyambudi, and Faucher, Carol, 2005, London, GBR: Routledge.

country is divided administratively into provinces. Since 2001, the number of provinces has grown from 26 to 33. Nowadays, there are 399 districts and 98 cities, all of them belong to 79,075 villages. Moreover, the BPS stated that Indonesia had a total population of 237.6 million people in 2010, an estimated 118.3 million people lived urban areas, the life expectancy for both men and women had increased. It exceeded

73 years for females and 67 years for men. Since the 50s, there has been an increase in employment in the manufacturing industry, especially in Java Island as the biggest populated part of the country. Annual growth of GDP increase from 3.2 % in the 60s to 7.1 % in the 90s, the GDP per capita spurred from USD (United States Dollars) $ 70 in the 60th to USD $846.8 billion in 2012 (Eng, 2009).

From the time when the decentralization era in 2000, the performance of the health workforce has better impacted the people. It has also been accompanied by changes in responsibility for the provision of services and the ways that human, financial, and material resources were managed. According to Rokx et al., (2010) under this system, districts were engaged in arranging all aspects of working systems of professional health workers. However, the decentralization regulations for making decisions and the budgets were vague. WHO`s study finds that in reality, the MoH (Minister of Health) of Indonesia is still deeply involved in decision-making responsibilities, financial control, planning and managing regional staff and programs. The confusion about sectorial laws still exists because the existing regulations have not yet been amended. This situation has impacted the expansion of sectoral aims, strategies, and connected tasks, such as setting a level of quality performance, manpower planning, and preparation of the annual formation exercise, which is still done centrally by the MoH.

Heywood & Choi (2010) explained the Indonesian government has begun to introduce the integration of preventive and curative medicine which was known as Bandung Plan or Patah-Leimena Plan since 1951. The strategy focused on distributing health services and providers in the community by developing public health facilities throughout the country. The government had advanced more than 7,000 health centers and 20,000 health sub-centers with an average population per center of fewer than 30,000 in the mid-1990s. They also stated that since 1989, there had been a midwife placement system as a groundbreaking effort to accelerate the decline of MMR (Maternal Mortality Ratio) and IMR (Infant Mortality Rate). Due to this policy, from a total of 79,075 villages, there were 72,000 village midwives spread around all over Indonesia.

The curative services are provided by hospitals in Indonesia. These hospitals are also made for education and referral systems for more complicated cases from low-level to higher-level hospitals, since decentralization, training, and coordination activities have focused on provincial health level as well as the oversight of provincial hospitals, delivering health services and allocating resources provided by districts health offices. In contrast, Puskesmas (health centers) are in charge of essential health services and primary care (Rokx, Schieber, & Harimurti, 2009).

There have been many barriers to providing excellent health care in Indonesia, large geographic, urban-rural and income inequalities some of many problems. The issue of inefficiency is still a significant problem. However, substantial progress has also been made, such as increasing access to health services, ensuring financial protection against impoverishment and improving health outcomes. The financial crisis in 1998 destroyed health care systems and appeared as obstacles to the provision of health service. Problems such as increasing self-treatment, height consumption on public spending, inequitable distribution within provinces and low quality of services by health care professionals are still unresolved (World Bank, 2009).

The problem of the Indonesian health care systems is as big as the other public health provisions, such as dissatisfaction of patient decision making, private consultations with health providers, hospitality fees, and long waiting times (Rokx, 2009). However, the most serious problem is the shortage of health workers, particularly doctors (Corporation, 2007). The differentiation between health workers to the population is very diverse. In 2008, the ratio was not reaching the population target of 100,000. Specialists were 7.7:100,000 (the target was 9:100,000), general practitioners were 26.3:100,000 (the target was 30:100,000), dentists were 7.7:100,000 (the target was 11: 100,000), nurses were 157.75:100,000, it was very close to the target of 158:100,000, and the midwife was 43.75: 100,000, it was far from the goal of 75: 100,000 (Minister of Health, 2010).

The unequal distribution of health workers with a high concentration in the central island such as Java

and Sumatra is also one of the biggest barriers to adequate service quality, the concentration is 48 % in Java and 26 % in Sumatra, only 25 % of those are scattered across the other islands (Agency for Development and Empowerment Minister of Health, 2013).

The underutilization of antenatal care facilities in Indonesia is still a barrier to improving maternal health service quality. The MoH recommends, at least, four antenatal visits for pregnancy women. The program schedules, at least, one visit in the first trimester, one visit in the second and one visit in the third trimester, it is only 74 % of pregnant women meet the government target (Indonesia, BPS-Statistics, 2013).

Even though Indonesia is the highest Muslim population in the world, the belief in Islam has only very lightly impacted the health behavior of its people. The belief in breast-feeding, which is part of the way of worship God in Islam has only impacted about 15 % of how Indonesian women breast feed their infants. The low breast-feeding behavior is an effect of the government policy of not too restricting the marketing of baby formula. In the area of vaccine use, the Ulema Board have banned the use of a meningitis vaccine which is included an enzyme derived from pigs. The government has to buy more expensive vaccine as a substitute for 200,000 Indonesian pilgrims a year (P. Webster, 2013).

The issue of health insurance is also one of the biggest problems in Indonesian. Approximately 50.5 % of the total population does not have health insurance. The health program for the poor people that is provided by the government is owned by 39.6 % population, while Jamsostek (the labor social insurance) and ASKES or ASABRI (the health insurance for civil servants and military) each accounted for 4.4 % and 6 % respectively (National Institute Health Research and Development, Ministry of Health, 2006). An effort to protect the health of people began in 1968 with obligated civil servants to pay 2.5 % from their salary for covering their family with health insurance, see figure 1.2 overview of Social Health Insurance Landmarks in Indonesia.

In early January 2014, the country has started the National Social Security System (referred as Sistem

Figure1.2. Overview of Social Health Insurance Landmarks in Indonesia

Year	Initiative
1968	Health insurance for civil servants – *Askes*
1974–90	Promotion and experiments in community-based health insurance (CBHI) – *Dana Sehat*
1992	Social security for private sector employees – Jamsostek, JPKM (HMOs), and CBHI
1997	Financial crisis
1998	MoH attempt to mandate HMOs fails
1999	JPS (Social Safety Net): financial assistance for the poor, ADB loan
2000	Comprehensive review of health insurance and amendment of constitution to prescribe the rights to health care
2001	Decentralization law implemented
2001	Comprehensive review of social security system
2002	Amendment of constitution on the right to social security; President establishes a task force on social security
2003	Parliament initiates a bill on National Social Health Insurance (June) Task force finishes drafting bill on National Social Security including health, occupational health, provident fund and pension, and death benefits (December)
2004	Bill on National Social Security enacted (October 19)
2005	Preparation for extension of insurance coverage to 36.4 million poor people
2008	MoH covers 76.4 million poor and near poor through *Askeskin/Jamkesmas* programs; National Social Security Council established (October 2008)

Note: Prof. Hasbullah Thabarni, as cited from Directions in Development: Health Financing in Indonesia: A Reform Road-map. P.30 by Rokx, Claudia, Schieber, George, Harimurti, Pandu. 2009, World Bank Publications.

Jaminan Sosial Nasional or SJSN), a system that provides national social security programs, i.e., a health program and four programs for employers (work accident, old-age savings, pension, death benefits), these systems will eventually cover all the people of Indonesia (Muliati, 2013).

Indonesia President, Susilo Bambang Yudhoyono (2014), said:

> "This is the biggest ever leap that has been taken by Indonesia since its independence. From now on, the poor can get treatment for free of charge at community health centers (Puskesmas) and hospitals. The program will be benefited to 121 million people or 48 % of the Indonesian population. In the second stage, starting from January 1, 2019, it is hoped that health insurance will cover all Indonesian people. The President also said that Firstly, around 86.4 million people will be considered eligible for premium payment assistance of 19,225 IDR (Indonesian Rupiah Rates) equal to 1.57 USD per individual per month. The Government has deducted a total of 19.3 trillion IDR from the state budget to do this. The

> premium for informal workers and retirees ranged from 25,500 IDR per month for third-class medical services to 59,500 IDR for first-class medical facilities, with at least three-month payment in advance. For official workers in the private sector, the premium is 5 % of their monthly income. The Government decides that as from 2015, employers will pay 4 % of it and employees will be responsible for the rest". ("Indonesia: Indonesia launches national health insurance program," 2014)

The impact of health insurance programs have a significantly negative association with out-of-pocket expenditures in two types of insurance; ASKESKIN reduces out-of-pocket expenditures by 34 % and ASKES by 55 % that is compared with non-ASKESKIN and non-ASKES; However, JAMSOSTEK is found to bear a non-significant effect. The capacity of programs, to offer financial assurance by decreasing out-of-pocket expenditures, is likely to be a direct purpose of their benefits package and co-payment policies (Aji, Allegri, Souares, & Sauerborn, 2013).

The research on an association between health insurance and the quantity of outpatient visits to public and private providers showed 63 % improvement in the average number of public visits by the beneficiaries of compulsory insurance for civil servants; Individuals' decisions, to make the first contact with private providers, were affected by private insurance membership (Hidayat & Pokhrel, 2009). The insurance era in Indonesia is likely going to improve public health promotion as well as healthcare systems, since the first government`s commitment of its national insurance for all, the people have been waiting for a bright national health care system future.

1.2 Millennium Development Goals and Sustainable Development Goals in global setting

The Millennium Summit 2000 was a momentum to declare the world`s commitment to achieving Millennium Development Goals (MDGs) by the year 2015 (AbouZahr & Wardlaw, 2001). It was also as The statement and the resulting globally agreed targets for the MDGs place health squarely at the center of the international development plan and champion it as a strategic to develop economic progress (Chan, 2007). The function of these goals, as part of a global effort, were described as a systematic approach and a benchmark for the world effort success to cure the problems in global communities, these goals were as follows: (1) eliminate poverty and hunger, (2) accomplish worldwide primary education, (3) encour-

age gender equality and empower women, (4) decrease child mortality, (5) increase maternal health, (6) combat malaria, HIV/AIDS, and communicable diseases, non-communicable diseases, (7) guarantee environmental sustainability, and (8) develop a global partnership for development (WHO, 2005). The efforts had already successfully reduced poverty to 50%, increase school enrollment, encourage global community effort in combating global efforts to fight HIV/AIDS and other infectious diseases (P. C. Webster, 2012). However, there was still 8.8 million children in the world who died a year before their fifth birthday (World Health Organization and UNICEF, 2010).

The global MMR decreased from 385 maternal deaths per 100,000 live births in 1990 to 216 in 2015. In spite of this 44 % decline, the MDG target of reducing the MMR by three-quarters was not achieved. The gradual and continuous loss of numbers will need to move more quickly for the global MMR to fall below 70 per 100,000 live births by 2030 (target 3.1). The essential condition that providing mothers with skilled health workers at delivery and access to medical treatments are crucial to treating life-threatening emergencies. Global, the proportion of births attended by skilled health staff increased from 60 % in 2000 to 68 % in 2011. However, only half of births are attended in low-income countries (World Bank, 2016).

The MDGs had continued an attention of international policy debates and state policy planning, for more than a decade; the result was highly inconstant through goals, states, and regions; even other countries have made significant development towards the attainment of the MDGs (Sachs, 2012). The UN Open Working Group, on July 19, 2014, adopted a set of Sustainable Development Goals (SDGs) to direct to the UN Secretary General and General Assembly in September 2014, for thoughtfulness; The Open Working Group suggested 17 goals and 169 targets for a 15 year period from 2015 to 2030 (Silver & Singer, 2014).

Sustainable development, related to economic growth that is environmentally related. Environmental goals can not be attained without development; Poor people will avoid environmental restrictions in their desperation for land, food, and sustenance. The development can not be achieved and continue without a

focus on environmental management (Sachs & Reid, 2006). Moreover, Bland said that SDGs as a new set of objectives was not proposed to be a new version of the MDGs, but rather transformational through merging the social, economic, and environmental supports for sustainable development. Within the health-focused SDG, nine goals were leading maternal health, such as child health, communicable diseases, non-communicable diseases, substance abuse, street traffic safety, sexual and reproductive health services, universal medical coverage, hazardous chemicals, and air, water, and soil pollution (Taylor & Christian, 2016).

There is difference target for MDGs and SDGs; MDGs are targeted primarily for developing countries, to which rich countries are to add their solidarity and support for money and technology; the SDGs are divided into the three general categories of economic development, environmental sustainability, and social inclusion dependent on the accomplishment of all three (Sachs, 2012). The ultimate outcomes, on the basis of the draft of the SDGs, are reducing maternal mortality (target 3-1) and reducing child mortality (target 3-2) (Silver & Singer, 2014). SDG 3 includes several related MDGs, however, is expanded to cover additional dimensions of healthy living. It seeks to "guarantee healthy lives and promote well-being for all at all ages," addressing MDGs 4, 5, and 6 on maternal and child health, as well as the main communicable diseases of malaria, tuberculosis, and HIV/AIDS. Both the MDGs and the SDGs include targets on universal access to reproductive health, which plays a key role in shaping demographic paths (World Bank; International Monetary Fund, 2015).

The GoI has been mainstreaming the MDGs from the planning and budgeting in the national long-term development plan and the national medium-term development plan (RPJMN) based on the annual work strategy and budget documents (Bappenas, 2010). The GoI has directed a program of maternal and child health policy to reduce the mortality rate among children under five (MDG 4) by two-thirds and cut the maternal mortality ratio by three-quarters (MDG 5) by 2015 (Azwar, 2010). The program requires significant effort via increased knowledge and changes in family maternal behavior. The increased knowledge and change behavior are essential in advancing health awareness during pregnancy (Bappenas, 2011).

1.3 Efforts to reduce MMR and IMR in Indonesia

Infant mortality rate (IMR) is a fundamental measure to shows the performance of health care systems. Most experts think that the high fertility is a result of biological and behavioral responses to high mortality. Although the evidence supports the hypothesis, it cannot satisfactorily explain fertility-mortality relationships (Scrimshaw, 1978). There are probably many causes affecting IMR. The World Fertility Survey in 28 developing countries showed that husband's occupation, mother's education, and husband's education was associated with the IMR (Hobcraft, Mcdonald, & Rutstein, 1984).

The United States, as a developed country, which is successfully in reducing death related causes such as respiratory distress syndrome, pneumonia and influenza, congenital anomalies, prematurity, low birth weight, and accidents; However, educational, ethnic, and income differences still exist (Singh & Yu, 1995). In Indonesia, the family welfare and maternal education have become two great barriers to reduce IMR. Intervention to modify the public policy system is needed - especially in reducing family socioeconomic inequality (Poerwanto, 2003). The study from Indonesia demographic health surveys indicates that rural and urban areas are also associated with under-five children and neonatal mortality in Indonesia (Hodge, Firth, Marthias, & Jimenez-Soto, 2014).

It is roughly calculated that 136,000 Indonesian's under-five children died in 2011 (Unicef, 2014). Sixty percent of infant deaths arise during the first year of life; eighty percent of child deaths occurred during age 1-11 months, which give the postneonatal mortality of 13 deaths per 1,000 live births. The data shows that the significant action of making a specified decrease in child mortality rates can only be achieved by reducing newborn deaths. Compared with under-five children and infant mortality there has been less progress reducing the newborn mortality rate which has fallen from 32 deaths per 1.000 births in 1991 to 20 deaths per 1,000 live births in 2012 (Indonesia, BPS-Statistics, 2013).

The newborn mortality has estimated 66,000 babies every year since 2002 (Unicef, 2014). The na-

tional newborn mortality rate shows inequities across Indonesia. The rates range from 13 and 14 deaths per 1,000 live births in South Sulawesi and East Java respectively to 33 deaths in West Nusa Tenggara, 35 deaths in West Papua and 37 deaths in North Maluku per 1,000 live births. Nearly one-third (29.9%) of newborn deaths occur within the first 24 hours after birth, with more than three-quarters happening in the first week of life (Indonesia, BPS-Statistics, 2013).

The MMR has been estimated at 359 deaths per 100,000 live births (Indonesia, BPS-Statistics, 2013). Mothers in Indonesia face a much higher risk of death than other neighbor countries: the lifespan of Indonesian maternal mortality is 1 in 110 in 2012, compared with 1 in 1,100 in Vietnam and 1 in 1,600 in Malaysia in 2013. The most important causes of maternal death are hemorrhage (30%), eclampsia (25%), sepsis (12%), abortion complications (4%), prolonged labor (5%) and indirect causes (12%). these deaths are believed to be preventable (Who, Unicef, Unfpa, The World Bank, & The United Nations population Division, 2014).

The BPS reveals that 83.1 % of live births are assisted by health worker (general practitioner, obstetrician, nurse, midwife or village midwife), and 63.2 % mothers are delivered in a health facility. However, there are still found significant inequities between provinces; the data shows that 98.7 % of births are delivered by a skilled provider in Jakarta, compared with only 56.8 % in East Nusa Tenggara, 43.3% in West Sulawesi and 39.9 in Papua (Indonesia, BPS-Statistics, 2013).

The study in Kerala, Costa Rica, and Sri Lanka, concludes that there are seven conditions which should be established to achieve low mortality: (1) female autonomy, (2) considerable input into both health and education (3), access to health service, (4) ensuring that health services work efficiently, (5) an adequate minimal standard nutrition, (6) universal immunisation, and (7) commitment to concentrating on the period before-after birth (Caldwell, 1986). Those conditions are needed and should be combined with public health interventions and quality of health services to support the effort in reducing child mortality in Indonesia (Trisnantoro & Soemantri, 2010).

In 2005, the risk of a mother dying in pregnancy or childbirth during her life was one in six of the poorest parts of the world; It was equal to about one in thirty thousand in Northern Europe; Most maternal deaths were concentrated in sub-Saharan Africa - about 50 % and in Asia about 45 % of the total; There were 535, 900 maternal deaths (Hill et al., 2007). The situation becomes more complicated in the developing countries because many governments have been facing difficulties in monitoring those indicators as information systems and vital registration inadequacy (AbouZahr & Wardlaw, 2001).

Koblinsky (2003) stated that the strategy for reducing maternal and child mortality was to mobilize political commitment, enable policy environment, invest social and economic development, poverty reduction, improve women's status, offer family planning services, provide quality antenatal care and skilled birth attendance, make emergency obstetric more widely available, strengthen the health system and involve the community. He also described several countries, including very poor ones, which have been successfully reducing their maternal and child mortality. However, the world's effort is lacking, especially in the developing countries.

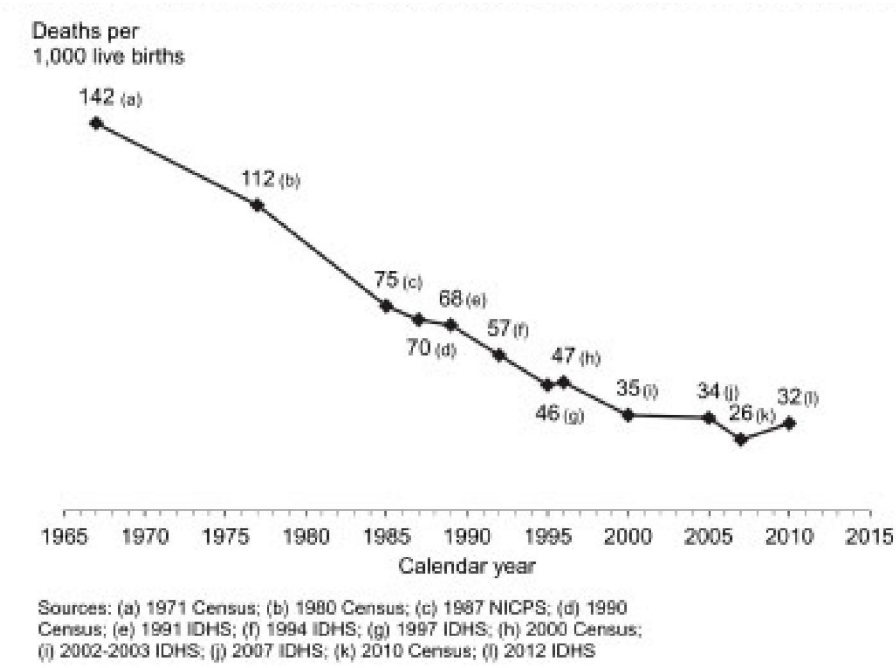
The most cases of maternal deaths occur during the immediate postnatal period; The leading cause is postpartum hemorrhaging; Most of these cases can be prevented with the intervention of skilled care attendance during childbirth (WHOand UNICEF, 2010). Seventy percent of under-five mortality deaths occur in the first year of life and nearly 40 % in the first month. These deaths are caused by factors which could have been prevented - such as acute respiratory tract infection, diarrhea, malaria, measles, and malnutrition. Moreover, 90 % of diarrhea deaths among children are caused by the absence of clean water and sanitation, basic post-natal care, nursing and access to health care. Simple and low-cost treatments for diarrheal disease stimulate a positive and significant impact on reducing infant mortality. In addition, low-cost immunization against measles, diphtheria, polio and other diseases have protected many children from disease and death (Binagwaho & Sachs, 2005).

Even though there have been efforts to reduce infant and maternal mortality, Indonesia is still suffering

from massive public health problems (see figure 1.3. Trend in infant mortality rate, Indonesia 1971-2012). In September 1998, the Government of Indonesia (GoI) introduced a new health paradigm that focuses on a public health approach. The new paradigm was emphasized health promotion and prevention rather than curative and rehabilitation programs. The paradigm was reflected in Healthy Indonesia 2010, which outlined the following actions; (1) leading and initiating health-oriented national development, (2) maintaining and exchanging family, individual, and public health, along with improving the environment, (3) maintaining the quality, equitability and affordability of health service and (4) promoting public self-reliance in achieving good health (WHO, 2008).

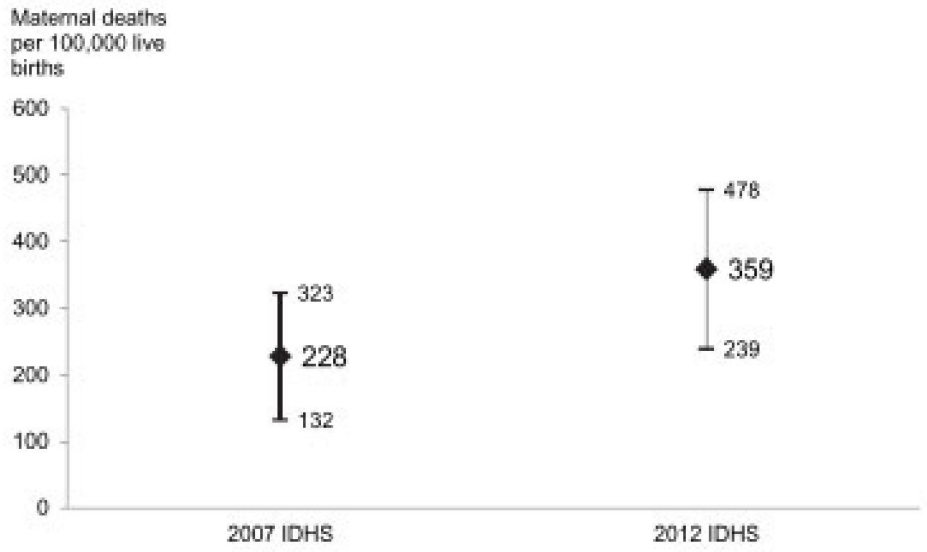
Although the MMR increased in 2012 to 359 per 100,000 live births, the result indicated an encouraging trend in the Indonesian health system, yet the target of the MDGs was still difficult to achieve. There were few arguments in the increasing the number of MMR, one of those was the range of the estimation

Figure 1.3. Trend in infant mortality rate, Indonesia 1971-2012



Note: Adapted from Indonesia Demographic and Health Survey 2012. P 104 by Indonesia, BPS-Statistics, and O. R. C. Macro, 2013, Jakarta

Figure1.4 Maternal Mortality Ratio (MMR) with confidence interval. for the five years preceding the 2007 IDHS and 2012 IDHS



Note: Adapted from Indonesia Demographic and Health Survey 2012. P 214 by Indonesia, BPS-Statistics, and O. R. C. Macro, 2013, Jakarta

based on 95 % confidence interval. The range of the MMR for 2012 can be from 239 to 478 maternal deaths per 100,000 live births and in 2007, the range is 132 to 323 (Indonesia, BPS-Statistics, 2013). See figure 1.4.

Antenatal care is related to having a positive effect on reducing maternal, fetal and neonatal deaths (Alexander & Kotelchuck, 2001). This program is not only influenced the mother's and the baby's health, but it also has a psychological effect preparing women for childbirth and antenatal visit (Beeckman et al., 2010; Sieber et al., 2006). It is also important for health policy makers to understand factors such as wealth index with low maternal education level, high birth rank infants with a birth interval of two years or lower, mothers' distance to health facilities, mothers less exposed to mass media, and mothers reporting no obstetric complications during pregnancy are associated with antenatal visits in the country (Titaley, Dibley, & Roberts, 2010).

1.4 Maternal and Child Health Handbook in Indonesia and the world

MCHHB (Maternal Child Health Handbook) was introduced to Indonesia in 1993 as an instrument for mothers and children in reducing MMR and IMR; the pilot project started in Salatiga, Central Java (Kusumayati & Nakamura, 2007). There was two phases support which was encouraged of MCHHB using in Indonesia by the Japan International Cooperation Agency (JICA). The first project was JICA technical cooperation project namely as "the Ensuring the Quality of MCH Services through MCHHB" dedicated to the dissemination of concept of the MCHHB was implemented in 1998-2003. Then, it was followed by the 2nd phase project that was "the Ensuring MCH Services with the MCH Handbook" from 2006 until 2009 particularly attention for increasing quality and strengthen the sustainability of the handbook utilization (Singgih, 2010).

In 1996, the developed version of Indonesian' MCHHB was started. After a year of new version developed, the GoI expanded MCHHB Program to four provinces, which were East Java, Bengkulu, South Sulawesi and West Sumatra provinces, subsequently, this project spread out to all provinces in Indonesia. This expansion was followed by others provinces included North Sulawesi in 1998, North Sumatera, Jambi, Central Kalimantan, South Kalimantan, West Java, Bali, Yogyakarta and West Nusa Tenggara provinces in 2000, Jakarta, West Kalimantan, Riau, East Nusa Tenggara, East Kalimantan, Central Sulawesi and Gorontalo provinces in 2001. At present, all of the Indonesian' provinces have implemented MCHHB Program for maternal, neonatal and child health (MNCH) services (Azwar, 2010).

Indonesia has used many types of similar records, which has caused many problems to establish record-keeping for Maternal and Child Health services. This reason makes GoI integrated the disparate records into MCHHB (Osaki, Hattori, & Kosen, 2013). The Ministerial Decree No. 284/Menkes/SKIIII/2004 stated that the MCHHB was the only health record of mother and child until five years old; the provision of MCHHB was the responsibility of GoI, and the utilization was the responsibility of the health providers.

This document has given a legal action to use MCHHB and also shown a high commitment of the MoH. In the main strategies of the MoH, the MCHHB is functioning as the tool for (1) social mobilization and community empowerment, (2) improving health system performance, and (3) improving surveillance, monitoring, and information systems (Singgih, 2010).

There were 4.5 million MCHHB distributed in 2014. The MoH spent IDR 16.6 billion ($US1.5 million) for printing and distributing the handbook to all over the island that year. Until 2014 MoH was the one who responsible for this activity, as for the districts; the province coordinator was in charge to propose the MCHHB to MoH related to the number of pregnancy mothers in their areas. However, since 2015, the printing task has been handed to districts. There are many donors' agencies which have an agreement with MoH to funds the districts in the printing activities such as UNICEF, Save Children, Indofood, Daihatsu and many others. Every five years MoH revise the MCHHB, the new MCHHB version has been used since 2015. The new version included teeth and hand washing picture. MoH has been planning to use special MCHHB Handbook for elementary and junior high school. There are many health checks activities and education materials according to the age groups including dental checks activities (Nasir & Baequni, 2014).

In the early 1990s, MCHHB started to be introduced in the world (Toyama & Nakamura, 2005). The contents of MCHHB are actually country specific. The size, color, and volume of MCHHB are different among the countries. Those countries have been done many projects by using MCHHB to improve MNCH during pregnancy, delivery and child health care such as tetanus toxoid (TT) immunization, prevention of mother to child transmission of HIV (PMTCT), antenatal care (ANC), delivery in health facility by skilled birth attendants (SBA), emergency obstetric care (EmOC) breast-feeding programs, expanded program of immunization (EPI) Integrated management of childhood illness (IMCI) and growth monitoring (Nakamura, 2010).

Nowadays, more than 30 countries have been using MCHHB; but, only a few countries provide

MCHHB nationwide. Several local studies have been conducted on utilizing the MCHHB in MNCH programs, which are carried out at different times, places, health care workers, and run by many donor organizations. However, there are a few papers that shows the association between MCHHB and the women's behavior and knowledge during pregnancy, delivery or child health care. There are also a few studies that are identified the health workers in utilizes MCHHB. Therefore, a national scope research with various related variables that can combine the MCHHB's studies in different countries and time is required to find the impact on health workers' and women`s behavior and knowledge during pregnancy, delivery, and child health care. Moreover, the research of MCHHB also needs to know the solution of its utilization among health workers. This evidence will strengthen the government strategy for developing and implementing MCHHB as the main home-based health records to MNCH programs as an important tool for achieving SDGs goals in Indonesia. This study also can be used as references on implementing MCHHB on MNCH programs in the world.

1.5 The Objective of the Dissertation

1.5.1. General Objective

The objective of this research was to analyze the impact of MCHHB to maternal and child health services during pregnancy, delivery and child health care.

1.5.2. Specific objectives

There were three studies that were held to reveal the specific objectives for MCHHB using;

1. to collect the documents and reports in the past MCHHB study and to analyses the effect of MCHHB on maternal and child health through a systematic review (the meta-analysis study).
2. to analyze the effects of home-based records on pregnancy, delivery, and child health care in Indonesia (the home-based records study).
3. to found the factors which were related to the utilization of MCHHB by the midwives and de-

scribed the utilization of MCHHB among the mothers of under-five children (The Study of MCHHB of Tangerang Regency in Banten Province).

1.6 The Structures of Seven Chapters

The dissertation consists of seven chapters: **Chapter 1** describes the background of Indonesian health systems, Millennium Development Goals, and Sustainable Development Goals in a global setting, efforts to reduce MMR and IMR in Indonesia, Maternal and Child Health Handbook in Indonesia and the world; the objectives of the dissertation and the structures of seven chapters **Chapter 2** describes the literature reviews about the home based record of Indonesia and the world (MCHHB or Antenatal Cards systems) that are related to practice and knowledge on maternal and child health care. This chapter also explains individual behavior theories. **Chapter 3** shows the concepts and literature support for meta-analysis theory on combining the report with a different methodology and the odds ratio as a standard value for the difference studies. This study describes the effectiveness of MCHHB in increasing mothers` knowledge and practice of pregnancy. **Chapter 4** is the result of study effectiveness of using of HBR (MCHHB and AC) in Indonesia. The data was collected from IDHS 2002, 2007 and 2012 studies, and this study combined the data with meta-analysis approach to identify the association between knowledge and practice of the mothers to HBR. **Chapter 5** described field survey of 259 women with under-five children and 207 village midwives in Tangerang regency, Banten. The perspective of mothers and midwives for using MCHHB also analyzed and discussed. **Chapter 6** discuss the following topics based on the results of chapters 3, 4 and 5; This chapter explains the role MCHHB in a new era, behavior changes of mothers, promotion of the involvement of men, the impact of health providers and future development of MCHHB.. **Chapter 7** conclusion of all of the studies.

Chapter 2
Literature Review

2.1 Home-Based Maternal Records in global setting

Since 1990, the strategic efforts have been undertaken to overcome the maternal mortality through safe motherhood programs, which assume every pregnancy is risky although the mother's health condition is in a good state before and during pregnancy. Through this approach, the World Health Organization (WHO) developed the "Four Pillars of Safe Motherhood" to describe various efforts that should be undertaken to save the mother and baby as a single unit. These four pillars were 1) family planning, 2) antenatal care, 3) delivery clean and safe, and 4) essential obstetric services (WHO, 1994b). These efforts give an idea to devise home-based card systems for monitoring pregnancy and inter pregnancy as possible solutions that monitor the critical phases with a simple, scientific and suitable adaptability to local conditions.

A simple home-based card for pregnancies and the inter pregnancy periods was developed in 1972. The card provided an action-oriented record using the local language. The community health worker who filled out the cards used marks and symbols to fill out the information while making home visits to the mothers' house. The mothers liked this cards, and the card also demonstrated to be an excellent evidence for health information in the rural community and a useful guide to physicians receiving referrals, Illiterate TBAs, and mothers. Moreover, The card could stimulate families to initiate appropriate action after identifying a risk that was illustrated in the record (Shah, Selwyn, Shah, & Kumar, 1993).

Much positive experience with the child's growth chart has prompted the development of similar records for monitoring the health of women. In January 1982, at the WHO meeting in Geneva, a prototype

of health record was designed to adapt for appropriate use in different settings. The record used in primary health care for monitoring and refining women's health status during pregnancy, labor, delivery, and post-partum phase including between pregnancies. It could also function to promote self-care, where appropriated, through the dynamic participation of the mother and her family and indicated the need for referral to the appropriate level of care. The record was valuable as an education aid for teaching women about health, nutrition and family planning. It could also provide baseline knowledge for state health information systems (WHO, 1994a). At the present, In some communities, women are urged to keep a home-based record which consists of up to date information such as marital status, parity, and prior pregnancies birth information in their home. These record can be helpful to provide decent counseling that has already discussed in individual counseling sessions (WHO, 2010).

However, establishing the HBR system in certain place need specific approach, WHO (1994a) explained about the requirement in establishing cards system as HBR;

> " When the introduction of record is being planned, initial considerations should include a review of available health statistics, and existing primary health care infrastructure and resources, both human and financial. Further steps will include:
> a) the development and production of a home-based maternal record to suit local conditions;
> b) the development of guidelines for training and for the introduction and use of records;
> c) the provision of adequate support for referral centers;
> d) consultation with health professionals from an early stage; consultation with technical staff concerning existing technology (for measurement of height, weight and blood pressure, estimation of hemoglobin, examination of urine), existing human resources (physicians, nurses, midwives, community health workers and traditional birth attendants), and existing information systems (recording, reporting and feedback of data);
> e) arrangements to ensure adequate monitoring and evaluation of the records;
> f) discussions with community leaders concerning the way in which home-based maternal records are to be introduced and operated;
> g) approaches to international and nongovernmental organizations and voluntary groups that may be willing to provide assistance".

Content, language and size of the home-based records vary according to local conditions. In developed countries, with predominantly literate populations and well-developed health facilities, the record has taken the form of booklets (Japan, United Kingdom, and the United States of America). Despite their variability, the record also has some common features, covered single pregnancies, used for outpatient settings of

health centers or hospitals and filled out by trained midwives, nurses or health assistants (WHO, 1994a). In a study of home-based growth chart as one of the types of the records with 751 mothers, showed 62 % of mothers understood the purpose of the weight mark and could distinguish a healthy weight from a sick sign of weight mark (Grant, K., and Stone, T, 1986). The contributions of the chart have increased awareness in terms of education messages and nutritional advice.

At many hospitals, there are also different types of hospital-based records for the mother. These kinds of documents record the information of the women who visit those hospitals. However, the record is often lengthy, complex, difficult to understand and inconvenient for the mothers themselves. A study of 96 women who attended a British community antenatal clinic in 1982, showed only half of them thought that carrying their complete records gave them a more responsible role in their pregnancy. The evidence suggested that many practitioners did not explain what they were writing for the record. Thus, it did not necessarily follow that giving woman their records resulted in being able to play a more informed, active part in their own pregnancies (Draper & Field, 1986).

The HBRs are being used as an instrument for recording risk factors, and early signs of complications in that can be easily understood by the mother. This system empowers women to recognize and understood health problems, as well as improve their own health care and that of their newborn infants. The HBRs are also expected to improve care continuity. In many developing countries, there is a significant need to establish the record's system. This situation happens because of a prevailing culture that women may return to her parents' home at the time of delivery (Shah et al., 1993). The record uses a questionnaire to identify mothers and babies who are in danger, and a diagram for charting fetal growth indirectly, by maternal weight, height of fundus, and age. The guidance is given on when to take action to protect premature or overdue babies. (Kennedy & Ritter, 1984).

Many countries realize the usefulness of home-based record to the individuals to whom they are referred. These record can also be retained by the mother. WHO (1994a) reported the different kinds of

contents and presentation had been used, but they were mostly single pregnancy records and outpatient settings. It also said that most of them were filled out by midwives, nurses or health assistants.

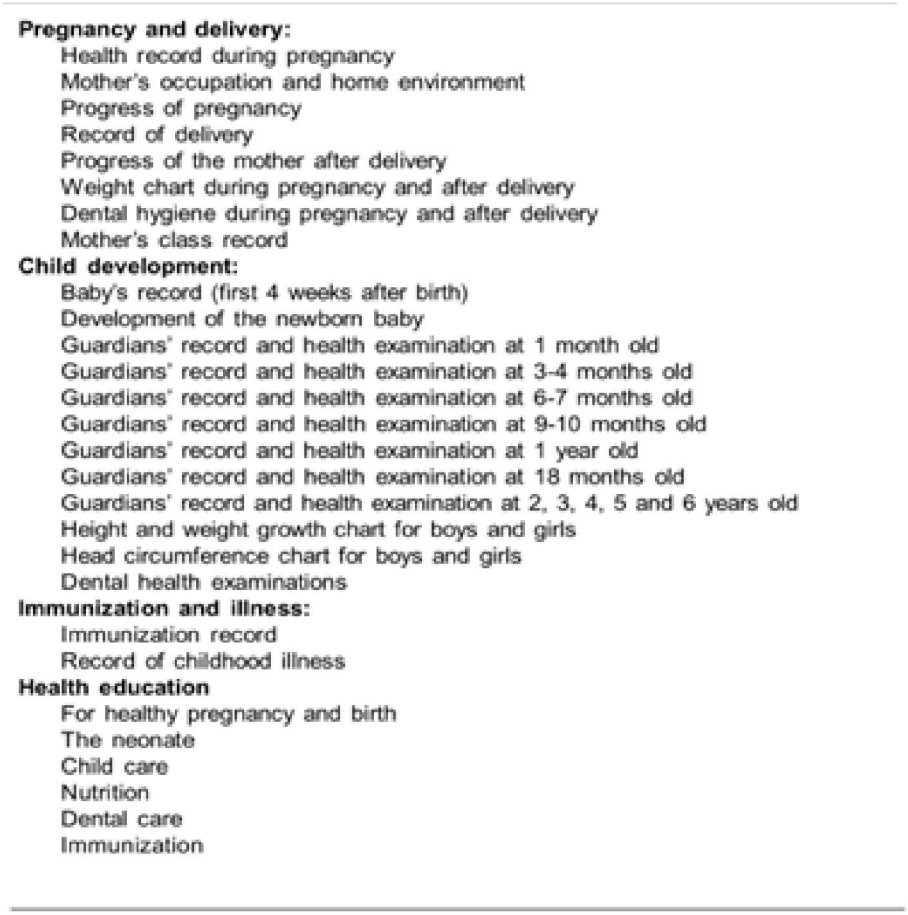
2.2 Maternal and Child Health Handbook (MCHHB) In Japan

The infant mortality rate (IMR) in Japan showed a drastic and constant decrease from 76.0 in 1947 to 2.4 in 2009 (Kaneda, 2010). The five possible factors of low infant mortality in Japan were identified as follows; (1) narrow socioeconomic distribution, (2) national health insurance, (3) maternal and child health handbook (MCHHB), (4) population-based screening and health checkup, and (5) high value placed on childbearing (Kiely & Hirayama, 1999).

Japan`s MCHHB has begun since 1948; It is reviewed every ten years. Every review includes the latest results of medical and child health achievement. The handbook includes various records of mother's health status during pregnancy, prenatal events, periodical health and progress assessment, immunization and other activities concerning child health. It is also contained various helpful suggestions for parents to nursing their children. Moreover, the handbook is very usefully to draw attention to child health and even beneficial for doctors to know their patients' conditions before children arrive at their offices (Bessho, 2007).

