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THESIS

FACTORS PREDICTING MATERNAL SELF-CARE BEHAVIORS DURING PREGNANCY IN GARUT DISTRICT, WEST JAVA, INDONESIA

TANTRI PUSPITA

A Thesis Submitted in Partial Fulfillment of
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Tantri Puspita 2015: Factors Predicting Maternal Self-Care Behaviors during Pregnancy in Garut District, West Java, Indonesia. Master of Nursing Science (Family and Community Health Nursing), Major Field: Family and Community Health Nursing, Boromarajonani College of Nursing Nopparat Vajira. Thesis Advisor: Miss Peranan Jerayingmongkol, R.N., Ph.D. 117 pages.

The purpose of this study was to identify factors predicting maternal self-care behaviors during pregnancy in Garut District, West Java, Indonesia. A self-care behavior is an important factor determining pregnant women's health during pregnancy and childbirth. Therefore, it is important to identify factors predicting self-care behaviors of women during pregnancy.

A cross-sectional survey design was used in this study with multi stage sampling technique. Self- administered questionnaire was used to collect the data from 313 pregnant women in five Public Health Centers (PHCs) in Garut District. Pearson product moment correlation, Spearman's rank correlation, Point Biserial correlation, and multiple regressions were used for data analysis. The results revealed that there were significant correlations between knowledge about maternal self-care behaviors during pregnancy, perceived benefits of maternal self-care behaviors during pregnancy, perceived self-efficacy in maternal self-care behaviors during pregnancy, social support satisfaction, and maternal self-care behaviors during pregnancy ($r = .130$, $p < 0.05$; $r = .271$, $p < 0.01$; $r = .438$, $p < 0.01$; $r = .312$, $p < 0.01$, respectively). The strongest predictor was perceived self-efficacy in maternal self-care behaviors during pregnancy followed by social support satisfaction and knowledge about maternal self-care behaviors during pregnancy. In conclusion, maternal self-care behaviors during pregnancy need to be improved and health promotion programs should focus on pregnant women's perceived self-efficacy in maternal self-care behaviors during pregnancy, sufficient social support satisfaction, and knowledge about maternal self-care behaviors during pregnancy.

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Tantri Puspita

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TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF FIGURES

LIST OF ABBREVATIONS

ACOG	=	American College of Obstetricians and Gynecologist
ACSM	=	American College of Sports Medicine
ANC	=	Antenatal care
BCNNV	=	Boromarajonani Collage of Nursing Nopparat Vajira
BMI	=	Body mass index
BNUPP	=	Board for National Unity and People's Protection
DSCR	=	Developmental self-care requisites
EFSA	=	European Food Safety Authority
ERB	=	Ethical Review Board
HD	=	Health department
HDSCR	=	Health deviation self-care requisites
HPM	=	Health Promotion Model
I-CVI	=	Item-content validity index
IDA	=	Iron deficiency anemia
IDHS	=	Indonesian Demographic Health Survey
IFIC	=	International Food Information Council
LBW	=	Low birth weight
MoH	=	Ministry Of Health
NHS	=	National Health Service
OSA	=	Obstructive sleep apnea
PAGB	=	Proprietary Association of Great Britain
PHC	=	Public health center
RA	=	Research assistant
SBI	=	Support Behavior Inventory
SOGC	=	Society of Obstetricians and Gynecologists of Canada
SRHAP	=	Self-Rated Abilities for Health Practices
UCSF	=	University of California, San Francisco
UNICEF	=	United Nations Children's Fund

LIST OF ABBREVATIONS (Continued)

US	=	United State
USCR	=	Universal self-care requisites
WHO	=	World Health Organization