In 1966, the Law of Maternal and Child Health was established, the MCHHB was defined in it. Since 1991 the handbooks have been distributed to all Japan for developing innovation of the health promotion of mothers and children. In 2002, the MCHHB was upgraded according to the reflection of decentralization. The national version of Japan's MCHHB consisted of 49 pages. However, the local district could add information according to their own needs (Nakamura, 2010). The content of Japan's MCHHB consist of (1) pregnancy and delivery, (2) child development, (3) immunization and illness and (4) health education (Nakamura, 2010), See figure 2.1 the content of Japan's MCHHB.

Figure 2.1 the content of Japan's MCHHB



Note: Adapted from Nakamura, Y. (2010). Maternal and Child Health Handbook in Japan. JMAJ, 53(4), 259–265.

The MCHHB can assist in the early recognition of high-risk pregnancy and the feedback system between clients, and care providers. The handbook also can improve health care for pregnancy-induced hypertension, and diabetes mellitus (Takayanagi, Iwasaki, & Yoshinaka, 1993). The study of 10,900 guardians in Japan revealed that MCHHB was helpful for childbearing (Fujimoto, Nakamura, Ikeda, Takeda, & Higurashi, 2001).

2.3 MCHHB in developing countries

The Tokyo conference report 2008 revealed that MCHHB incorporated information that

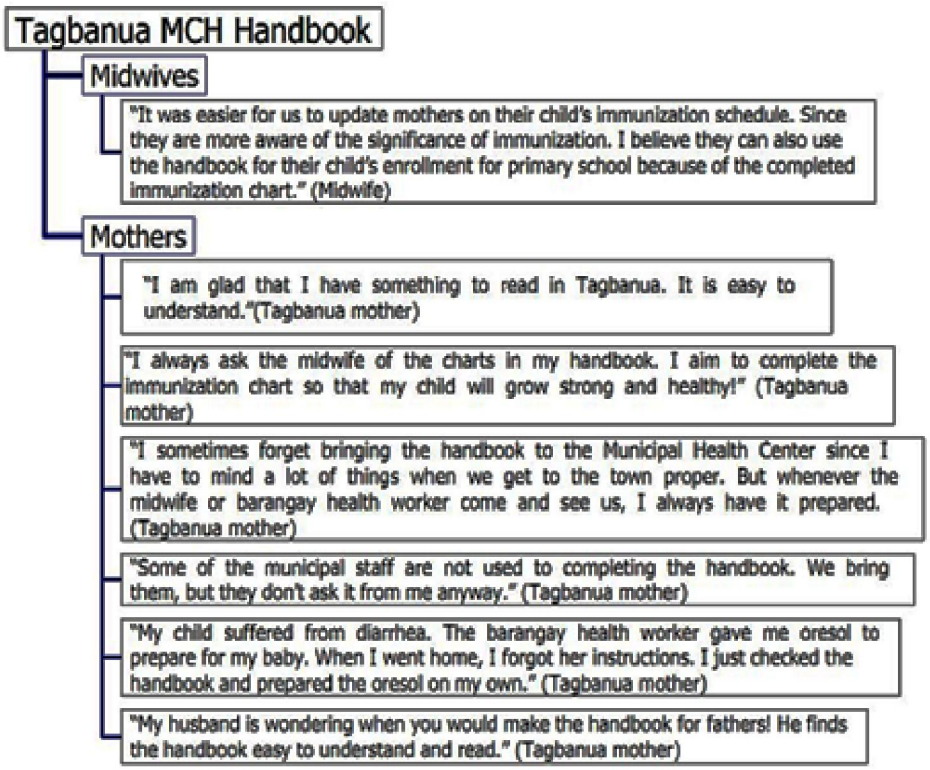
ranges from primary health care to specific issues of pregnancy and child care. This handbook was also acted as a motivational tool for health care providers and pregnant mothers' families to assist and encourage them in seeking medical care. It also described the role of MCHHB as referral documents of pre-post natal mother and child health care services to guarantee the care continuum (Osaka University, 2008).

Experiences of MCHHB practice in different countries are not the same. The MCHHB in Thailand has been launched for 25 years. However, the utilization by mothers is relatively low. Based on a study of 101 pregnant women in 2006, there was only 54.5% of the MCHHB filled out by records of the high-risk pregnancy assessment and only 57.4% filled out by the nutrition graph for pregnant women. Over 80% filled out completed records of pregnancy examinations and tetanus vaccinations. 62% % of pregnant women revealed that they read the information about proper practices during pregnancy, and 73.3% read the food table for pregnant women (Isaranurug, 2009). The socialization of the handbook among the health worker was still one of the problems where the health workers were not informed at pre-service training among medical and nursing students by the government. The printing budget was the others issues in distribution the handbook among the pregnancy mothers (Isaranurug, 2010).

The use of cards systems for treatment, immunization and antenatal has been used extensively within the community before the MCHHB has been introduced in Bangladesh; However, there was no evidence that the usage of these cards was beneficial to mothers, so the government rewrote the cards. The study in 2002 showed that the MCHHB had a strong impact on maternal and child health knowledge, practice, record keeping and utilization on MCH services. In 2006, the government made an agreement to use the MCHHB on a project basis. Between 2006 and 2009, a community-based study was carried out the for the preparation of MCHHB on a national scale (Bhuiyan, 2009).

The result of a qualitative study on the utilization of MCHHB in an indigenous island in The Philippines proved that users benefit from the presence of MCHHB. The midwives said that the MCHHB could assist in monitoring the immunization status of children. The mothers who used MCHHB

Figure 2.2 The results of qualitative research-of the Philippines Indigenous Tabagnua People,



Note: adapted from De Los Reyes, C. (2010). Maternal and Child Health Handbook Among The Indigenous Peoples In The Philippines. Osaka University.

stated that it was easy to read and understand, and this handbook also helped them find diarrhea (De Los Reyes, 2010) (see figure 2.2).

The first trials of Cambodia`s MCHHB were conducted in 2007 (Vuthy and Yanagisawa, 2010). The handbook was constructed on the Indonesian and Japanese handbooks. It was evaluated according to the comments from health workers, individual interviews and focus groups with mothers, nurses, and midwives. The pre-post intervention surveys revealed that the handbook was increased ANC attendance, delivery with skilled birth attendants and delivery at a health facility, and the qualitative study also indicated that the MCHHB was well received and culturally appropriate (Yanagisawa, Soyano, & Igarashi, 2015).

Since 2008, Palestine has used the MCHHB as part of a national program. The difficulty of Palestinian's mothers to visit their regular hospitals or clinics because of checkpoints and separation walls has been

made certain problems with delivering adequate MNCH care. The handbook that contained a history of treatments, consultations, and other medical records, help the doctors or health workers to check the previous health status where the mothers came to visit. The study of Palestinian's MCHHB has concluded that the handbook may be an effective tool to increase (i) communication between the mothers and the health provider and (ii) mothers' knowledge and health-seeking behaviors related to maternal, newborn, and child health (Hagiwara, Ueyama, Ramlawi, & Sawada, 2013).

Ministry Health of Mongol decided to adapt MCHHB which was used in Japan in 2005. It was hoped that the handbook would help child survival program by providing information on family health issues, prevention of diseases, and improved participation of the parents in the child health (Soyolgerel, 2010). The Mongolian government first considered the handbook as a critical intervention in maternal and child health in 2007. The study MCHHB in Mongol showed that the handbook could promote continuous care and increased in ANC visit among the intervention group. Moreover, the handbook could be identified maternal morbidities during pregnancy and promoted health-seeking behaviors (Mori, Yonemoto, Noma, Ochirbat, & Barber, 2015).

2.4 Home-based records (HBRs) and MCHHB in Indonesia

A decade before using MCHHB, Indonesia applied *Kartu Menuju Sehat* (KMS) *Ibu Hamil* as an Antenatal Card for pregnant women to monitor their state of nutrition and health. (Purwati, 1990). The first MCHHB introduced in 1993; it was estimated that more than 50,000 health cadres and 10,000 midwives had been trained on MCHHB; More than 5,000,000 MCHHB had been reproduced and distributed, and more than 5,000,000 families had been exposed to the MCHHB (Azwar, 2010).

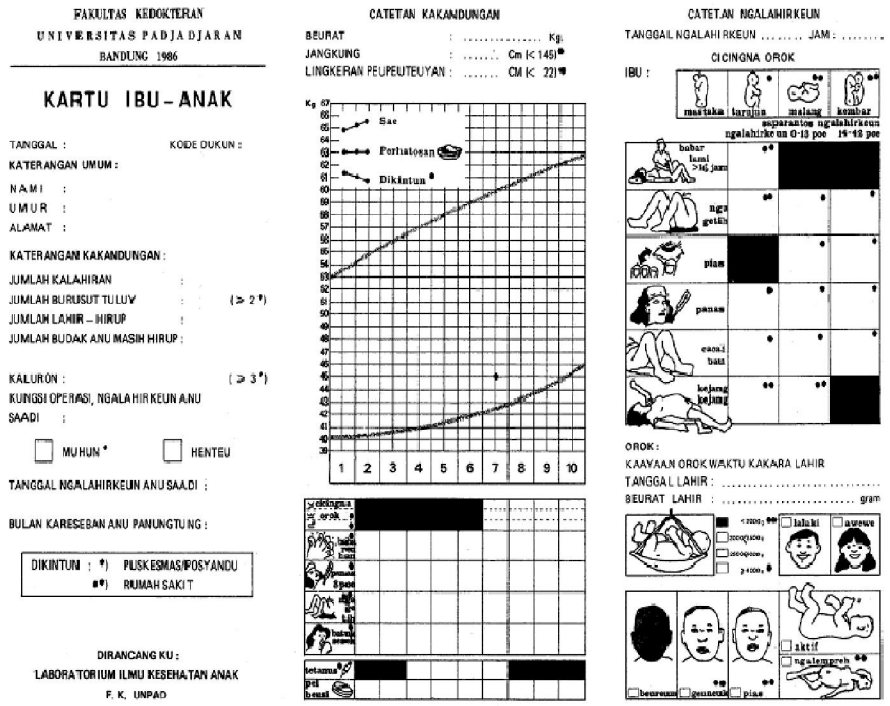
Different types of HBRs have been used in many countries. Indonesia uses both antenatal cards (mother's health card) and maternal and child health handbook (MCHHB) as its HBR, see figure 2.3 the type of HBR which used in Bandung, Indonesia. The results of observation of Indonesian mother`s health cards in four provinces showed that this card was very useful for: (1) motivation, (2) improving weight, (3) mediat-

ing the distribution of iron pills and tetanus vaccination, (4) a useful guide to cadres and health personnel and (5) a source for recording health statistics (Husaini MA, Husaini YK, Sandjaja, Gunawan N, Hudono T, 1996). The success of Japan's reduction of the mother and child mortality has prompted the Indonesian government to adopt MCHHB. In Indonesia, MCHHB is expected to improve the quality of service on maternal and child health and nutrition for reducing MMR and IMR to achieve MDG's targets. The dissemination of MCHHB is done through health centers, hospitals, community health centers (Posyandu). The program is aimed to increase the knowledge and skills of the health officers, as well as the improvement of service quality. MCHHB is needed as a monitoring tool, as well as for health education and counseling for people, especially mothers.

The government has been established pregnancy classes for the dissemination of the MCHHB knowl-

Figure 2.3.

A Home-Based Joint Mother-Child Record which was used in Bandung, Indonesia



Note: Adapted from Home-based Maternal Records: Guidelines for Development, Adaptation and Evaluation. P.24,, World Health Organization, 1994.

edge. The classes are study groups of pregnant women with gestational ages between 4 and 36 weeks (before delivery) by the maximum participants of 10 people. In such classes, the mothers learn together, discuss and share their experiences during pregnancy (MoH Indonesia, 2011). The study of pregnancy class revealed that the class increased mother's knowledge (Eliana & Fridayanti, 2012).

MCHHB in Indonesia is recognized to simplify various types of health cards into one handbook. The cards of maternal health, family planning, and growth monitoring and child development were often mis-

Figure 2.4
Picture of few contents of MCHHB about delivery preparation, nutrition for pregnant women, danger sign of pregnancy and after giving birth

placed. It is also tough for mothers to keep many different kinds of cards properly. As health educational materials, MCHHB contributes to the improvement of knowledge and behavior of mothers regarding maternal and child health. MCHHB can integrate many health checkup records into one comprehensive record book (Osaki, Hattori, Kosen, & Singgih, 2009). MCHHB is also useful as a referral document when a pregnant mother or a child is referred to a health center or a hospital (Nakamura, 2010; Muhdar, 2008). See figure 2.4 the picture of few MCHHB's contents about delivery preparation, nutrition for pregnant women, danger sign of pregnancy and after giving birth.

The antenatal Card *(KMS Kartu Ibu Hamil)* had been using in Indonesia until the Ministerial Decree No. 284/Menkes/SK/III/2004. Through the Ministerial Decree, Government of Indonesia (GoI) tried to change the antenatal cards with MCHHB and nationalize MCHHB as the only home-based mothers' health record to all over the country. With this documents, Minister of Health Indonesia required that every child should be provided with an MCHHB, and every health care worker should educate parents via the MCHHB (Azwar 2010).

Recently, In Indonesia, the handbook is distributed by the local government when a mother registers for her pregnancy. Public health nurses can write records regarding the medical status of the child. Also, the mother can bring it when her child is sick.

2.5 Organization Behavior

The study of MCHHB in Tangerang District, Banten used organizational behavior approach and concept to find the relationship between midwives and others health workers with the handbook. The following sub chapter explains the theory and practice of organization behavior.

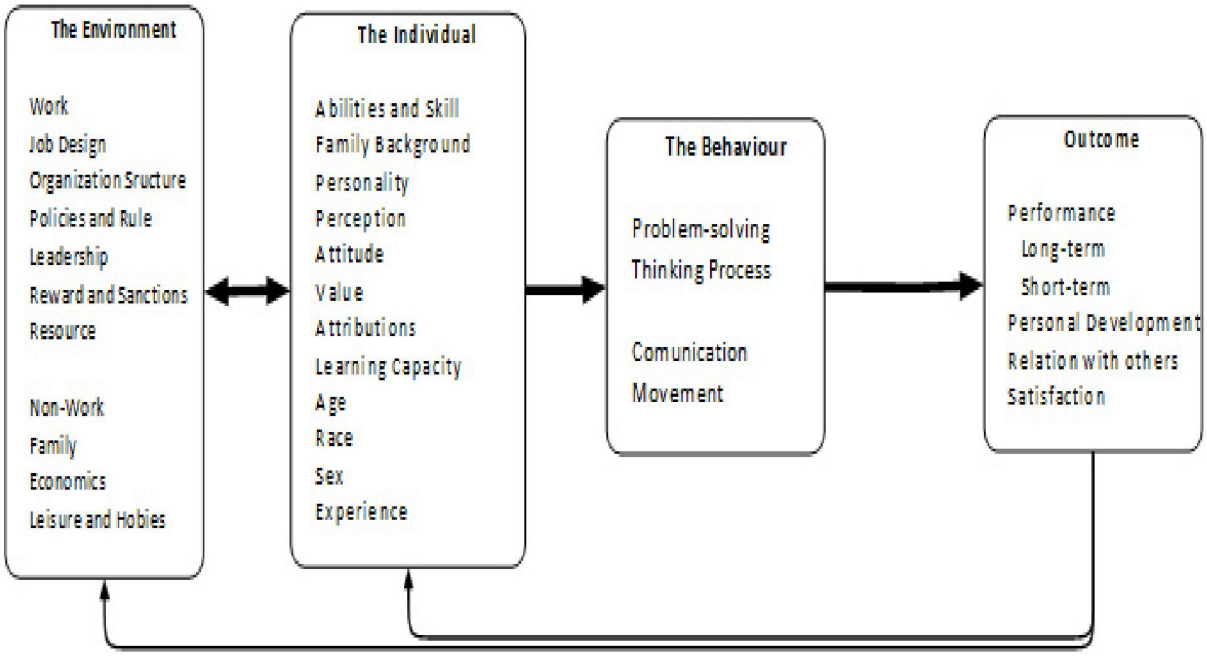
Organizational Behavior plays a major role in business management. It is the field of study which finds out the impact that individuals, groups, and structure have on behavior within an organization, and it applies knowledge to create organizations work more effectively (Frederick, 2014). Individual behavior is

part of a study of organization behavior (OB). In short, OB is defined as the study of persons and groups in organizations. It could be improved a better understanding of work and people (John R. Schermerhorn, Hunt, & Osborn, 2002). The individual is a fundamental feature of organizational behavior whether acting in isolation or as part of a group. It is the role of management to integrate the individual, and the organization provides a working environment that permits the satisfaction of individual needs, as well as the attainment of organizational goals (Laurie J, 2010). The term organizational behavior refers to the behavior of people in organizations. OB tries to understand the behavior, attitudes, and performance of people in organizations; OB is a practical behavioral science that is constructed upon contributions from a number of behavioral (Shajahan, 2007).

Individual performance is the groundwork of organizational performance; Understanding individual behavior is, for this reason, critical for effective management; Psychology and social psychology provide relevant knowledge about the relationship between attitudes, perceptions, personality, values and individual performance. Motivation and ability to work associate to determine performance. Motivation theory attempts to explain and predict how individual's behavior is stimulated; One of the most dominant influences on individual performance is an organization's reward system (Gibson, Ivancevich, & Donnelly, 2012). In health agencies, the high performance is defined as the provision of cost-effective, high quality, and appropriately accessible health services that involve inputs and outcomes that satisfy the patient. Low performance is its opposite (Kazandjian & Lied, 1999).

According to Gibson, the effective management required individual behavior that was recognized and, when feasible, taken into consideration while managing organizational behavior. To comprehend individual differences, managers should (1) observe and recognize the differences, (2) study variables that influence individual behavior, and (3) discover relationships among the variables. Behavior is anything that a person does. Talking to a manager, listening to a co-worker, calling a customer, updating the company's web site, and hiring a new employee are behaviors. So are daydreaming about winning the lottery, updating a

Figure 2.5
Individual Behaviour Framework



Note: Adopted from Organizations: Behavior, Structure, Processes P.88, James L. Gibson, 2012.

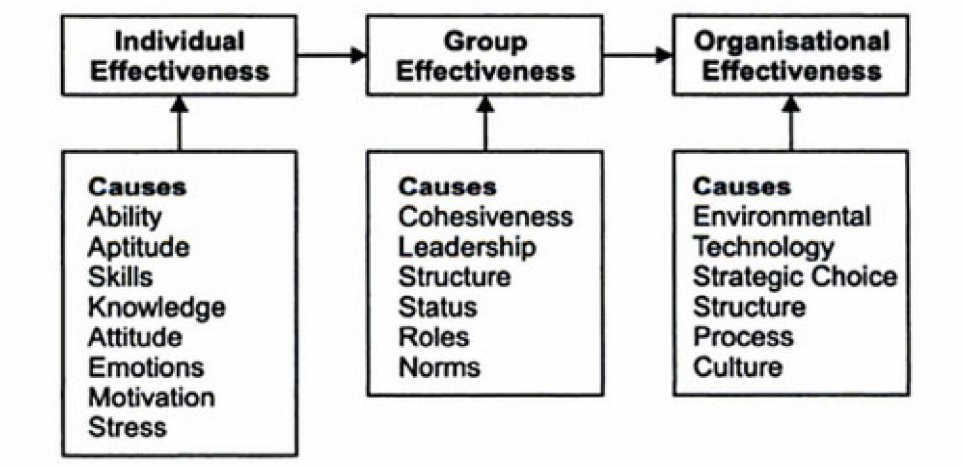
facebook page, and learning how to use a firm's accounting system. The general framework indicates that behavior depends on the types of variables shown in figure 2.5. Thus, as Kurt Lewin as stated in Gibson (2012) originally proposes, B = f (I, E): an employee's behavior (B) was a function of individual (I) and environmental (E) variables. The behavior that results in the job was unique to each, but the underlying process is basic to all people (Gibson, Ivancevich, & Donnelly, 2012).

Skill is the ability that uses one's knowledge effectively and readily in execution or performance. The ability is the quality or state of being able (the ability of soil to hold water); especially: the physical, mental, or legal power to perform ("Merriam-Webster Online Dictionary," 2015). Traditionally, one way to build or improve knowledge, skills and abilities of employees is through training and development. Due to differences in knowledge, skills, and abilities and training approach could make a difference based on desired outcomes (Hernandez, 2009).

Different approaches to organizational effectiveness indicate that the achievement of organizational objectives efficiently is the outcome of organizational effectiveness. Actually, three levels of effectiveness can be identified as shown in figure 2.6. As we see at the core level of individual effectiveness, which emphasizes the task performance of specific employees or members of the organization, the tasks to be performed are contained in job descriptions. Manager considers the effectiveness of individuals through performance appraisal. Individuals seldom work alone. He usually works in groups, necessitating another level, viz., group effectiveness. In some instances, group effectiveness is basically the sum of the combinations of all its members (Ahmad & Darzi, 2008).

The need for building or improving an employee's knowledge, skill, and ability are essential for the effective organization. There are five categories that need training; (1) orientation and new employee training, (2) training for job-specific skills, concepts, or attitudes, (3) in-service training programs on organization-identified topics, (4) continuing education provided outside of the organization and (5) employee career development to add new skills or enable employees to perform new jobs and take on additional responsi-

Figure 2.6 The Three level of Effectiveness



Note:
Adopted from James L. Gibson, *as cited from Organizational Behaviour. page 380. S. Fayyaz Ahmad, Nazir Ahmad Gilkar & Javid Ahmad Darzi Atlantic Publishers & Dist, Jan 1, 2008*

bilities; The health care organization must ascertain the training and development needs of its workforce; A large integrated health system offers more training programs than a small physician group practice or nursing home (Hernandez, 2009).

Motivation is one of the important variables of individual in the organization that is defined as: (1) a psychological force that determines the direction of a person's behavior, (2) a person's level of effort and (3) a person's level of persistence in the face obstacle; There are several theories which are commonly used to motivate workers. Some of which are: (1) Maslow's Hierarchy of need proposed that people seek to satisfy five basic kinds of need: physiological, safety, belongings, esteem, and self-actualization. (2) Herzberg's Motivation-Hygiene Theory explained that people had two sets of needs: motivator needs and hygiene needs. Hygiene requirements referred to extrinsically motivated behaviors performed to acquire material or social rewards or to avoid punishment. Motivation needs were associated to work itself and how challenging that work is (Lauby, 2005).

The idea to build effective, feasible and ethnically diverse groups of workers globally attractive, global organizations which are composed of various ethnic groups, ages and genders will challenge management to alter their practices accordingly. The evidence demonstrates that the ethnic diversity relates negatively to organizational functioning. When moderated by variety management policies and practices and team processes, racial diversity correlates positively with organizational performance; Gender and age diversity produce mixed results, suggesting that the gender and age diversity reflect more complicated relationships (Choi & Rainey, 2010). Members of homogeneous groups report higher performance in their groups than do members of diverse groups (McLeod, Lobel, & Cox, 1996). If employment teams manage the diversity well, they can make diversity an asset to performance. Alternatively, if diversity is ignored or mishandled, it may detract from performance (Cox & Blake, 1991).

Individual's perception of the organization as a place to work and the quality of management can have a major influence on job satisfaction, attitude, and levels of performance; The process of perception describes

the manner in which information (stimuli) from the environment around us is selected and organized to provide meaning for the individual. Perception is the mental function of performing implication to stimuli such as shapes, colors, drive, sounds, taste, touch, smells, pain, pressures, and feelings; Perception gives rise to individual behavioral responses to particular situations. Differences in perception result in different people attaching different meanings to the same stimuli. The underlying issue may have nothing specifically to do with work, but as perceptions become a person's reality, value judgments can be a major potential source of conflict (Laurie J, 2010). Some experts define it as a way of forming impressions about oneself, other people, and daily life experiences. It has a substantial impact on his or her responses to a given situation (John R. Schermerhorn et al., 2002). Gibson et al. (2012) explained that individuals used five senses to experience the environment: sight, touch, hearing, taste, and smell. The organizing the information in the environment to made it sense was called perception. The perception involved receiving stimuli, organizing them, and interpreting the organized stimuli to influence behavior and form attitudes.

Supervision is one of the most important variables of management; It define as instructional leadership that relates perspectives to behavior, focuses on purposes, contributes to and supports organizational actions, coordinates interactions, provides for improvement and maintenance of the instructional program, and assesses goal achievements (Burke & Krey, 2005) The role of supervisors is divided into two roles; as trouble-shooters to give an advice in their field, and as solution-builders who invite questions to discover employee expertise and amplify it. Positive supervision focuses on competence. Notice the parallel between discovering competence and working on progress and finding and applying successful ideas (Bannink, 2014).

Chapter 3

Is Maternal and Child Health Handbook effective?: Meta-Analysis of the Effects of MCH Handbook

3.1 Meta-analysis

A meta-analysis is a quantitative approach to comparing effect size between studies. This effect size comes from a treatment, a trial, a decision, a strategy, a catastrophe, a collision, an innovation, an invention, an intervention, an election, an evolution, a revolution, a mutiny, an incident, an insurgency, an invasion, an act of terrorism, an outbreak, an operation, a habit, a ritual, a riot, a program, a performance, a disaster, an accident, a mutation, an explosion, an implosion, or an accident (Ellis, 2010). There were nearly 2,300 biomedical journals in 1940, and the number was increasing to 23,000 in 1990 with an enormous quantity of peer-reviewed papers, comments, and letters. A systematic review as a meta-analysis of the published data is very useful because a large amount of information often covers scattered data and discordant conclusions. The critical works of synthesis with meta-analysis are needed (Leandro, 2005).

The advantages of meta-analysis as a method are not doubted because many publications have been using this method. Ellis (2010) said that meta-analysis was a statistical analysis for reviewing, examining a particular effect, and combining the results of independent studies to estimate the size of the effect in the population. The result of a meta-analysis was a weighted mean as reflection of the population`s effect size which was more accurate than any of the individual estimates. The analysis generated information regarding the precision and statistical significance of the pooled estimates and the variation in the sample of observed effects.

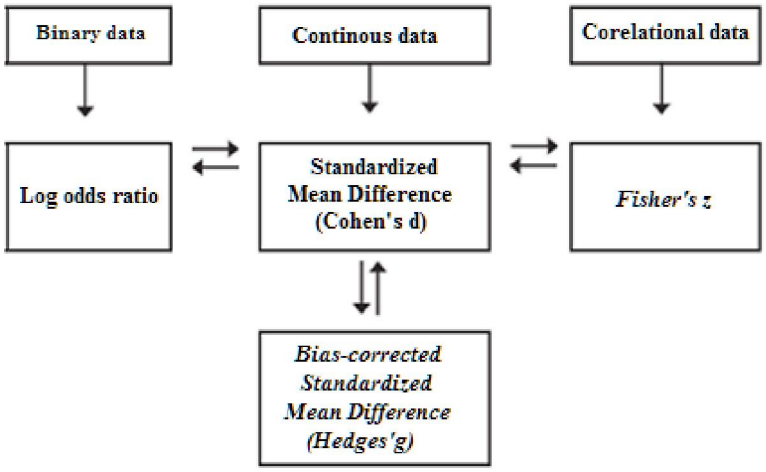
However, some myths have made researchers reluctant to use this method. One of myths is the notion that a meta-analysis is only utilized for the biomedical purpose. This methodology has been used in several other fields. There is also a myth about whether this method can improve the quality of the research. Figure 3.1 describes some of the false opinions of researchers in the meta-analysis (Littell, Corcoran, & Pillai, 2008). One advantage is that the method can make conversion into difference type of effect size between studies. There is also a possibility to make a combination of effect sizes as long as it has the same meaning in all the studies. If the effect size which is being used are different, researchers could do a conversion and choose the same effect size to compare studies, such as (1) binary data which uses odds ratios, (2) continuous data which uses the standardized Mean Difference and (3) correlation data which uses Fisher's Z. See

Figure 3.1 Myth about Meta-analysis

Myth	*Fact*
Meta-analysis comes from biomedical research and requires a medical perspective.	Meta-analysis was initially developed in the social and behavioral sciences and is widely used outside of medicine.
Systematic reviews and meta-analyses are appropriate only for studies of treatment effects.	These methods are appropriate for many kinds of research questions. Meta-analysis is used to synthesize research on correlations, epidemiological data (incidence and prevalence rates), accuracy of diagnostic tests, prognostic accuracy (etiological and risk factors), and treatment effects.
Systematic reviews can (or should) include only randomized controlled trials (RCTs).	Many systematic reviews include nonrandomized designs, such as case-control studies, interrupted time-series designs, prospective before-and-after design, nonequivalent comparison groups (often with matching), and RCTs. The research question dictates appropriate designs.
Meta-analysis requires many studies.	Meta-analysis can be performed with two studies.
Meta-analysis requires large studies.	Sample size in the original studies is not an appropriate inclusion criterion. There are tests and corrections for small-sample bias. Meta-analysis can be used with single-subject designs (also known as individual patient data [IPD]).
Meta-analysis can overcome problems with quality (validity) in original studies.	Study qualities can be examined, analyses can detect which study qualities may matter, and results of higher-quality studies can be emphasized. Meta-analysis does not improve the quality of original studies ("garbage in, garbage out").

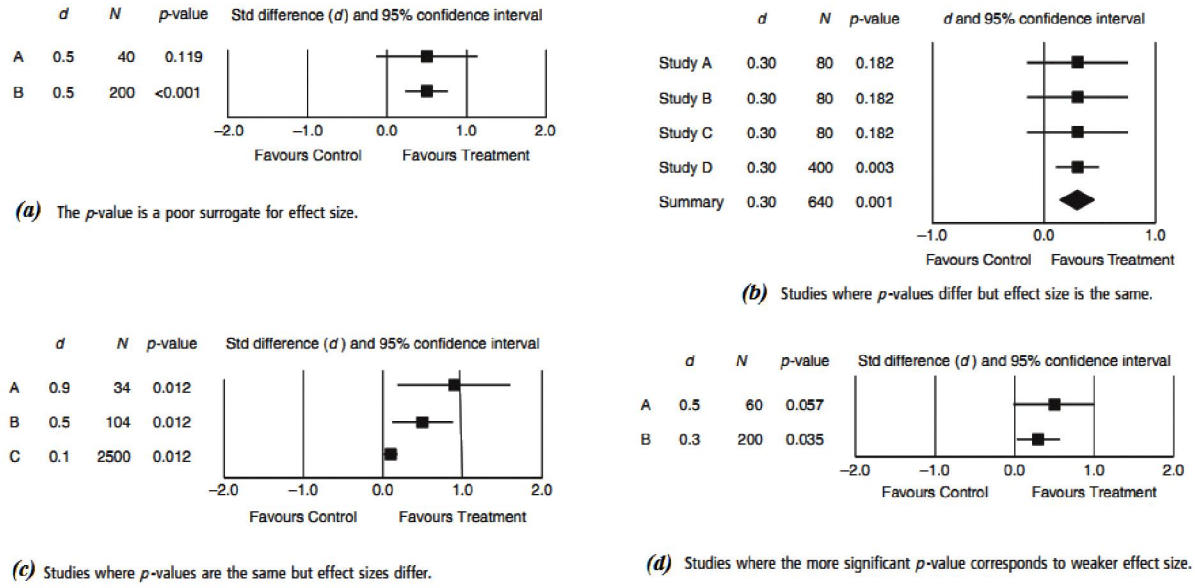
Note: Adopted from Littell, JH Corcoran, J. Pillai, V. *Systematic reviews and meta-analysis, page 5.*

Figure 3.2 Converting among Effect Sizes



Note: Adopted from Introduction to Meta-Analysis. P.46, Borenstein, Michael Hedges, Larry V. Higgins, Julian P. T. Rothstein, Hannah R. 2011

Figure 3.3 Examples the fundamental mistakes of wrong interpretation *p-value*



Note: Adopted from Introduction to Meta-Analysis. P. 300-3001, Borenstein, Michael Hedges, Larry V. Higgins, Julian P. T. Rothstein, Hannah R. 2011

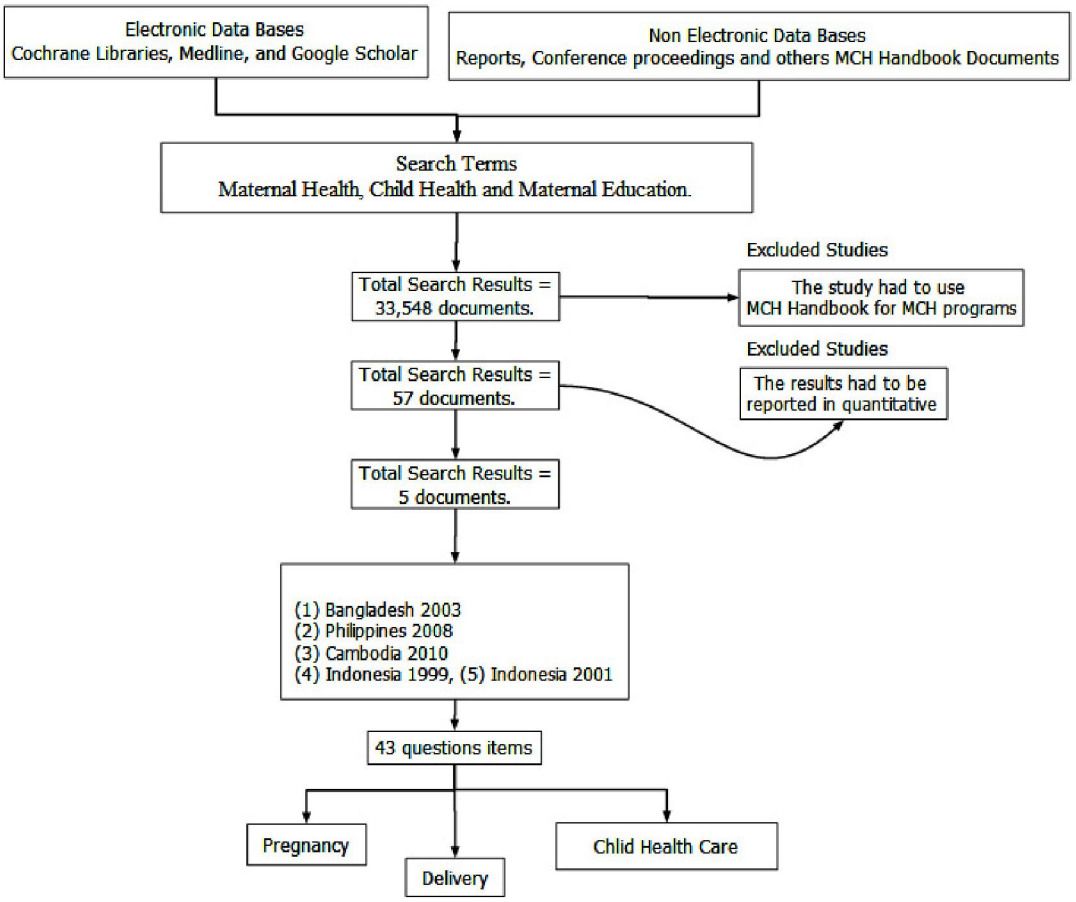
figure 3.2, the way to convert effect size (Borenstein, Hedges, Hinggins, & Rothstein, 2009).

Even though there has been an increase in evidence-based interest in the past few years; the data

analysis is still performed poorly, and the statistics method is often misrepresented; the biggest difference is caused by the wrong interpretation of p-value. Figure 3.3 describes misinterpreting p-value. There are a few misinterpretations for example: (1) figure 3.3.a shows two studies where study A has a p-value of 0.119 while the study of B has a p-value <0.001 both had the same effect size (0.50), the difference in this study displays only the sample size (total sample is 40 in Study A and 200 in Study B) works with the effect size focus on estimating the magnitude of the effect; the effect size for both studies are 0.50, and the accuracy (0.129 to 1.129 for Study A, and 0.219 to 0.781 for Study B); (2) figure 3.3.b reveals that four studies report p-values of 0.182, 0.182, 0.182, and 0.003, the reviewer who works with these p-values may think that the effect is greater in the last study. The studies show that the effect size is the same in all the studies, and the p-values differ only because the sample size is larger in the last study; (3) figure 3.3. c shows that three studies each report a p-value of 0.012, Many researchers assume that the treatment effect is consistent across studies, the studies indicate that study A has a large effect (and poor precision), while Study B has a moderate effect (and modest accuracy), and study C has a small effect (and excellent accuracy); (4) figure 3.3.d explains that the effect sizes directly avoid the problem of interpreting no significant p-values to indicate the absence of an effect in interpreting significant p-values to show a substantial effect; studies A and B report p-values of 0.057 and 0.035; researchers will assume that the effect size is higher in Study B, but it turns out that the effect is weaker in study B (Borenstein M., Hedges L. V., 2009).

The statistic meta-analysis has four critical stages of research synthesis; (1) problem formulation, (2) data collection, (3) data evaluation, (4) data analysis and interpretation (Hartung J, Knapp G, 2008). Every method has a way to verify the possibility of bias of the data that occurs in the observed sample. In a meta-analysis two methods to validate the data are available; the funnel plot method analysis and Rosenthal's Fail-safe N. In checking with the funnel plot method computer programs can do the visualization of both observed and imputed study. if there are no substantial differences between those studies, we can say ob-

Figure 3.4 Flow diagram of search strategy of meta-analysis



served studies are valid. The purpose of using the Rosenthal's Fail-safe N, is to know how many studies to be included before the effect size becomes insignificant. In this case, the higher value of Rosenthal's Fail-safe N the better the studies are (Borenstein et al., 2009).

Until the twenty-first century, the term evidence synthesis is used synonymously with the term meta-analysis. There are two models which have to determine in using meta-analysis when the study reveals consistent homogeneity between effects, this implies a sampling variation and a fixed-effect model are useful. If there is a significant variation of results, then a random effects model should be applied. When survey results demonstrate consistency in the context of significant heterogeneity of study populations, then one can infer a robustness of effect which remains reliable despite the large variation of study subjects (Darzi, Athanasiou, 2011).

Table 3.1
The sources of data of Meta-analysis study

No	Research Title	Reasearch Methodology	Odds Ratio Confersion	N Sample	Countries	Explanation of the Study
1a	Baseline study on the effect of MCH Handbook Utilization on the Mothers' Knowledge and Practice in Maternal and Child Health Matters West Sumatra Indonesia	Rapid Survey	The study has conducted in the same rural area; so that the characteristics of communities have not changed, even though the studies performed with different times. This condition allows us recalculate the data and makes it as pre and post test data model with the assumption matched respondent between intervention and control group. Odds ratios calculated from 2x2 tables of pre-post test data design.	611	Indonesia, 1999	Repeated cross sectional study in West Sumatra, Indonesia. The study selected Padang Pariaman District as the intervention area and Tanah Datar District as the control area.Two consecutive surveys were conducted in 1999 (baseline survey, before introducing the handbook in either area) and 2001. Mothers who were pregnant or had children under three years of age were allowed to be selected as respondents. Using a multistage random sampling method, 611 adn 621 mothers were selected as respondents, from the same sub-districts and villages, for the three consecutive surveys.
1b	Midterm study on the effect of MCH Handbook Utilization on the Mothers' Knowledge and Practice in Maternal and Child Health Matters West Sumatra Indonesia	Rapid Survey		621	Indonesia, 2001	
2	Study on Development and assesment of maternal and Child health (MCH) Handbook in MCHTI, Dhaka,Bangladesh	Intervetion Study	We can calculate the odds ratio from pre-post intervention data.	513	Bangladesh, 2003	The study result of pregnant mothers at M.C.H.T.I, Dhaka, Bangladesh. The study held in November 2002 to August 2003. Control group used maternal child cards and intervention used MCH Handbook
3	Maternal and Child Health Handbook among the Indigenous Groups in the Philippines: A Case of the Tagbanua Mothers of Coron, Palawan	The case intervention study composed of a quantitative methodology and supported by qualitative methodology.	We can calculate the odds ratio from pre-post intervention data.	50	Philipphines, Coron, Palawan, 2008	This study focused on Barangay Cabugao, Coron Island, Coron Municipality, Palawan Province, Philippines. The target group of this study consisted of Tagbanua mothers, pregnant and or has been pregnant for the last 6 years and local municipal health officers, midwife and health volunteers. Changes in knowledge, attitude and practice among Tagbanua mothers were assumed to be attributed by the MCH handbook program. The researcher was assured that the same MCH programs in the community were scheduled and conducted by local health providers even before the introduction of the handbook in August 2007 up to August 2008. No other additional interventions pertaining to MCH were conducted during the same timeframe.
4	MCH Handbook pilot Project Project Evaluation in Cambodia	Pre-Post Intervention Study	We can calculate the odds ratio from pre-post intervention data.	640	Ponhea-Krek-Dombae (PKD) and Memut; kampong Cham Province, cambodia, 2010	The base line survey (pre intervention) was conducted from June to July 2007 and post-intervention survey from May to June 2009 in Cambodia. Respondents age 15-49 years who have the baby 1 year prior to the survey. 320 women selected from intervention and control area.

Table 3.2
How to standardized odds ratio

The computational formula for the odds ratio is

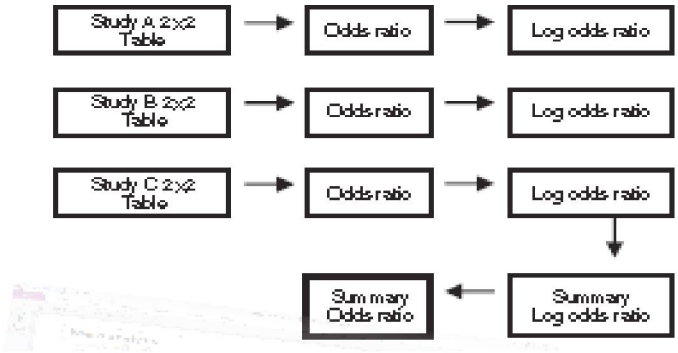
$$OddsRatio = \frac{AD}{BC}.$$

The log odds ratio is then

$$LogOddsRatio = \ln(OddsRatio),$$

with approximate variance

$$V_{LogOddsRatio} = \frac{1}{A} + \frac{1}{B} + \frac{1}{C} + \frac{1}{D}$$



Note: Adapted from Home-based Maternal Records: Guidelines for Development, Adaptation and Evaluation. P.24, World Health Organization, 1994.

3.2 Objectives

The objectives of the study were to collect documents and reports in the past MCHHB study and to analyze the effect of MCHHB on maternal and child health through a systematic review.

3.3 Methods

Systematic searches were undertaken from electronic databases including Cochrane Libraries, Medline, and Google Scholar. Online searches of the main conference proceedings and reports were also conducted in order to identify unpublished literature. The search key terms were included: Maternal Health, Child Health, and Maternal Education. The systematic searches were for studies published between 1980 and October 2011.

After the initial selection of titles and abstracts, I reviewed full-text publications of possible studies. The study had to meet the following criteria to be included in the meta-analysis. First, the study used the

MCHHB for MCH programs and activities. Second, the results had to be reported in a quantitative manner to permit calculation of effect size.

There were several major factors should be considered in the selection of effect size such as; (1) the effect size should be measured (at least approximately) the same things, (2) the effect size should not depend on parts of study design that may differ from study to study (for example the sample size or whether covariates are used), (3) the effect size should be calculable from the information that is likely to be reported in published research papers and (4) the effect size should have technical properties (Borenstein M., Hedges L. V., 2009).

The methods of odds ratio were used to estimate effect size and confidence intervals. Calculations were conducted with comprehensive meta-analysis V2 software. The computations were carried out on a log scale for summary log odds ratio and transferred to the summary odds ratio in order to perform all steps in the meta-analysis (see table 3.2)

The Funnel plot method, Rosenthal's Fail-safe N, and Orwin's fail-safe N were used to validate the data and were displayed to define how many missing studies would convey the overall effect represent the smallest effect.

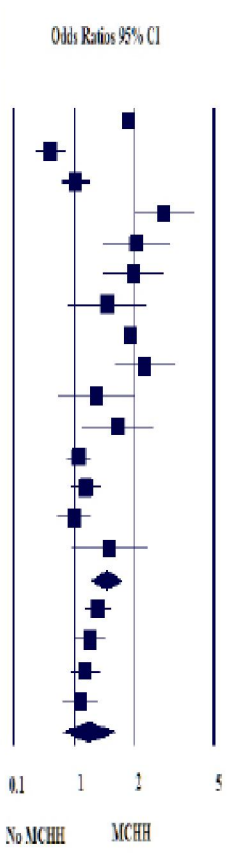
3.4 The Results

My searching were identified 33,548 titles (figure 3.4). After initial screening of titles and abstracts, I eliminated the documents that were not using MCHHB studies for MCH Program. Only 57 documents included further studies.

However, from 57 documents only four added to the further analysis. The others could not be included in the criteria because they were not quantitative reports of the MCHHB. Most of these studies were the ongoing projects reports, and few were qualitative analyses of MCHHB associations. It was a coincidence that four of these were selected documents in English while others were eliminated because it was not in accordance with the criteria.

Table 3.3
Summary of Meta-analysis examination the association between MCHHB and Pregnancy

No	Study Name	Odds	Lower Limit	Upper Limit	Z-value	P-Value	Relative weight
1	Knowledge ANC Visit	1.86	1.59	2.18	7.61	0.00	8.03
2	Knowledge Mother TT	0.76	0.63	0.91	-2.96	0.00	7.85
3	Mothers who were able to tell any danger sign during pregnancy	1.01	0.86	1.19	0.14	0.89	7.99
4	Risk factor during pregnancy	2.80	1.97	3.98	5.77	0.00	6.29
5	Pregnant woman should consult a health care more than three time during pregnancy	2.04	1.38	3.01	3.56	0.00	5.88
6	Mothers should consume more food during her pregnancy	1.97	1.37	2.83	3.66	0.00	6.17
7	Health personnel should provide prenatal care	1.46	0.93	2.31	1.63	0.10	5.27
8	First prenatal consultation should be done during the first semester of pregnancy	1.89	1.31	2.73	3.40	0.00	6.12
9	Complication during pregnancy/delivery	2.24	1.58	3.18	4.51	0.00	6.28
10	Pregnant woman needs tetanus toxoid immunization	1.29	0.82	2.01	1.11	0.27	5.37
11	Additional iron sources are needed during pregnancy	1.65	1.09	2.50	2.37	0.02	5.67
12	Mother`s percepton on her knowledge on pregnancy risk factors	1.05	0.91	1.21	0.67	0.50	8.13
13	Knowledge on appropriate time for he first antenatal care	1.14	0.95	1.37	1.38	0.17	7.84
14	Knowledge of safe birth attendance	1.00	0.81	1.22	-0.04	0.97	7.69
15	Important of vitamin A supplementation	1.49	0.96	2.32	1.79	0.07	5.43
	Knowledge Sub Total	1.44	1.22	1.70	4.26	0.00	
16	Practice ANC Visit	1.31	1.11	1.53	3.28	0.00	25.57
17	Practice Mothers TT	1.20	1.00	1.43	1.95	0.05	25.05
18	Antenatal care attendance	1.13	0.94	1.36	1.32	0.19	25.03
19	History of antenatal care during the last pregnancy	1.07	0.87	1.32	0.65	0.52	24.36
	Practice Sub total	1.17	0.87	1.58	1.05	0.29	



After the final selection, I identified four documents (English language). There were no randomized controlled trials (RCTs) were included. All the studies were from low or middle-income countries Indonesia (1999, 2001), Bangladesh (2003), Cambodia (2010) and the Philippines (2009), see table 3.1. These four documents consisted of forty-three question items which were categorized into pregnancy, delivery, and child care. The total sample size of this study was 2,435.

The four documents which consist of 43 questions grouped into three variables such as pregnancy, delivery and child health care. Grouping was based on the characteristics of interventions by the MCHHB in the form of recording and provided information to the mothers. To conduct an analysis of the effect size, I needed a standardized effect size of these three variables so that I could calculate the overall effect size of each variable. Standardization needed to analyze data from different countries with different characteristics of the respondents, time studies, and large samples. After the data had been standardized by odds ratios, I compared the data to determine the trend and calculate the overall effect size of these three variables

The funnel plot method showed that the 'adjusted' point estimate suggests a lower odds ratio than the original analysis. Rosenthal's Fail-safe N was 714, suggesting that there would need to be nearly 714 studies with a mean odds ratio of 1.0 added to the analysis before the cumulative effect would become statistically nonsignificant. Similarly, Orwin's Fail-safe N is 33, suggesting that there would need to be over 33 studies with a mean odds ratio of 1.0 added to the analysis before the cumulative effect would become trivial (defined as an odds ratio of 1.05). Given that the meta-analysis was able to identify 43 question items for pregnancy, delivery and child health care.

3.4.1. Pregnancy

The relationship between MCHHB and pregnancy care revealed that mothers who used MCHHB during pregnancy had a higher level of knowledge (OR 1.44, 95% CI: 1.22-1.70) than whose did not use MCHHB during pregnancy (Table 3.3). The study on knowledge of risk factors during pregnancy had the

largest effect on the odds ratio (OR 2.80, 95% CI: 1.97-3.98).

The strong significant effects of MCHHB were observed in the knowledge of antenatal care visit (OR 1.86, 95% CI: 1.59-2.18), and mother should consume more food during pregnancy (OR 1.97, 95% CI: 1.37-2.83). MCHHB was also associated with the practice of Tetanus Toxoid (TT) immunization during pregnancy (OR 1.20, 95% CI: 1.00-1.43) and antenatal visits (OR 1.31, 95% CI: 1.11-1.53). The results of the analysis on knowledge and practices of pregnancy are as follows;

3.4.1.1. Knowledge of antenatal care visit

Table 3.3 showed the results of pregnant mothers at Maternal and Child Health Teaching Institute (MCHTI) in Dhaka, Bangladesh. The study was held in November 2002 to August 2003 to reveal the impact of the utilization of MCHHB. The respondents of pregnant mothers at MCHTI were randomly categorized into the intervention group with MCHHB and the control group which was provided only maternal child cards. The odds ratios of antenatal care (ANC) visits for both intervention and control group were 1.86, 95% CI: 1.59-2.18, p-value 0.001. It revealed that mothers who used MCHHB had more knowledge of ANC visit than those who only used the card during pregnancy.

3.4.1.2. Knowledge of TT (Tetanus Toxoid)

Table 3.3 showed the analysis result of pregnant mothers at MCHTI Dhaka, Bangladesh. Both control and intervention groups were asked about TT immunization. The odds ratio for intervention and control group was 0.76, 95% CI: 0.63-0.91, p-value 0.001. It was revealed that MCHHB had no effect on increasing the mother's knowledge to have the TT immunization because the Odds ratio < 1.

3.4.1.3. Mothers who were able to tell any danger sign during pregnancy

Table 3.3 showed the odds ratio control and intervention group about danger signs during pregnancy. The baseline survey (pre-intervention) was conducted from June to July 2007 and post-intervention survey from May to June 2009 in Cambodia. Respondents were between 15-49 years who gave birth one year prior to the survey; about 320 women had been selected from intervention and control areas. In 2000,

mother health record cards were developed and introduced in Cambodia for risk identification such as physical examination of mothers, history of infections, diabetes, and disability. The control and intervention place were designed as equal as possible. The mothers were asked if they knew any danger signs during pregnancy. The odds ratio intervention and control group was 1.01, 95% CI: 0.86-1.10, p-value 0.89.

3.4.1.4. Risk factor during pregnancy

This part was a study about MCHHB on Barangay Cabugao, Coron Island, Coron Municipality of Palawan Province, Philippines. The target group was Tagbanua mothers, pregnant and had previously been pregnant in the last six years.

This study focused on their knowledge, attitudes, and practices on maternal and child health before and after the introduction of the MCHHB in their community. This study included the mothers' utilization of the MCHHB. Data on their knowledge and practice were gathered through a field survey. A semi-structured, pre-tested, questionnaire was conducted among fifty Tagbanua mothers (De Los Reyes, 2010), The odds ratio Risk factors during pregnancy was 2.80, 95% CI: 1.97-3.98 and p-value 0.001. It was revealed that using MCHHB 2.8 times more effective than not using MCHHB (see table 3.3).

3.4.1.5. Pregnant woman should consult a health care more than three times during Pregnancy

In Palawan, one of Philippines' provinces, the MCHHB data of the study showed an odds ratio of pregnant women who requested health care more than three times, was 2.04, 95% CI: 1.38-3.01, p-value 0.001. It was revealed that using MCHHB was 2.04 times more effective than not using MCHHB (see table 3.3).

3.4.1.6. Mothers should consume more food during pregnancy

The study of MCHHB In Palawan, one of Philippines' provinces, showed an odds ratio of knowledge of Pregnant women who consume more food during pregnancy was 1.97, 95% CI: 1.37-2.83, p-value 0.001. It was revealed that using MCHHB 1.97 times more effective than not using MCHHB (see table 3.3).

3.4.1.7. Health personnel should provide prenatal care to mothers

The question asked about knowledge of mothers for checking up antenatal care with a health professional. The study of MCHHB In Palawan, one of Philippines' provinces, showed that the odds ratio knowledge of mother who know about antenatal care check-up which should provide by skilled health personnel was 1.46, 95% CI: 0.93-2.31 p-value 0.10. It was revealed that using MCHHB 1.46 times more effective than not using MCHHB (see table 3.3).

3.4.1.8. First, prenatal consultation should be done during the first trimester of pregnancy

This part was one of the questions from MCHHB study from Palawan, one of Philippines' provinces. It was about the knowledge of first prenatal consultation during the first trimester. The study showed the odds ratio 1.89, 95% CI: 1.31-2.73, p-value 0.001. It was revealed that using MCHHB was 1.89 times more effective than not using MCHHB (see table 3.3).

3.4.1.9. Complications during pregnancy or delivery

The question asked about the knowledge of complications during pregnancy or delivery. The study MCHHB in Palawan, one of Philippines' provinces, showed the odd ratio 2.25, 95% CI: 1.58-3.18 and p-value 0.001. It was revealed that using MCHHB was 2 .25 times more effective than not using MCHHB (see table 3.3).

3.4.1.10. Pregnant woman needs tetanus toxoid immunizations

The question asked about the knowledge of tetanus toxoid immunizations for mothers. The study of MCHHB in Palawan, one of Philippines' provinces showed the odd ratio 1.29, 95% CI: 0.82-2.01 and p-value 0.27 (see table 3.3).

3.4.1.11. Additional iron sources are needed during pregnancy

The question asked about the knowledge of additional iron sources for the women during pregnancy. The study of MCHHB in Palawan, one of Philippines' provinces showed the odd ratio 1.65, 95% CI: 1.09-

2.50, p-value 0.02. It was revealed that using MCHHB 1.65 times more effective than not using MCHHB (see table 3.3).

3.4.1.12. Mother`s perception of her knowledge of pregnancy risk factors

Table 3.3 showed two consecutive surveys from MCHHB study in 1999 and 2001 in Indonesia. The respondents from MCHHB study in 1999 were 611 mothers and in the 2001 study were 621 mothers included. The study selected Padang Pariaman district as the intervention area and *Tanah Datar* district as the control area. This question asked about Mother's knowledge on pregnancy risk factors. The study showed the odds ratio 1.05, 95% CI: 0.91-1.21 and p-value 0.5.

3.4.1.13. Knowledge of the appropriate time for the first antenatal care

Table 3.3 showed the result of MCHHB study of 1999 and 2001 in Indonesia. The question asked about Mother's Knowledge at the appropriate time for the first antenatal care.

The odds ratio of this question item was 1.14, 95% CI: 0.95-1.37, p-value 0.17. It was revealed that MCHHB had the potential to increase the mother's knowledge at the appropriate time for the first antenatal care because the p-value was greater than 0.05 which was revealed that effect size was not significant.

3.4.1.14. Knowledge of safe birth attendance

Table 3.3 showed the result of MCHHB study of 1999 and 2001 in Indonesia. This question asked about Mother's knowledge on safe birth attendance. The Odds ratio of this question item was 1.00, 95% CI: 0.81-1.22, p-value 0.97. The p-value greater than 0.05 revealed the effect size was not significant.

3.4.1.15. Importance of Vitamin A supplementation

This question asked about the importance of vitamin A supplementation for the women during pregnancy. The study of MCHHB in Palawan, one of Philippines' provinces showed the odds ratio of importance vitamin A supplementation 1.49, 95% CI: 0.96-2.32, p-value 0.07. See table 3.3.

3.4.1.16. Practice of Antenatal Care (ANC) visit

Table 3.3 showed the study result of pregnant mothers at MCHTI, Dhaka, Bangladesh. Control and

intervention group respondents ask about her Practice of ANC visit. The odds ratio both intervention and control group was 1.31, 95% CI: 1.11-1.53, p-value 0.001. It was revealed that using MCHHB was 1.31 times effective than using the card.

3.4.1.17. Practice of TT Immunization

Table 3.3 showed the study result of pregnant mothers at MCHTI, Dhaka, Bangladesh. Both Respondents in the control group and intervention group were asked about their TT immunization.

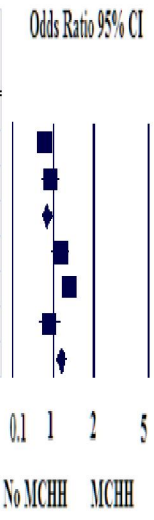
The odds ratio intervention and control group was 1.20, 95% CI: 1.00-1.43, p-value 0.05. It was revealed that using MCHHB 1.20 times effective than using the card.

3.4.1.18. Antenatal care attendance of Mothers

Table 3.3 showed the odds ratio question item of antenatal care attendance during pregnancy. The baseline survey (pre-intervention) was conducted from June to July 2007, and the post-intervention survey was conducted from May to June 2009 in Cambodia. The age of respondents 15-49 years who had a baby one year prior to the survey, about 320 women selected as respondents from each intervention and control area. The odds ratio intervention and control group is 1.13, 95% CI: 0.94-1.36, p-value 0.19. Because the p-value greater than 0.05, the effect size was not significant.

Table 3.4
Summary of Meta-analysis examination the association between MCHHB and delivery

No	Study Name	Odds	Lower Limit	Upper Limit	Z-value	P-Value	Relative weight
1	Mothers who were able to tell any danger signs during puerperium	0.86	0.76	0.97	-2.51	0.01	63.65
2	Mothers who were able to tell any danger signs during delivery	0.85	0.82	1.11	-0.59	0.55	36.35
	Knowledge Sub Total	0.89	0.81	0.98	-2.36	0.02	
3	Mothers who delivered their baby with skilled birth attendance	1.12	0.85	1.32	1.39	0.16	34.55
4	Mothers deliver in health facilities	1.31	1.12	1.53	3.44	0.00	38.77
5	Preferred place of delivery for the last pregnancy	0.84	0.78	1.13	-0.64	0.52	26.68
	Practice Sub Total	1.14	1.03	1.25	2.63	0.01	



3.4.1.19. History of antenatal care during the last pregnancy

Table 3.3 showed the result of MCHHB study of 1999 and 2001 in Indonesia. The question asked about the history of antenatal care practice during the last pregnancy. The odds ratio of this question item is 1.07, 95% CI: 0.87-1.32, p-value 0.52. Because the p-value greater than 0.05, the effect size was not significant.

3.4.2. Delivery

Giving birth is a critical moment for pregnant women. Mothers' knowledge and childbirth accompanied by midwives or others medical personnel are recommended for a safe delivery. There are only 5 questions items concerning delivery (Table 3.4). The relationship between MCHHB and delivery revealed that MCHHB was not related to a positive increase in knowledge, the study only showed that the handbook was related to positive increase in practice. Mothers who received MCHHB had higher safer practice by skilled birth attendants (OR 1.12, 95% CI: 0.95-1.32) and delivered in health facilities (OR 1.31, 95% CI: 1.12-1.53). The results of the analysis on knowledge and practices of pregnancy are as follows;

3.4.2.1. Mothers who were able to tell any danger signs during puerperium

Table 3.4 showed the odds ratio of control and intervention of question item about mothers who were able to tell any danger signs during puerperium. The baseline survey (pre-intervention) was conducted from June to July 2007 and post-intervention survey from May to June 2009 in Cambodia.

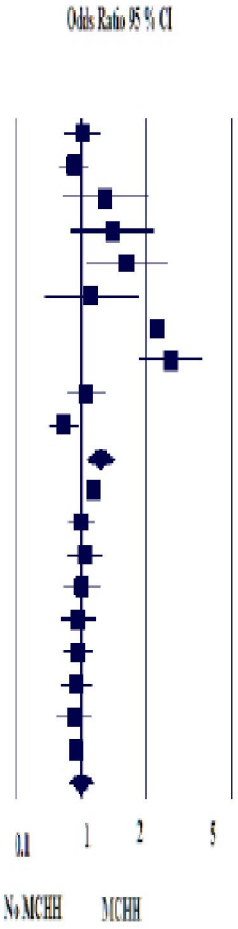
The age of respondents was between 15-49 years who had a baby one year prior to the survey; about 320 women were selected as respondents from each intervention and control area. The odds ratio intervention and control group was 0.86, 95% CI: 0.76-0.97, p-value 0.01.

3.4.2.2. Mothers who were able to recognize danger signs during delivery

Table 3.4 showed the odds ratio control and intervention of question item about mothers who were able to recognize danger signs in childbirth. The odds ratio intervention and control group is 0.95, 95% CI:

Table 3.5
Summary of Meta-analysis the association between MCHHB and Child Health Care

No	Study Name	Odds	Lower Limit	Upper Limit	Z-value	P-Value	Relative weight
1	Knowledge Breast Feeding	1.01	0.84	1.22	0.10	0.92	13.88
2	Women who answered correctly on the time that a baby gets first immunization	0.92	0.78	1.08	-1.01	0.31	14.70
3	Importance of vaccines	1.29	0.81	2.04	1.08	0.28	6.50
4	Importance of regular monthly weighing of youngest child	1.39	0.89	2.18	1.43	0.15	6.70
5	Mothers knowledge on the immediate initiation of breastfeeding	1.61	1.04	2.49	2.15	0.03	6.96
6	Significance of breastfeeding for babies	1.11	0.67	1.84	0.41	0.68	5.78
7	Mothers know that food other than berastmilk should be introduced to the baby at six months	2.26	1.56	3.27	4.32	0.00	8.42
8	Mothers know that exclusive breastfeeding should be 6 months	2.59	1.83	3.66	5.39	0.00	9.01
9	Mothers and perception on the importance of Breast-feeding babies	1.05	0.85	1.29	0.44	0.66	13.25
10	Knowledge on the appropriate periode of exclusive breast-feeding	0.83	0.70	0.97	-2.27	0.02	14.78
	Sub Total Knowledge	**1.22**	**1.05**	**1.41**	**2.66**	**0.01**	
11	Practice Breast feeding	1.13	0.95	1.36	1.39	0.16	11.16
12	Early Breastfeeding	1.00	0.87	1.15	0.00	1.00	12.07
13	Colostrums	1.04	0.85	1.26	0.37	0.71	10.72
14	Breast feeding the latest baby	1.00	0.82	1.23	0.04	0.97	10.49
15	Mothers who could show the immunization card of their child	0.96	0.80	1.17	-0.37	0.71	10.81
16	Immunization Coverage OPV (Oral Polio vaccine)	0.97	0.82	1.14	-0.41	0.68	11.49
17	Immunization Coverage DPT	0.95	0.80	1.12	-0.59	0.55	11.46
18	Immunization Coverage BCG	0.92	0.77	1.11	-0.84	0.40	10.99
19	Immunization Coverage Hep B	0.95	0.78	1.14	-0.59	0.56	10.99
	Sub Total Practice	**0.99**	**0.87**	**1.13**	**-0.15**	**0.88**	



0.82-1.11, p-value 0.55. Because the p-value was greater than 0.05, it was revealed that the effect size was not significant.

3.4.2.3. Mother who delivered their babies with skilled birth attendance

Table 3.4 showed the odds ratio of control and intervention of question item about a mother who delivered their babies with skilled birth attendance. The odds ratio intervention and control group was 1.12, 95% CI: 0.95-1.32, p-value 0.16. Because the p-value was greater than 0.05, it was revealed that the effect size was not significant.

3.4.2.4. Mothers who delivered her babies in health facilities

Table 3.4 showed the odds ratio of control and intervention of question item about mothers who delivered their babies in health centers. The odds ratio intervention and control group was 1.31, 95% CI: 1.12-1.53, p-value 0.0001. Because the p-value was smaller than 0.05, the effect size was significant.

3.4.2.5. Referred place of delivery for the last pregnancy

Table 3.4 showed the study in West Sumatra, Indonesia. This question asks about preferred place of delivery for the last pregnancy. The odds ratio intervention and control group was 0.94, 95% CI: 0.78-1.13, p-value 0.52. Because the p-value was greater than 0.05, the effect size was not significant.

3.4.3. Child Health Care

The relationship between MCHHB and child health care revealed that mothers who used MCHHB during child health care had a higher level of knowledge (OR 1.22, 95% CI; 1.05-1.41) than whose did not use MCHHB during pregnancy (Table 3.5). The study on baby food at six months (OR 2.26, 95% CI: 1.56-3.27) and exclusive breast-feeding for 6 months (OR 2.59, 95% CI: 1.83-3.66) are the biggest effect size. However, the effect of practice was not significant (OR 0.99, 95% CI; 0.87 -1.13). The results of the analysis on knowledge and practices of pregnancy are as follows;

3.4.3.1. Breast Feeding Knowledge

Table 3.5 showed the study result of pregnant mothers at MCHTI, Dhaka, Bangladesh. Both control

and intervention group asked for breast-feeding knowledge. The odds ratio intervention and control group was 1.01, 95% CI: 0.84-1.22, p-value 0.92. Because of p-value greater than 0.05 which revealed that the effect size was not significant.

3.4.3.2. Women Who Answered Correctly On the Time That A Baby Gets The First Immunization

Table 3.5 showed the odds ratio of control and intervention of question item about women who answered correctly on the time that a baby gets the first vaccination. The odds ratio for intervention and control group was 0.92, 95%, CI: 0.78-1.08, p-value 0.31. Because of p-value greater than 0.05, which revealed that the effect size was not significant.

3.4.3.3. Knowledge of the Importance of Vaccines

The study of MCHHB in Palawan, one of Philippines' provinces showed the odds ratio for importance of vaccines 1.29, 95% CI: 0.81-2.04, p-value 0.28. Because of p-value greater than 0.05, which revealed that the effect size was not significant (see Table 3.5).

3.4.3.4. Importance of The Regular Monthly Weighing of The Youngest Child

The study of MCHHB in Palawan, one of Philippines' provinces showed the odds ratio for importance of the regular monthly weighing of the youngest child was 1.39, 95% CI: 0.89-2.18 and p-value 0.28. Because of the p-value greater than 0.05, which was revealed that effect size was not significant (see Table 3.5).

3.4.3.5. Knowledge of The Immediate Initiation of Breast-feeding

The odds ratio knowledge on the immediate initiation of breast-feeding was 1.61, 95% CI: 1.04-2.49 and p-value 0.03. It was revealed that using MCHHB was 1.61 times more effective than whose did not use MCHHB (see Table 3.5).

3.4.3.6. Significance of Breast-feeding for Babies

The study of MCHHB in Palawan, one of Philippines' provinces showed the odds ratio significance of

breast-feeding for infants was 1.11, 95% CI: 0.67-1.84 and p-value 0.68. Because the p-value was greater than 0.05, the effect size was not significant (see Table 5.3).

3.4.3.7. Mothers Know that the Food other than Breast Milk should be Introduced to the Baby at Six Months

The odds ratio mothers knew that the food other than breast milk should be introduced to the baby at six months was 2.26, 95% CI: 1.56-2.49, p-value 0.001. It revealed that using MCHHB was 2.26 times more effective than not using MCHHB (see Table 3.5).

3.4.3.8. Mothers Know that Exclusive Breast-feeding should be given until Six Months

The odds ratio mothers knew that exclusive breast-feeding should be given until six months was 2.59, 95% CI: 1.83-2.4, p-value 0.001. It was revealed that using MCHHB was 1.39 times more effective than not using MCHHB (see Table 3.7).

3.4.3.9. Mothers and her Perception on the Importance of Breast-feeding Babies

Table 3.5 showed the result of MCHHB study of 1999 and 2001 in Indonesia. This question asked about mothers and perception of the importance of breast-feeding babies. The odds ratio of this question item was 1.05, 95% CI: 0.85-1.29, p-value 0.66. The p-value was greater than 0.05; which revealed that the effect size was not significant.

3.4.3.10. Knowledge of the Appropriate Period of Exclusive Breast-feeding

Table 3.5 showed the result of MCHHB study of 1999 and 2001 in Indonesia. This question asked about knowledge of the right period of exclusive Breast-feeding. The odds ratio of this question item was 0.83, 95% CI: 0.70-0.97, p-value 0.02. Because the p-value was greater than 0.05, it revealed that the effect size was not significant.

3.4.3.11. Practice of Breast-feeding

Table 3.5 showed the study result of pregnant mothers at MCHTI, Dhaka, Bangladesh. The study was held in November 2002 to August 2003. The control group was used in maternal child cards and interven-

tion used MCHHB. Both control and intervention group asked practice of Breast-feeding. The odds ratio in the show no effect (odds ratio >1).

3.4.3.12. Early Breast Feeding

Table 3.5 showed the odds ratio control and intervention of Cambodia MCHHB study about early breast-feeding. The odds ratio intervention and control group was 1.00, 95%, CI: 0.87-1.15, p-value 1.00. Because the p-value was greater than 0.05, the effect size was not significant.

3.4.3.13. Giving Colostrum to the Baby

Table 3.5 showed the odds ratio control and intervention of question item about giving colostrum to the baby. The odds ratio intervention and control group was 1.04, 95%, CI: 0.85-1.26, p-value 0.71. Because of p-value greater than 0.05, it was revealed that the effect size was not significant.

3.4.3.14. Breast-feeding the Latest Baby

Table 3.5 showed the odds ratio control and intervention of breast-feeding the latest baby. The odds ratio intervention and control group was 1.00, 95%, CI: 0.82-1.23, p-value 0.97. Because the p-value greater than 0.05, the effect size was not significant.

3.4.3.15. Mothers Who Could Show the Immunization Card of Their Children

Table 3.5 showed the odds ratio control and intervention of mothers who could show the immunization card of their children. The odds ratio intervention and control group was 0.96, 95%, CI: 0.80-1.17, p-value 0.71. The p-value was greater than 0.05; the effect size was not significant.

3.4.3.16. Immunization Coverage of Oral Polio Vaccine (OPV)

Table 3.5 showed the odds ratio control and intervention of vaccination (OPV). The odds ratio intervention and control group was 0.97, 95%, CI: 0.82-1.14, p-value 0.68. The p-value was greater than 0.05, so the effect size was not significant.

3.4.3.17. Immunization Coverage of Diphtheria, Tetanus, and Pertussis (DPT) Vaccine

Table 3.5 showed the odds ratio control and intervention of Immunization coverage (DPT). The odds

ratio intervention and control group was 0.95, 95%, CI: 0.80-1.12, p-value 0.45. The p-value was greater than 0.05, so the effect size was not significant.

3.4.3.18. Immunization Coverage of Bacillus Calmette–Guérin (BCG) Vaccine

Table 3.5 showed the odds ratio control and intervention of immunization coverage (BCG). The odds ratio intervention and control group was 0.92, 95%, CI: 0.77-1.11, p-value 0.40. There was no effect of MCHHB with BCG coverage.

3.4.3.19. Immunization Coverage of Hepatitis B

Table 3.5 showed the odds ratio control, and intervention of vaccination Hepatitis B. The odds ratio intervention and control group was 0.95, 95%, CI: 0.78-1.14, p-value 0.56. Because the p-value was greater than 0.05, the effect size was not significant.

3.5 Discussion

This study was conducted to quantify the effect of MCHHB on pregnancy, delivery and child health care by utilizing meta-analysis for the first time. There were many difficulties in collecting quantitative data to be processed because most studies on MCHHB were carried out in qualitative approaches. We searched the literature and documents through not only online searches but also major conference proceedings and reports. However, we could find only 5 studies with 43 question items.

In this study, Meta-analysis revealed a strong relationship between MCHHB and knowledge of mothers in pregnancy and child health care. The effects of MCHHB on knowledge and practice might be different. In question items of pregnancy and child health care, meta-analysis between MCHHB and knowledge of mothers showed the higher association than that between MCHHB and practice. The study in Thailand showed that the antenatal care (ANC) perception of pregnant women has significant associations with education level, marital status, family support, and behaviors of bringing the MCHHB to the ANC visits (Ilno

Y. , 2010) .The knowledge of mothers can be improved by the provision of MCHHB as health educational material. However, the behavior changes are more challenging issues, which are related to educational level, socioeconomic situation, and family support. It may be very difficult for only the MCHHB program to promote changes in health behavior. All the MCHHB activities which were analyzed in this study had trained health professionals before distribution of MCHHB and had monitoring activities for the supervision of MCHHB utilization and MCH service delivery. It is very difficult to distinguish between the effects of MCHHB itself and MCH services which are closely related to MCHHB.

This study revealed that MCHHB was significantly associated with increasing rate TT immunization during pregnancy. Neonatal tetanus can be prevented by immunizing women of childbearing age with TT, either during pregnancy or after pregnancy. TT immunization protects the mother and also through a transfer of tetanus antibodies to the fetus as well as her infant. Kusumayati A (2007) found that active usage of MCHHB by mothers is strongly associated with knowledge. When mothers read most or all parts of the MCHHB, they could understand the reason why TT immunization was important for pregnant mothers.

Meta-analysis studies showed that MCHHB was associated with the practice of deliveries by skilled birth attendants, deliveries in health facilities. However, the relationship between MCHHB and immunizations of OPV, DPT and BCG were not identified. The deliveries are attended by skilled birth attendants and the deliveries in health facilities are confirmed to reduce maternal mortality ratio and neonatal mortality rates. The study at a pilot hospital in Bangladesh showed that pregnant women who receive MCHHB have more MCH information, better practices in MCH care, and higher utilization of MCH services than those in the control group (Bhuiyan SU, 2009). MCHHB increase the knowledge of safe birth attendants. This direct message may influence the behaviors of pregnant women and delivery.

This study utilizing meta-analysis showed MCHHB had a higher association with knowledge of moth-

ers than their practice in pregnancy and child health care. The illumination of the relationship between knowledge and practice by the effect of MCHHB needs more quantitative analysis in both community and hospital settings in many countries. Now MCHHB has been introduced to more than 30 countries. Further studies are expected to clarify the effects of MCHHB.

Chapter 4

The Effect of Home-based Records of Maternal and Child Health Services in Indonesia

4.1 Introduction

Reducing child mortality (MDG 4) and improving maternal health (MDG 5) are not only health issues. The strategy for the improvement of maternal and child health (MCH) and the reduction of maternal mortality ratio (MMR) and infant mortality rate (IMR) has worked through mobilizing political commitment, creating an enabling policy environment, investing in social and economic development, reducing poverty, improving women's status, and encouraging community involvement. Several countries have successfully reduced maternal and child mortality, but the results have remained very sluggish in most of the world, especially in developing countries (Koblinsky, 2003).

The Government of Indonesia had directed maternal and child health policy to reduce the mortality rate among children under five by two-thirds (MDG 4) and cut the maternal mortality ratio by three-quarters (MDG 5) by 2015 (Azwar, 2010).

The Government of Indonesia had applied *Kartu Menuju Sehat (KMS)* card for children under the age of five to monitor the growth curve and the records of immunizations, and *Kartu Menuju Sehat Ibu Hamil* (pregnant mothers cards) as an antenatal card (AC) to monitor the nutrition and health during pregnancy

(Purwati, 1990). In 1994, the Japan International Cooperation Agency (JICA) introduced the Maternal and Child Health handbook (MCHHB) to integrate maternal care and child care in Salatiga City in Central Jawa Province. Since first being introduced in 1994, it was estimated that more than 50,000 health cadres (village health vokunterrs) and 10,000 midwives had been trained for using the MCHHB, more than 5,000,000 copies of the MCHHB had been printed, and more than 5 millions families had been exposed to the MCHHB (Azwar, 2010).

Indonesia uses MCHHB and AC (antenatal card), as national home-based records (HBRs) for pregnancy women and child health care, to monitor their maternal and child health situation during the period. Through Ministerial Decree No. 284/Menkes/SK/III/2004, the Ministry of Health of Indonesia has tried to nationalize the utilization of the MCHHB as the only HBR in all locations in the country. The Minister of Health of Indonesia stated that every child should be provided with an MCHHB, and every health care worker should educate parents using the MCHHB (Budiharja, 2010). The content of the MCHHB was aimed to improve the knowledge and skills of mothers and families about pregnancy, delivery, child development, immunization, illness, and health (Nakamura, 2010). This policy is expected to increase the knowledge and change the behavior of pregnant women and families through community empowerment, thus serving to decrease MMR, U5MR, and IMR.

Therefore, the study aimed to investigate the relationship between the HBRs and women's knowledge as well as their behavior regarding pregnancy, delivery, and child health care. The evidence could serve to strengthen the government's strategy for developing and implementing the MCHHB as the main home-based health record.

4.2 Objectives

The objective of the study was to analyze the effects of home-based records on pregnancy, delivery, and child immunization in Indonesia.

Table 4.1
Possession of Home-Based Records and socioeconomic characteristics of respondents who have baby born 5 years prior of the survey in the IDHS 20012, 2007 and 2002

Variable Name	IDHS 2012					IDHS 2007					IDHS 2002-2003				
	Frequency		Percent			Frequency		Percent			Frequency		Percent		
No HMBR	10,317		72%			11,349		83%			9,948		90%		
Yes HMBR	3,985		28%			2,300		17%			1,159		10%		
Total	14,302		100%			13,649		100%			11,107		100%		
	No MCHH	Percent	Yes MCHH	Percent	P value	No MCHH	Percent	Yes MCHH	Percent	P Value	No MCHH	Percent	Yes MCHH	Percent	P value
type of Resident															
Urban	4941	47.9%	1880	47.2%		4,675	41.2%	983	42.7%		4,568	46%	541	47%	
Rural	5376	52.1%	2105	52.8%	0.23	6,674	58.8%	1,317	57.3%	0.71	5,380	54%	618	53%	0.32
Total	10317	100.0%	3985	100.0%		11,349	100.0%	2,300	100.0%		9,948	100%	1,159	100%	
Age 5-year groups															
15-19	302	2.9%	189	4.7%		327	2.9%	101	3.1%		358	3.6%	54	3.7%	
20-24	1,844	17.9%	886	22.2%		2,216	19.5%	522	20.1%		2,152	21.6%	292	22.0%	
25-29	2,847	27.6%	1,156	29.0%		3,213	28.3%	668	28.4%		2,982	30.0%	343	29.9%	
30-34	2,558	24.8%	931	23.4%		2,788	24.6%	569	24.6%		2,358	23.7%	273	23.7%	
35-39	1,762	17.1%	609	15.3%	0.0001	1,897	16.7%	310	16.2%	0.0001	1,439	14.5%	145	14.3%	0.0040
40-44	833	8.1%	190	4.8%		736	6.5%	111	6.2%		549	5.5%	44	5.3%	
45-49	171	1.7%	24	.6%		172	1.5%	19	1.4%		110	1.1%	8	1.1%	
Total	10,317	100.0%	3,985	100.0%		11,349	100.0%	2,300	100.0%		9,948	100.0%	1159	100.0%	
Highest educational level															
No education	196	1.9%	54	1.4%		304	2.7%	38	1.7%		353	3.5%	23	2.0%	
Primary	3,097	30.0%	1,132	28.4%		4,284	37.8%	752	32.7%		4,257	42.8%	398	34.3%	
Secondary	5,611	54.4%	2,264	56.8%	0.0140	5,800	51.1%	1,298	56.4%	0.0001	4,597	46.2%	635	54.8%	0.0001
Higher	1,413	13.7%	535	13.4%		960	8.5%	212	9.2%		741	7.4%	103	8.9%	
Total	10,317	100.0%	3,985	100.0%		11,348	100.0%	2,300	100.0%		9,948	100.0%	1,159	100.0%	
Wealth index															
Poorest	2,796	27.1%	909	22.8%		2943	25.9%	467	20.3%		2,592	26.1%	240	25.5%	
Poorer	2,075	20.1%	867	21.8%		2268	20.0%	473	20.6%		1,925	19.4%	254	19.6%	
Middle	1,916	18.6%	818	20.5%	0.0001	2038	18.0%	499	21.7%	0.0001	1,743	17.5%	222	17.7%	0.0010
Richer	1,843	17.9%	765	19.2%		2037	17.9%	473	20.6%		1,777	17.9%	200	17.8%	
Richest	1,687	16.4%	626	15.7%		2063	18.2%	388	16.9%		1,911	19.2%	243	19.4%	
Total	10,317	100.0%	3,985	100.0%		11349	100.0%	2300	100.0%		9,948	100.0%	1,159	100.0%	

4.3 Methods

The data from the Indonesia Demographic and Health Survey (IDHS) 2002-03, 2007 and 2012 was used for analysis. The data was designed with *Badan Pusat Statistics* (BPS) Statistics Indonesia, the National Family Planning Coordinating Board (NFPCB), and the Ministry of Health (MoH). The birth data records of the women aged of 15-49 years who had babies born within five years prior to the study, were utilized in all provinces of Indonesia. The numbers of samples in IDHS were 14,302 women (IDHS 2012), 13,649 women (IDHS 2007) and 11,107 women (IDHS 2002-2003) throughout all provinces of Indonesia who attended antenatal care for their pregnancies with medical doctors, obstetrician, gynecologists, nurses, or midwives.