FACTORS PREDICTING MATERNAL SELF-CARE BEHAVIORS DURING PREGNANCY IN GARUT DISTRICT, WEST JAVA, INDONESIA

INTRODUCTION

Currently, millions of pregnant women suffer from disability, disease, infection, and injury and 95% of these cases are in Africa and Asia. Out of this number, 50% are in Sub-Saharan Africa and 35% are in South Asia (United Nations Children's Fund [UNICEF], 2009). Each year, more than half a million women's deaths are caused by factors related to pregnancy and childbirth (UNICEF, 2012). According to UNICEF (2009) the causes of pregnant women's deaths are classified as direct or indirect. Direct causes relate to obstetric complications during pregnancy, labor, or the post-partum period such as haemorrhage, sepsis, eclampsia, obstructed labor, or abortion complications. Indirect causes are existing conditions such as anemia or malaria that affect women's health. An analysis of data from 115 countries by Say *et al.* (2014) has shown that out of 60,799 maternal deaths between 2003 and 2009, 27% were due to indirect causes and 73% were due to direct obstetric causes. Of all direct causes, haemorrhage accounted for 27.1%, hypertensive disorders 14%, and sepsis 10.7%, with the remaining causes of death accounted for by abortion (7.9%), embolism (3.2%), and other direct causes (9.6%). According to the World Health Organization (WHO) (2009), these causes can be prevented through health promotion by promoting maternal self-care behaviors which involve the collaboration of individuals, families, and communities.

At a national level in Indonesia, the health problems of pregnant women are a major concern of the government. According to Indonesian Demography Health Survey (IDHS) from 2007 to 2012, the maternal mortality rate increased from 228 cases to 359 per 100,000 live births (National Population and Family Planning Board, 2013). A health research conducted in 2013 showed the prevalence of health risks among pregnant women aged 15-49 years consisting of chronic malnutrition (24.2 %), malaria (1.9 %), and anemia (37.1 %). Other problems relating to the health behaviors of mothers during pregnancy include the low rate of pregnant women who take iron

supplements (at least 90 tablets) during pregnancy (33.3 %) Ministry of Health (MoH) Indonesia, 2013a). In the district of Garut, the morbidity rate of pregnant women is high. Out of 53,000 pregnant women, 45% suffer from anemia, 13% suffer from chronic malnutrition, and approximately 9% suffer from moderate goiters (Health Department [HD] of Garut, 2013a). These maternal health problems are influenced by maternal behaviors either before or during pregnancy (Hawkins *et al*., 2010; Chayatab, 2006; Kramer, 1987).

Maternal health problems are associated with their behaviors, for example, pelvic inflammatory disease and vaginal irritation are affected by inappropriate personal hygiene, especially douching (United State Department of Health and Human Services (2010). Raatikainen *et al.* (2007) mentioned that pregnant women who never or insufficiently visit antenatal care (ANC) clinic tend to have higher rate of severe adverse pregnancy outcomes such as placental abruption or chorio-amnionitis. A study conducted by Calheiros *et al*. (2013) found that poor quality of sleep negatively affected the quality of life of pregnant women, and the findings of Facco *et al.* (2010) stated that inadequate sleep would increase inflammatory and metabolic derangements, which could lead to hypertension and non-insulin dependent diabetes.

Catanzo and Artal (2008) stated that exercise during pregnancy could reduce the potential risks of obesity, chronic hypertension and diabetes. In addition, a study by Nascimento *et al*. (2012) found an association between exercise during pregnancy, on one hand, and higher fitness of the respiratory system, improvement of urinary symptoms (urinary incontinence) and lower risk of back pain, on the other.

Basically, health problems during pregnancy and childbirth can be prevented by healthy self-care behavior (World Health Organization [WHO], 2009). WHO stated that “Self-care is the ability of individuals, families and communities to maintain their health status as free from diseases or disabilities either with or without support from health care provider”. Orem (2001) explained that there are several human need self-care requisites to be met during a person’s lifetime. These include sufficiency of air, water and food; elimination processes and excrements; activity and

rest; solitude and social interaction; prevention of hazards; promotion of human function and development within society; conformity to human growth and development processes; and control of injury, defect, disability or medical treatment. Regarding pregnant women, self-care behaviors can be performed before and during pregnancy. Therefore, the prevention of behaviors posing negative effect on their infants can be done through promotive, preventive, or curative health care intervention (WHO, 2009).

The prevention of health problems in pregnancy and childbirth can be done by doing some specific self-care behaviors. Pregnant women can prevent preterm delivery and giving birth to low birth weight (LBW) infants by avoiding exposure to smoking or secondhand smoke and alcohol consumption during pregnancy (Khader *et al*., 2011; Miyake *et al*., 2014). Having appropriate personal hygiene can avoid infections of vagina, uterus, and teeth (United State Department of Health and Human services, 2010; Chayatab, 2006). The Ministry of Health (MOH) of Indonesia (2009) stated that consuming iron pills during pregnancy prevents anemia. A study by Ornella *et al.* (2014) found that detection and management of obstetric complications for pregnant women were possible by visiting an ANC facility. Furthermore, pregnant women can ensure a baby born with normal weight by gaining weight as recommended during pregnancy (Crawley, 2013). Pregnant women weight gain is influenced by their eating behaviors during pregnancy (Thitpad and Banchonhattakit, 2012).