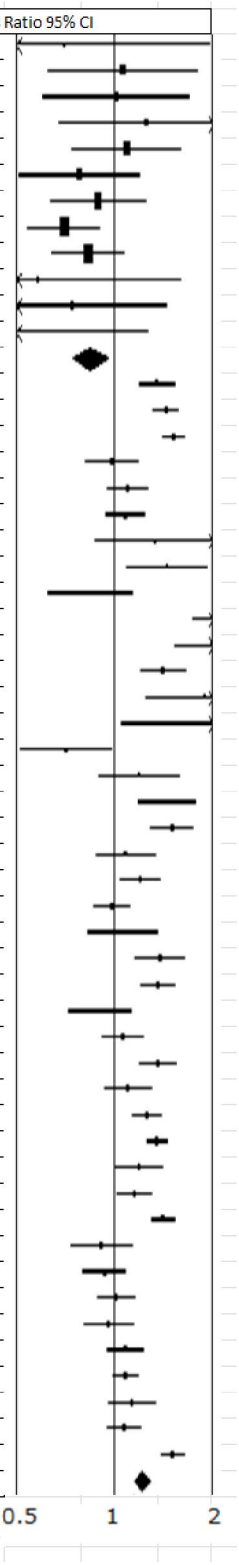
In IDHS 2002-2003 and 2007, the question about MCHHB or antenatal card (AC) was used. In IDHS 2012, the relevant question was directed to women who used to MCHHB. So it was very difficult to distinguish between women who used MCHHB or AC in IDHS 2002-2003 and 2007. However, the effect of MCHHB could be observed in IDHS 2012.

The study group included women who used the AC or MCHHB as a home-based records (HBRs) group and women who did not use the HBRs as the control group. The HBRs group consisted of women who could show their HBRs to the data collectors. The control group consisted of women who could not show their HBRs to the data collectors. The descriptive statistics and the outcomes were calculated in binary form. The odds ratios and 95% confidence intervals (CI) were used to investigate the magnitude of the association between each independent variable and the outcomes. The odds ratios were higher than one, signifying that HBRs had a positive effect compared with the control scenario. The knowledge and practices during pregnancy and delivery were grouped into the categories of "bad" and "good". "Good" knowledge and practices referred to cases where the women developed the best knowledge and practice from the health care perspective and vice versa.

The independent variables consisted of HBRs ownership and possible confounders such as age, years

Table 4.2 Odds ratios of the association between
Home-Based Records and Knowledge of Pregnancy

No	Good/Bad	Study Name	IDHS	Odds Ratio 95% CI
1	Bad	Should do if experience this problem:' dont know	2012	1.01 (0.60-1.70)
2	Bad	Should do if experience this problem:' dont know	2007	1.06 (0.62-1.81)
3	Bad	Should do if experience this problem:' dont know	2002	0.70 (0.25-1.96)
4	Bad	Should do if experience this problem: nothing	2012	0.78 (0.51-1.20)
5	Bad	Should do if experience this problem: nothing	2007	1.09 (0.74-1.61)
6	Bad	Should do if experience this problem: nothing	2002	1.25 (0.67-2.33)
7	Bad	Should do if experience this problem: see TBA	2012	0.83 (0.64-1.08)
8	Bad	Should do if experience this problem: see TBA	2007	0.70 (0.54-0.91)
9	Bad	Should do if experience this problem: see TBA	2002	0.89 (0.63-1.25)
10	Bad	Should do if experience this problem: take herbs	2012	0.49 (0.19-1.28)
11	Bad	Should do if experience this problem: take herbs	2007	0.74 (0.8-1.46)
12	Bad	Should do if experience this problem: take herbs	2002	0.58 (0.21-1.61)
		Random 0.84 (0.74-0.95); Z value (-2.73) P value (0.006)		
13	Good	Knows the signs of danger during pregnancy	2012	1.52 (1.40-1.65)
14	Good	Knows the signs of danger during pregnancy	2007	1.44 (1.31-1.58)
15	Good	Knows the signs of danger during pregnancy	2002	1.35 (1.91-1.54)
16	Good	Problems during pregnancy: baby in wrong position	2012	1.08 (0.94-1.24)
17	Good	Problems during pregnancy: baby in wrong position	2007	1.10 (0.95-1.28)
18	Good	Problems during pregnancy: baby in wrong position	2002	0.98 (0.81-1.19)
19	Good	Problems during pregnancy: breathlessness	2012	0.84 (0.62-1.14)
20	Good	Problems during pregnancy: breathlessness	2007	1.45 (1.08-1.94)
21	Good	Problems during pregnancy: breathlessness	2002	1.33 (0.87-2.03)
22	Good	Problems during pregnancy: convulsions	2012	1.41 (1.20-1.66)
23	Good	Problems during pregnancy: convulsions	2007	1.99 (1.53-2.59)
24	Good	Problems during pregnancy: convulsions	2002	2.38 (1.74-3.26)
25	Good	Problems during pregnancy: faint	2012	0.71 (0.51-0.99)
26	Good	Problems during pregnancy: faint	2007	1.48 (1.05-2.09)
27	Good	Problems during pregnancy: faint	2002	1.89 (1.24-2.88)
28	Good	Problems during pregnancy: fever	2012	1.50 (1.29-1.75)
29	Good	Problems during pregnancy: fever	2007	1.45 (1.18-1.78)
30	Good	Problems during pregnancy: fever	2002	1.19 (0.89-1.59)
31	Good	Problems during pregnancy: prolonged labor	2012	0.98 (0.86-1.12)
32	Good	Problems during pregnancy: prolonged labor	2007	1.20 (1.04-1.39)
33	Good	Problems during pregnancy: prolonged labor	2002	1.08 (0.87-1.34)
34	Good	Problems during pregnancy: swollen limbs	2012	1.36 (1.20-1.54)
35	Good	Problems during pregnancy: swollen limbs	2007	1.38 (1.15-1.65)
36	Good	Problems during pregnancy: swollen limbs	2002	1.06 (0.83-1.36)
37	Good	Problems during pregnancy: tiredness	2012	1.36 (1.36-1.55)
38	Good	Problems during pregnancy: tiredness	2007	1.06 (0.91-1.23)
39	Good	Problems during pregnancy: tiredness	2002	0.90 (0.72-1.13)
40	Good	Problems during pregnancy: vaginal bleeding	2012	1.35 (1.25-1.46)
41	Good	Problems during pregnancy: vaginal bleeding	2007	1.26 (1.13-1.40)
42	Good	Problems during pregnancy: vaginal bleeding	2002	1.10 (0.93-1.31)
43	Good	Should do if experience this problem: rest	2012	1.01 (0.88-1.16)
44	Good	Should do if experience this problem: rest	2002	0.91 (0.74-1.14)
45	Good	Should do if experience this problem: rest	2007	0.93 (0.79-1.09)
46	Good	Should do if experience this problem: go to a health facility	2002	1.19 (1.00-1.41)
47	Good	Should do if experience this problem: go to a health facility	2012	1.41 (1.30-1.53)
48	Good	Should do if experience this problem: go to a health facility	2007	1.15 (1.01-1.30)
49	Good	Should do if experience this problem: see doctor	2012	1.08 (0.98-1.19)
50	Good	Should do if experience this problem: see doctor	2007	1.08 (0.94-1.24)
51	Good	Should do if experience this problem: see doctor	2002	0.96 (0.80-1.15)
52	Good	Should do if experience this problem: see midwife	2012	1.51 (1.39-1.64)
53	Good	Should do if experience this problem: see midwife	2007	1.07 (0.95-1.21)
54	Good	Should do if experience this problem: see midwife	2002	1.13 (0.95-1.34)
		Random 1.21 (1.14-1.28); Z value (6.710) P *value* (0.00001)		



of education, household wealth quintile, and urban or rural residence of the respondents.

Logistic regression analysis was conducted by using SPSS Version 18.0 for both univariate and multi-variate analyses to obtain adjusted odds ratios and 95% CI. Comprehensive Meta-analysis software, version 2 was utilized to combine the results to draw the conclusions of the study, differentiating the effect of HBR into "bad" and "good" knowledge and activities.

A limitation ought to be considered when interpreting the findings presented from the IDHS 2002 and 2007: Only one question about the MCHHB or AC was asked, and we could not distinguish between women who used these two methods of HBRs (even Indonesian government had not use AC since 2004 for maternal and child health program, it remained available in some of the Indonesian districts at the time until the necessary number of MCHHB is procured for the entire population). In The IDHS 2012, the relevant question was directed only to women who used to MCHHB, so we were able to observe the effects of the MCHHB during pregnancy, delivery, and immunization.

4.4 Results

There was a significant increase for women who used HBRs from 10 percents (IDHS 2002-2003), 17 percent (IDHS 2007) and 28 percent (IDHS 2012). See table 4.1

The results of the study were classified into three main topics of pregnancy,delivery and child health care.

4.4.1. Knowledge during pregnancy

Odds ratios HBRs of knowledge during pregnancy consisted of 42 questions which were associated with good effects of pregnancy information during pregnancy and 12 questions related to bad effects of pregnancy information during pregnancy to the mother. Table 4.2 showed that being in the HBRs group was negatively influenced by bad knowledge about pregnancy (OR 0.84, 95% CI: 0.74–0.95) and positive influence with good knowledge of pregnancy (OR 1.21, 95% CI: 1.14–1.28).

4.4.1.1. What should they do if they experience this problem; don't Know

Table 4.2 in the section of bad activities number 1, 2 and 3 showed the odds ratio of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question. The odd ratios of IDHS 2002-2003 was 0.70 (CI 95% 0.25 -1.96), IDHS 2007 was 1.06 (CI 95% 0.62 -1.81) and IDHS 2012 was 1.01 (CI 95% 0.60 - 1.70).

4.4.1.2. What should they do if they experience this problem; nothing

The number 4, 5 and 6 in table 4.2 showed the odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question. The result revealed that the odds ratio of IDHS 2002-2003 was 1.25 (CI 95% 0.67-2.33), IDHS 2007 was 1.09 (CI 95% 0.74-1.61) and IDHS 2012 was 0.78 (CI 95% 0.51-1.20). This question asked whether the mothers did anything to cure the problems during their pregnancy. The mother answered that she did not do anything to cure the problem.

4.4.1.3. What should they do if they experience this problem; see Traditional Birth Attendant (TBA)

Table 4.2 number 7, 8 and 9 showed the odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question. The result revealed that IDHS 2002-2003 was 0.89 (CI 95% 0.63 - 1.25), IDHS 2007 was 0.70 (CI 95% 0.54 - 0.91) and IDHS 2012 was 0.8 (CI 95% 0.64 - 1.08). This question asked the mother whether they went to TBA to cure the problems during their pregnancy. This activity could be dangerous for pregnancy if they went to TBA during that time. This question had a negative influence on pregnancy information and activities.

4.4.1.4. What should they do if they experience this problem; take Herbs

Table 4.2 in the section of bad activities number 10, 11 and 12 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question. The result revealed that IDHS 2002-2003 was 0.58 (CI 95% 0.21 -1.6), IDHS 2007 was 0,74 (CI 95% 0.80 -1.46) and IDHS 2012 was 0,49 (CI 95% 0.19 - 1.28). This question had a negative influence on pregnancy information and activities.

4.4.1.5. Knows the danger signs during pregnancy

Table 4.2 in the section of good activities number 13, 14 and 15 showed the odds ratios of IDHS 2002-

2003, IDHS 2007 and IDHS 2012 of the question. The odds ratios of IDHS 2002-2003 was 1.35 (CI 95% 1.19 - 1.54), IDHS 2007 was 1.44 (CI 95% 1.31 - 1.58) and IDHS 2012 was 1.52 (CI 95% 1.40 - 1.65). The answer gave information whether the mothers knew the danger signs during pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.6. Problems during pregnancy: baby in the wrong position

Table 4.2 in the section of good activities number 16, 17 and 18 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about the baby in the wrong position. The odds ratio of IDHS 2002-2003 was 0.98, CI 95% (0.81 - 1.19), IDHS 2007 was 1.10 (CI 95% 0.95 - 1.28) and IDHS 2012 was 1.08 (CI 95% 0.94 - 1.24). The answer gave information whether the mothers knew the sign of a baby in the wrong position as one of the problems during pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.7. Problems during pregnancy: breathlessness

The number 19, 20 and 21 in table 4.2 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question. The odds ratios of IDHS 2002-2003 was 1.33 (CI 95% 0.87 - 2.03) , IDHS 2007 was 1.45 (CI 95% 1.08 - 1.94) and IDHS 2012 was 0.84 (CI 95% 0.62 - 1.14). The answer gave information whether the mothers knew about breathlessness as one of the problems during pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.8. Problems during pregnancy: convulsion

Table 4.2 in the section of good activities number 22, 23 and 24 showed the odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about convulsion as one of the problems during pregnancy. The odds ratios of IDHS 2002-2003 was 2.38 (CI 95% 1.74 - 3.26), IDHS 2007 was 1.99 (CI 95% 1.53 - 2.59) and IDHS 2012 was 1.41 (CI 95% 1.20 - 1.66). The answer gave information whether the mothers knew about convulsion. This question had a positive influence on pregnancy information and activities.

4.4.1.9. Problems during pregnancy: faint

Table 4.2 in the section of good activities number 25, 26 and 27 showed the odds ratio of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about faint. The odds ratios of IDHS 2002-2003 was 1.89 (CI 95% 1.24 - 2.88), IDHS 2007 was 1.48 (CI 95% 1.05 - 2.09) and IDHS 2012 was 0.71 (CI 95% 0.51 - 0.99). The answer gave information whether the mothers knew about faint as one of the problems during pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.10. Problems during pregnancy: fever

The number 28, 29 and 30 in table 4.2 showed the odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about fever. The odds ratios of IDHS 2002-2003 was 1.19 (CI 95% 0.89 - 1.59), IDHS 2007 was 1.45 (CI 95% 1.18 - 1.78) and IDHS 2012 was 1.50 (CI 95% 1.29-1.75). The answer gave information about knowledge of the mothers on fever as one of the problems during pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.11. Problems during pregnancy: prolonged labor

Table 4.2 in the section of good activities number 31, 32 and 33 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about prolonged labor. The odds ratios of IDHS 2002-2003 was 1.08 (CI 95% 0.87 - 1.34), IDHS 2007 was 1.20 (CI 95% 1.04 - 1.39) and IDHS 2012 was 0.98 (CI 95% 0.86 - 1.12). This question had a positive influence on pregnancy information and activities.

4.4.1.12. Problems during pregnancy: swollen limbs

Table 4.2 number 34, 35 and 36 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question about swollen limbs. The odds ratio IDHS 2002-2003 1.06 (CI 95% 0.83 - 1.36), IDHS 2007 was 1.36 (CI 95% 1.20 - 1.54) and IDHS 2012 was 0.98 (CI 95% 0.86 -1.12). The answer gave information whether the mothers knew about swollen limbs as one of the problems during their pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.13. Problems during pregnancy: tiredness

Table 4.2 in the section of good activities number 37, 38 and 39 showed odds ratios IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question of prolonged labor. The odds ratio IDHS 2002-2003 0.90, (CI 95% 0.72 - 1.13), IDHS 2007 was 1.06 (CI 95% 0.91 - 1.23) and IDHS 2012 was 1.36 (CI 95% 1.19 - 1.55). The answer gave information whether the mothers knew about tiredness as one of the problems during pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.14. Problems during pregnancy: vaginal bleeding

Table 4.2 in the section of good activities number 25, 26 and 27 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question about vaginal bleeding. The odds ratios of IDHS 2002-2003 was 1.10 (CI 95% 0.93 - 1.31), IDHS 2007 was 1.26 (CI 95% 1.13 - 1.40) and IDHS 2012 was 1.35 (CI 95% 1.25 - 1.46). The answer gave information whether the mothers knew about vaginal bleeding as one of the problems during their pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.15. What should they do if they have this problem; rest

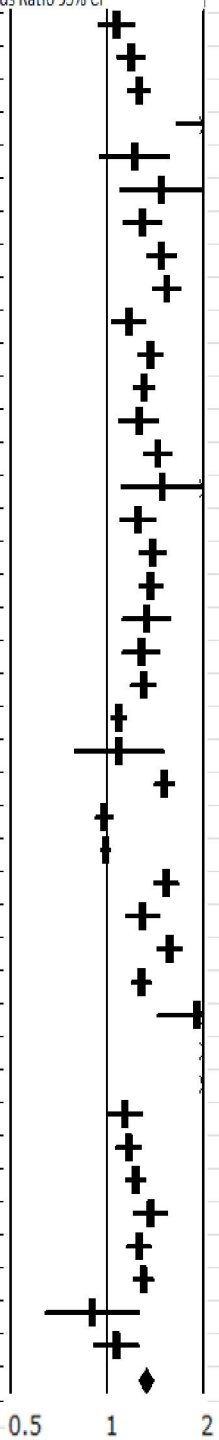
Table 4.2 in the section of good activities number 43, 44 and 45 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question about what should they did if they experienced the problem; rest. The odds ratios of IDHS 2002-2003 was 0.91 (CI 95% 0.74 - 1.14), IDHS 2007 was 0.93 (CI 95% 0.79 - 1.09) and IDHS 2012 was 1.01 (CI 95% 0.88 - 1.16). This question had a positive influence on pregnancy information and activities.

4.4.1.16. What should they do if they have this problem; go to a health facility

Table 4.2 in the section of good activities number 46, 47 and 48 showed odds ratios IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question about what should the mothers did if they experienced the problem; go to a health facility. The odds ratio IDHS 2002-2003 1.19 (CI 95% 1.00 -1.41), IDHS 2007 was 1.15 (CI 95% 1.01 -1.30) and IDHS 2012 was 1.41 (CI 95% 1.30 -1.53). The answer gave information

Table 4.3
Odds ratios of the association between Home-Based Records and practice of pregnancy

No	Good/Bad	Study Name	IDHS	Odds Ratio 95% CI
1	Good	Accompanied by husband in antenatal care visit	2002	1.07 (0.94-1.22)
2	Good	Accompanied by husband in antenatal care visit	2007	1.19 (1.07-1.32)
3	Good	Accompanied by husband in antenatal care visit	2012	1.26 (1.15-1.38)
4	Good	Antenatal care: stomach examination	2002	2.72 (1.64-4.51)
5	Good	Antenatal care: stomach examination	2007	1.22 (0.94-1.58)
6	Good	Antenatal care: stomach examination	2012	1.48 (1.10-2.00)
7	Good	During pregnancy discuss: place to deliver	2002	1.29 (1.12-1.49)
8	Good	During pregnancy discuss: place to deliver	2007	1.48 (1.32-1.65)
9	Good	During pregnancy discuss: place to deliver	2012	1.54 (1.39-1.71)
10	Good	During pregnancy discuss: transportation to place to deliver	2002	1.17 (1.03-1.33)
11	Good	During pregnancy discuss: transportation to place to deliver	2007	1.37 (1.25-1.51)
12	Good	During pregnancy discuss: transportation to place to deliver	2012	1.31 (1.21-1.42)
13	Good	During pregnancy discuss: person to assist delivery	2002	1.26 (1.09-1.46)
14	Good	During pregnancy discuss: person to assist delivery	2007	1.44 (1.29-1.60)
15	Good	During pregnancy discuss: person to assist delivery	2012	1.49 (1.11-2.01)
16	Good	During pregnancy discuss: payment for the delivery	2002	1.25 (1.10-1.43)
17	Good	During pregnancy discuss: payment for the delivery	2007	1.39 (1.26-1.54)
18	Good	During pregnancy discuss: payment for the delivery	2012	1.37 (1.25-1.50)
19	Good	During pregnancy discuss: identifying blood donor	2002	1.33 (1.11-1.59)
20	Good	During pregnancy discuss: identifying blood donor	2007	1.28 (1.12-1.47)
21	Good	During pregnancy discuss: identifying blood donor	2012	1.30 (1.18-1.43)
22	Good	Told about pregnancy complications	2002	1.09 (1.03-1.16)
23	Good	Told about pregnancy complications	2007	1.09 (0.79-1.51)
24	Good	Told about pregnancy complications	2012	1.51 (1.40-1.63)
25	Good	During pregnancy, given or bought iron tablets	2002	0.98 (0.92-1.05)
26	Good	During pregnancy, given or bought iron tablets	2007	0.99 (0.95-1.03)
27	Good	During pregnancy, given or bought iron tablets	2012	1.53 (1.40-1.60)
28	Good	During pregnancy. Height measured	2002	1.29 (1.14-1.46)
29	Good	During pregnancy. Height measured	2007	1.57 (1.43-1.73)
30	Good	During pregnancy. Height measured	2012	1.28 (1.19-1.38)
31	Good	During pregnancy. Weighed	2002	1.91 (1.44-2.54)
32	Good	During pregnancy. Weighed	2007	2.64 (2.12-3.29)
33	Good	During pregnancy. Weighed	2012	2.40 (1.97-2.93)
34	Good	During pregnancy. Urine sample taken	2002	1.14 (1.00-1.30)
35	Good	During pregnancy. Urine sample taken	2007	1.17 (1.06-1.29)
36	Good	During pregnancy. Urine sample taken	2012	1.23 (1.14-1.33)
37	Good	During pregnancy. Blood sample taken	2002	1.37 (1.21-1.56)
38	Good	During pregnancy. Blood sample taken	2007	1.26 (1.15-1.38)
39	Good	During pregnancy. Blood sample taken	2012	1.30 (1.20-1.40)
40	Good	Told where to go for pregnancy complications	2002	0.90 (0.64-1.27)
41	Good	Told where to go for pregnancy complications	2007	1.07 (0.91-1.26)
	Good	Random	1.32 (1.25-1.40); Z value (9.94) P *value* (0.00001)	



whether the mothers went to the health facility if they had problems during their pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.17. What should mothers do if they have this problem; see a doctor

Table 4.2 in the section of good activities number 49, 50 and 51 showed odds ratios IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question about what should they did if they had the problem; see a doctor. The odds ratios of IDHS 2002-2003 was 0.96 (CI 95% 0.80 - 1.15), IDHS 2007 was 1.08 (CI 95% 0.94 -1.24) and IDHS 2012 was 1.08 (CI 95% 0.98 - 1.19). The answer gave information whether the mothers visited the doctor to cure the problems during their pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.1.18. What should they do if they have this problem; see midwife

Table 4.2 in the section of good activities number 52, 53 and 54 showed odds ratios IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question about what should they do if they experience this problem; see midwives. The odds ratios of IDHS 2002-2003 was 1.13 (CI 95% 0.95 - 1.34), IDHS 2007 was 1.07 (CI 95% 0.95 -1.21) and IDHS 2012 was 1.51 (CI 95% 1.39 -1.64). The answer gave information whether the mothers visited the midwife to cure the problems during their pregnancy. This question had a positive influence on pregnancy information and activities.

4.4.2. Practice during pregnancy

The practice of pregnancy is one the most valuable thing to see women behavior and also health workers' service to women in the time of pregnancy. There were 41 questions about the practice of pregnancy by women related to good activities in the study of IDHS 2002-2003, 2007 and 2012 (see table 4.3). The summary of odds ratio was 1.32 (CI 95% 1.25 - 1.40).

4.4.2.1. Accompanied by husband during antenatal care visit

Table 4.3 number 1, 2 and 3 showed odds ratios IDHS 2002-2003, IDHS 2007 and IDHS 2012 about whether the mothers were accompanied by the husband during antenatal care visit. The odds ratio IDHS

2002-2003 was 1.07 (CI 95% 0.94 - 1.22), IDHS 2007 was 1.19 (CI 95% 1.07 -1.32) and IDHS 2012 was 1.26 (CI 95 1.15 -1.38. The answer gave information whether their husband accompanied the mothers to the health facilities. The question had a positive influence on pregnancy activities.

4.4.2.2. Antenatal care: stomach examination

The number 4, 5 and 6 in table 4.3 showed the odds ratios of IDHS 2002-2003 was 2.72 (CI 95% 1.64 - 4.51); IDHS 2007 was 1.22 (CI 95% 0.94 - 1.58) and IDHS 2012 was 1.48 (CI 95 1.10 - 2.00). This question asked the information whether doctors or midwives checked the mothers' stomach during their visit to the health facility. This question had a positive influence on pregnancy activities.

4.4.2.3. During pregnancy, the mothers discuss: place to deliver and transportation to place to deliver

Table 4.3 number 7, 8 and 9 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about the information whether the mothers during their pregnancy discussed a place to deliver. The odds ratios IDHS 2002-2003 was 1.29 (CI 95% 1.12 - 1.49), IDHS 2007 was 1.48 (CI 95% 1.32 - 1.65) and IDHS 2012 was 1.54 (CI 95% 1.39 - 1.71). This question had a positive influence on pregnancy activities.

Table 4.3 number 10, 11 and 12 showed the odds ratios of IDHS 2002-2003 was 1.17 (CI 95% 1.03 - 1.33), IDHS 2007 was 1.37 (CI 95% 1.25 - 1.51) and IDHS 2012 was 1.31, CI 95% 1.21 - 1.42. The answer gave information about whether the mothers discussed with their husbands or families about the transportation to place for delivery during the time of pregnancy and. This question had a positive influence with pregnancy activities.

4.4.2.4. During pregnancy the mothers and their husband discuss: person to assist delivery

Table 4.3 number 13, 14 and 15 gave the information about whether or not the mothers discussed with their husbands or families about the person who should assist the mothers in delivery during the time of pregnancy.

The table showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012. The odds ratios of

IDHS 2002-2003 was 1.26 (CI 95% 1.09 - 1.46), IDHS 2007 was 1.44 (CI 95% 1.29 - 1.60) and IDHS 2012 was 1.49 (CI 95% 1.11 - 2.01). This question had a positive influence on pregnancy activities.

4.4.2.5. During pregnancy discuss: payment for delivery

Table 4.3 number 16, 17 and 18 gave information about whether the mothers discussed with their husband or family about the funding for delivery during the time of pregnancy. This question had a positive influence on pregnancy activities. The odds ratios IDHS 2002-2003 was 1.25 (CI 95% 1.10 - 1.43), IDHS 2007 was 1.39 (CI 95% 1.26 - 1.54) and IDHS 2012 was 1.37 (CI 95% 1.25 - 1.50).

4.4.2.6. During pregnancy discuss: identifying blood donor

The number 19, 20 and 21 in table 4.3 showed the odds ratios of IDHS 2002-2003 1.33 (CI 95% 1.11 - 1.59), IDHS 2007 was 1.28 (CI 95% 1.12 -1.47) and IDHS 2012 was 1.30 (CI 95% 1.18 - 1.43). The answer gave information whether the mothers discussed with their husbands or families about the persons who was willing to give the donor at the critical time during the time of pregnancy. This question had a positive influence on pregnancy activities.

4.4.2.7. Told about pregnancy complications

Table 4.3 numbers 22, 23 and 24 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about whether the health worker gave information about pregnancy complications to the mothers. The odds ratios of IDHS 2002-2003 1.09 (CI 95% 1.03 - 1.16), IDHS 2007 was 1.09 (CI 95% 0.79 - 1.51) and IDHS 2012 was 1.51 (CI 95% 1.40 - 1.63). This question asked the information whether the mothers were taught by midwives or doctors about signs of pregnancy complications during the time of pregnancy. This question had a positive influence on pregnancy activities.

4.4.2.8. During pregnancy; given or bought iron tablets

This question asked information whether the mothers consumed iron tablets during pregnancy. This question had a positive influence on pregnancy activities.

The numbers 25, 26 and 27 in Table 4.3 showed odds ratios of IDHS 2002-2003, IDHS 2007 and

IDHS 2012 about whether the mothers were given or bought iron tablets during pregnancy. The odds ratios of IDHS 2002-2003 was 0.98 (CI 95% 0.92 - 1.05), IDHS 2007 was 0.99 (CI 95% 0.95 - 1.03) and IDHS 2012 was 1.53 (CI 95% 1.40 - 1.68).

4.4.2.9. During pregnancy; height measured and weighed

Table 4.3 number 28, 29 and 30 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about whether the mothers did height measured during pregnancy. The odds ratios IDHS 2002-2003 was 1.29 (CI 95% 1.14 - 1.46), IDHS 2007 was 1.57 (CI 95% 1.43 - 1.73) and IDHS 2012 was 1.28 (CI 95% 1.19 - 1.38). The answer gave information whether the mothers measured their height during their pregnancy. This question had a positive influence on pregnancy activities.

Table 4.3 number 31, 32 and 33 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about whether the mothers were weighted during pregnancy. The odds ratios of IDHS 2002-2003 was 1.91 (CI 95% 1.44 - 2.54), IDHS 2007 was 2.64 (CI 95% 2.12 - 3.29) and IDHS 2012 was 2.40 (CI 95% 1.97 - 2.93). The answer gave information about whether the mothers measured their weight during pregnancy. This question had a positive influence on pregnancy activities.

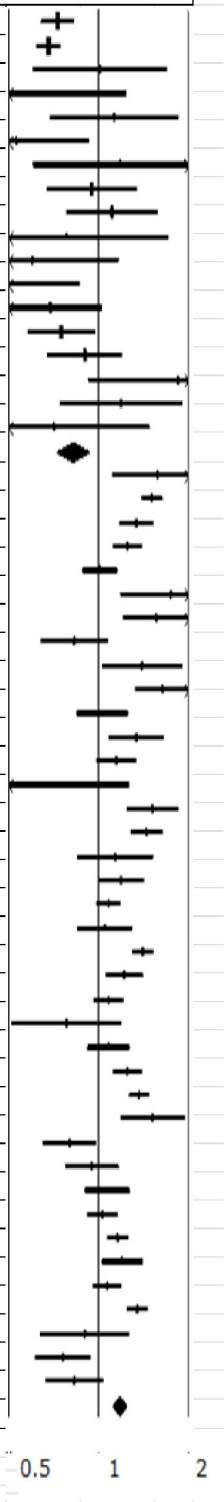
4.4.2.10. During pregnancy; urine sample was taken and blood sample taken

Table 4.3 number 34, 35 and 36 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the urine sample was taken during pregnancy. The odds ratios of IDHS 2002-2003 was 1.14 (CI 95% 1.00 - 1.30), IDHS 2007 was 1.17 (CI 95% 1.06 - 1.29) and IDHS 2012 was 1.23 (CI 95% 1.14 - 1.33). This question asked the information about whether the mothers checked their urine at a health facility or laboratory during pregnancy. This question had a positive influence on pregnancy activities.

Table 4.3 numbers 37, 38 and 39 showed odds ratios IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the blood sample was taken during pregnancy. The odds ratio IDHS 2002-2003 was 1.37 (CI 95% 1.21 - 1.56), IDHS 2007 was 1.26 (CI 95% 1.15 - 1.38) and IDHS 2012 was 1.30 (CI 95% 1.20 - 1.40). The

Table 4.4
Odds ratios of the association between Home-Based Records and knowledge of delivery

No	Bad/Good	Study Name	IDHS	Odds Ratio and 95% CI
1	Bad	Problems during labor/delivery: dont know	2002	0.73 (0.64-0.83)
2	Bad	Problems during labor/delivery: dont know	2007	0.68 (0.62-0.75)
3	Bad	Problems during labor/delivery: dont know	2012	1.01 (0.60-1.70)
4	Bad	Should do if experience this problem during labor/delivery: don't know	2002	0.16 (0.02-1.24)
5	Bad	Should do if experience this problem during labor/delivery: don't know	2007	1.13 (0.69-1.86)
6	Bad	Should do if experience this problem during labor/delivery: don't know	2012	0.53 (0.30-0.93)
7	Bad	Should do if experience this problem: nothing	2002	0.78 (0.35-1.72)
8	Bad	Should do if experience this problem: nothing	2007	0.60 (0.31-1.17)
9	Bad	Should do if experience this problem: nothing	2012	0.37 (0.16-0.87)
10	Bad	Should do if experience this problem: see TBA	2002	0.69 (0.46-1.03)
11	Bad	Should do if experience this problem: see TBA	2007	0.75 (0.58-0.97)
12	Bad	Should do if experience this problem: see TBA	2012	0.90 (0.67-1.20)
13	Bad	Should do if experience this problem: take herbs	2002	1.85 (0.92-3.72)
14	Bad	Should do if experience this problem: take herbs	2007	1.19 (0.74-1.91)
15	Bad	Should do if experience this problem: take herbs	2012	0.71 (0.34-1.49)
	Bad	Random 0.82 (0.72--0.93); Z value (-3.08) P *value* (0.002)		
16	Good	Problems during labor/delivery: excessive bleeding	2012	1.01 (0.88-1.16)
17	Good	Problems during labor/delivery: excessive bleeding	2007	1.25 (1.11-1.40)
18	Good	Problems during labor/delivery: excessive bleeding	2002	1.34 (1.17-1.53)
19	Good	Problems during labor/delivery: convulsions	2002	1.58 (1.11-2.25)
20	Good	Problems during labor/delivery: convulsions	2012	1.51 (1.39-1.64)
21	Good	Problems during labor/delivery: faint	2002	1.75 (1.18-2.60)
22	Good	Problems during labor/delivery: faint	2007	1.56 (1.21-2.02)
23	Good	Problems during labor/delivery: faint	2012	0.83 (0.64-1.08)
24	Good	Problems during labor/delivery: fever	2012	1.03 (0.84-1.26)
25	Good	Problems during labor/delivery: fever	2007	1.64 (1.33-2.03)
26	Good	Problems during labor/delivery: fever	2002	1.40 (1.02-1.92)
27	Good	Problems during labor/delivery: long labor	2012	0.49 (0.19-1.27)
28	Good	Problems during labor/delivery: long labor	2007	1.15 (0.98-1.34)
29	Good	Problems during labor/delivery: long labor	2002	1.34 (1.08-1.66)
30	Good	Problems during labor/delivery: placenta does not come out	2012	1.08 (0.98-1.19)
31	Good	Problems during labor/delivery: placenta does not come out	2002	1.19 (1.00-1.42)
32	Good	Problems during labor/delivery: stillbirth	2012	1.41 (1.30-1.53)
33	Good	Problems during labor/delivery: stillbirth	2002	1.05 (0.85-1.30)
34	Good	Problems during labor/delivery: water breaks too soon	2012	0.78 (0.51-1.20)
35	Good	Problems during labor/delivery: water breaks too soon	2007	1.08 (0.96-1.22)
36	Good	Problems during labor/delivery: water breaks too soon	2002	1.22 (1.05-1.41)
37	Good	Should do if experience this problem: rest	2012	0.95 (0.77-1.17)
38	Good	Should do if experience this problem: rest	2007	0.80 (0.65-0.99)
39	Good	Should do if experience this problem: rest	2002	1.52 (1.18-1.95)
40	Good	Should do if experience this problem: go to a health facility	2012	1.37 (1.26-1.48)
41	Good	Should do if experience this problem: go to a health facility	2007	1.25 (1.11-1.40)
42	Good	Should do if experience this problem: go to a health facility	2002	1.08 (0.91-1.28)
43	Good	Should do if experience this problem: see doctor	2012	1.16 (1.06-1.26)
44	Good	Should do if experience this problem: see doctor	2007	1.03 (0.91-1.16)
45	Good	Should do if experience this problem: see doctor	2002	1.07 (0.90-1,28)
46	Good	Should do if experience this problem: see midwife	2012	1.35 (1.24-1.47)
47	Good	Should do if experience this problem: see midwife	2007	1.07 (0.96-1.20)
48	Good	Should do if experience this problem: see midwife	2002	1.20 (1.02-1.41)
	Good	Random 1.12 (1,06-1.17) P value (4.23) P *value* (0.00001)		



answer gave information about whether mothers checked their blood at a health facility or laboratory. This question had a positive influence on pregnancy activities.

4.4.2.11. Told where to go for pregnancy complications

This question asked information about whether or not the mothers were taught by midwives or doctors about pregnancy complications and where to go. This question had a positive influence on pregnancy activities.

Table 4.3 numbers 40 and 41 showed odds ratios of IDHS 2002-2003 and IDHS 2007 of the question. The odds ratios of IDHS 2002-2003 was 0.90 (CI 95% 0.64 - 1.27) and IDHS 2007 was 1.07 (CI 95% 0.91 - 1.26).

4.4.3. Knowledge during delivery

The knowledge during delivery is one of the factors associated with a safe delivery (see table 4.4). the odds ratios of knowledge during delivery consisted of 39 questions which are related to the good influence of delivery information during pregnancy and 18 questions are related to the bad influence of delivery information during pregnancy to the mothers. Table 4.4 showed that being in the home-based group is negative influence with bad knowledge of delivery information; the odds ratio was 0.82; (CI 95% 0.72-0.93) and positive influence with good knowledge of delivery, the odd ratio was 1.12 (CI 95% 1.06-1.17).

4.4.3.1. Problems during labor: don't know

Table 4.4 in the section of bad activities numbers 1, 2 and 3 showed an odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about whether mothers knew problems during labor. The answer of the mothers was "didn't know'. The odds ratios IDHS 2002-2003 was 0.73 (CI 95% 0.64 -0.83), IDHS 2007 was 0.68 (CI 95% 0.62 - 0.75) and IDHS 2012 was 1.01 (CI 95% 0.60 - 1.70). The mothers gave the information that they didn't know problems during labor. This question had a negative influence on pregnancy information and activities.

4.4.3.2. What should they do if they experience this problem during delivery: don't know

The section of bad activities numbers 4, 5 and 6 in Table 4.4 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about the information what should the mothers did if they experienced the problem, the answer of the mother were " didn't " know. The odds ratio IDHS 2002-2003 was 0.16 (CI 95% 0.02 -1.24), IDHS 2007 was 1.13 (CI 95% 0.69 - 1.86) and IDHS 2012 was 0.53 (CI 95% 0.30 - 0.93). This question gave the information, if the mothers had problems, they would not have done anything to solve their problems because they didn't know what should they do. This question had a negative influence on pregnancy information and activities.

4.4.3.3. What should they do if they experience this problem during delivery: nothing

This answer gave information that if the mothers had problems during delivery time, they would haven't done anything to solve the problems. Mothers should visit health personnel for consult their problems during the time because only doctors and midwives have the personal capacity to give the right information to cure the problem, the decision to find others way or do not to do anything may be dangerous to their health. This question had a negative influence on pregnancy information and activities.

Table 4.4 in the section of bad activities number 7, 8 and 9 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about the question. The odds ratio IDHS 2002-2003 was 0.78 (CI 95% 0.35 - 1.72) IDHS 2007 was 0.60 (CI 95% 0.31 - 1.17) and IDHS 2012 was 0.37 (CI 95% 0.16 - 0.87).

4.4.3.4. What should they do if they experience this problem during delivery: see TBA

The section of bad activities numbers 10, 11 and 12 in Table 4.4 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about what should they did if they experienced this problem; the mothers would see TBA. The odds ratio IDHS 2002-2003 was 0.69 (CI 95% 0.46 - 1.03), IDHS 2007 was 0.75 (CI 95% 0.58 - 0.97) and IDHS 2012 was 0.90 (CI 95% 0.67 - 1.20). The answer gave information that if the mothers had problems during delivery, they would go to TBA to solve their problems. This question had a negative influence on pregnancy information and activities.

4.4.3.5. What should they do if experience this problem during delivery: takes Herbs

Table 4.4 in the section of bad activities number 13, 14 and 15 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 what should they do if experience this problem: take herbs. The odds ratio IDHS 2002-2003 was 1.85 (CI 95% 0.92 - 3.72) IDHS 2007 was 1.19 (CI 95% 0.74 - 1.91) and IDHS 2012 was 0.71 (CI 95% 0.34- 1.49). The answer gave information that if the mothers had problems during delivery, they would take herbs to solve their problems. Herbs or Jammu in Indonesia have many types; even there is Jammu for cure the problems during delivery, but it is not recommended to mothers to use during this time. This question had a negative influence on pregnancy information and activities.

4.4.3.6. Problems during delivery: excessive bleeding

The number 16, 17 and 18 in Table 4.4 on the section of good activities showed odds ratios of IDHS 2002-2003 and IDHS 2012 about excessive bleeding. The odds ratio IDHS 2002-2003 was 1.34 (CI 95% 1.11 - 2.25), IDHS 2007 was 1.25 (CI 95% 1.11 -1.40) and IDHS 2012 was 1.01 (CI 95% 0.88 - 1.16). The answer gave information that the mothers knew about excessive bleeding as one of the problems during delivery. This question had a positive influence on pregnancy information and activities.

4.4.3.7. Problems during delivery: convulsions

Table 4.4 in the section of good activities number 19 and 20 showed odds ratios of IDHS 2002-2003 and IDHS 2012 about convulsions. The odds ratio IDHS 2002-2003 was 1.58 (CI 95% 1.11 - 2.25), and IDHS 2012 was 1.51 (CI 95% 1.39 - 1.64). The answer gave information that the mothers knew about convulsion as a problem during delivery. This question had a positive influence on pregnancy information and activities.

4.4.3.8. Problems during delivery: faint; fever and long labor

Table 4.4 in the section of good activities number 21, 22 and 23 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about faint. The odds ratio IDHS 2002-2003 was 1.75 (CI 95% 1.18 - 2.60), IDHS 2007 was 1.56 (CI 95% 1.21 -2.02) and IDHS 2012 was 0.83 (CI 95% 0.64 - 1.08). The

answer gave information that the mothers knew about fainting as problems during delivery. This question had a positive influence on pregnancy information and activities.

The number 24, 25 and 26 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about fever. The odds ratio IDHS 2002-2003 was 1.40 (CI 95% 1.02 - 1.92), IDHS 2007 was 1.64 (CI 95% 1.33 - 2.03) and IDHS 2012 was 1.03 (CI 95% 0.84 -1.26). The answer gave information that the mothers knew about fever as a problem during delivery. This question had a positive influence on pregnancy information and activities.

The number 27, 28 and 29 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of long labor. The odds ratio IDHS 2002-2003 was 1.34 (CI 95% 1.08 -1.66), IDHS 2007 was 1.15 (CI 95% 0.98 -1.34) and IDHS 2012 was 0.49 (CI 95% 0.19 -1.27). The answer gave information that the mothers knew about long labor as problems during delivery. This question had a positive influence on pregnancy information and activities.

4.4.3.9. Problems during delivery: placenta doesn't come out

The answer gave information that the mothers knew that the placenta did not come out was a problem during delivery. This question had a positive influence on pregnancy information and activities. Table 4.4 in the section of good activities number 30 and 31 showed odds ratios of IDHS 2002-2003 and IDHS 2012 of placenta didn't come out. The odds ratio IDHS 2002-2003 was 1.19 (CI 95% 1.00 - 1.42) and IDHS 2012 was 1.08 (CI 95% 0.98 -1.19).

4.4.3.10. Problems during delivery: stillbirth

The number 32 and 33 showed odds ratios of IDHS 2002-2003 and IDHS 2012 of stillbirth. The odds ratio IDHS 2002-2003 was 1.05 (CI 95% 0.85- 1.30) and IDHS 2012 was 1.41 (CI 95% 1.30 -1.53). The answer gave information that the mothers knew about stillbirth as a problem during delivery. This question had a positive influence on pregnancy information and activities.

4.4.3.11. Problems during delivery: water breaks too soon

The answer gave information that the mothers knew premature water breakage as a problem during delivery. This question had a positive influence on pregnancy information and activities. Table 4.4 in the section of good activities number 34, 35 and 36 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of water breaking too soon. The odds ratio IDHS 2002-2003 was 1.22 (CI 95% 1.05 -1.41), IDHS 2007 was 1.08 (CI 95% 0.96 - 1.22) and IDHS 2012 was 0.78 (CI 95% 0.51 - 1.20).

4.4.3.12. What should they do if they experience this problem: rest

The answer gave information that if the mothers had problems such as convulsions, excessive bleeding, fainting, fever, long labor, placenta not coming out, stillbirth, water breaking too soon, etc., They would take a rest. This question had a positive influence on pregnancy information and activities. Table 4.4 in the section of good activities number 37, 38 and 39 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of rest. The odds ratio IDHS 2002-2003 was 1.52 (CI 95% 1.18 - 1.95), IDHS 2007 was 0.80 (CI 95% 0.65 - 0.99) and IDHS 2012 was 0.95 (CI 95% 0.77 -1.17).

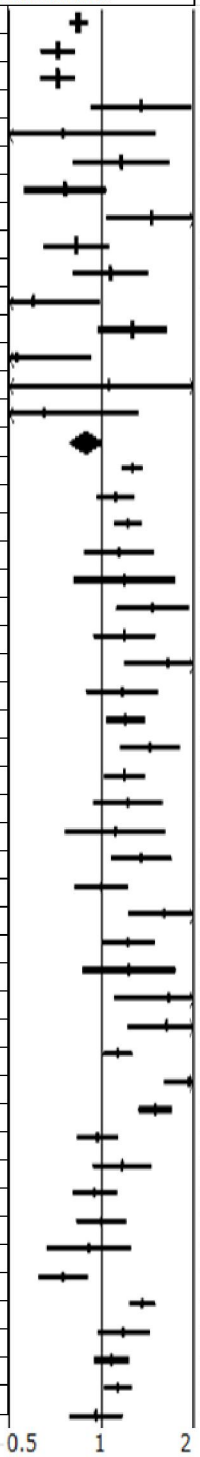
4.4.3.13. What they should do if they experience this problem: go to the health facility, see a doctor and midwife

Table 4.4 in the section of good activities number 40, 41 and 42 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question whether the mothers went to the health facility. The odds ratio IDHS 2002-2003 was 1.08 (CI 95% 0.91 - 1.28), IDHS 2007 was 1.25 (CI 95% 1.11- 1.40) and IDHS 2012 was 1.37 (CI 95% 1.26 - 1.48). The answer gave information that if the mothers had problems such as convulsions, excessive bleeding, faint, fever, long labor, placenta didn't come out, stillbirth, water break too soon, etc., They would go to a health facility. This question had a positive influence on pregnancy information and activities.

The number 43, 44 and 45 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question about if seeing a doctor. The odds ratios IDHS 2002-2003 was 1.07 (CI 95% 0.90 -1.28),

Table 4.5
Odds ratios of the association between Home-Based Records and knowledge after delivery

No	Bad/Good	Study Name	IDHS	Odds Ratio and 95% CI
1	Bad	After giving birth/during seclusion: don't know	2012	0.84 (0.78-0.90)
2	Bad	After giving birth/during seclusion: don't know	2002	0.72 (0.63-0.82)
3	Bad	After giving birth/during seclusion: don't know	2007	0.72 (0.63-0.82)
4	Bad	Should do if experience this problem: nothing	2012	1.35 (0.92-1.98)
5	Bad	Should do if experience this problem: nothing	2002	0.75 (0.37-1.51)
6	Bad	Should do if experience this problem: nothing	2007	1.16 (0.81-1.67)
7	Bad	Should do if experience this problem: don't know	2012	0.53 (0.30-0.93)
8	Bad	Should do if experience this problem: don't know	2002	1.06 (0.37-3.06)
9	Bad	Should do if experience this problem: don't know	2007	0.65 (0.32-1.32)
10	Bad	Should do if experience this problem: see TBA	2012	1.07 (0.80-1.43)
11	Bad	Should do if experience this problem: see TBA	2002	0.60 (0.36-0.99)
12	Bad	Should do if experience this problem: see TBA	2007	1.26 (0.97-1.64)
13	Bad	Should do if experience this problem: take herbs	2012	0.76 (0.56-1.04)
14	Bad	Should do if experience this problem: take herbs	2002	1.46 (1.03-2.06)
15	Bad	Should do if experience this problem: take herbs	2007	0.83 (0.65-1.06)
	Bad	Random 0.89 (0.78-1.00); Z value (-1.89) P value (0.06)		
16	Good	Problems after giving birth: excessive bleeding	2012	1.26 (1.16-1.37)
17	Good	Problems after giving birth: excessive bleeding	2002	1.11 (0.96-1.28)
18	Good	Problems after giving birth: excessive bleeding	2007	1.22 (1.10-1.36)
19	Good	Problems after giving birth: convulsions	2012	1.19 (0.94-1.50)
20	Good	Problems after giving birth: convulsions	2002	1.65 (1.18-2.30)
21	Good	Problems after giving birth: convulsions	2007	1.17 (0.89-1.54)
22	Good	Problems after giving birth: faint	2012	1.14 (0.88-1.48)
23	Good	Problems after giving birth: faint	2002	1.19 (0.81-1.75)
24	Good	Problems after giving birth: faint	2007	1.47 (1.11-1.94)
25	Good	Problems after giving birth: fever	2012	1.20 (1.03-1.39)
26	Good	Problems after giving birth: fever	2002	1.44 (1.15-1.81)
27	Good	Problems after giving birth: fever	2007	1.19 (1.01-1.40)
28	Good	Problems after giving birth: foul-smelling discharge	2012	1.22 (0.94-1.58)
29	Good	Problems after giving birth: foul-smelling discharge	2002	1.11 (0.76-1.62)
30	Good	Problems after giving birth: foul-smelling discharge	2007	1.35 (1.07-1.70)
31	Good	Problems after giving birth: sore breast	2012	1.00 (0.82-1.22)
32	Good	Problems after giving birth: sore breast	2002	1.60 (1.22-2.09)
33	Good	Problems after giving birth: sore breast	2007	1.22 (0.99-1.50)
34	Good	Problems after giving birth: sadness/depression	2012	1.23 (0.86-1.75)
35	Good	Problems after giving birth: sadness/depression	2002	1.66 (1.10-2.51)
36	Good	Problems after giving birth: sadness/depression	2007	1.63 (1.21-2.19)
37	Good	Should do if experience this problem: rest	2012	0.97 (0.83-1.13)
38	Good	Should do if experience this problem: rest	2002	1.17 (0.94-1.46)
39	Good	Should do if experience this problem: rest	2007	0.95 (0.80-1.12)
40	Good	Should do if experience this problem: go to a health facility	2012	1.31 (1.18-1.45)
41	Good	Should do if experience this problem: go to a health facility	2002	1.15 (0.94-1.41)
42	Good	Should do if experience this problem: go to a health facility	2007	1.11 (0.97-1.28)
43	Good	Should do if experience this problem: see doctor	2012	1.13 (1.02-1.26)
44	Good	Should do if experience this problem: see doctor	2002	0.96 (0.78-1.18)
45	Good	Should do if experience this problem: see doctor	2007	0.98 (0.85-1.13)
46	Good	Should do if experience this problem: see midwife	2012	1.36 (1.23-1.50)
47	Good	Should do if experience this problem: see midwife	2002	1.18 (0.97-1.44)
48	Good	Should do if experience this problem: see midwife	2007	1.08 (0.95-1.23)
	Good	Random 1.22 (1.16-1.28); Z value (7.655) P value (0.0001)		



IDHS 2007 was 1.03 (CI 95 0.91- 1.16) and IDHS 2012 was 1.16 (CI 95% 1.06 - 1.26). The answer gave information that if the mothers had problems such as convulsions, excessive bleeding, faint, fever, long labor, placenta not coming out, stillbirth, water breaking too soon, etc., The mothers would visit the doctor for consultation or treatment. This question had a positive influence on pregnancy information and activities.

The number 34, 35 and 36 showed adjusted odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 about seeing midwives. The odds ratio IDHS 2002-2003 was 1.20 (CI 95% 1.02 -1.41), IDHS 2007 was 1.07 (CI 95 0.96 - 1.20) and IDHS 2012 was 1.35 (CI 95% 1.24 -1.47). The answer gave information that if the mothers had problems such as convulsions, excessive bleeding, fainting, fever, long labor, placenta not coming, stillbirth, water breaking too soon, etc., The mothers would visit the midwives for consultation or treatment. This question had a positive influence on pregnancy information and activities.

4.4.4. Knowledge after delivery

The knowledge of after delivery is one of the factors associated with a safe delivery (see table 4.5). The Odds ratios HBRs of knowledge after delivery consisted of 33 questions which were associated with good effect of the after delivery information during pregnancy and 15 question related to bad effect of the after delivery information during pregnancy to the mothers. Table 4.5 showed that being in the home-based group was negatively associated with bad knowledge after delivery 0.89 (CI 95% 0.78-1.00) and positively influenced good knowledge after delivery 1.22 (CI 95% 1.16-1.28).

4.4.4.1. What should they do if they are experiencing problem after giving birth: don't know

Table 4.5 in the section of bad activities number 1, 2 and 3 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 about problem after giving birth. The answer of mothers that they didn't know The odds ratios IDHS 2012 was 0.84 (CI 95% 0.78 - 0.90), IDHS 2002-2003 was 0.72 (CI 95% 0.63 - 0.82) and IDHS 2007 was 0.72 (CI 95% 0.63 - 0.82). The answer gave information that the mothers didn't know problems after giving birth. This question had a negative influence on pregnancy information and activities.

4.4.4.2. What should they do if they are experiencing problems after delivery: nothing

This answer gave information that if the mothers had problems during delivery time, they would do nothing to solve the problems. Actually, they have to visit health workers for consult their problems during this time because only doctors and midwives have the right information to solve the problems, the decision to find others way or do not do anything may be dangerous to their health. This question had a negative influence on pregnancy information and activities. Table 4.5 in the section of bad activities number 4, 5 and 6 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 about the question. The odds ratios IDHS 2012 was 1.35 (CI 95% 0.92 - 1.98), IDHS 2002-2003 was 0.75 (CI 95% 0.37 - 1.51) and IDHS 2007 was 1.61 (CI 95% 0.81 - 1.67).

4.4.4.3. What should they do if they the are experiencing the problems after delivery: don't know

Table 4.5 in the section of bad activities number 7, 8 and 9 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 about the question. The odds ratio IDHS 2012 was 0.53 (CI 95% 0.30 - 0.93),IDHS 2002-2003 was 1.06 (CI 95% 0.37 - 3.06) and IDHS 2007 was 0.65 (CI 95% 0.32 -1.32). The answer gave information that if the mothers had problems after delivery, they wouldn't know where to go to solve their problems. Doctors and midwives explained the mothers during their visits to go to the health facility or consult to the nearest hospital how to cure the problems. MCHHB also gave an explanation of where to go if something serious appears. There were many sources of information about post pregnancy knowledge that was impossible for mothers to miss if they looked for it. This question had a negative influence on pregnancy information and activities.

4.4.4.4. What should they do if they are experiencing the problems after delivery: see TBA

The answer gave information that if the mothers had problems after giving birth, they would go to TBA to solve their problems. One of the reasons for high maternal mortality rate in Indonesia is due to the activities of pregnancy mothers that are still visiting traditional birth attendants for consult and delivery. This question had negative influence pregnancy information and activities Table 4.5 in the section of bad

activities number 10, 11 and 12 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 about seeing TBA. The odds ratios IDHS 2012 was 1.07 (CI 95% 0.80 - 1.43), IDHS 2002-2003 was 0.60 (CI 95% 0.36 - 0.99) and IDHS 2007 was 1.26 (CI 95% 0.97 -1.64).

What should they do if they experience problems after delivery: take herbs

Table 4.5 in the section of bad activities number 13, 14 and 15 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 about taking herbs. The odds ratios IDHS 2012 was 0,76 (CI 95% 0.56-1.04), IDHS 2002-2003 was 1,46 (CI 95% 0.65-1.06) and IDHS 2007 was 0,83 (CI 95% 0.16 - 0.87). This answer indicated that if the mothers had problems during delivery time, they would take herbs solve the problems.

4.4.4.5. Problems after giving birth: excessive bleeding

The section of good activities number 16, 17 and 18 in Table 4.5 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 of excessive bleeding. The odds ratio IDHS 2012 was 1.26 (CI 95% 1.16 - 1.37), IDHS 2002-2003 was 1.11 (CI 95% 0.96 -1.28) and IDHS 2007 was 1.22 (CI 95% 1.10 -1.36). This answer gave information that the mothers knew about excessive bleeding as a post delivery problem. This question had a positive influence on pregnancy information and activities.

4.4.4.6. Problems after giving birth: convulsions

The answer gave information that the mothers had known about convulsions as a post delivery problem. This question had a positive influence on pregnancy information and activities.

Table 4.5 in the section of good activities number 19, 20 and 21 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 of convulsions. The odds ratios IDHS 2012 was 1.19 (CI 95% 0.94 - 1.50), IDHS 2002-2003 was 1.65 (CI 95% 1.18 -2.30) and IDHS 2007 was 1.17 (CI 95% 0.89 - 1.54).

4.4.4.7. Problems after giving birth: faint and fever

Table 4.5 in the section of good activities number 22, 23 and 24 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 about fainting. The odds ratios IDHS 2012 was 1.14 (CI 95% 0.88

-1.48), IDHS 2002-2003 was 1.19 (CI 95% 0.81 -1.75) and IDHS 2007 was 1.47 (CI 95% 1.11 - 1.94). The answer gave information that the mothers knew about fainting as one of after delivery problems. This question had a positive influence on pregnancy information and activities.

The number 25, 26 and 27 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 about fever. The odds ratio IDHS 2012 was 1.20 (CI 95% 1.03 -1.39), IDHS 2002-2003 was 1.44 (CI 95% 1.15 -1.81) and IDHS 2007 was 1.19 (CI 95% 1.01 - 1.40). The answer gave that the mothers knew about fever as a post delivery problem. This question had a positive influence on pregnancy information and activities.

4.4.4.8. Problems after giving birth: foul-smelling discharge

The answer gave information that the mothers knew about foul-smelling discharge as a post delivery problem. This question had a positive influence on pregnancy information and activities. Table 4.5 in the section of good activities number 28, 29 and 30 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 of foul-smelling discharge. The odds ratio IDHS 2012 was 1.22 (CI 95% 0.94 -1.58), IDHS 2002-2003 was 1.11 (CI 95% 0.76 - 1.62) and IDHS 2007 was 1.35 (CI 95% 1.07 - 1.70).

4.4.4.9. Problems after giving birth: sore breasts

The answer gave information that the mothers had known about sore breasts as a post delivery problem. This question had a positive influence on pregnancy information and activities. Table 4.5 in the section of good activities number 31, 32 and 33 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 of the sore breast. The odds ratios IDHS 2012 was 1.00 (CI 95% 0.82 -1.22), IDHS 2002-2003 was 1.60, (CI 95% 1.22 -2.09) and IDHS 2007 was 1.22 (CI 95% 0.99 - 1.50).

4.4.4.10. Problems after giving birth: sadness/depression

The answer gave information that the mothers knew about sadness or depression as a post delivery problem. This question had a positive influence on pregnancy information and activities. Table 4.5 in the section of good activities number 34, 35 and 36 showed odds ratios of IDHS 2012, IDHS 2002-2003 and

IDHS 2007 about sadness/depression. The odds ratios IDHS 2012 was 1.23 (CI 95% 0.86 - 1.75), IDHS 2002-2003 was 1.66 (CI 95% 1.10 - 2.51) and IDHS 2007 was 1.63 (CI 95% 1.21 -2.19).

4.4.4.11. What should they do if they are experiencing this problem: rest

The answer gave information that if the mothers had this problem, they would rest. This question had a positive influence on pregnancy information and activities. Table 4.5 in the section of good activities number 37, 38 and 39 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 of what mothers should do if they experienced this problem: rest. The odds ratio IDHS 2012 was 0.97 (CI 95% 0.83 - 1.13), IDHS 2002-2003 was 1.17 (CI 95% 0.94 - 1.46) and IDHS 2007 was 0.95 (CI 95% 0.80 -1.12).

4.4.4.12. What should they do if they experience this problem: going to health facility, seeing Doctor and Midwife

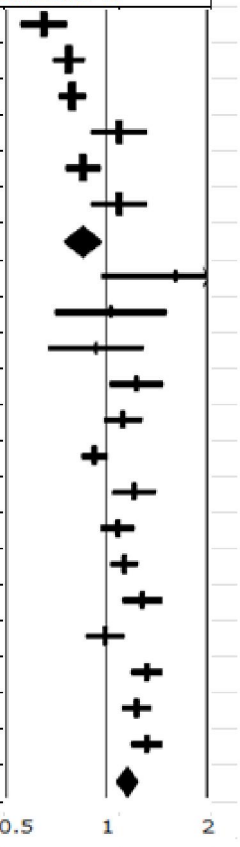
Table 4.5 in the section of good activities number 40, 41 and 42 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 of what mothers should do if experience this problem: go to a health facility. The odds ratio IDHS 2012 was 1.31 (CI 1.18 - 1.45), IDHS 2002-2003 was 1.15 (CI 95% 0.94 - 1.41) and IDHS 2007 was 1.11 (CI 95% 0.97 - 1.28). The answer gave information that if the mothers had this problem, they would go to the health facility for treatment. This question had positive influence on pregnancy information and activities

The number 43, 44 and 45 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 of what mothers should do if experience this problem: see a doctor. The odds ratio IDHS 2012 was 1.13 (CI 1.02 - 1.26), IDHS 2002-2003 was 0.96 (CI 95% 0.78 - 1.18) and IDHS 2007 was 0.98 (CI 95% 0.85 - 1.13). The answer gave informed that if the mothers had this problem, they would see a doctor for treatment. This question had positive influence on pregnancy information and activities

The number 46, 47 and 48 showed odds ratios of IDHS 2012, IDHS 2002-2003 and IDHS 2007 of the question of what mothers should do if experience this problem: see midwives. The odds ratio IDHS 2012 was 1.36 (CI 1.23 - 1.50), IDHS 2002-2003 was 1.18 (CI 95% 0.97 - 1.44) and IDHS 2007 was 1.08 (CI

Table 4.6
Odds ratios of the association between Home-Based Records and delivery assistant

No	Bad/Good	Study Name	IDHS	Odds Ratio and 95% CI
1	Bad	Traditional birth attendant	2002	0.65 (0.55-0.76)
2	Bad	Traditional birth attendant	2007	0.77 (0.69-0.86)
3	Bad	Traditional birth attendant	2012	0.79 (0.72-0.87)
4	Bad	Relative/friend	2002	1.09 (0.90-1.33)
5	Bad	Relative/friend	2007	0.85 (0.75-0.96)
6	Bad	Relative/friend	2012	1.09 (0.90-1.33)
	Bad	Random 0.85 (0.74-0.96); Z value (-2.53) P value (0.01)		
7	Good	Doctor	2002	1.61 (0.96-2.69)
8	Good	Doctor	2007	1.03 (0.70-1.52)
9	Good	Doctor	2012	0.93 (0.67-1.29)
10	Good	Obstetrician	2002	1.23 (1.02-1.48)
11	Good	Obstetrician	2007	1.12 (0.98-1.28)
12	Good	Obstetrician	2012	0.92 (0.84-1.01)
13	Good	Vilage midwife	2002	1.21 (1.04-1.41)
14	Good	Vilage midwife	2007	1.08 (0.96-1.22)
15	Good	Vilage midwife	2012	1.13 (1.03-1.24)
16	Good	Nurse/midwives	2002	1.28 (1.11-1.47)
17	Good	Nurse	2007	0.99 (0.86-1.13)
18	Good	Nurse	2012	1.32 (1.18-1.47)
19	Good	Midwives	2007	1.23 (1.11-1.36)
20	Good	Midwives	2012	1.32 (1.18-1.47)
	Good	Random 1.15 (1.07-1.24); Z value (3.73) P value (0.00001)		



95% 0.95 -1.23). the answer gave information that if the mothers had this problem, they would see midwives for treatment. This question had a positive influence on pregnancy information and activities.

4.4.5. Choice of delivery assistant

Women's behavior in finding delivery assistance was critical for a safe delivery (see table 4.6). Odds ratios HBRs of Choice of delivery assistant consisted of 14 questions which were associated with Good effect for a safe delivery and 6 questions related to Bad Effect for safe delivery. Table 4.6 showed that being in the home-based group was negatively related to bad delivery assistant OR 0.85 (95% CI: 0.74 – 0.96) and positively related to good delivery assistance OR 1.15, 95% (CI: 1.07 -1.24).

4.4.5.1. Delivery assistant: traditional birth attendance

The answer gave information that mothers went to traditional birth attendants for delivering their babies. This question had a negative influence on delivery activities. Table 4.6 in the section of bad activities number 1, 2 and 3 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the question of delivery assistant: traditional birth attendance. The odds ratio IDHS 2002-2003 was 0.65 (CI 95% 0.55 - 0.76), IDHS 2007 was 0.77 (CI 95% 0.69 - 0.86) and IDHS 2012 was 0.79 (CI 95% 0.72 - 0.87).

4.4.5.2. Delivery assistant: relative

Table 4.6 in the section of bad activities number 4, 5 and 6 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of mother's relative as a delivery assistant. The odds ratio IDHS 2002-2003 was 1.09 (CI 95% 0.90 -1.33), IDHS 2007 was 0.85 (CI 95% 0.75 - 0.96) and IDHS 2012 was 1.09 (CI 95% 0.90 - 1.33). The answer gave information that mothers went to their relatives for delivering their babies. This question had a negative influence on delivery activities.

4.4.5.3. Delivery assistant: doctor

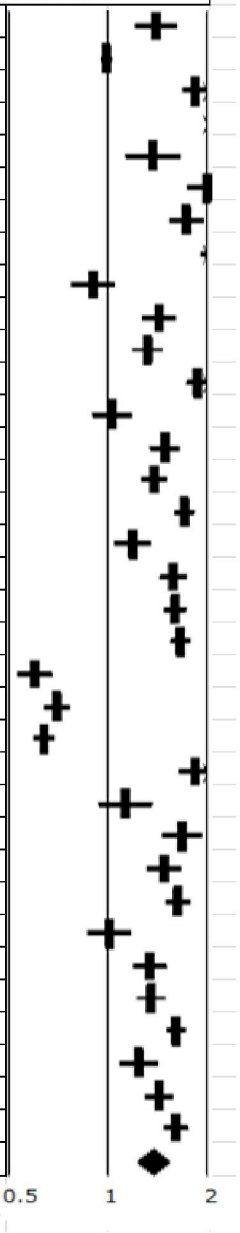
The number 7, 8 and 9 in Table 4.6 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of the doctor as a delivery assistant. The odds ratio IDHS 2002-2003 was 1.61 (CI 95% 0.96 -2.69), IDHS 2007 was 1.03 (CI 95% 0.70 - 1.52) and IDHS 2012 was 0.93 (CI 95% 0.67 -1.29). The answer gave information that mothers went to the doctor for delivering their babies. This question had a positive influence on delivery activities.

4.4.5.4. Delivery assistant: obstetrician

The answer gave information that mothers went to an obstetrician for delivering their babies. This question had a positive influence on delivery activities. Table 4.6 in the section of good activities number 10, 11 and 12 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of obstetrician as a delivery assistant. The odds ratio IDHS 2002-2003 was 1.23 (CI 95% 1.02 - 1.48), IDHS 2007 was 1.12, (CI 95% 0.98 - 1.28) and IDHS 2012 was 0.92 (CI 95% 0.84 -1.01).

Table 4.7
Odds ratios of the association between Home-Based Records and practice immunization

No	Bad/Good	Study Name	IDHS	Odds Ratio and 95% CI
1	Good	Hepatities B	2002	1.40 (1.21-1.62)
2	Good	Hepatities B	2007	0.99 (0.95-1.03)
3	Good	Hepatities B	2012	1.84 (1.68-2.01)
4	Good	Received BCG	1997	2.28 (2.08-2.50)
5	Good	Received BCG	2002	1.37 (1.13-1.67)
6	Good	Received BCG	2007	2.00 (1.74-2.30)
7	Good	Received BCG	2012	1.73 (1.53-1.96)
8	Good	Received DPT 1	1997	2.08 (1.91-2.27)
9	Good	Received DPT 1	2002	0.90 (0.77-1.05)
10	Good	Received DPT 1	2007	1.43 (1.27-1.61)
11	Good	Received DPT 1	2012	1.32 (1.19-1.47)
12	Good	Received DPT 2	1997	1.87 (1.73-2.02)
13	Good	Received DPT 2	2002	1.03 (0.89-1.19)
14	Good	Received DPT 2	2007	1.49 (1.34-1.66)
15	Good	Received DPT 2	2012	1.38 (1.26-1.51)
16	Good	Received DPT 3	1997	1.71 (1.59-1.83)
17	Good	Received DPT 3	2002	1.19 (1.04-1.36)
18	Good	Received DPT 3	2007	1.58 (1.43-1.74)
19	Good	Received DPT 3	2012	1.60 (1.48-1.73)
20	Good	Received MEASLES	1997	1.66 (1.54-1.78)
21	Good	Received MEASLES	2002	0.60 (0.53-0.68)
22	Good	Received MEASLES	2007	0.70 (0.64-0.77)
23	Good	Received MEASLES	2012	0.64 (0.59-0.69)
24	Good	Received POLIO 1	1997	1.84 (1.64-2.06)
25	Good	Received POLIO 1	2002	1.13 (0.93-1.37)
26	Good	Received POLIO 1	2007	1.68 (1.46-1.94)
27	Good	Received POLIO 1	2012	1.48 (1.31-1.68)
28	Good	Received POLIO 2	1997	1.63 (1.49-1.78)
29	Good	Received POLIO 2	2002	1.01 (0.87-1.18)
30	Good	Received POLIO 2	2007	1.34 (1.19-1.51)
31	Good	Received POLIO 2	2012	1.35 (1.22-1.49)
32	Good	Received POLIO 3	1997	1.61 (1.50-1.73)
33	Good	Received POLIO 3	2002	1.24 (1.08-1.42)
34	Good	Received POLIO 3	2007	1.43 (1.29-1.58)
35	Good	Received POLIO 3	2012	1.61 (1.48-1.76)
	Good	Random 1.37 (1.23-1.53); Z value (5.59) P *value* (0.00001)		



4.4.5.5. Delivery assistant: village midwives

Table 4.6 in the section of good activities number 13, 14 and 15 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of village midwives as a delivery assistant. The odds ratio IDHS 2002-2003 was 1.21 (CI 95% 1.04 - 1.41), IDHS 2007 was 1.08 (CI 95% 0.96 - 1.22) and IDHS 2012 was 1.13

(CI 95% 1.03 - 1.24). These answer gave information that mothers went to village midwives for delivering their babies. This question had a positive influence on delivery activities.

4.4.5.6. Delivery assistant: nurse

Table 4.6 in the section of good activities number 17 and 18 showed odds ratios of IDHS 2007 and IDHS 2012 of the nurse as a delivery assistant. The odds ratio IDHS 2007 was 0.99 (CI 95% 0.86 - 1.13) and IDHS 2012 was 1.32 (CI 95% 1.18 - 1.47). The answer gave information that mothers went to nurses for delivering their babies. This question had a positive influence on delivery activities.

4.4.5.7. Delivery assistant: midwife

The answer gave information that mothers went to midwives for delivering their babies. This question had a positive influence on delivery activities. Table 4.6 in the section of Good activities number 19 and 20 showed odds ratios of IDHS 2007 and IDHS 2012 of the question of delivery assistant: midwives. The odds ratio IDHS 2007 was 1.23 (CI 95% 1.11 -1.36) and IDHS 2012 was 1.32 (CI 95% 1.18 - 1.47).

4.4.6. Practice of immunization

Odds ratios HBRs of practice immunization consisted of 35 questions which were associated with Good effect for child health care. Random odds ratio for the practice of immunization was 1.37 (95% CI: 1.23-1.53).

4.4.6.1. Hepatitis B

This question and answer inform that HBRs motivated the mother to take their children to get Hepatitis B vaccination. This question had a positive influence on child health care. Table 4.7 number 1, 2 and 3 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of Hepatitis B. The odds ratios IDHS 2002-2003 was 1.40 (CI 95% 1.21 - 1.62), IDHS 2007 was 0.99 (CI 95% 0.95 - 1.03) and IDHS 2012 was 1.84 (CI 95% 1.68 -2.01).

4.4.6.2. BCG

This question and answer inform that HBRs motivated the mother to take their children to get BCG vaccination. This question had a positive influence on child health care. Table 4.7 number 4, 5, 6 and 7 showed odds ratios of IDHS 1997, IDHS 2002-2003, IDHS 2007 and IDHS 2012 of BCG. The odds ratios IDHS 1997 was 2.28 (CI 95% ; 2.08 - 2.50), IDHS 2002-2003 was 1.37 (CI 95% 1.13 - 1.67), IDHS 2007 was 2.00 (CI 95% 1.74 -2.30) and IDHS 2012 was 1.73 (CI 95% 1.53 - 1.96).

4.4.6.3. DPT

Table 4.7 number 8, 9,10 and 11 showed odds ratios of IDHS 1997, IDHS 2002-2003, IDHS 2007 and IDHS 2012 of question of DPT1. The odds ratio IDHS 1997 was 2.08 (CI 95% 1.91 - 2.27), IDHS 2002-2003 was 0.90 (CI 95% 0.77 - 1.05), IDHS 2007 was 1.43 (CI 95% 1.27 - 1.61) and IDHS 2012 was 1.32 (CI 95% 1.19 -1.47).

Table 4.7 numbers 12, 13,14 and 15 showed odds ratios of IDHS 1997, IDHS 2002-2003, IDHS 2007 and IDHS 2012 of DPT2. The odds ratios IDHS 1997 was 1.87 (CI 95% 1.73 - 2.02), IDHS 2002-2003 was 1.03 (CI 95% 0.89 - 1,91) IDHS 2007 was 1.49 (CI 95% 1.34 - 1.66) and IDHS 2012 was 1.38 (CI 95% 1.26 -1.5).

Table 4.7 numbers 16, 17,18 and 19 showed odds ratios of IDHS 1997, IDHS 2002-2003, IDHS 2007 and IDHS 2012 of DPT3. The odds ratios IDHS 1997 was 1.71 (CI 95% 1.59 - 1.83), IDHS 2002-2003 was 1.19 (CI 95% 1.04 - 1.36), IDHS 2007 was 1.58 (CI 95% 1.43 - 1.74) and IDHS 2012 was 1.60 (CI 95% 1.48 -1.73).

This question and answer informed that HBRs motivated the mother to take her children to get the DPT1 vaccination. This question had a positive influence on child health care.

4.4.6.4. Measles

The question and answer informed that HBRs motivated the mother to take her children to get the measles vaccination. This question had positive influence with child health care. Table 4.7 number 20,

21,22 and 23 showed odds ratios of IDHS 2002-2003, IDHS 2007 and IDHS 2012 of measles. The odds ratios IDHS 1997 was 1.66 (CI 95 1.54 -1.78), the odds ratio IDHS 2002-2003 was 0.60 (CI 95% 0.53 0.68) , IDHS 2007 was 0.70 (CI 95% 0.64 - 0.77) and IDHS 2012 was 0.64 (CI 95% 0.59 -0.69).

4.4.6.5. Polio

Table 4.7 number 24, 25,26 and 27 showed odds ratios of IDHS 1997, IDHS 2002-2003, IDHS 2007 and IDHS 2012 of Polio 1. The odds ratio IDHS 1997 was 1.84 (CI 95 1.64 - 2.06), IDHS 2002-2003 was 1.13 (CI 95% 0.93 - 1.37), IDHS 2007 was 1.68 (CI 95% 1.46 -1.94) and IDHS 2012 was 1.48 (CI 95% 1.31- 1.68).

The number 28, 29,30 and 31 showed odds ratios of IDHS 1997, IDHS 2002-2003, IDHS 2007 and IDHS 2012 of Polio 2. The odds ratio IDHS 1997 was 1.63 (CI 95 1.49 - 1.78), IDHS 2002-2003 was 1.01 (CI 95% 0.87 - 1.18), IDHS 2007 was 1.34, (CI 95% 1.19 - 1.51) and IDHS 2012 was 1.35, (CI 95% 1.22 -1.49).

The number 32, 33,34 and 35 showed odds ratios of IDHS 1997, IDHS 2002-2003, IDHS 2007 and IDHS 2012 of Polio 3. The odds ratio IDHS 1997 was 1.61, (CI 95 1.50 - 1.73), IDHS 2002-2003 was 1.24 (CI 95% 1.08 - 1.42), IDHS 2007 was 1.43 (CI 95% 1.29 -1.58) and IDHS 2012 was 1.61 (CI 95% 1.48 - 1.76).

These questions and answers informed that HBRs motivated the mother to get her children vaccinated for polio. This question had positive influence with child health care.

4.5 Discussion

This study revealed that the women who had MCHHB or AC during pregnancy would have much more knowledge on danger sign during pregnancy. The MCHHB including the picture and explanations about danger signs during pregnancy may play an important role as a piece of secondary information for mothers and their families. Mothers could get accurate information on danger signs from MCHHB. A previous study on the MCHHB in Indonesia revealed that the utilization of MCHHB was associated with better

maternal knowledge of the maternal health services (Kusumayati & Nakamura, 2007). Good knowledge and practices during pregnancy are very important to pregnant women. When they acquire more knowledge on risk factors related to pregnancy and delivery, pregnant women will be more motivated to choose safe births and to visit a health facility for regular antenatal checks. Appropriate knowledge may introduce better health behavior. MCHHB might be a tool to promote better communication between health providers and users (Nakamura 2010). In the clinics in Indonesia, it is very difficult for the patients to ask many questions to midwives or doctors in the limited consultation time. However, pregnant women keep MCHHB as a secondary source and communicate with health providers on the basis of appropriate information about the knowledge and practice of pregnancy. This study found that pregnant women who had MCHHB or AC were significantly more attended by skilled birth attendants including midwives, nurses or doctors. In other words, only a few mothers with HBRs used TBAs or relatives/friends for delivery assistance. Home deliveries attended by TBAs, relatives or friends were still popular in Indonesia (Titaley & Hunter, 2010). Many factors influencing the choice of delivery sites were reported in Indonesia; access to maternity services, opinions of the spouse, relatives, or grandmothers, social influences of TBAs, previous experience, and medical advice from health workers in abnormal pregnancies (Amooti-Kaguna & Nuwaha, 2000, Rindrialis, 2005). A previous study in Indonesia found an association between education, knowledge and attitude and type of delivery assistance (Bloom, Lippeveld, & Wypij, 1999). Cab (2004) stressed the importance of mother's education level, knowledge, and attitude, household income, family support, and the role of health workers in Indonesia, but there was no association found between maternal health and employment, culture, delivery costs, or distance from the health facility .

The Indonesian government set up the national target in 2010 that 90% of deliveries should be assisted by medical personnel. The IDHS reported that 66% of women in 2002–2003 and 73% of women in 2007 were assisted by medical staff during their deliveries (Chan, 2007). The utilization of HBRs for pregnant women to increase knowledge and change the behavior is one of the ways to reach the Indonesian targets

for deliveries assisted by medical staff (Hagiwara, Ueyama, Ramlawi, & Sawada, 2013).

According to WHO guidelines for pregnant women, the content of antenatal care (ANC) visits include 1) blood pressure measurement, 2) urine testing for bacteria and proteinuria, 3) blood testing to detect syphilis and severe anemia, and 4) weight/height measurement. Antenatal care visits were strongly positively associated with the use of the HBRs. A study in the urban India showed that women who used antenatal care were more likely to make use of safe delivery care, and to explain why antenatal care was associated with reduced maternal mortality (Bloom et al., 1999).

The findings of this study revealed that the utilization of HBRs had significant effects on involving husbands into the support of pregnancy. The husbands of pregnant women with HBRs changed their behaviors to accompany women to antenatal visits and increase the discussion with wives about preparation for the delivery. Pregnant women and their husbands discussed the place of delivery, transportation to the health facility for delivery, skilled birth attendants, preparation of the payment for the delivery, and decision on blood donors. The discussions among pregnant women and husband made an impact on facilitating the preparation for the delivery and leading the women to choose safe delivery. One study found that changes in women's moods and emotions required special support, especially from their husbands and mothers (Nigenda et al., 2003). A study about social support and its relationship to maternal health indicated that mothers who had the support of a companion during labor and delivery experienced fewer childbirth complications and lower postpartum depression (Gjerdingen, Froberg, & Fontaine, 1991). HBRs in Indonesia were expected to promote the discussion about pregnancy and delivery, and to change the behaviors in the family to prepare safe delivery.