There were several studies examining the relationships among factors relating to self-care behavior. Knowledge of self-care behavior, maternal age, and self-efficacy in self-care were identified as important factors of self-care behavior during pregnancy. A study revealed that both self-efficacy and knowledge of self-care were predictors of self-care behavior among teenage pregnant women (Panthumas *et al*., 2012). Family support and intention to get pregnant were also associated with self-care behaviors, while the income of pregnant women was not significantly associated with self-care behaviors during pregnancy (Sriumporn, 2000). In other studies, low educational level, intention to get pregnant, and low income status were associated with overall risks of inadequate ANC visit in Vietnam (Tran *et al*., 2012). Yet another

study by Wen *et al*. (2010) found that maternal education level was associated with daily fruit and soft drink consumption, and household income was associated with vegetable consumption. Kost *et al.* (1998) found that it was easier for women aged 20-29 to quit smoking during pregnancy than women aged 35 and older. A study conducted by Fernandez and Newby (2010) found that social support influenced pregnant women's health behaviors such as ANC visits and choosing a healthy diet.

The Health Promotion Model (HPM) has been used as a guide to explain factors relating to health behavior (Thaewpia *et al*., 2012; Lin *et al*., 2009; Panyapisit, 2002). The model shows that health behavior is influenced by many factors such as personal factors (age, education, socioeconomic status, etc.), perceived benefits of action, perceived barriers to action, perceived self-efficacy, and interpersonal influences (Pender *et al*., 2011). Using HPM, Thaewpia *et al*. (2012) found that self-efficacy, perceived benefits, and social support explained 49.3% of the variance in actual health promoting behaviors of 35 years or older pregnant Thai women. Further, a study by Panyapisit (2002) found that perceived benefits of health promoting behaviors, perceived barriers to health promoting behaviors, age, income and pregnancy planning could predict over 50 % of health promoting behaviors during pregnancy among women experiencing pre-matured delivery.

There were many studies using Orem's Self-care theory to explain women's behaviors during pregnancy. Calaghan (2006) combined theories of Pender's Health Promotion Model (HPM) (2002) and Orem's Self-Care Theory (2001) to find relationships between basic conditioning factors (age, gender, development state, health state, life styles, health care system factors, availability of resources, and external environmental factors) and healthy behavior in adolescent pregnant women. Other studies include a study by Panthumas *et al.* (2012) investigated factors relating to overall self-care behavior among teenage primigravida in Thailand; Chayatab (2006) explored self-care requisites (universal, developmental, health deviation) and factors relating adolescent pregnant women.

Although many studies had examined factors relating to maternal self-care behaviours, the results cannot be generalized to pregnant women in the Garut district.

The previous studies were conducted in the clinic (Thaewpia *et al*., 2012; Hawkins *et* al., 2010), and a study used convenience sampling method was conducted at a medical centre (Lin *et al*., 2009). Others studies focused on age groups such as teenagers, adolescents, or older pregnant women (Calaghan, 2006; Chayatab, 2006; Thaewpia *et al*., 2012; Panthumas *et al*., 2012). There is a belief in Indonesia that pregnancy and childbirth is a natural process, so pregnant women do not need special treatments and are allowed to work hard, eat inadequate essential nutrient foods (HD of Garut (2013b). This perspective may contribute to inappropriate maternal self-care behavior during pregnancy. Thus, to reduce maternal mortality and complications during pregnancy and delivery, it is important to identify predictive factors of self-care behaviors during pregnancy in the Garut District. By understanding these factors, intervention to prevent maternal morbidity caused by these factors during pregnancy could be arranged. This study would provide baseline data for further policy action by the local government and health professionals to improve self-care behaviors of pregnant women in the Garut District.

OBJECTIVES

1. General objective

The overall objective of this study was to identify predictive factors of maternal self-care behaviors (SCB) during pregnancy in Garut District.

2. Specific objectives

Specific objectives of this study were:

2.1 To identify the relationship between personal factors (income, age, ANC numbers, parity, gestational age, health problems, educational level, knowledge of maternal SCB during pregnancy) and maternal SCB during pregnancy.

2.2 To identify the relationship between perceived benefits of maternal SCB during pregnancy and maternal SCB during pregnancy.

2.3 To identify the relationship between perceived barriers to maternal SCB during pregnancy and maternal SCB during pregnancy.