This HBRs study also found a strong relationship between children who had HBRs got higher coverage of basic immunizations. The MCHHB, which was provided during pregnancy, served as a reminder for immunizations (Osaki, Kosen, Indriasih, Pritasari, & Hattori, 2015). The role of community health cadres (village health volunteers) was very important in providing education for mothers regarding the importance

of immunization and encouraging mothers to visit Posyandu (integrated service post) where their children got immunizations. Health cadres were well aware of the advantages of using the MCHHB, and they extracted knowledge from the book and disseminated the information to the community to reinforce changes in the community's behavior (Adi I.R,2010). The brief explanations and colorful figures of the MCHHB could also be helpful in providing health education material. The MCHHB, as an immunization record book and educational tool for mothers, had motivated women and health professionals to immunize children on appropriate schedule. The immunization schedule was printed in MCHHB, which was kept at home. Mother could get the information on immunization very easily, and this information reminded mothers to immunize their children at health facilities or Posyandu.

This IDHS study revealed that pregnant women who had HBRs increased their knowledge on pregnancy, delivery, and child health care, and changed their practices regarding husband involvement and immunization coverages of their children.

Chapter 5

The Study of MCHHB of Tangerang Regency in Banten Province

5.1 Background

The Maternal and Child Health (MCH) programs in Indonesia has aimed to reduce mortality and morbidity of mothers and children through improving service quality and maintaining the continuity of maternal and perinatal health care. There are many health professionals concerned to MCH program in Indonesia, the role of village midwives is vital and essential, especially in the villages, for the improving the quality of health care during pregnancy, delivery, newborn and children. The Government of Indonesia has established the system for education and provision for village midwives to allocate them every village. Village midwives have lived in the villages to attend the deliveries and promote maternal and child health (MCH) in good cooperation with other health professionals.

The expanded program of village midwives has been targeted in the coverage of MCH programs including MCHHB. The utilization of MCHHB by the midwives is crucial as one of the tools in conducting health promotion and disease prevention under the collaboration with cadres (health volunteers) working at Posyandu (integrated health post). The MCHHB may help the midwives to do home visits, to motivate the pregnant women about antenatal care up, and to promote at least four times antenatal visits during pregnancy. The midwives also play major roles as delivery assistants and antenatal care. The IDHS reported that 60 % of mothers had their pregnancies examined by midwives (Indonesia, BPS-Statistics, 2013).

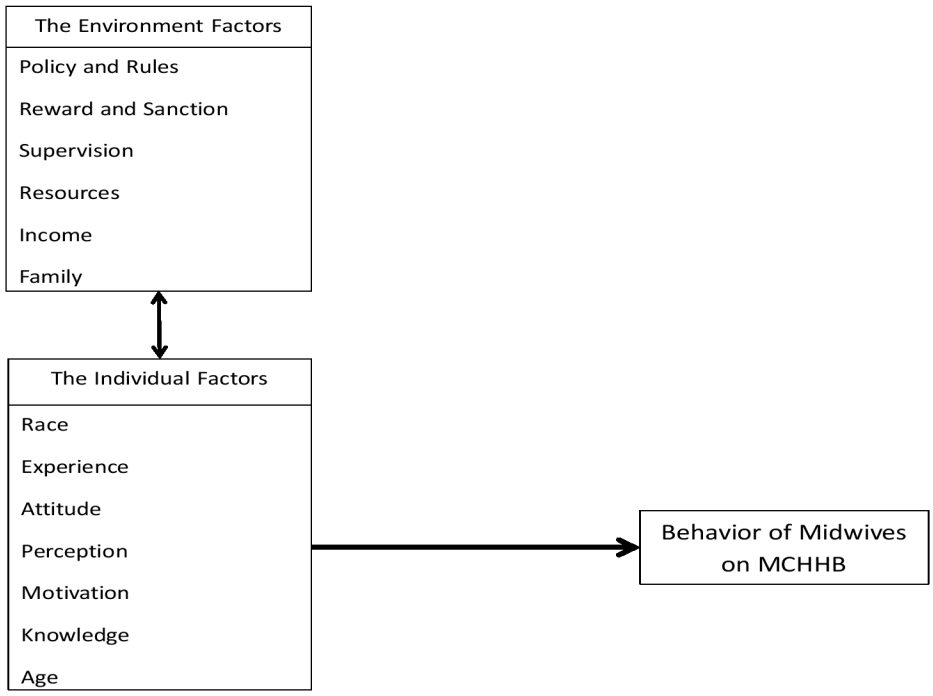
In observing behavioral of the midwives, the conceptual framework based on James L Gibson (2012) model of employees` behavior was used (see figure 5.1). The determinants of the behavior of midwives

on MCHHB were classified into two groups; the environmental factors and the individual factors. Environmental factors included policy and rules, reward and sanctions, supervision, resources, and income. Individual factors of the midwives were age, the ethnic group, and family background. The behavior of midwives on MCHHB was an independent factor that is affected by environmental and individual factors; according to Kurt Lewin, B = f (I, E); an employees` behavior (B) is function of individual variables (I) and environmental variables (E) (Gibson et al., 2012).

5.2 Objectives

The objectives of the study were to find the factors related to the utilization of MCHHB by the midwives and to analyze the use of MCHHB among the mothers of under-five children in Tangerang regency of Banten province.

Figure 5.1
Conceptual Framework for Assessment of MCHHB utilization by Midwives in Tangerang Regency, Banten Province, Indonesia



5.3 Methodology

5.3.1. Survey Location

The survey was conducted in Tangerang regency, the Banten province. The site of the regency is on the border with Jakarta, which can potentially develop into a capital buffer area. The regency also functions as a gate between Banten province and the national capital city. This situation has impacted on the health problems and challenge in the regency.

The regency is located in the eastern part of Banten province. Tangerang regency consists of 246 villages with an area of 959.60 square kilometers or 10.91 % of the total area of the Banten province. The population of Tangerang regency in 2008 was 2,834,376 with a relatively rapid growth rate of 2.31 % per year during the last 10 years. The population density reached 2,615 people per square kilometer. This tendency was attributed to natural factors and the trend of immigration which was caused by the attraction of job seekers with the expansion of industry, trade, and services. The largest percentage age of the population was in the group of 15-64 years which was around 68.02 % while the group of 0-14 years was about 29.56 % and the group of 65 years, and older amounted to only 2.42 %. The composition of the population groups by age showed that the dependency ratio of the people in Tangerang regency was around 47 or in other words that one hundred productive persons bore forty-seven persons who were not in productive age (Tangerang Statistics, 2012).

There were 197 maternal deaths per 100,000 live births and 74 infant deaths per 1,000 live births (Health District Office Tangerang 2010). The health regency office stated that there were 13 hospitals, 38 private maternity hospitals, 161 Puskesmas (health centers), 2,218 Posyandu, 1,279 physicians private practice, and 714 private midwives clinics (Tangerang Statistics, 2012)). The maternal mortality ratio of Banten province increased from 75.9 in 2011 to 359.1 in 2012 (Health Province of Banten, 2013).

Moreover, the data from Tangerang Bureau of Statistics (2012) also described that the maximum level of elementary school was 27.0 %, and high school graduate level was 23.0 %. Meanwhile, junior

Table 5.1
Midwives Place of Work

NO	SUB-DISTRICT	MIDWIVES PLACE OF WORK (n=207)		NO	SUB-DISTRICT	MIDWIVES PLACE OF WORK (n=207)	
		n	%			n	%
1	Balaraja	6	2.9	14	Mauk	14	6.8
2	Cikupa	4	1.9	15	Mekar baru	9	4.3
3	Cisauk	9	4.3	16	Pagedangan	4	1.9
4	Curug	2	1.0	17	Pakuhaji	8	3.9
5	Gn kaler	8	3.9	18	Panongan	5	2.4
6	Jambe	7	3.4	19	Rajeg	12	5.8
7	Jayanti	4	1.9	20	Sepatan	8	3.9
8	Kelapa dua	11	5.3	21	Sukadiri	8	3.9
9	Kemiri	7	3.4	22	Sukamulya	4	1.9
10	Kosambi	13	6.3	23	Teluk naga	16	7.7
11	Kresek	11	5.3	24	Tigaraksa	12	5.8
12	Kronjo	11	5.3		Total	207	100.0
13	Legok	14	6.8				

high school was about 16.5 %. Among the working-aged population, 44.8 % of them were employed in the manufacturing sector, following 23.0 % in the trade sector, 13.1 % in the service sector, 6.2% in the agricultures, and other sectors.

5.3.2. Questionnaires

Two types of questionnaires were used for the midwives and one type for the mothers of under-five children. These questionnaires had similar contents, especially in the content of activity in fill out the MCHHB. However, there were different additional questions for midwives or the mothers of under-five children as follows;

a) The contents of questionnaires for midwives

- Characteristics of midwives (age, the year of graduation, religion, ability to communicate with local language, occupation of the husband, personal and family income, marital status, back-ground of MCHHB course)

- Midwives' perceptions
- Midwives' attitudes
- Midwives' knowledge of MCHHB
- Writing behavior of MCHHB
- Environmental supports

Table 5.2
Residence of Mothers with Under-Five Childern

NO	SUB-DISTRICT	MCHHB (n=6090)			(n=259)	NO	SUB-DISTRICT	MCHHB (n=6090)			(n=259)
		Yes	No	Tot	Sample			Yes	No	Tot	Sample
1	Balaraja	76	134	210	34	16	Mauk	92	118	210	4
		36.2%	63.8%	100.0%	13.1%			43.8%	56.2%	100.0%	1.5%
2	Cikupa	51	159	210	13	17	Mekar baru	81	129	210	8
		24.3%	75.7%	100.0%	5.0%			38.6%	61.4%	100.0%	3.1%
3	Cisauk	51	159	210	17	18	Pagedangan	68	142	210	16
		24.3%	75.7%	100.0%	6.6%			32.4%	67.6%	100.0%	6.2%
4	Curug	54	156	210	8	19	Pakuhaji	82	128	210	2
		25.7%	74.3%	100.0%	3.1%			39.0%	61.0%	100.0%	.8%
5	Gunung kaler	76	134	210	3	20	Panongan	44	166	210	10
		36.2%	63.8%	100.0%	1.2%			21.0%	79.0%	100.0%	3.9%
6	Jambe	88	122	210	4	21	Pasar kemis	38	172	210	5
		41.9%	58.1%	100.0%	1.5%			18.1%	81.9%	100.0%	1.9%
7	Jayanti	70	140	210	28	22	Rajeg	48	162	210	0
		33.3%	66.7%	100.0%	10.8%			22.9%	77.1%	100.0%	0%
8	Kelapa dua	42	168	210	7	23	Sepatan	96	114	210	1
		20.0%	80.0%	100.0%	2.7%			45.7%	54.3%	100.0%	.4%
9	Kemiri	50	160	210	3	24	Sepatan Timur	96	114	210	4
		23.8%	76.2%	100.0%	1.2%			45.7%	54.3%	100.0%	1.5%
10	Kosambi	58	152	210	18	25	Sindang jaya	61	149	210	17
		27.6%	72.4%	100.0%	6.9%			29.0%	71.0%	100.0%	6.6%
11	Kresek	60	150	210	1	26	Solear	50	160	210	1
		28.6%	71.4%	100.0%	.4%			23.8%	76.2%	100.0%	.4%
12	Kronjo	80	130	210	7	27	Sukadiri	106	104	210	6
		38.1%	61.9%	100.0%	2.7%			50.5%	49.5%	100.0%	2.3%
13	Legok	55	155	210	8	28	Sukamulya	90	120	210	5
		26.2%	73.8%	100.0%	3.1%			42.9%	57.1%	100.0%	1.90%
14	Teluk naga	76	134	210	16	29	Cisoka	58	152	210	8
		36.2%	63.8%	100.0%	6.2%			27.6%	72.4%	100.0%	3.1%
15	Tigaraksa	71	139	210	5	**Total**		1896	4194	6090	259
		33.8%	66.2%	100.0%	1.9%			31.1%	68.9%	100.0%	100.0%

Table 5.3
Socioeconomic Characteristic of Midwives

Characteristics		Midwives	
		n=207	%
Educational Background			
	Diploma 1	10	4.8
	Diploma 3	178	86
	Diploma 4	19	9.2
	Length of Time from The Year of Graduation		
	Mean year	7.3	-
	Minimum year	1	-
	Maximum year	24	-
Age			
	Minimum age	21	
	Maximum age	56	
	Mean	34.14	
Religion			
	Islam	201	97.1
	Christian	4	1.9
	Catholic	2	1
Husband's Occupation			
	Private employee	77	37.2
	Government employee	70	33.8
	Blue-collar worker	3	1.4
	Self-employee	26	12.6
	Other	16	7.8
Marital Status			
	Married	192	92.8
	Not married	15	7.2
Personal Income			
	IDR 1,000,000 – 1,999,999	137	66.2
	IDR 2,000,000 - 2,999,999	34	16.4
	IDR 3,000,000 - 3,999,999	25	12.1
	IDR 4,000,000 - 4,999,999	8	3.9
	IDR 5,000,000 or more	3	1.5
Training of MCHH			
	Yes	13	6.3
	No	194	93.7
Ethnics			
	Banten	127	61.4
	Others	80	38.6

- Midwives' behavior while using MCHHB
- Motivation of midwives in using MCHHB

b) The interview guide for midwives and health officials

(1) Do you use MCHHB to educate or explain the mother about maternal and child health care? (2) Do you advise the mothers to come to the Puskesmas or Posyandu to bring their MCHHB? (3) Do you ask the mothers if she brings the MCHHB when she comes to examine her pregnancy or child? (4) Do

Table 5.4
Average Perception of Midwives

No	Average midwives' perception	Frequency	Percent
1	1	1	0.5
2	1.1	1	0.5
3	2.9	1	0.5
4	3.2	1	0.5
5	3.3	2	1
6	3.4	2	1
7	3.5	1	0.5
8	3.6	5	2.4
9	3.7	6	2.9
10	3.8	57	27.5
11	3.9	15	7.2
12	4	27	13
13	4.1	15	7.2
14	4.2	14	6.8
15	4.3	11	5.3
16	4.4	4	1.9
17	4.5	12	5.8
18	4.6	4	1.9
19	4.7	14	6.8
20	4.8	13	6.3
21	4.9	1	0.5
	Mean; 4.06	207	100.0
	Median: 4.0		
	Mode : 3.8		
Grouped with Median as a cut point			Height: 55.6
			Moderate: 44.4

you give a new MCHHB to every mother who loses her Handbook? (5) Do you give advice to the mothers and her husband to read the MCHHB? (6) Do you provide pregnancy and mother-child classes to promote the MCHHB? (7) Do you provide copies of the MCHHB to pregnant women who come to visit? (8) Do you regularly coordinate a meeting with your boss or your colleague about MCHHB? (9) Do you keep the MCHHB that was owned by mothers at your place in case the mother loses her handbook? (10) Do you write the results of the mothers' health checkups on MCHHB?

c) The contents of the questionnaires for mothers with under-five children

- Characteristics of mothers (age, educational background, family size, household income, posses-

Table 5.5
Association between Midwives Perception and Their Behavior on MCHHB

NO	Behavior of Midwives on MCHHB	Perception of Midwives about MCHHB (n=207)								
		Moderate				High				*P*-value
		No	%	Yes	%	No	%	Yes	%	
1	Do you use MCHHB to educate or explain mother about maternal and child health care?	12	5,80	80	38,60	15	7,20	100	48,30	1
2	Do you advise the mothers to come to the Puskesmas or Posyandu to bring their MCHHB	0	0	92	44,40	0	0,00	115	55,60	-
3	Do you ask the mothers whether she brings the MCHHB when she comes to examine her pregnancy or child?	1	0,50	91	44,40	3	1,00	112	54,10	0,63
4	Do you give a new MCHH to every mothers who lost her Handbook?	29	14,10	62	30,10	28	13,60	87	42,20	0,27
5	Do you give an advice to the mothers and her husband to read the MCHHB?	4	1,90	88	42,50	3	1,40	112	54,10	0,7
6	Do you do pregnancy and mother-child classes to socialize the MCHHB?	6	2,90	11	41,50	11	5,30	104	50,20	0,45
7	Do you provide stock of the MCHHB to be given to pregnant women who come to visit?	9	4,30	83	40,10	1	0,50	114	55,10	0.06 (1)
8	Do you regularly coordinate a meeting with your boss or your colleague about MCHHB	21	10,10	71	34,30	22	10,60	93	44,90	0,32
9	Do you keep the MCHHB that owned by mothers in your place for fear of the mother lost her handbook?	71	77,20	21	22,80	88	76,50	27	23,50	1
10	Do you write the result of health checkup of nothers on MCHHB?	2	1,00	90	43,50	3	1,40	112	54,10	1
	(1) OR 12.361 CI 95% 1.53-99.48									

sion of MCHHB).

- Utilization of MCHHB (persons who explain MCHHB to mothers), reading activity, observation of the utilization of MCHHB).

Before the survey was started, the questionnaires were pre-tested by thirty midwives to check the validity of the questionnaires with SPSS data program.

5.3.3. Data Collection of Village Midwives and Mothers of Under-Five Children

The data had collected between October 2013 to January 2014. In total, 207 village midwives and 259 mothers of under-five children were interviewed by using questionnaires. The recruitment of midwives' respondents was done via the stratified random sampling, and mothers' respondents was conducted via the purposive sampling method. The author interviewed five midwives and one head of Puskesmas to express their experience in using MCHHB in the regency area.

Table 5.6
Average Attitude of Midwives

No	Average midwives' attitude	Frequency	Percent
1	1	1	.5
2	1.37	1	.5
3	2.74	1	.5
4	3.16	1	.5
5	3.53	1	.5
6	3.58	1	.5
7	3.63	2	1.0
8	3.68	2	1.0
9	3.74	9	4.3
10	3.79	5	2.4
11	3.84	12	5.8
12	3.89	27	13.0
13	3.95	24	11.6
14	4	30	14.5
15	4.05	15	7.2
16	4.11	11	5.3
17	4.16	7	3.4
18	4.21	7	3.4
19	4.26	3	1.4
20	4.32	7	3.4
21	4.37	4	1.9
22	4.47	7	3.4
23	4.53	4	1.9
24	4.58	2	1.0
25	4.63	5	2.4
26	4.68	1	.5
27	4.74	5	2.4
28	4.79	3	1.4
29	4.84	3	1.4
30	4.95	2	1.0
31	5	4	1.9
	Mean; 4.06	207	100.0
	Median: 4.0		
	Mode : 4.0		
Grouped with Median as a cut point			Height: 42,0
			Moderate: 58.0

Table 5.1 shows the workplace of midwives. The respondents were 207 village midwives from 243 villages. The Tangerang regency consists of 29 sub-districts. Among them, 24 sub-districts were selected and five sub-districts (Cisoka, Sepatan Timur, Sindang Jaya. Pasar Kemis and Solear) were excluded for the geographical reasons.

The questionnaires for mothers with under-five children were provided to mothers living in 29 sub-districts by using purposive sampling method. Table 5.2 shows the residence of under-five children's mothers.

Table 5.7
Association between Midwives Attitude and Their Behavior on MCHHB

NO	Behavior of Midwives on MCHHB	Attitude of Midwives about MCHHB (n=207)								
		Moderate				High				*P*-value
		No	%	Yes	%	No	%	Yes	%	
1	Do you use MCHHB to educate or explain mother about maternal and child health care?	16	7,73	71	34,30	11	5,31	109	52,66	0,061
2	Do you advise the mothers to come to the Puskesmas or Posyandu to bring their MCHHB	-	-	87	42,03	-	-	120	57,97	-
3	Do you ask the mothers whether she brings the MCHHB when she comes to examine her pregnancy or child?	2	1,00	85	41,06	2	0,97	118	57,00	0,561
4	Do you give a new MCHHB to every mothers who lost her Handbook?	30		57	27,67	27	13,11	92	44,66	0,081
5	Do you give an advice to the mothers and her husband to read the MCHHB?	4	1,90	83	40,10	3	1,45	117	56,52	0,45
6	Do you do pregnancy and mother-child classes to socialize the MCHHB?	6	2,90	81	39,13	11	5,31	109	52,66	0,617
7	Do you provide stock of the MCHHB to be given to pregnant women who come to visit?	8	3,90	79	38,16	2	0,97	118	57,00	0.019 (1)
8	Do you regularly coordinate a meeting with your boss or your colleague about MCHHB	23	11,10	64	30,92	20	9,66	100	48,31	0,11
9	Do you keep the MCHHB that owned by mothers in your place for fear of the mother lost her handbook?	74	35,70	13	6,28	85	41,06	35	16,91	0.01 (2)
10	Do you write the result of health checkup of nothers on MCHHB?	4	1,90	83	40,10	1	0,48	119	57,50	0,16

(1) OR 5.03 CI 95% 1.03-24.49
(2) OR 2.14; CI 95% 1.04-4.37

Table 5.8
Average Knowledge of Midwives

No	Average midwives' Knowledge	Frequency	Percent
1	22	1	0.5
2	24	2	1
3	25	4	1.9
4	27	4	1.9
5	28	8	3.9
6	29	5	2.4
7	30	24	11.6
8	31	33	15.9
9	32	86	41.5
10	33	40	19.3
	Mean; 31.22	207	100.0
	Median: 32		
	Mode : 32		
Grouped with Median as a cut point			Height: 60.9
			Moderate: 39.1

Table 5.9
Average Motivation of Midwives

No	Average midwives' motivation	Frequency	Percent
1	3	2	1
2	3	1	0.5
3	3	1	0.5
4	3	2	1
5	4	10	4.8
6	4	5	2.4
7	4	19	9.2
8	4	35	16.9
9	4	62	30
10	4	22	10.6
11	4	15	7.2
12	4	8	3.9
13	4	6	2.9
14	4	4	1.9
15	5	1	0.5
16	5	6	2.9
17	5	3	1.4
18	5	4	1.9
19	5	1	0.5
	Mean; 3.92	207	100.0
	Median: 3.91		
	Mode : 3.93		
Grouped with Median as a cut point			Height: 52.7
			Moderate: 47.3

Interviews for midwives and mothers were conducted by trained ten interviewers who were recruited from Public Health Study Program, Faculty of Medicine and Health Sciences of *Syarif Hidayatullah* State Islamic University (UIN) Jakarta and University of *Muhammadiyah (UHAMKA)*. They were trained by the author to collect the data for this study for one week and to brush up interview skills and consider the ethical issues.

5.3.4. Data Processing and Statistical Analysis

The data collected from 207 midwives and 259 mothers of under-five children. The result was checked if there were any incomplete data and then verified. Furthermore, the verified raw data from the questionnaires were inputted by the operator for data entry, using SPSS software analysis and Microsoft Excel. The data analysis was performed to describe the recent situation of utilization of MCHHB among midwives and mothers of under-five children. The data analysis was also provided the attitude, perception, motivation and behavior of midwives in utilizing MCHHB as well as the association between variables. The results of interviews of five midwives were analyzed to support quantitative data.

Table 5.10
Average Filling Out of Midwives

No	Average midwives' Fill Out	Frequency	Percent
1	36	3	1.4
2	39	1	0.5
3	44	2	1
4	47	1	0.5
5	51	1	0.5
6	58	1	0.5
7	60	1	0.5
8	61	1	0.5
9	62	1	0.5
10	63	2	1
11	64	1	0.5
12	65	1	0.5
13	67	1	0.5
14	68	1	0.5
15	69	1	0.5
16	70	2	1
17	71	4	1.9
18	72	2	1
19	73	2	1
20	74	3	1.4
21	75	4	1.9
22	76	5	2.4
23	77	8	3.9
24	78	5	2.4
25	79	10	4.8
26	80	13	6.3
27	81	17	8.2
28	82	28	13.5
29	83	85	41.1
	Mean; 78.32	207	100.0
	Median: 82		
	Mode : 83		
Grouped with Median as a cut point			Height: 73.9
			Moderate: 26.1

The primary data of mothers of under-five children were used to analyses reading behavior and checking the fill out status of MCHHB. The secondary data from regency health office were analyzed for supporting primary data, especially in finding the association between ownership MCHHB and characteristics mothers of under-five children.

5.4 Results

This sub chapter is divided into two main subjects; (1) the descriptions of the factors that were related to utilization of MCHHB among village midwives and (2) the descriptions of the utilization of MCHHB among mothers of under-five children.

Table 5.11 (a)
Filling Out of MCHHB According to Midwives

NO	CONTENTS ON MCHHB CONTENTS	FILLING OUT STATUS (n=207)				NO	CONTENTS ON MCHHB CONTENTS	FILLING OUT STATUS (n=207)			
		Empty		Filled				Empty		Filled	
		n	%	n	%			n	%	n	%
1	Family Identification	3	1.4	204	98.6	25	Date	4	1.9	203	98.1
2	The delivery will be assisted by a midwife	9	4.3	198	95.7	26	Complain	0	-	207	100.0
3	The delivery cost	36	17.4	171	82.6	27	Blood pressure	0	-	207	100.0
4	Transportation/village ambulance	48	23.2	159	76.8	28	Weight of mothers	0	-	207	100.0
5	Family planning method	27	13.0	180	87.0	29	Gestation (weeks)	0	-	207	100.0
6	Blood donor	56	27.1	151	72.9	30	Fundal High	1	0.5	206	99.5
7	First day of last menstruation, Date	3	1.4	204	98.6	31	Fetal position	0	-	207	100.0
8	Estimated Date of delivery (EDD), Date	1	0.5	206	99.5	32	Fetal heart beat	1	0.5	206	99.5
9	Circumference of upper arms	1	0.5	206	99.5	33	Swollen feet	7	3.4	200	96.6
10	Height	5	2.4	202	97.6	34	Laboratory result	17	8.2	190	91.8
11	Type of contraception used before this pregnancy	8	3.9	199	96.1	35	Intervention or treatment	2	1.0	205	99.0
12	Medical history mother	2	1.0	205	99.0	36	Advice given	3	1.4	204	98.6
13	History of allergy	12	5.8	195	94.2	37	Name of examiner	8	3.9	199	96.1
14	Number of pregnancy	1	0.5	206	99.5	38	Remarks	19	9.2	188	90.8
15	Number of deliveries	1	0.5	206	99.5	39	Next consultation date	8	3.9	199	96.1
16	Number of premature birth	2	1.0	205	99.0	40	Woman Colum	17	8.2	190	91.8
17	Number of living children	1	0.5	206	99.5	41	New Borh Colum	19	9.2	188	90.8
18	Number of death children	0	-	207	100.0	42	Referral Colum	40	19.3	167	80.7
19	Number of premature birth	5	2.4	202	97.6	43	Date delivery	11	5.3	196	94.7
20	Interval from the last pregnancy	3	1.4	204	98.6	44	Complaint	9	4.3	198	95.7
21	TT immunization status	4	1.9	203	98.1	45	Blood Pressure	8	3.9	199	96.1
22	Last TT immunization	3	1.4	204	98.6	46	Pulse Minutes	10	4.8	197	95.2
23	Previous birth attendance	1	0.5	206	99.5	47	Respiration/minutes	12	5.8	195	94.2
24	Last delivery method	4	1.9	203	98.1	48	Temprature	12	5.8	195	94.2

Table 5.11 (b)
Filling Out of MCHHB According to Midwives

NO	CONTENTS ON MCHHB CONTENTS	FILLING OUT STATUS (n=207)				NO	CONTENTS ON MCHHB CONTENTS	FILLING OUT STATUS (n=207)			
		Empty		Filled				Empty		Filled	
		n	%	n	%			n	%	n	%
49	Contraction	8	3.9	199	96.1	68	Respiratory rate	22	10.6	185	89.4
50	Hemorrhage	9	4.3	198	95.7	69	Heartbeat	24	11.6	183	88.4
51	Color amount	12	5.8	195	94.2	70	Check for diarrhea	25	12.1	182	87.9
52	Defecation	9	4.3	198	95.7	71	Check for jaundice	21	10.1	186	89.9
53	Urination	8	3.9	199	96.1	72	Check for possibility of low weight and or breastfeeding problems	16	7.7	191	92.3
54	Breastmilk Production	8	3.9	199	96.1	73	Check the status of vit K1	14	6.8	193	93.2
55	Intervention vit A	9	4.3	198	95.7	74	Check the status of vit K2	17	8.2	190	91.8
56	Advice given	11	5.3	196	94.7	75	Check immunization status	9	4.3	198	95.7
57	Remarks	18	8.7	189	91.3	76	Check others complain	17	8.2	190	91.8
58	Final Postpartum condition	15	7.2	192	92.8	77	Check mother complain	14	6.8	193	93.2
59	Family Planning service	12	5.8	195	94.2	78	Action	10	4.8	197	95.2
60	Birth Notification	22	10.6	185	89.4	79	Examiner sign	15	7.2	192	92.8
61	1st Visit	17	8.2	190	91.8	80	Record ilness	25	12.1	182	87.9
62	2nd Visit	18	8.7	189	91.3	81	Vit A	14	6.8	193	93.2
63	3rd Visit	20	9.7	187	90.3	82	Health monitoring card	5	2.4	202	97.6
64	Weight	18	8.7	189	91.3	83	Record Basic Immunization	5	2.4	202	97.6
65	Height	21	10.1	186	89.9						
66	Temperature	19	9.2	188	90.8						
67	Ask the mother what is the baby`s illness	17	8.2	190	91.8						

5.4.1. MCHHB Utilization of Village Midwives

5.4.1.1. Characteristics of Village Midwives

The characteristics of village midwives consisted of an educational background, the year of graduation, religion, husband occupation, marital status, and family income. Table 5.3 showed the socioeconomic

characteristics of the respondents. The mean age was 34 years old, and the minimum age was 21 years old. The result revealed that 86% of village midwives completed Diploma 3 with an average length of 7 years from their first graduation, 97.7 % of midwives were Moslem and 92. 8% of midwives were married. 37.0 % of their husbands worked as private employees. As for the personal income, 66.2% of midwives had 1 to 2 million IDR (Indonesia Rupiah) monthly, while the standard salary in the regency in 2014 was 2.4 million IDR. The survey revealed that almost 93.7% of midwives hadn't received any MCHHB training from the Ministry of health or regency Public Health Office.

The cross-tabulation was used for the association between midwives' behavior and their age. The results showed that there were no significant variables.

5.4.1.2. Perception of Midwives

Table 5.4 showed the perception of midwives on MCHHB. There were 13 questions for perception. The Likert scale was used for describing the answer of the midwives, and the scale consisted of (1) strongly disagree, (2) disagree, (3) neutral, (4) agree and (5) strongly agree. The data were divided into two categories by using cut point of 4.0 as the median of the average perception. 55.6 % of the answers of midwives were classified as a high perception, and the rest of 44.4 % was categorized as a moderate perception.

Table 5.5 shows the association between midwives perception and their behavior in using MCHHB. There were 10 questions for behavior of midwives and two categories of their perception. The result revealed that providing a stock of the MCHHB to be given to pregnant women who came to visit showed a significant relationship with perception of midwives (p-value < 0.05).

5.4.1.3. Attitude of Midwives

Table 5.6 showed the attitude of midwives on MCHHB. There were 19 questions about the attitude by using the Likert scale (1) strongly disagree, (2) disagree, (3) neutral, (4) agree and (5) strongly agree. The data were divided into two categories by using cut point of 4.0 as the median of the average perception. The result showed that 58 % of the midwives revealed as a high attitude.

Table 5.12 (a) Association between Environmental Support and Midwives Behavior on MCHHB

NO	BEHAVIOR OF MIDWIVES ON MCHHB		ENVIRONMETAL SUPPORT IN STRENGTHENING MCHHB PROGRAM (n=207)				
			Is there any regular coordination meeting in the implementation of the MCH Handbook in your institution?				
			No	%	Yes	%	*P*-value
1	Do you ask the mothers whether she brings the MCHHB when she comes to examine her pregnancy or child?	No	3	1.40	1	0.50	**0.025 (1)**
		Yes	38	18.40	165	79.70	
			Does the institution where you work observe the inventory MCH handbook: when there is a shortage they would seek to procure the MCH handbook?				
			No	%	Yes	%	*P*-value
2	Do you give a new MCHH to every mothers who lost her Handbook?	No	7	3.40	50	24.30	**0.04 (2)**
		Yes	6	2.90	143	69.40	
			Is there any regular coordination meeting in the implementation of the MCH Handbook in your institution?				
			No	%	Yes	%	*P*-value
3	Do you give a new MCHHB to every mothers who lost her Handbook?	No	18	8.70	39	18.90	**0.018 (3)**
		Yes	23	11.20	126	61.20	
			Is there any regular supervision of implementation of the MCH Handbook program in your institution?				
			No	%	Yes	%	*P*-value
4	Do you give a new MCHHB to every mothers who lost her Handbook?	No	27	13.10	30	14.60	**0.001(4)**
		Yes	35	17.00	114	55.30	
			Is there any rule to establish pregnancy and mother-child classes to socialize the MCH Handbook in your Puskesmas or Posyandu?				
			No	%	Yes	%	*P*-value
5	Do you use MCHHB to educate or explain mother about maternal and child health care?	No	3	1.40	14	6.80	**0.039 (5)**
		Yes	7	3.40	183	88.40	
	(1) OR 13.26; CI 95% 1.31-128.6						
	(2) OR 3.33; CI 95% 1.07-10.4						
	(3) OR 2.52; CI 95% 1.24-5.16						
	(4) OR 2.93; CI 95% 1.53-5.58						
	(5) OR 5.60; CI 95% 1.30-24.06						

NO	BEHAVIOR OF MIDWIVES ON MCHHBB		ENVIRONMETAL SUPPORT (n=207)				
			Is there a standard operational procedure from midwives' organization that obligates you to use the MCH handbook?				
			No	%	Yes	%	*P*-value
6	Do you provide stock of the MCHHB to be given to pregnant women who come to visit?	No	3	1.40	7	3.40	**0.06 (5)**
		Yes	17	8.20	180	87.00	
			Does the institution where you work observe the inventory MCH handbook: when there is a shortage they would seek to procure the MCH handbook?				
			No	%	Yes	%	*P*-value
7	Do you provide stock of the MCHHB to be given to pregnant women who come to visit?	No	5	2.40	5	2.40	**0.0001 (6)**
		Yes	8	3.90	189	91.30	
			Is there any regular coordination meeting in the implementation of the MCH Handbook in your institution?				
			No	%	Yes	%	*P*-value
8	Do you provide stock of the MCHHB to be given to pregnant women who come to visit?	No	6	2.90	4	1.90	**0.005 (8)**
		Yes	35	19.80	162	78.30	
			Does the institution where you work observe the inventory MCH handbook: when there is a shortage they would seek to procure the MCH handbook?				
			No	%	Yes	%	*P*-value
9	Do you regularly coordinate a meeting with your boss or your colleague about MCHHB	No	6	2.90	37	17.90	**0.031 (9)**
		Yes	7	3.40	157	75.80	
			Is there any regular coordination meeting in the implementation of the MCH Handbook in your institution?				
			No	%	Yes	%	*P*-value
10	Do you regularly coordinate a meeting with your boss or your colleague about MCHHB	No	16	7.70	27	13.00	**0.002 (10)**
		Yes	25	12.10	139	67.10	
	(5) OR 4.53; CI 95% 1.07-19.17						
	(6) OR 23.62; CI 95% 5.66-98.45						
	(8) OR 6.94; CI 95% 1.81-25.9						
	(9) OR 3.63; CI 95% 1.15-11.46						
	(10) OR 3.29; CI 95% 1.55-6.98						

Table 5.12 (b) Association between Environmental Support and Midwives Behavior on MCHHB

NO	BEHAVIOR OF MIDWIVES ON MCHHB		ENVIRONMETAL SUPPORT IN STRENGTHENING MCH HANDBOOK PROGRAM (n=207)				
			Is there any regular supervision of implementation of the MCH Handbook program in your institution?				
			No	**%**	**Yes**	**%**	***P*-value**
11	Do you regularly coordinate a meeting with your boss or your colleague about MCHHB	No	20	9.70	23	11.10	**0.015 (11)**
		Yes	43	20.80	121	58.50	
			Is there any regular supervision of implementation of the MCH Handbook program in your institution?				
			No	**%**	**Yes**	**%**	***P*-value**
12	Do you keep the MCHHB that owned by mothers in your place for fear of the mother lost her handbook?	No	56	27.10	103	49.80	**0.007 (12)**
		Yes	7	3.40	41	19.80	
			Does the institution where you work observe the inventory MCH handbook: when there is a shortage they would seek to procure the MCH handbook?				
			No	**%**	**Yes**	**%**	***P*-value**
13	Do you write the result of health checkup of nothers on MCHHB?	No	2	1.00	3	1.40	**0.03 (13)**
		Yes	11	5.30	191	92.30	
	(11) OR 2.45; CI 95% 1.22-4.89						
	(12) OR 3.18; CI 95% 1.34-7.56						
	(13) OR 11.57; CI 95% 1.74-76.59						

Table 5.7 shows the result of cross tabulation analysis between behavior and categorical data of the midwives' attitude. There were two significant variables (p-value < 0.05) associated with those data such as behavior to provide the stock of MCHHB to give for pregnant women (p-value 0.019; OR 5.03, CI 95% 1.03 – 24.49) and behavior to keep the MCHHB that were owned by mothers in your place for fear the mother lost her MCHHB (p-value 0.01; OR 2.14, CI 95% 1.10- 4.37).

5.4.1.4. Knowledge of Midwives

Table 5.8 showed the knowledge of midwives about MCHHB. There were 10 questions for midwives' behavior and 33 questions for their knowledge. The average of knowledge of midwives were 31 out of 33 questions. The data showed that 60 % of the midwives had high knowledge. There was no any significant relationship between behavior and high knowledge.

Table 5.13
Characteristics of Under-Five Mothers on MCHHB

Characteristics	U 5 Mothers	
	n=259	%
Educational Background		
Primary school (not Finish)	17	6.6
Primary School	90	34.7
Elementary School	68	26.3
High School	74	28.6
University	10	3.9
Age of Mothers		
Minimum age	10	years
Maximum age	47	years
Mean	27.4	years
Number of U5 Chidren		
one	245	94.6
two	13	5.0
three	1	0.4
Age of Children		
Mean	14.93	months
Median	12	months
Mode	10	months
Minimum	1	months
Maximum	57	months
Family Income		
Mean	1,768,377	
Minimum	300,000	
Maximum	8,000,000	

5.4.1.5. Motivation of Midwives

Table 5.9 showed the average motivation of midwives on MCHHB. There were 10 questions for behavior. The 31 numbers of questions about motivation on the Likert scale were used for describing the answers of the midwives. The data showed that 52.7 % of the midwives were categorical into high motivation.

The analysis showed that there were two significant results (1) using MCHHB to educate or explain mothers about maternal and child health (p-value 0.039; OR 2.5, CI 95% 1.06- 5.86), and (2) giving a new MCHHB to every mother who lost the handbook (p-value 0.042; OR 1.9, CI 95% 1.05- 3.65).

5.4.1.6. Fill out MCHHB by Midwives

Table 5.10 showed the filling out of MCHHB. There were 10 questions about behavior and 82 items

Table 5.14
Reading Behavior of Undre-Five Mothers on MCHHB

NO	READING ACTIVITIES OF U5 MOTHERS ON MCHHB CONTENTS	READING STATUS (n=259)				NO	READING ACTIVITIES OF U5 MOTHERS ON MCHHB CONTENTS	READING STATUS (n=259)			
		No	%	Yes	%			No	%	Yes	%
1	Regular antenatal care	138	53.3	121	46.7	16	Family planning	185	71.4	74	28.6
2	Measure the height and check the weight	190	73.4	69	26.6	17	Maternal health record during pregnancy	186	71.8	73	28.2
3	Take one iron tablet every day	188	72.6	71	27.4	18	Maternal health record during on delivery and new born	201	77.6	58	22.4
4	TT Imunization	181	69.9	78	30.1	19	Birth notification	198	76.4	61	23.6
5	Preparation for delivery	163	62.9	96	37.1	20	Breastfeeding advice	170	65.6	89	34.4
6	Birth planning	187	72.2	71	27.4	21	Neonatal care	184	71	75	29
7	Mother daily care	187	72.2	72	27.8	22	Baby daily care	172	66.4	87	33.6
8	Recommended diet during pregnancy	171	66	88	34	23	Dental care	187	72.2	72	27.8
9	Danger sign during pregnancy	166	64.1	93	35.9	24	Sign of serious illness	194	74.9	65	25.1
10	Sign of labor	139	53.7	120	46.3	25	Family planning	185	71.4	74	28.6
11	Problems during labor	164	63.3	95	36.7	26	Advice of giving Vitamin A capsule	189	73	70	27
12	How to breastfeed the baby	163	62.9	96	37.1	27	Immunization schedule	173	66.8	86	33.2
13	Vitamin A capsule	200	77.2	59	22.8	28	Environmental cleanness	198	76.4	63	24.3
14	Check the mothers health to midwives/doctors	197	76.1	62	23.9	29	Treatment for common childhood illnesses	172	66.4	87	33.6
15	Postpartum danger sign and illness	197	76.1	62	23.9	30	Health monitoring card	176	68	83	32

Table 5.15 (a)
MCHHB Filling Out Status by Checking in Under-Five Mothers' Home

NO	CONTENTS ON MCHHB CONTENTS	FILLING OUT STATUS (n=259)				NO	CONTENTS ON MCHHB CONTENTS	FILLING OUT STATUS (n=259)			
		Empty		Filled				Empty		Filled	
		n	%	n	%			n	%	n	%
1	Family Identification	50	19.3	209	80.7	25	Date	47	18.1	212	81.9
2	The delivery will be assisted by a midwife	249	96.1	10	3.9	26	Complain	57	22.0	202	78.0
3	The delivery cost	254	98.1	5	1.9	27	Blood pressure	35	13.5	224	86.5
4	Transportation/village ambulance	255	98.5	4	1.5	28	Weight of mothers	40	15.4	219	84.6
5	Family planning method	256	98.8	3	1.2	29	Gestation (weeks)	40	15.4	219	84.6
6	Blood donor	256	98.8	3	1.2	30	Fundal High	63	24.3	196	75.7
7	First day of last menstruation, Date	46	17.8	213	82.2	31	Fetal position	57	22.0	202	78.0
8	Estimated Date of delivery (EDD), Date	55	21.2	204	78.8	32	Fetal heart beat	64	23.8	195	76.2
9	Circumference of upper arms	120	46.3	139	53.7	33	Swollen feet	90	34.0	169	66.0
10	Height	132	51.0	127	49.0	34	Laboratory result	129	49.2	130	50.8
11	Type of contraception used before this pregnancy	150	57.9	109	42.1	35	Intervention or treatment	63	23.4	196	76.6
12	Medical history mother	175	67.6	84	32.4	36	Advice given	92	34.8	167	65.2
13	History of allergy	172	66.4	87	33.6	37	Name of examiner	71	26.6	188	73.4
14	Number of pregnancy	58	22.4	201	77.6	38	Remarks				
15	Number of deliveries	69	26.6	190	73.4	39	Next consultation date	100	37.9	159	62.1
16	Number of premature birth	77	29.7	182	70.3	40	Woman Colum	218	84.0	41	16.0
17	Number of living children	111	42.9	148	57.1	41	New Borh Colum	220	84.8	39	15.2
18	Number of death children	138	58.3	121	41.7	42	Referral Colum	219	84.4	40	15.6
19	Number of premature birth	151	58.3	108	41.7	43	Date delivery	221	85.2	38	14.8
20	Interval from the last pregnancy	150	57.9	109	42.1	44	Complaint				
21	TT immunization status	163	62.9	96	37.1	45	Blood Pressure				
22	Last TT immunization	173	66.8	86	33.2	46	Pulse Minutes				
23	Previous birth attendance	157	60.6	102	39.4	47	Respiration/minutes				
24	Last delivery method					48	Temprature				

Table 5.15 (b)
MCHHB Filling Out Status by Checking in Under-Five Mother's Home

NO	CONTENTS ON MCHHB CONTENTS	FILLING OUT STATUS (n=259)				NO	CONTENTS ON MCHHB CONTENTS	FILLING OUT STATUS (n=259)			
		Empty		Filled				Empty		Filled	
		n	%	n	%			n	%	n	%
49	Contraction					68	Respiratory rate	252	97.3	7	2.7
50	Hemorrhage					69	Heartbeat	251	96.9	8	3.1
51	Color amount					70	Check for diarrhea	252	97.3	7	2.7
52	Defecation					71	Check for jaundice	252	97.3	7	2.7
53	Urination					72	Check for possibility of low weight and or breastfeeding problems	252	97.3	7	2.7
54	Breastmilk Production					73	Check the status of vit K1	251	96.9	8	3.1
55	Intervention vit A					74	Check the status of vit K2				
56	Advice given					75	Check immunization status	240	92.6	19	7.4
57	Remarks					76	Check others complain	251	96.9	8	3.1
58	Final Postpartum condition					77	Check mother complain	253	97.7	6	2.3
59	Family Planning service					78	Action				
60	Birth Notification	217	83.6	42	16.4	79	Examiner sign	252	97.3	7	2.7
61	1st Visit	216	83.2	43	16.8	80	Record ilness	254	98.0	5	2.0
62	2nd Visit	215	82.8	44	17.2	81	Vit A				
63	3rd Visit	214	82.4	45	17.6	82	Health monitoring card	61	22.7	198	77.3
64	Weight	246	95.0	13	5.0	83	Record Basic Immunization				
65	Height	212	81.6	47	18.4						
66	Temperature	248	95.7	11	4.3						
67	Ask the mother what is the baby`s illness	252	97.3	7	2.7						

Table 5.16
Association between Characteristics of Under-Fve Mothers and MCHHB ownership

NO	CHARACTERISTICS U5 MOTHERS		MCHHB OWNERSHIP (n=6089)				
			No	%	Yes	%	*P*-value
1	Type of districts	Rural	3708	68%	1737	32%	0.0001 (1)
		Urban	485	75%	159	25%	
2	U5 Mothers age	High	2090	67%	847	33%	0.0001 (2)
		Low	2088	71%	1047	29%	
3	Ownership MCHHB		4194	69%	1896	31%	

(1) OR 1.49; CI95% 1.184-1.724
(2) OR 1.24; CI95% 1.03-1.10

where the midwives had to write in MCHHB. The average of the answers of midwives was 78, so it meant that 78 items were filled in out of 82 items. After the data were divided into two categories, moderate and high fill out performance, 73.9% of the midwives showed the performance of highly fill out in MCHHB.

Four questions revealed the significant association between behavior and high fill out performance; (1) using MCHHB to educate or explain mothers about maternal and child health (p-value 0.009; OR 3.14, CI 95% 1.37- 7.23), (2) giving an MCHHB to every mother who lost her MCHHB (p-value 0.001; OR 3.7, CI 95% 1.94- 7.7), (3) regularly coordinate a meeting (p-value 0.001; OR 3.32, CI 95% 1.63- 6.75) and (4) keeping MCHHB (p-value 0.004; OR 2.46, CI 95% 1.02- 5.87).

The following contents showed low fill out rates in MCHHB; (1) the delivery cost, (2) transportation/ village ambulance, (3) family planning method, (4) blood donor, (5) referral, (6) heartbeat check, (7) check for diarrhea and (8) record of illnesses and growth or development program (see table 5.11 (a)-(b))

5.4.1.7. Environmental Support

Table 5.12 showed an association between environmental support and behavior of midwives. There were 10 questions about behavior and 8 questions about environment support.

There were 13 questioners of significant variables between behavior and environment supports; asking mothers to bring MCHHB, giving new MCHHB to every mother who lost her MCHHB, using MCHHB to educate or explain mothers on maternal and child health, and providing stock of MCHHB.

5.4.2. Mothers with Under-Five Children

The data of behavior of mothers of under-five children (n=259) were analyzed to read MCHHB and fill in MCHHB. Table 5.13 showed the characteristics mothers of under-five children. The highest proportion of the mother's education was primary school (34.7%), the mean age of the mothers was 27.4 years, the mode of the number of children was one and the average of family income was IDR 1.7 million.

The highest proportions of reading activities were the signs of labor with 46.3% and regular antenatal care with 46.7%. The content of labor signs was described in MCHHB with figures,which showed bloody mucous discharge and amniotic fluid discharge from the birth canal. Table 5.14 showed one of the highest reading activities of mothers was breast-feeding advice. The content advised mothers to breast feed their babies, at least, eight times a day whenever the baby wanted. The information encouraged mothers to breast feed their babies until six months. This study reveled that the mothers read about 30% of the contents of MCHHB on average.

This study reveled that 36.2 % of the results of health examinations were filled in MCHHB by midwives. Table 5.15 showed the items of MCHHB which were filled in by midwives. The highest proportion was family identification (80.7%), following the first day of the last menstruation (82.2%), and estimation of the delivery date (78.8%). The lowest rates of the items were of blood donors (1.2%) and family planning method (1.2%), following delivery cost (1.9%), delivery assisted by midwives (3.9%) and transportation to the health facility (1.5%).

5.4.3. Characteristics Mothers of Under-Five Children due to Regency Data

Secondary data from the regency health office were used to analyze the association between the char-

acteristics of mothers with under-five children and ownership of MCHHB. Four characteristics such as educational background, age, the number of children and family income were annualized.

Only two out of four characteristics showed significance with MCHHB (see table 5.16). The type of regency, classified between rural and urban, showed a significant association with MCHHB ownership (OR 1.49; CI 95% 1.184-1.724). The mothers living in urban areas had MCHHB 1.49 times compared with the mothers living in rural area. The age of mothers of under-five children also showed significant association with MCHHB ownership (OR 1.24; CI 95% 1.03-1.10). The results showed that young mothers seem to have MCHHB 1.24 times compared with older mothers.

5.4.4. The Qualitative Results of Interviews

The interviews were conducted to reveal the reality of MCHHB program from the perspective of health professionals; five midwives, one regency health official and one medical doctor of Puskesmas.

5.4.4.1. Utilization of MCHHB for pregnancy mothers

The midwives used MCHHB as education materials for pregnant women at the time of consultation at Posyandu and Puskesmas. The midwives explained about pregnancy, delivery and child health care by using the MCHHB to pregnant women. In mothers class at Posyandu or Puskesmas, midwives made lectures to pregnant mothers by using MCHHB. When husbands did not come to mothers class, midwives suggested the mothers to ask their husbands to read the content of MCHHB at home.

> "I use only MCHHB as a promotion tool for disseminating MCH knowledge in Puskesmas. The MCHHB help mothers to understand important subjects of pregnancy, delivery and child health care, because it contains interesting pictures. The MCHHB could also motivate the mothers to read it. When I explained the MCHHB material, the mothers responded positively and asked a lot of questions about the contents of interesting pictures. I educate mothers using MCHHB in mothers' classes once a month in Posyandu and counseling time at Puskesmas. I explain the risk of pregnancy for pregnant women and immunizations for babies in mother-child classes.". Midwife 1

> "I explain the MCH knowledge to mothers using MCHHB as education material about pregnancy, delivery and child health care. Sometimes, I use trained cadres for educating mothers in Posyandu. The average time of the mother's class is about one hour. The husbands usually don't come with the

mothers because they are busy with their work". Midwife 2

"I use MCHHB as an information source to educate mothers in class. The classes run between 30 minutes to one hour. I have difficulty with working mothers; they often don't come to the class, and neither do their husbands, so I usually ask the mothers together with their husbands to read the MCHHB." Midwife 4

"I ask mothers to read the handbook before they attend the class. I use MCHHB material to educate the mothers. I explain the signs of pregnant risk factors. I am trying to conduct both mother-child class and mother class, but only mother classes are held in our Posyandu.". Midwife 5

5.4.4.2. Filling out MCHHB

The village midwives understood that some parts of MCHHB remained empty, but it took a time to fill out the MCHHB. They knew well ideally that midwives and cadres should write down the results of health examinations of antenatal, delivery and child health care, but they did not have an enough time to fill out MCHHB.

"It takes 15-20 minutes to fill out each handbook while counseling so that I ask cadres to help me to fill it out." Midwife 1

"When Posyandu is open in my village, there are 35 to 40 pregnant women to get health examinations for their pregnancy.". Midwife 1

"When there were many patients, a new patient just visited at my clinic or health center. I spent a lot of time in writing out MCHHB of only one new visitor." Midwife 2

"I want every midwives to write all the clinical information in MCHHB, but a few of us write it. Sometimes I find that the ANC part is still blank, and a few only write the names of the mothers and their address". Midwife 3

5.4.4.3. Training for health professionals

The study indicated that the special training of MCHHB was only attended by midwife coordinators and not participated by village midwives. The contents of the training were how to use and fill out MCHHB and how to monitor the MCHHB program in the regency level. The midwife coordinators

should disseminate the information on MCHHB to village midwives in Puskesmas after the special training of MCHHB. However, the system of the training of trainers (TOT) did not function well in the regency where the study was conducted. All the midwives said that they requested the special training course on MCHHB because the opportunity of training will motivate them to fill out MCHHB properly and learn how to utilize it as an educational material for pregnant mothers and children.

> "I have never attended a special training course for MCHHB. I participated in only the training for MCH service. In the training of MCH service, the facilitators explained MCH issues as well as MCHHB". Midwife 1

> "I attended a special training on MCHHB with the midwife coordinators. The trainers explained to us how to fill out the MCHHB and how to make a body weight curve. The trainer asked us to disseminate the lessons in the training course to the village midwives in the Puskesmas". Midwife 4

> "I attended a special training on MCHHB at the regency health office as a midwife coordinator. The trainers explained to me how to fill out the MCHHB and how to make a report to the regency health office. They also described mother classes for pregnant women and children under five years.". Midwife 5

> "I need the training on MCHHB at the Puskesmas level because I am in charge of distribution and utilization of the MCHHB. From the beginning of using MCHHB in our Puskesmas, I have never gotten the training on MCHHB. " Midwife 1

5.4.4.4. The supervision for village midwives

The supervision program was well organized for mother health card. However, the supervision program was not established for MCHHB in the regency. The health information system of pregnancy and delivery is very critical to safe delivery and obstetric emergency. The comprehensive health information system on pregnancy, delivery and child health is expected to support village midwives to work for high risk pregnant mothers at community level.

> "Every six months there is supervision for mothers' data from the regency health office. But as far as I know, there is no supervision system for MCHHB program!" Miwife2

"MCHHB is important to us. I am afraid when a pregnant mother comes to me without MCHHB". Midwife 3

"I never have a problem with MCHHB stock. I distribute the MCHHB without any payment to pregnant women in Puskesmas. If they come to my private midwife practice, they should pay at a reasonable price. If a mother loses their MCHHB, I could replace it with a new one and advise her not to lose it again. I suggest every pregnant woman to bring the MCHHB every time when they visit Posyandu or Puskesmas". Midwife 5

5.5 Discussion

This study was conducted to make the questionnaire survey to village midwives and mothers, and to conduct semi-structured interviews of midwives and health professionals in Tangerang regency of Banten province.

This study reveled that the mothers read about 30 % of the contents of MCHHB on average. Because Banten province is near the capital city of Jakarta, the literacy rate of young women has increased recently. The study showed that 59.3% of mothers graduated from at least junior high school. However, the reading capacity of mothers who graduated from only primary school were not satisfied to understand the contents of MCHHB. In MCHHB, there are so many health and medical contents such as regular antenatal care, danger sign during pregnancy, how to take Vitamin A capsule, neonatal care, body weight curve and immunization schedule etc. These information is very important for mothers to have a health life during pregnancy, delivery and child health. So even low-educated mothers are expected to understand the basic contents of MCHHB. Midwives tried to solve this problems to suggest the mothers to ask their husbands to read the content of MCHHB at home. When it is difficult for the mothers to understand the contents of MCHHB, husbands or relatives could read it and explain the contents to mothers.

Gibson, et. al (2012) stated that midwives behaviors were affected by the environmental factors and the individual factors. However, this study revealed that there was no association between individual factors (such as perceptions, the age, income, education of midwives, and income of their husbands) and the

behaviors of the midwives on MCHHB. The environmental factors were related to supervision system and health information at regency health office and Puskesmas. Supervision is needed to monitor and evaluate programs of the MCHHB at Puskesmas level. The regular supervision from regency health office was required to monitor the utilization of MCHHB by village midwives. The regular coordinating meetings in Puskesmas were essential to share the information and improve the utilization of MCHHB among midwife coordinators, village midwives and health cadres working at Posyandu. The communication was facilitated through coordination and teamwork to pursue the needs of patients and clients (Downe, Byrom, & Sympson, 2010). This study found that many village midwives requested regular coordinating meetings and the training course on MCHHB. The supervision and training are essential to ensure the quality of MCHHB program and to strengthen the communication among health professionals who is working for MCHHB.

This study reveled that 36.2 % of the results of health examinations were filled out. The low filling out of MCHHB by midwives might be related to motivation factors. David & Garry (2000) said that the motivation was the force to drive good-oriented behavior behind an individual's action. This study confirmed good practice of village midwives. Some of the midwives utilized MCHHB to explain MCH care to mothers with under-five children, while they did not get the training course on MCHHB. These midwives continued to keep motivation due to the appreciation of the mothers and the community.

One of the good examples of utilization MCHHB was mothers class, which was recently introduced to Indonesia. The mothers class was launched to support the utilization of MCHHB for improving knowledge for mothers and encouraging healthy behavior during pregnancy, delivery and child health (Minister of Health Indonesia, 2011). Pregnant women could not only get information and knowledge in mothers class but also share experience and change behaviors with other pregnant women. This study showed that mothers class for pregnant women and children was conducted, because the regency health office established a

model for strengthening the utilization of MCHHB. In mothers class, village midwives read and explain the antenatal care and risk factors to pregnant mothers by utilizing MCHHB. Mothers can understand well about the contents of MCHHB. However, the interview study revealed that the training for village midwives was needed to promote mother class, because is was very difficult for village midwives to use MCHHB properly without guidance. The mothers class also has limitation. Utami (2012) found that the antenatal class in Jakarta could not change the behaviors to initiate breast-feeding after birth. The further research both in rural and urban areas will be needed to evaluate the effect of mothers class in Indonesia.

This study disclosed that some village midwives kept MCHHB in their offices, because they were afraid that mothers lost MCHHB at home or forgot to bring MCHHB to Puskesmas or Posyandu. The basic concept of MCHHB is that pregnant mothers can keep MCHHB with medical records and health information at home. However, midwives showed their paternalism to do better performance for low educated mothers.

The study revealed the reality of the utilization of MCHHB. The Government of Indonesia has introduced MCHHB for the improvement of maternal and child health. Village midwives utilized MCHHB as home-based records and mothers accepted MCHHB as educational materials. However, there were many challenges to be solved. Midwives should write down more and mothers should read MCHHB more. The local government should intervene by modifying environmental factors and individual factors related to the MCHHB program. Primary health care is based on the development in the spirit of self-reliance and self-determination. MCHHB strengthened the continuing of care during pregnancy, delivery and child health at regency and community level. The local government, health professionals and mothers are expected to ensure the continuos of care at regency and community level in the spirit of self-reliance and self-determination.

Chapter 6
Discussion

The objective of this dissertation was to analyze the impact of Maternal and Child Health Handbook (MCHHB) to maternal and child health (MCH) services during pregnancy, delivery and child health care. This dissertation consists of three studies that were conducted in the period of Millennium Development Goals (MDGs) for analysis of MCHHB at the time of pregnancy, delivery and child health care. The first study was "Is the maternal and child health handbook effective? Meta-analysis of the effect of MCH Handbook", which analyzed the utilization of MCHHB in four developing countries such as Indonesia, Philippines, Cambodia, and Bangladesh. The second one was "the effect of home-based records to maternal and child health services in Indonesia" which focused on mothers who had home-based records (HBRs) at the national level of Indonesia. The third study was "The Study of MCHHB of Tangerang Regency in Banten Province", which demonstrated the utilization of MCHHB in the regency. The results concluded that the use of the MCHHB was associated with increasing knowledge of pregnant women on maternal and child health care, as well as a behavioral change of mothers.

In this chapter, at first the role of MCHHB is discussed, because the global health society is changing from the era of MDGs to a new Sustainable Development Goals (SDGs). Many previous studies mentioned the relationship between the increase of knowledge and behavior changes of mothers. However, this dissertation found the impact of MCHHB on not only the mothers but also the husbands (or partners) and health

providers. Based on three studies, behavior changes of mothers, involvement of husbands and the role of health providers will be discussed.

6.1 The role of MCH Handbook in the new era

The struggle to reduce many problems has inspired the world's effort to spur on achieving the targets of MDGs. In September 2015, the governments in the world agreed a new set of SDGs as a new round of international goals to tail the 15 years of MDGs period. Poverty was one of the leading causes of increasing maternal and infant mortality in many countries (Sachs & Reid, 2006). Reducing maternal and child mortality by decreasing poverty within the community was the ultimate outcome of maternal, newborn, and child health of the SDGs target (Silver & Singer, 2014).

The goal of SDG 3 to ensure healthy lives and promote well-being for all at all ages addresses MDG 4 (reduce child mortality by two-thirds), MDG 5 (improve maternal health), and MDG 6 (combat HIV/AIDS, malaria, and other diseases). Both the MDGs and the SDGs include targets on universal access to reproductive health, which plays a key role in shaping demographic paths (World Bank; International Monetary Fund, 2015).The effort to reduce maternal mortality by less than 70 per 100,000 live births by 2030 and prevent deaths of newborns and under-five children have been making the entire world work harder to achieve the goals (Silver & Singer, 2014).

Japan's success in reducing maternal and infant mortality has encouraged many governments to implement MCHHB as a tool to increase maternal, and child health care performance as well as reducing maternal and child deaths in many developing countries. The Maternal and Child Health (MCH) Care programs follow the World Health Organization (WHO) standard as its golden benchmark throughout the world. The MCHHB which was adopted from Japan has the various contents of MCH care. The contents of MCHHB are included the MCH services which are recommended by WHO. Several countries have modified it with colorful figures and more interesting explanations according to their own local situations and needs. The government and health providers can monitor mothers' medical records through MCHHB and the various

package services that mothers and children obtain during the time of pregnancy, delivery and child health care.

MCHHB consists of the contents and checkup record that motivate mothers to get the continuum of care in health facilities from the beginning of pregnancy until child health care. The handbook contains explanation and health record such as; (1) antenatal care attendance during pregnancy, delivery and immediate post-partum for promoting safe delivery with skilled birth attendance, (2) neonatal care through birth preparedness messages and post-natal care, (3) breast feeding and complementary feeding, (4) immunization coverage of mothers and children, (5) supplementation of Vitamin A to children 6-59 months and (6) integrated approach to management of sick children. The handbook can be used as a guide for health workers to assess and treat the primary causes of mortality for diarrhea, pneumonia, malaria and other febrile diseases, as well as malnutrition, and for referral cases where necessary.

The study of Home-based Records (HBRs) in Indonesia showed a relationship between pregnant women with MCHHB and the continuum of care from perinatal to infant care to health facilities. According to Kerber, Graft-Johnson, & Bhutta (2007), the package for the continuum of care was critical to the health of mothers, infants, and children. It consisted of eight items for care packages; (1) clinical care of reproductive health, (2) clinical care for childbirth, (3) clinical care for newborn and child, (4) reproductive health package, (5) antenatal care package, (6) postnatal care package, (7) child health package and (8) family and community care package.

The Indonesian MoH has been planning to create the continuum of care for reproductive health throughout using special handbooks - particularly for elementary and junior high school where there are many health check activities and sexual education materials related to the age groups including dental activity monitoring (Nasir & Baequni, 2014). In Indonesia, there is a complete manual package regarding monitoring local areas for maternal and child health, e.g., mapping the pregnant woman, examining her for antenatal care, encouraging and obligating mothers to give birth at health facilities, home visits for postpar-

tum mother and babies care including the provision of vitamin A and complete immunization. The result of monitoring is recorded in the MCHHB, and the special report card is issued for the supervision of the regency health office. Midwives regularly send the reports to regency health office, and the regency health office will provide feedback regarding the results.

Based on the results, of three studies the impact of MCHHB to antenatal care (ANC), family planning, HIV-AIDS and nutrition will be discussed.

The content of antenatal care visits in Indonesia is similar with ANC care recommended by WHO including, e.g., 1) blood pressure measurement, 2) urine testing for bacteria and proteinuria, 3) blood testing to identify syphilis and severe anemia, and 4) weight/height measurement. The HBRs study revealed that antenatal care visits were positively associated with the use of the MCHHB or antenatal card (AC). A study in developing countries showed that women who used antenatal care were more likely to give birth safely (Bloom, Lippeveld, & Wypij, 1999). This argument may explain why antenatal care is associated with reduced maternal mortality.

The high number of deaths in the newborn period reached to 42 % of all deaths among under-five children, and could be linked to access to essential health care services (Silver & Singer, 2014). The quality of ANC could be measured by three dimensions: number of visits, schedule of beginning of care and presence of all recommended components of care (Joshi & Torvaldsen, 2014).

The study of meta-analysis and HBRs showed that MCHHB associated with mothers activities in checking up their pregnancy, delivery, and child health care. Moreover, the HBRs study demonstrated that the MCHHB might be related to the continuum of care from perinatal to infant care.

MCHHB may play a significant role as a monitoring tool for antenatal care. MCHHB content describes and provides the writing place for packages of the checkup record about the kind of the services that mother gets during their visit to the health center, furthermore, writing the health status and consultation result in the MCHHB can help government and health workers to know the quality of MCH services

acquired by the mothers.

The issue of family planning to improve the quality of mothers and child health is include in the SDGs and MDGs goals. Theoretically, family planning could reduce IMR through birth reduction, especially among young women by arranging and preventing their births (Bongaarts, 1987). MCHHB as a source of information provides information about family planning and its benefits for mothers and their children. The survey in Tangerang regency showed that mothers' behavior of reading the content of family planning in the MCHHB was only 28 % while the result of midwife study in writing checkup record for family planning in MCHHB reached 94%.

The rise of HIV-AIDS has triggered a massive world effort to reduce the incidence. The high transmission of the disease from mother to child prompted some countries to create systems to monitor HIV-AIDS positive mothers through laboratory checkups. According to the WHO (2016) the percentage of HIV-infected pregnant women who had a risk of transmission to children during pregnancy, delivery or breast-feeding could be from 15 to 45 %. Several developing countries have modified MCHHB as a monitoring tool to pregnant women who suffer from infection. In Indonesia, Minister of Health includes RDT-HIV test results in MCHHB to warn the health care worker to perform specific actions with particular procedure of mothers with HIV positive to implement the prevention of mother-to-child transmission (PMTCT) of HIV.

The studies of Meta–analysis and HBRs also found a strong relationship between being in the MCHHB group and basic immunization for children. The MCHHB, which was provided during pregnancy, served as a reminder for immunizations (Osaki, Kosen, Indriasih, Pritasari, & Hattori, 2015). The role of community health cadres is critical in providing education for mothers regarding the importance of immunization and encouraging mothers to visit Posyandu (integrated service post) and organizing a time for vaccination. Health cadres were well aware of the advantages of using the MCHHB, and they extracted knowledge from the handbook and disseminated the information to reinforce changes in community behav-

ior to the community (Adi, 2010). The studies of HBRs showed that MCHHB or AC provided an association between the handbook and mothers activities to immunize their children.

MCHHB can play a significant role as a tool to ensure adequate nutrition for under-five children. The contribution of MCHHB in declining the incidence of malnutrition work through monitoring. Health monitoring card (*Kartu Menuju Sehat :KMS*) was one of the cards showing child growth curves based on index weight anthropocentric according to age in Indonesia. MCHHB includes the same contents of KMS card. The mothers understand child development through this card via the green line which indicates a healthy child. The children are weighed every month in Puskesmas (health center) or Posyandu. The midwives make a dot sign in the result space and then check that the indicator is signed on the green and yellow line. The child growth curves in MCHHB record the history of child nutritional development. The Tangerang regency studies showed that 77 % midwives wrote in child growth curves, while only 32% of mothers read the curve. MCHHB can play a significant role as a tool to ensure adequate nutrition for child health care, when health workers will explain mothers how to use and read MCHHB more.

Physical distance and financial limitation were two major constraints that prevent mothers from accessing institutional deliveries. In some places, the trained delivery assistants were only targeted at the mothers who experience obstetric complications (Titaley & Hunter, 2010). Distance to health facilities reduced the use of MCH services. The poor access to MCH services was found in developing countries, and there were three delays in many poor areas; determining to seek care, reaching a health facility and getting appropriate treatment (Munjanja, 2012).

Survey of Tangerang regency showed the mothers that possessed MCHHB and lived in the rural area had the possibility 1.24 times more opportunities to come to the health center than that in urban areas. In the countryside, the mothers live far away from health service centers. However, MCHHB information can motivate the mothers to check up their pregnancy, giving birth at the health facility and immunize children

at the proper time even in the era of SDGs. Moreover, the ownership of MCHHB is one requirement to get health insurance especially for uninsured pregnant mothers who are too poor to get *Jampersal* (Insurance for poor pregnancy mothers) in all Indonesian provinces.

6.2 Behavior changes of mothers

It was expected that the information about maternal and child health in MCHHB could be read and understood by mothers and their families. The one major factor that had the potential to harm antenatal and birthing practice was the lack of danger signs recognition in neonates by mothers and family members (Awasthi, Verma, & Agarwal, 2006).

The HBRs study showed that the knowledge of mothers who had MCHHB or AC in the pregnancy, delivery, and child health care was higher than those who did not have MCHHB or AC. The HBRs study also showed that mothers who had MCHHB or AC also knew about vaginal bleeding, fainting, convulsions, swallow limbs, fever, and tiredness as problems during pregnancy. The study also revealed that MCHHB or AC was associated with choosing health facilities if the mothers had problems during pregnancy, delivery and when their children get sick.

The Indonesian Minister of Health (MoH) program has introduced MCHHB, which includes pictures and explanations about pregnancy, delivery and child health care. This may play a significant role as auxiliary information for mothers and their families. Mothers can get accurate information about potential problems during pregnancy from the handbook.

The health of mothers, neonatal, and under-five children consisted of consecutive periods and evolutions during the life cycle. Mothers needed health facilities to help them to plot and space their pregnancies and antenatal care that was connected to safe childbirth care provided by skilled birth attendants; Both mothers and babies need postpartum care during the critical six weeks after birth; the postpartum care should additionally connect the mother to family-planning services and the baby to child health care (Kerber, Graft-Johnson, & Bhutta,2007). The high numbers of mothers giving birth were assisted by tra-

ditional birth attendants (TBA) in developing countries or in places that were not identified as health care institutions caused the high MMR and IMR and were closely related to the maternal education, ownership of health insurance, visit antenatal care and childbirth complications (Auliasih et al., 2013).

The Indonesia Demographic and Health Survey (IDHS) reported that 66% of mothers in 2002–2003, 73% of mothers in 2007 and 83% of mothers in 2012 were assisted by medical staff during their deliveries (Indonesia, BPS-Statistics, 2013). To reach the Indonesian targets for deliveries assisted by medical personnel, using HBR for pregnant women are promising possibilities (Hagiwara, Ueyama, Ramlawi, & Sawada, 2013). We found the usefulness of MCHHB or AC for mothers to be an information source that triggered good behavior and protect dangerous activities during delivery.

Increasing knowledge about safe delivery motivates mothers to deliver safely through health facility during delivery times. However, several mothers who are living in the urban areas traditionally move from their own residences to their parents' houses during delivery times. This is one of the reasons why it is difficult for health workers to trace the pregnancy statuses. The MCHHB can be a medical record to mothers when they are referred to the hospital during emergencies and change their place of antenatal care visits or delivery. With the information of health records in MCHHB, health workers can react quickly when mothers need medical treatment. The HBRs study showed the relationship between mothers who have MCHHB with their behavior to find an obstetrician, midwife, and doctor to help her at the time of delivery.

The study of MCHHB meta-analysis and HBR showed that women who have MCHHB or AC knew how to solve problems when they arose, and that MCHHB or AC had a significant effect on increasing the knowledge of mothers about danger signs during pregnancy. Although the mothers in several places were less interested in reading MCHHB, the message of this handbook was still able to strengthen the mothers' knowledge. There were many information sources besides MCHHB such as radio, newspapers, TV and also health professionals. This broad variety of sources was a cause of confusion among mothers who had a poor education because sometimes the messages were only partially accepted. A study of Philippine's

indigenous people also confirmed that the handbook could be useful in communicating the programs and health promotion to people even if their education level was poor (De Los Reyes, 2010). The MCHHB, in this case, ought to function as the primary source of information for mothers. MCHHB would eliminate bias among maternal and child care information. MCHHB may empower the mothers with the provision of appropriate information.

Child health care, especially regarding immunization is a very significant factor in reducing child mortality and morbidity. Immunization coverage is one of the main predictors of the infant mortality rate (Shimouchi, Ozasa, & Hayashi, 1994). Strengthening routine immunization may not contribute significantly to reducing IMR, but it does have a significant global impact on mortality and morbidity of children under five years old (Sharma, 2007). The brief explanations about immunization with colorful figures could also be helpful in providing health education material. The MCHHB, as an immunization record book and educational tool for mothers, has motivated women and health professionals to immunize children in appropriate time. The MCHHB also describes necessary child immunizations according to age. The HBR study confirms that MCHHB or AC was associated with mother's behavior to come to the health center for immunization of their children. The content of MCHHB educate the mothers that immunizations can prevent many childhood illnesses. The information may motivate the mothers to immunize their children in Posyandu or Puskesmas.

6.3 Promotion of the involvement of men

The influence of the handbook also motivated the husbands to be more caring and understanding in supporting and driving the mothers for doing the continuity of care during the pregnancy delivery and child health care. The HBR study revealed that MCHHB or AC was associated with antenatal care in the health facility and triggered a discussion of pregnancy and delivery among the couple.

Husbands play a major role to change behaviors of mothers. MCHHB or AC can contribute to the participation of husbands in maternal and child health services. Support from husbands and families prevented

depression in mothers during pregnancy (Zuckerman, Amaro, Bauchner, & Cabral, 1989). A lack of care during pregnancy is a significant factor in poor health because support from husbands or families could prevent complications and contributes to healthy infant births (Ricci & Kyle, 2009; Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993). Further studies showed that mothers with depression during pregnancy were at increased risk of premature births and low birth weight (Grote et al., 2010). Rosenfield and Maine (1985) stated that complications during delivery prevent thorough preparation at the onset of pregnancy. Furthermore, they revealed that the most of the efforts, though small, will reduce maternal mortality.

The study of HBRs showed that MCHHB or AC may motivate the discussion between mothers and their husbands to solve financial problems as well as access to health services. This process is critical, if both the mother and husband can complete discussions in early pregnancy. It will be better for mothers, regarding pregnancy, birth preparations, safety and adequate child health care programs. Such discussions more likely affected the women for more preparation in delivery time and led the women to choose safe delivery care. A study in Indonesia discovered that there was a significant relationship between the role of the husband and their parents with pregnant mothers' behavior in antenatal care and delivery (Hafidz, 2007).

The influence of the husband is critical to the mother in determining the place of delivery, especially in Indonesia. The role of the husband is very complex from paying medical bills as well as helping mothers preparing food during the pregnancy and the delivery period (Muleta, Gerrits, & Both, 2009). Hence, involving the husband early in the pregnancy is essential to a safe delivery. The husband's knowledge of gestation and childbirth will support the mother's caring role during pregnancy to guarantee safe delivery. A study conducted in Indonesia revealed that personal reference is one of the most influential factors, followed by affordability of health care facilities and culture (Furi & Megatsari, 2014).

Community contributions to mother care during pregnancy showed that there was a positive association between antenatal care receipt, maternal and child health outcomes (Stephenson & Elfstrom, 2012). A

previous study on the MCHHB in Indonesia revealed that having the MCHHB was associated with better maternal knowledge regarding antenatal care (Kusumayati & Nakamura, 2007), The finding based on improving right knowledge and practice of pregnancy with HBR is important because knowledge and practices of Indonesian women and their families remain unsatisfactory. Community members still perceive that health service is necessary only if the mother has a complication in their pregnancy (Titaley & Hunter, 2010). In Tangerang regency study, it was observed that the Posyandu activities were held by health cadres and midwives once a month. Health cadres consisted of community volunteers. They were middle-aged women from surrounding areas to help mothers and babies in local health activities. The Posyandu activities performed the maintenance of maternal and child health, family planning, immunization, and nutrition improvement through the provision of vitamin A and supplementary food for children under five years old, under coordination and monitoring of the midwives from the health center.

The high rate of maternal mortality caused by hemorrhage is a serious problem in some countries. The deaths of twenty-three percent women in reproductive age (15-49 years) in Bali, Indonesia were due to maternal causes. Postpartum hemorrhage was the most common cause of maternal death (Fortney et al., 1988). The most significant treatment of hemorrhage is red blood cell (RBC) transfusion (Jansen, A. JG, et al., 2005). The HBRs study revealed that MCHHB or AC associated with husband involvement to decide issues required to prepare for the delivery included 1) the delivery location; 2) transportation to the delivery location; 3) the person to assist with the delivery; 4) payment for the delivery; and 5) identifying a blood donor. Husbands contributed to decided the preparedness of emergency during delivery. A study of social support and its relationship to maternal health indicated that mothers who had a companion during labor and delivery, experienced fewer childbirth complications and lower postpartum depression (Gjerdingen, Froberg, & Fontaine, 1991) However, an Indonesian study concluded that most husbands accompanied their wives to just less than four antenatal care visits to health facilities. Some husbands did not accompany their wives to these visits, mainly because the husbands were far away at the time of the antenatal care visits

(Umami, 2007).

To perform emergency preparation for mothers, the husband should be involved in the initial oriented antenatal care because the influence of husband is crucial to find a blood donor during an emergency.

6.4 Impact to health providers

In encouraging and educating mothers to use health service facilities, the government of Indonesia has launched Ministerial Decree No. 284/Menkes/SK/III/2004, stating that every child should be provided with an MCHHB, and every health care worker should educate parents using the MCHHB (Budiharja, 2010). Since that time, all health workers such as midwives, nurses, and sometimes doctors who specialize in pregnancy and birth have educated pregnant woman through a series of consultations. Antenatal care provides an important chance to develop the maternal understanding of care during and after pregnancy. However, studies recommend that communication is often insufficient (Jennings & Yebadokpo, 2010). The function of MCHHB is essential for early detection to pregnant mothers and under-five children, determining relevant information of maternal and child health throughout communication or outreach programs for mothers, families, and communities including the persons or groups who become their reference to the behavioral changes. These programs are related to safe delivery that prevents infant and maternal mortality. Takayanagi, Iwasaki, & Yoshinaka (1993), stated that MCHHB could assist in the early recognition of high-risk pregnancy and the feedback system between clients. Care providers could improve health care for pregnancy-induced hypertension, and diabetes mellitus. Even, MCHHB is internationally diverse, its function for giving further information about pregnancy, delivery and child health care, remains the same.

The results of Tangerang regency survey among 207 village midwives described the situation of pregnancy, delivery, and child health care services in that place.

The midwife plays an important role as delivery assistant. She is involved in the mother's first antenatal care visit. IDHS reported that 60 percent of mothers had their pregnancies examined by midwives

(Indonesia, BPS-Statistics, 2013). Midwife behavior is complex. It is affected by several environmental variables and individual factors (Gibson, Ivancevich, & Donnelly, 2012).

The Tangerang Regency study also confirmed that highly motivated midwives were associated with using MCHHB to educate, explain maternal and child health care and giving MCHHB to every mother of under-five children who lost their handbook.

The environmental support such as supervision of the implementation of MCHHB is associated with regular coordination meeting activity. This supervision is needed to monitor and evaluate programs of the MCHHB at Puskesmas level. The study Tangerang regency found that this activity was related to the behavior of asking mothers whether they brought MCHHB and gave new MCHHB to mothers who lost their handbooks. At Puskesmas level, poor reading behavior caused mothers either to forget their handbooks or to treat the handbooks with disrespect. Regularly asking mothers to bring MCHHB when visited the Puskesmas influenced every mother to do so. In Jakarta, every mother brings MCHHB when visited Puskesmas because Puskesmas insists on it for every visit. Regular supervision was also required from health regency offices and midwife coordinators to monitor the activities of village midwives and health cadres in the utilization of MCHHB.

The training of midwives has a strong impact on their practice (Wickham, 2008). Training also establishes personal identities and could identify midwives with their specific competencies (Sue Chilton, Heather Bain, Ann Clarridge, 2012).

Different midwives' characteristics may cause differences in behavior and work performance. Modifying these factors will affect behavior or activity of individual in the workplace. Many factors were related to individual behavior including demographic factors (e.g. age. sex, and race), abilities and skills, perception, attitudes, and personality shape, productive nonproductive and counterproductive work behavior (Elnaga, 2013). However, this study found that there was no association between perception, the age of midwives,

income, experience, time since first graduation and husband occupation, with the midwives' behavior on MCHHB.

Initiating education classes for mothers could encourage the midwives to write examination results in MCHHB. The MoH has obligated to run mothers' classes for pregnant women to every Puskesmas. In the classes, midwives educate mothers and their husbands on the MCHHB, pregnancy, delivery and child health care. The mother is advised to attend three times during her pregnancy with her husband. However, from the field supervision by the main researcher, in several Puskesmas, mothers' classes were not held regularly.

The HBRs study revealed that doctors, obstetricians and nurses also make important contributions in helping mothers as delivery assistants. Although midwife is the frontline birth attendant in Puskesmas or health centers, obstetricians also played a significant role in assisting deliveries in hospitals, especially in referral cases. Each Puskesmas had a close referral hospital.

6.5 Future development of MCH Handbook

The MCHHB can be used for different groups of people, mothers and husbands as well as other health providers. The use of MCHHB among these various groups have different challenges and stories. The utilization of MCHHB among pregnant women demonstrate that the handbook is associated with improving maternal knowledge and behavior. However, there were still problems such as low reading motivation, loss of the MCHHB, and not bringing the MCHHB to health centers. However, the role of midwives to obligate mothers to bring the MCHHB when visiting health centers, is one solution, and providing pregnancy and mothers' classes is another idea to disseminate the MCHHB message.

The role of the husband and community was critical in supporting the mothers during the time of pregnancy and child to visit health care centers. However, many husbands did not company their wives when during visits to antenatal care checkups, one of the reasons was that the prenatal care and postnatal

care were held during working hours. It would be a better idea to set up prenatal and postnatal care at the Puskesmas or Posyandu on Saturdays or Sundays when many husbands stay home.

Midwives, regarding prenatal and postnatal checkup, play a critical role in utilizing the MCHHB at the health center level, modifying environmental and individual factors related to writing MCHHB health examination results.

There were several limitations among three studies. As for the Meta-analysis study of MCHHB, there were no studies with randomized controlled trials and all the studies were conducted in low or middle-income countries. The quality of the studies was not satisfied, and there were many biases at that time. The HBR study that used the Indonesian demographic health survey (IDHS) could not analyze a differentiation between MCHHB and AC, because the primary data included both MCHHB and AC in the same category. However since 2004, Indonesia has been using MCHHB only as the HBR for all provinces, so that the effect of MCHHB contributes more than AC to the improvement of maternal, neonatal and child health in Indonesia. The Tangerang-Regency study asked midwives to reply to self-writing questionnaires. However, each study has the methodology to validate the data.

The use of MCHHB as the national program is expected to improve the quality of service on maternal and child health and nutrition. The MCHHB in Indonesia is an important tool to motivate mothers, fathers and health providers to ensure continued care. The MCHHB could be a reference health handbook for mothers to refer to the hospital in emergency cases or to change health facilities because of a change of address.

There are so many programs to improve maternal, neonatal and child health (MNCH) in Indonesia and other countries. These interventions are carried out at different times, at different places, by different health care workers and are sometimes run by many donor organizations. The MCHHB program can guarantee the continuum of maternal, neonatal and child health care. MCHHB motivates mothers, husbands, com-

munities, and health workers to start child health care early in the pregnancy. Moreover, maternal and child health care should continue after delivery at least until the children reach five years old.

Chapter 7
Conclusion

In the era of Sustainable Development Goals (SDGs), Maternal and Child Health handbook (MCHHB) is becoming a tool of entry for promoting maternal and child health care. MCHHB includes a list of maternal and child health services as a continuum of care during pregnancy, delivery, and child health as well as promoting an effort to reduce Maternal Mortality Ratio (MMR), Infant Mortality Rate (IMR), and Under-five Mortality rate (U5MR) in many developing countries.

Three studies have specific outcomes. The meta-analysis study of MCHHB conducted in four developing countries, showed that mothers who used MCHHB during pregnancy had a higher level of knowledge in pregnancy and delivery and showed behavior changes in antenatal care (ANC) and nutrition. The Home-based Records (HBRs) study using the Indonesia Demographic Health Survey (IDHS) revealed that mothers who had HBRs had more knowledge and better practices during pregnancy, delivery, and child health care. The Tangerang regency study demonstrated the association between individual and environment factors and midwives' behavior in utilizing MCHHB.

MCHHB program has been introduced in more than 30 countries including both developing and developed countries. MCHHB is not merely a pocket notebook. The village midwives conduct antenatal health checkups for pregnant mothers. While deliveries are conducted at home or at health facilities, skilled birth attendants are expected to attend the delivery. When the emergency case in delivery, the assistance of the husband and the community is needed to transportation and safer referral. After the delivery, the midwife or a public health nurse conducts a newborn visit to the family's home. Infant checkups and vaccinations are

conducted at Puskesmas (health center) or Posyandu (integrated health post) in Indonesia. Throughout the process of pregnancy, delivery and child health care, many different health workers are involved at different locations and different times. MCHHB covers all these processes of the continuum of care by recording health examinations and providing educational information.

MCHHB may play a significant role as a monitoring tool for ANC, delivery, nutrition and immunization, when health workers will explain mothers how to use and how to read MCHHB. The challenging issues which three studies demonstrated were how to utilize MCHHB more effectively from the perspective of health workers and mothers, while there were many positive findings. MCHHB promoted male involvement in decision of delivery and emergency case. MCHHB ensured to promote appropriate nutritional education for pregnant mothers and infants. MCHHB was utilized as an immunization record book and an educational tool for motivating mothers and health workers to immunize children in appropriate time.

MCHHB is not a direct device to reduce maternal and child deaths. However MCHHB can strengthen the communication between health providers and mothers with children. Medical doctors, nurses, midwives and cadres (village health volunteers) make important contributions in helping mothers with MCHHB. MCHHB is not only an educational material for pregnancy, delivery and child health, but also a communication tool to enhance relationship among mothers, husbands, communities and health care providers.

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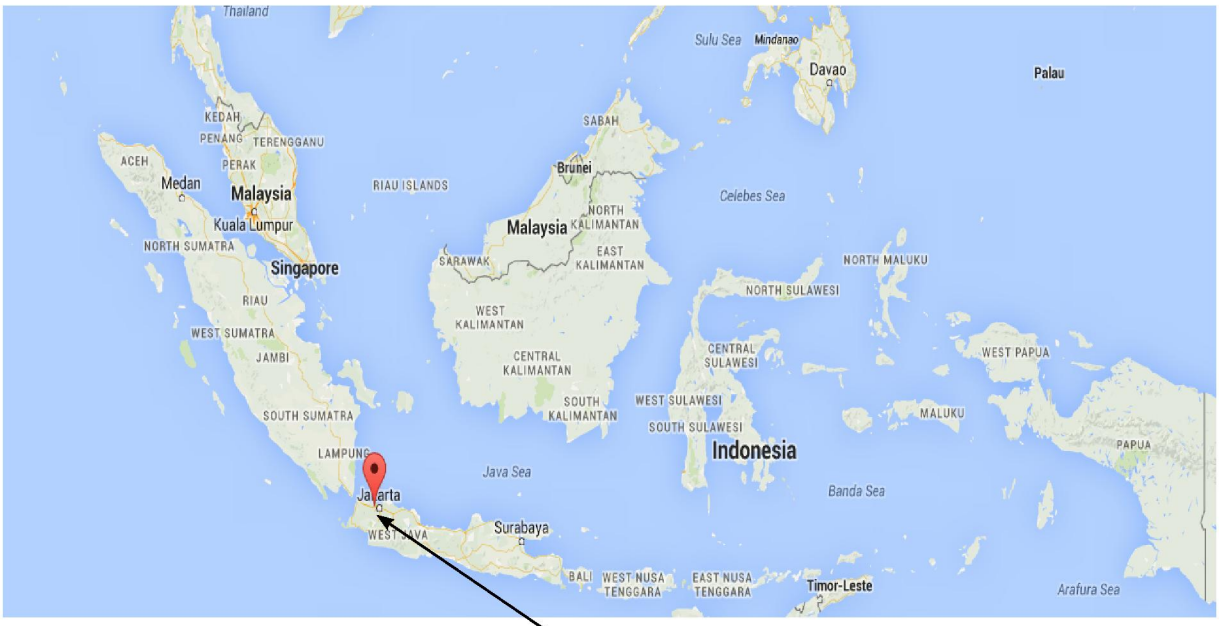
Appendices

Appendix 1 Study Area

Map of Indonesia



Map of Banten Province

Source: DPD Perpamsi Banten. (n.d.). Retrieved April 8, 2015, from http://perpam-sibanten.org/kabupatenserang.htm

Map of Tangerang Regency

Source;
Berwisata ke Kabupaten Tangerang. (n.d.). Retrieved April 8, 2015, from http://jakarta.panduanwisata.id/beyond-jakarta/tangerang/berwisata-ke-kabupaten-tangerang/

Appendix 2 : Part of questionnaire MCHHB in IDHS Woman's questionnaire

12IDHS-W

2012 INDONESIA DEMOGRAPHIC AND HEALTH SURVEY
WOMAN'S QUESTIONNAIRE

SECTION 4. PREGNANCY AND POSTNATAL CARE

	RECORD ALL MENTIONED. DO NOT READ OUT RESPONSES.	OTHER _____ X (SPECIFY)
409A	CHECK 409: CODE 'A', 'B', 'C','D' OR 'E' CIRCLED ☐↓ CODE 'F', OR 'X', CIRCLED ☐→ (SKIP TO 410)	
409B	Were you given an MCH book for this pregnancy? IF YES: May I see it, please?	YES, SEEN . . . . . 1 YES, NOT SEEN . . . . . 2 NO . . . . . 3 DON'T KNOW 8
410	Where did you receive antenatal care for this pregnancy? Anywhere else? PROBE TO IDENTIFY EACH TYPE OF PERSON AND RECORD ALL MENTIONED.	HOME RESPONDENT'S HOME . . . . . A OTHER HOME . . . . . B PUBLIC SECTOR HOSPITAL . . . . . C HEALTH CENTE . . . . . D VILLAGE HEALTH POST . . . . . E DELIVERY POST . . . . . F HEALTH POST . . . . . G OTHER _____ H (SPECIFY) PRIVATE MEDICAL SECTOR HOSPITAL I

Source; Indonesia, BPS-Statistics, 2013

Appendix 3 MCHHB Photo Collection

Mothers are waiting to check theirs pregnancy and child, however a few of them didn't bring MCHHB in Puskesmas

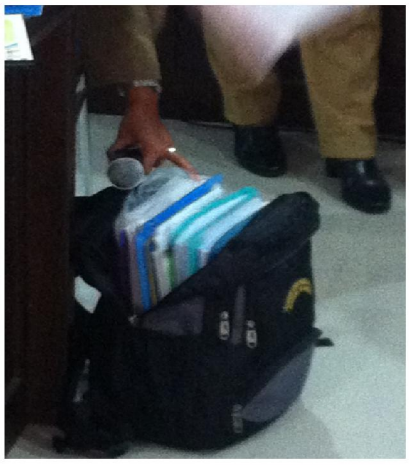
Baby Incubator in Puskesmas Poned (the place where there are Basic Obstetrics Neonatal Emergency service, the patients can stay for delivering their babies in that place)

Delivery bed in Puskesmas Poned

Drugs, Medical Supplies & Equipment in Puskesmas Poned

The situation at midwives co-ordination meeting and evaluation to check the documents for annual report

Head of Puskesmas, Midwife's coordinator and village midwives in one of sub-district Puskesmas



A bag is full with reports (this bag was brought by a midwife while coordination meeting in Health district office in 2013)

Appendix 4 Research Ethics Document

研究倫理審査通知書

Decision by the Research Ethics Committee of Global Human Studies,
Graduate School of Human Sciences, Osaka University

2013年 7月 25日
25 / July / 2013

申請者氏名 Applicant's Name :
Baequni

申請者所属・職名 Applicant's Position & Affiliation:
Graduate School of Human Sciences, Osaka University

研究課題名 Research Title:
The Utilization of Maternal and Child Health Handbook (MCHH)
by Midwives in Banten Province, Indonesia.

上記の研究課題について、2013年7月25日に開催された研究倫理委員会による審査の結果、承認いたしましたので通知します。
Based on the review meeting held on 25 July 2013, the Research Ethics Committee approves the above research.

大阪大学大学院 人間科学研究科 グローバル人間学専攻
研究倫理委員会 委員長
中村安秀

Prof. Yasuhide Nakamura, MD. Ph.D
Chairperson,
Research Ethics Committee of Global Human Studies,
Graduate School of Human Sciences, Osaka University

Appendix 5 Questionnaire for midwives

SURVEY

THE UTILIZATION OF MATERNAL AND CHILD HEALTH HANDBOOK (MCHHB) BY MIDWIVES IN TANGERANG REGENCY-BANTEN, INDONESIA 2013

INFORMED CONSENT FORM FOR MIDWIVES

This informed consent is for Banten Province midwives in a research titled "The Utilization of Maternal and Child Health Handbook by Midwives in Tangerang Regency-Banten, Indonesia".

INFORMATION OF THE PRINCIPAL RESEARCHER

Name **: Baequni (MPH)**

Affiliation **: Graduate School of Human Sciences, Osaka University, Japan**

1. INTRODUCTION

This research is for doctoral dissertation of Baequni Ph.D. candidate with Graduate School of Human Sciences, Osaka University, Japan. You are invited to take part in the research. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

2. PURPOSE OF THE RESEARCH

The purpose of this research is to find the factors which are related to the utilization of MCH Handbook (MCHHB) by the midwives in Tangerang regency of Banten Province. MCHHB is an essential component to improve maternal and child health care for women at the time of pregnancy , delivery and child health care. We want to know the utilization of the MCHHB by the Midwives to the mothers.

3. TYPE OF RESEARCH

This research will involve your participation in one hour fill in questioner about items related to your Individual factor, organization factor, attitude, practice and related aspect about utilization of MCHHB by midwives.

4. PARTICIPATION SELECTION

You are being invited to take part in this research because you are purposively and confining selected as a representative of midwives in Tangerang regency.

5. VOLUNTARY PARTICIPATION

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. You may change your mind later and stop participating even if you agreed earlier.

6. PROCEDURE

When you accept participation in this research, you will be asked to:

a. Filling in the questioner by yourself
b. Be interviewed to describe about knowledge, attitude, practice and related information about MCHHB

7. DURATION

The research takes place over five months in total. During that time, we will visit you or if it is difficult we will send the questioner and pick up the questioner. Few of you will be interviewed about the information related of MCHHB..

8. RISK AND DISCOMFORT

There is a risk that you may share some personal or confidential information by chance, or that you may feel uncomfortable talking about some of the topics. However, we do not wish for this to happen. You do not have to answer any question if you feel the questions are too personal or if talking about them makes you uncomfortable. You can skip them and move into the next question or quit answering.

9. BENEFIT

There will be no direct benefit to you, but your participation is likely to help us find out how to improve maternal and child health care in your community.

10. INCENTIVES

You will not be provided any incentive to take part in the research. However, we will give you a small gift as an appreciation for your time and willingness of the participation.

11. CONFIDENTIALITY

The research being done in the community may draw attention. We will not be sharing information about you to anyone outside of the research team. The information that we collect from this research will be kept private. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock up all the information collected in this research.

12. WHO TO CONTACT

If you have any questions about this research, you may contact Baequni at 8094274 (Indonesia), or e-mail at baequni@yahoo.com. If you have any questions or concern about your rights as a research participant, you may contact Prof. Yasuhide Nakamura with Graduate School of Human Sciences, Osaka University at +81 66879 8064 or e-mail at Yastisch@aol.com.

13. CONSENT STATEMENT

I have read all the information. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I have been provided a copy of this form for my record and I consent voluntarily to be participant in this research.

Print Name of Participant	Print Name of Principal Researcher
_____	_____
Signature of Participant	Signature of Principal Researcher
_____	_____
Date: _____	Date: _____
Day/Month/Year	Day/Month/Year

1. MIDWIFE'S BACKGROUND

Please, fill in the table below with your personal data

ID 1	Name	
ID 2	Home address	
	Sub District	
	District	
	Village	
ID 3	Office Address	
	Sub District	
	District	
	Village	
ID 4	Phone Number	
ID 5	Your Birth Day Day/Month/Year	
ID 6	Education Level	1. D1 Midwife 2. D3 Midwife 3. D4 Midwife
ID 7	Year of graduated from midwife course	
ID 8 '	Length of employment	.....Year .....Month
ID 9	What is your religion ?	1. Islam 2. Protestant 3. Catholic 4. Hindu 5. Buddha 6. Others, please explain.....
ID 10	What is your ethnic ?	1. Banten ethnic 2. Others, please explain.....
ID 11	Do you speak Banten Language ?	1. Yes 2. No 3. Others, please explain.....

ID 12	Are you married ?	1. Yes 2. No 3. Others, please explain..... *If your answer no please go to question ID 15*
ID 13	What is your husband status ?	1. Government official 2. Private sector 3. Running his own business 4. Labor 5. Unemployed 6. Others. Please explain….....
ID 14	How much money does your family spend monthly ?	1. IDR 1,000,000 up to 1,999,999 2. IDR 2,000,000 up to 2,999,999 3. IDR 3,000,000 up to 3,999,999 4. IDR 4,000,000 up to 4,999,999 5. IDR 5,000,000 up to 5,999,999 6. IDR 6,000,000 up to 6,999,999 7. IDR 7,000,000 up to 7,999,999 8. IDR 8,000,000 up to 8,999,999 9. IDR 9,000,000 up to 9,999,999 10. IDR 10,000,000 up to 14,999,999 11. IDR 15,000,000 up to 20,000,000 12. More than IDR 20,000,000
ID 15	How much money do you spend monthly ?	1. IDR 1,000,000 up to 1,999,999 2. IDR 2,000,000 up to 2,999,999 3. IDR 3,000,000 up to 3,999,999 4. IDR 4,000,000 up to 4,999,999 5. IDR 5,000,000 up to 5,999,999 6. IDR 6,000,000 up to 6,999,999 7. IDR 7,000,000 up to 7,999,999 8. IDR 8,000,000 up to 8,999,999 9. IDR 9,000,000 up to 9,999,999 10. IDR 10,000,000 up to 14,999,999 11. IDR 15,000,000 up to 20,000,000 12. More than IDR 20,000,000
ID 16	How much is your salary monthly ?	1. IDR 1,000,000 up to 1,999,999 2. IDR 2,000,000 up to 2,999,999 3. IDR 3,000,000 up to 3,999,999 4. IDR 4,000,000 up to 4,999,999 5. IDR 5,000,000 up to 5,999,999 6. IDR 6,000,000 up to 6,999,999 7. IDR 7,000,000 up to 7,999,999 8. IDR 8,000,000 up to 8,999,999 9. IDR 9,000,000 up to 9,999,999 10. IDR 10,000,000 up to 14,999,999 11. IDR 15,000,000 up to 20,000,000 12. More than IDR 20,000,000
ID 17	Do you receipt any incentive from your office on doing MCH Handbook program ?	1. Yes 2. No

ID 18	Have you ever have any courses about MCH Handbook Program ?	1. Yes 2. No
ID 19	If you have ever take any courses on MCH Handbook; when have you take it ?	Year…….. Month……..
ID 20	How long the MCH Handbook course took ?	……Days

2. MIDWIFE'S PERCEPTION OF MCH HANDBOOK

Choose one answer that you believe is the best solution for you!

P1	The MCH Handbook gives explanation about antenatal care	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P2	The MCH Handbook gives explanation about preparation for delivery	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P3	The MCH Handbook gives explanation about danger sign during pregnancy.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P4	MCH Handbook give explanation about problem during the labor	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P5	MCH Handbook gives explanation about how to breastfeed the baby.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P6	MCH Handbook gives explanation about postpartum danger and illness.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P7	MCH Handbook gives explanation about Family planning.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P8	MCH Handbook is useful as maternal and child health record.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

P9	MCH Handbook is useful for mother, husband and community as educational materials	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P10	MCH Handbook helps your work and makes it easier	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P11	It is a big burden for you to write down into MCH Handbook	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P12	MCH handbook can increase mother knowledge of pregnancy, delivery and child health care	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
P13	MCH handbook can change mother's behaviors of pregnancy, delivery and child health care	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

3. MIDWIFE'S ATTITUDE ABOUT MCH HANDBOOK AND PREGNANCY

Choose one answer that you believe is the best solution for you!

A1	I always give MCH Handbook to pregnant women who come for the first time to visit Puskesmas	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A2	I give an explanation about antenatal and child health care according MCH Handbook guidance	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A3	I want every mother who come to visit bring her MCH Handbook	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A4	I write the status of pregnant mothers every time she come to visit in MCH Handbook	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

A5	I want midwives` behavior of writing status for pregnancy mother and child health care in MCH Handbook as standard procedure for midwives in Maternal Child Health care.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A6	I need some supervision from my superior to encourage me to write in MCH Handbook	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A7	I need more incentive for writing the status of pregnancy mothers and child health care in MCH Handbook	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A8	I have enough time in writing the status of pregnancy mothers and child health care in MCH Handbook	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

4. MIDWIFE'S ATTITUDE ABOUT MCH HANDBOOK AND DELIVERY

Choose one answer that you believe is the best solution for you!

A9	I write the status of delivery on the section of Birth notification	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A10	I explain to mother the process of delivery	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A11	I explain to mothers the problems that may occur during delivery	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A12	I write in referral section on the MCH Handbook before I send the pregnant mothers to take intensive care in the hospital.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A13	I write in delivery section on the handbook for newborn babies.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

5. MIDWIFE'S ATTITUDE ABOUT MCH HANDBOOK AND CHILD HEALTH CARE

Choose one answer that you believe is the best solution for you!

A14	I follow MCH Handbook as my guidance to educate mothers about the way to take care her babies	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A15	I write on the MCH Handbook about child growth and development	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A16	I write on the part of exclusive breast table in the MCH Handbook about feeding period.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A17	I need help from health cadres in writing child growth and development on handbook.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A18	I encourage every mother that comes to visit to bring her MCH Handbook.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
A19	I did not found any difficulty in writing child health status in MCH Handbook.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

6. MIDWIFE'S KNOWLEDGE ON MCH HANDBOOK

Choose one answer that you believe is the best solution for you!

	Please mark the column that best describes what you think or feel	**Right**	**Wrong**
PE1	The following statement related to danger sign during pregnancy		
	a. Bleeding		
	b. Swollen feet, arms and face ; or headaches sometimes followed by convulsions		
	c. High Fever		
	d. Amniotic fluid discharge comes out before expected delivery date		
	e. Fetus` movement is decreasing or there is no movement at all		

	f. A pregnant woman keeps vomiting and doesn't want to eat		
PE2	The following statement related to preparation before delivery		
	a. The mothers and her husband decide whether delivery will be assisted by midwife or doctor		
	b. Plant to have delivery in the village delivery post, health center, delivery house or others health facilities		
	c. The family should save some money for delivery expenses		
	d. The pregnant women and her spouses should prepare a blood donor		
	e. Asking the midwife or doctor the estimate delivery date		
	f. The family and their community should be prepared with transportation		
PE3	The following statement related to danger sign during delivery		
	a. The infant doesn't deliver after 12 hours of contractions		
	b. Bleeding from the birth canal		
	c. High fever		
	d. The umbilical cord or the baby`s hand comes out first from the birth canal		
	e. Convulsion		
	f. The woman isn't strong enough to push during delivery		
	g. Smelly or cloudy amniotic fluid		
	h. The placenta doesn't come out after the baby is delivered		
	i. The pregnant woman is restless or having severe pain		
PE4	The following statement related to postpartum mother		
	a. Eat one more plate of food per meal than before you were pregnant		
	b. Rest enough, so that you are in good condition and production enough breast milk		
	c. Take one high dose capsule of Vitamin A		
	d. Take one iron tablet every day during this time		

	e. Keep your vagina clean, change your sanitary napkin each time it is wet		
PE5	The following statement related to keep the newborn warm		
	a. Bathe your baby after birth		
	b. Wrap your baby with a dry sheet		
	c. Do not put your baby in a cold or windy place		
	d. If the birth weight is less than 2,500 grams hold the baby closely in order to have a skin to skin contact with the mother (kangaroo method)		
PE7	The following statement related to the function of MCH Handbook		
	a. The tolls for recording and monitor maternal and child health care		
	b. A tool that help midwife in communication and counseling to mother		
	c. An equipment for the family to look midwife activities on maternal and child health		

7. MIDWIFE'S MOTIVATION ON MCH HANDBOOK

Choose one answer that you believe is the best solution for you!

	Please mark the column that best describes what you think or feel	Yes	No
O1	Is there any rule from your superior that obligate you to use the MCH Handbook for maternal and child health care ?		
O2	Is there any reward or sanction from your institution about writing and educate mothers using the MCH handbook ?		
O3	Is there a standard operational procedure from midwives` organization that obligates you to use the MCH handbook ?		
O4	Does the institution where you work observe the inventory MCH handbook: when there is a shortage they would seek to procure the MCH handbook ?		
O5	Is there any regular coordination meeting in the implementation of the MCH Handbook in your institution ?		
O6	Is there any regular supervision of implementation of the MCH Handbook program in your institution ?		
O7	Is there any rule to establish pregnancy and mother-child classes to socialize the MCH Handbook in your Puskesmas or Posyandu ?		
O8	Is there any other form of recording system of maternal and child health care besides MCH Handbook in your Institution ?		

8. MIDWIFE'S BEHAVIOUR IN MCH HANDBOOK

Choose one answer that you believe is the best solution for you!

	Please mark the column that best describes what you think or feel	Yes	No
PR1	Do you use MCH Handbook for educate or explain to mother about maternal and child health care ?		
PR2	Do you advise the mother to come to the Puskesmas or Posyandu to bring their MCH Handbook ?		
PR3	Do you ask the mother whether she brings the MCH Handbook when she comes to examine her pregnancy or child ?		
PR4	Do you give a new MCH Handbook to every mother who lost her Handbook ?		
PR5	Do you give an advice to mother and her husband to read the MCH Handbook ?		
PR6	Do you do pregnancy and mother-child classes to socialize the MCH Handbook ?		
PR7	Do you provide stock of the MCH Handbook to be given to pregnant women who come to visit ?		
PR8	Do you conduct regular coordination with colleague or your boss about the MCH handbook program ?		
PR9	Do you keep the MCH Handbook that owned by mother in your place for fear of the mother lost her handbook ?		

9. MIDWIFE'S MOTIVATION IN MCH HANDBOOK

Choose one answer that you believe is the best solution for you!

M1	Write status of mothers and children health in the MCH-HB can improve the work performance of midwife	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M2	Midwife's achievement should be assessed according to profession indicators and assessed fairly	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M3	Midwives who are regularly recording maternal and child health status in MCHHB should be entitled to praise and awards	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M4	Recording the health status of mothers and children health in the MCHHB are one of the duties of midwife	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M5	Recording the health status of mothers and children health in the MCHHB is a midwife obligation from midwife's organization	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

M6	Pregnant women education with MCHHB is midwife's responsibility	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M7	Midwives are responsible for the completeness the MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M8	Make record in MCHHB related with professional respon-sibilities of the midwife	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M9	The health status of mothers and children in MCHHB are useful for the midwife	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M10	The health status of mothers and children in MCHHB are useful for the mothers	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M11	It is a waste of time for midwives to write MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M12	All the midwives are obligated to write MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M13	It is important to write MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M14	Writing health status in MCHHB is only require to claim the insurance for poor mothers	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M15	Writing health status in MCHHB is only require to high risk mothers	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M16	I am trying hard to improve my performance in servicing the mothers at health facilities	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

M17	I prioritize my duty as a midwife rather than private matters	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M18	I have knowledge and skill to utilize of MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M19	I feel very glad when I can finish recording the health status of mothers in MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M20	The work environment supports me to utilize MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M21	I can coordinate and communicate with other midwives to do my duty.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M22	Everyone in the organization has the same opportunity to develop theirs career	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M23	Head of Puskesmas and districts health office personnel are entitled to reprimand when the midwife did not record maternal and child health in MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M24	Sanctions required for midwives who are not utilize MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M25	We need facilitation from health districts office to utilize MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M26	Our leader acted wisely to solve the problems	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M27	The employment relationship between superiors and subordinates is very good in our office.	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

M28	Head of Puskesmas and districts health office personnel providing training to employees to improve the ability and skills	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M29	Head of the Puskesmas and health districts office communicate to midwives about the objectives of the MCHHB program	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]
M30	There is a support from the head of the Puskesmas or Health districts office for utilizing MCHHB	1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree	[.....]

10. WRITING BEHAVIOR IN MCH HANDBOOK

The following statement asks you about your activities in filling the Handbook

	Please mark the column that best describes what you think or feel	Yes	No
I1	Family Identification		
I2	Welcoming The Delivery		
	a. The delivery will be assisted by a midwife		
	b. The delivery cost		
	c. Transportation/village ambulance		
	d. Family planning method		
	e. Blood donor		
I3	Maternal health record during current pregnancy		
	a. First day of last menstruation, Date		
	b. Estimated Date of delivery (EDD), Date		
	c. Circumference of upper arms		
	d. Height		
	e. Type of contraception used before this pregnancy		
	f. Medical history mother		

	g. History of allergy		
	h. Number of pregnancy		
	i. Number of deliveries		
	j. Number of premature birth		
	k. Number of living children		
	l. Number of still birth		
	m. Number of premature births		
	n. Interval from the last pregnancy		
	o. TT immunization status		
	p. Last TT immunization		
	q. Last delivery assistant		
	r. Last delivery		
	s. Date		
	t. Complain		
	u. Blood pressure		
	v. Weight		
	w. Cycle of pregnancy		
	x. Height of Fundus		
	y. Fetal position		
	z. Fetal heart beat		
	aa. Swollen feet		
	ab. Laboratory test result		
	ac. Intervention or treatment		

	ad. Advice given		
	ae. Name of examiner		
	af. Remarks		
	ag. Next consultation date		
I4	Maternal health record on delivery and newborn		
	a. Woman		
	b. Newborn		
	c. Referral		
I5	Postpartum Mother		
	a. Date		
	b. Complain		
	c. Blood pressure		
	d. Pulse		
	e. Respiration rate		
	f. Temperature		
	g. Uterus contraction		
	h. Hemorrhage		
	i. Lochia		
	j. Defecation		
	k. Urinate		
	l. Early Breastfeeding		
	m. Intervention and treatment(Vit A, Fe)		
	n. Advice given		

	o. Remarks		
	p. Final conclusion of postpartum condition		
	q. Family planning service for post-partum mother		
I6	Birth Notification		
I7	Neonatal examination		
	a. 1st Visit		
	b. 2nd Visit		
	c. 3rd Visit		
	d. Weight		
	e. Height		
	f. Temperature		
	g. Ask the mother what is the baby`s illness		
	h. Respiratory rate		
	i. Heartbeat		
	j. Check for diarrhea		
	k. Check for jaundice		
	l. Check for possibility of low weight and or breastfeeding problems		
	m. Check the status of vitamin K1		
	n. Check for immunization status		
	o. Check for complains		
	p. Check for maternal complain		
	q. Therapy		
	r. Examiner		

I8	Record of illnesses and growth or development program		
I9	Vitamin A		
I10	Health Monitoring Card (KMS)		

Thank You

Appendix 6 Questionnaire for Mothers

Respondent Identity : Kecamatan: Kelurahan : RW/RT:

QUESTIONER FOR MOTHER

ID 1	Name	
ID 2	Home address	
	Sub District	
	District	
	Village	
ID 4	Phone Number	
ID 5	Your Birth Day Day/Month/Year	
ID 6	Education Level	1. Never 2. Didn't graduate from elementary school 3. Graduate from elementary school 4. Graduate from high school 5. Bachelor Degree 6. Magistral Degree
ID 5	Did you have MCHHB ?	1. Yes (Show it) 2. No
ID 6	Number of Children ?	1. 1 Child 2. 2 Children 3. 3 Children 4. 4 Children 5. More than 4 Children
ID 7	How much is average family income monthly ?	1. IDR 1,000,000 up to 1,999,999 2. IDR 2,000,000 up to 2,999,999 3. IDR 3,000,000 up to 3,999,999 4. IDR 4,000,000 up to 4,999,999 5. IDR 5,000,000 up to 5,999,999 6. IDR 6,000,000 up to 6,999,999 7. IDR 7,000,000 up to 7,999,999 8. IDR 8,000,000 up to 8,999,999 9. IDR 9,000,000 up to 9,999,999 10.IDR 10,000,000 up to 14,999,999 11.IDR 15,000,000 up to 20,000,000 12.More than IDR 20,000,000

	26). Advice of giving Vitamin A capsule	Yes	No
	27). Immunization schedule	Yes	No
	28). Environmental cleanness	Yes	No
	29). Treatment for common childhood illnesses	Yes	No
	30). Health monitoring card	Yes	No
BK3.	Observation MCHHB, which part of MCHHB filed in ?		
	1). Family Identification	Filled	Blank
	2). The delivery will be assisted by a midwife	Filled	Blank
	3). The delivery cost	Filled	Blank
	4). Transportation/village ambulance	Filled	Blank
	5). Family planning method	Filled	Blank
	6). Blood donor	Filled	Blank
	7). First day of last menstruation, Date	Filled	Blank
	8). Estimated Date of delivery (EDD), Date	Filled	Blank
	9). Circumference of upper arms	Filled	Blank
	10). Height	Filled	Blank
	11). Type of contraception used before this pregnancy	Filled	Blank
	12). Medical history mother	Filled	Blank
	13). History of allergy	Filled	Blank
	14). Number of pregnancy	Filled	Blank
	15). Number of deliveries	Filled	Blank
	16). Number of premature birth	Filled	Blank
	17). Number of living children	Filled	Blank
	18). Number of death children	Filled	Blank
	19). Number of premature birth	Filled	Blank
	20). Interval from the last pregnancy	Filled	Blank
	21). TT immunization status	Filled	Blank
	22). Last TT immunization	Filled	Blank
	23). previous birth attendance	Filled	Blank
	24). Date	Filled	Blank
	25). Complaint	Filled	Blank
	26). Blood pressure	Filled	Blank
	27). Weight of mothers	Filled	Blank
	28). Gestation (weeks)	Filled	Blank
	29). Fundal Heigh	Filled	Blank
	30). Fetal position	Filled	Blank
	31). Fetal heart beat	Filled	Blank
	32). Swollen feet	Filled	Blank
	33). Laboratory result	Filled	Blank
	34). Intervention or treatment	Filled	Blank
	35). Advice given	Filled	Blank

Respondent Identity :	Kecamatan:	Kelurahan :	RW/RT:

BK3.	Observation MCHHB, which part of MCHHB filed in ?		
	1). Family Identification	Filled	Blank
	2). The delivery will be assisted by a midwife	Filled	Blank
	3). The delivery cost	Filled	Blank
	4). Transportation/village ambulance	Filled	Blank
	5). Family planning method	Filled	Blank
	6). Blood donor	Filled	Blank
	7). First day of last menstruation, Date	Filled	Blank
	8). Estimated Date of delivery (EDD), Date	Filled	Blank
	9). Circumference of upper arms	Filled	Blank
	10). Height	Filled	Blank
	11). Type of contraception used before this pregnancy	Filled	Blank
	12). Medical history mother	Filled	Blank
	13). History of allergy	Filled	Blank
	14). Number of pregnancy	Filled	Blank
	15). Number of deliveries	Filled	Blank
	16). Number of premature birth	Filled	Blank
	17). Number of living children	Filled	Blank
	18). Number of death children	Filled	Blank
	19). Number of premature birth	Filled	Blank
	20). Interval from the last pregnancy	Filled	Blank
	21). TT immunization status	Filled	Blank
	22). Last TT immunization	Filled	Blank
	23). previous birth attendance	Filled	Blank
	24). Date	Filled	Blank
	25). Complaint	Filled	Blank
	26). Blood pressure	Filled	Blank
	27). Weight of mothers	Filled	Blank
	28). Gestation (weeks)	Filled	Blank
	29). Fundal Heigh	Filled	Blank
	30). Fetal position	Filled	Blank
	31). Fetal heart beat	Filled	Blank
	32). Swollen feet	Filled	Blank
	33). Laboratory result	Filled	Blank
	34). Intervention or treatment	Filled	Blank
	35). Advice given	Filled	Blank
	36). Name of examiner	Filled	Blank
	37). Next consultation date	Filled	Blank
	38). date delivery	Filled	Blank

Respondent Identity :	Kecamatan:	Kelurahan :	RW/RT:

	39). Birt weight	Filled	Blank
	40). Refferal	Filled	Blank
	41). woman condition	Filled	Blank
	42). Birth Notification	Filled	Blank
	43). 1st Visit	Filled	Blank
	44). 2nd Visit	Filled	Blank
	45). 3rd Visit	Filled	Blank
	46). Weight	Filled	Blank
	47). Height	Filled	Blank
	48). Temperature	Filled	Blank
	49). Ask the mother what is the baby`s illness	Filled	Blank
	50). Respiratory rate	Filled	Blank
	51). Heartbeat	Filled	Blank
	52). Check for diarrhea	Filled	Blank
	53). Check for jaundice	Filled	Blank
	54). Check for possibility of low weight and or breastfeeding problems	Filled	Blank
	55). Check the status of vit K	Filled	Blank
	56). Check immunization status	Filled	Blank
	57). check others complain	Filled	Blank
	58). check mother complain	Filled	Blank
	59). examiner sign	Filled	Blank
	60). Record ilness	Filled	Blank
	61). Health monitoring card	Filled	Blank

THANK YOU

Appendix 7 Permission letter from Health office District to Collect Data

PEMERINTAH KABUPATEN TANGERANG

DINAS KESEHATAN

KOMPLEK PERKANTORAN TIGARAKSA

JL. H. ABDUL HAMID TIGARAKSA TANGERANG TELP. (021) 5990535, FAX. (021) 5990534

Tangerang, 4 Oktober 2013

Nomor : 423.5/[illegible]40 - Dinkes

Lampiran : -

Perihal : ***Ijin Penelitian dan Pengumpulan Data***

Kepada Yth :
Dekan FKIK UIN
Syarif Hidayatullah Jakarta
di -
Tempat

Menindaklanjuti surat Saudara nomor : Un. 01/F10/OT.01.6/3760/ 2013 tanggal 13 September 2013 perihal Permohonan Ijin Penelitian dan Pengumpulan Data. Kepala Dinas Kesehatan Kabupaten Tangerang dengan ini memberikan izin kepada nama dibawah ini :

Nama : Baequni, SKM., MKes
NIp : 19680911 200312 1 001
Judul Penelitian : The Utilization of Maternal and Child Health Handbook (MCHH) by Midwives in Banten Province, Indonesia

untuk melaksanakan penelitian dan pengumpulan data di Wilayah Kerja Dinas Kesehatan Kabupaten Tangerang, dan kami minta agar yang bersangkutan melaporkan hasil kegiatan ke Dinas Kesehatan Kabupaten Tangerang melalui Bidang Pengembangan dan Promosi Kesehatan.

Demikian, atas perhatian dan kerjasamanya diucapkan terima kasih.

Kepala Dinas Kesehatan
Kabupaten Tangerang

Drg.Hj. Naniek Isnaini. L, M.Kes
Pembina Utama Muda
Nip. 19611218 198603 2 005

Tembusan Kepada :
1. Kepala Bidang di Dinas Kesehatan Kab. Tangerang
2. Ka. UPT Puskesmas se- Kabupaten Tangerang

Appendix 8 Qualitative questionnaire for Midwives

For Health Personnel ID Number __ __ __ __ __

GUIDANCE FOR IN-DEPTH INTERVIEW TO MIDWIVES

Identification:

Province	:
District	:
Sub district	:
Village	:
ID number	:
Respondent`s name	:
Respondent's address	:
Interviewer`s name	:
Date of interview	:
Date of birth	:

When did you start to be midwives ?....year

1. Training
   - What kind training did you receive?
   - How did you feel about the effectiveness of the training?

2. Practice
   - How did you use MCH Handbook for promotion Maternal and Child Health?

3. Difficulties
   - What kind of barriers or difficulties did you find in implementation of MCH Handbook?
   - How did you solve the problems above?

4. Did you get support from the government to use the MCH Handbook?
5. How many minutes did you spend for filing one MCH Handbook ?
6. What is your suggestion to improve MCH Handbook program in your area?