2.4 To identify the relationship between perceived self-efficacy in maternal SCB during pregnancy and maternal SCB during pregnancy.

2.5 To identify the relationship between social support satisfaction and maternal SCB during pregnancy.

2.6 To determine the significant factors predicting maternal SCB during pregnancy in Garut district.

LITERATURE REVIEW

This part provides a literature review on pregnancy, self-care behaviors (SCB), halth beaviors needed during pregnancy, maternal SCB during pregnancy, health promoting lifestyle, factors relating to maternal SCB during pregnancy, theories and concepts relating to maternal SCB during pregnancy. Additionally, conceptual frameworks and the definition of terms will be addressed.

1. Pregnancy

Pregnancy begins by conception. According to the National Health Service [NHS] United Kingdom (2009), conception is the process that starts with the fertilization of an egg and end with the implantation of an egg into a woman's uterus. University of California, San Francisco [UCSF] (2014) explains that pregnancy is divided into three trimesters. Each trimester is marked by specific developments of the fetus. The full term of pregnancy is 40 weeks. Every pregnant woman makes different experiences with pregnancy symptoms. In the first trimester (0 to 13 weeks), the major symptoms are nausea, fatigue, breast tenderness and frequent urination. In the second trimester (14 to 26 weeks), nausea may decrease. Other symptoms that may appear are back pain, abdominal pain, leg cramps, constipation and heartburn. In this trimester, the pregnant women feel fluttering movements from the baby. In the last trimester (27 to 40 weeks), symptoms include shortness of breath, hemorrhoids, urinary incontinence, varicose veins and sleeping problems.

Health problems occurring commonly during pregnancy include preeclampsia, anemia, gestational diabetes mellitus and hyperemesis gravidarum (Cohen, 2000). The pregnant women will show signs and symptoms if health problems occur. These problems may be caused by many factors. Preeclampsia is characterized by the occurrence of hypertension, proteinuria and edema. Preeclampsia is characterized by physiological changes in placental vasculature, hyper-aggregation of platelets, reduced vascular prostacyclin production, and evidence of endothelial cell damage. Women who have a high calcium diet show low incidence of preeclampsia.

Anemia is commonly caused by iron deficiency and can be corrected with iron supplements. Gestational diabetes mellitus is defined as intolerance of glucose during pregnancy and is resolved after delivery. The impairment of insulin secretion with increasing insulin resistance causes gestational diabetes mellitus. This can be prevented by metabolic control during preconception and pregnancy. Hyperemesis gravid arum is marked by nausea and vomiting, which disturbs nutritional balance and leads to weight loss and deficiencies of fluid and electrolyte. Relief of hyperemesis gravid arum can be obtained by avoiding recumbence after meals, elevating the head while sleeping, and eliminating the consumption of substances such as alcohol, nicotine, caffeine, and chocolate (Cohen, 2000).

2. Self-care behaviors (SCB)

2.1 Definition of self-care

Several definitions of self-care have been defined in the relevant literature. Self-care is a person acting in a way to preserve themselves while being equipped with the power and developed or advanced abilities to maintain and to improve their health (Orem, 2001). According to the Proprietary Association of Great Britain (PAGB) (2006), self-care is a person's actions taken to look after themselves and their family to maintain health during their life based on their knowledge and information in collaboration with health care providers, if needed. WHO (2009) stated that self-care is the ability of individuals, families and communities to encourage their well-being, to prevent disease, to maintain health, and to survive disease and disability with or without support from a healthcare provider.

In summary, self-care are the actions taken by individuals to maintain their health, which includes health promotion, prevention and treatment of diseases and disabilities with or without partnership. In this study, self-care refers to pregnant women acting to maintain their health and the health of their fetus during pregnancy.

2.2 Self-care concept

Self-care is behavior concerning what to do and what not to do for a person to maintain health over time (Orem, 2001). Orem (2001) explains self-care as a combination of self-care agency and therapeutic self-care demand. These terms are detailed below.

The self - care agency is defined as individual capabilities or limitations for engaging in continuous and effective self-care. An adequate self-care agency can be maintained by examining self-care habits, measuring the benefits of self-care practices, recognizing changes of need, and becoming knowledgeable about new self-care requisites. The development of self-care agency is supported by intellectual curiosity, instruction and supervision from others, and by the experience of performing self-care procedures (Orem, 2001).

Therapeutic self-care demand includes all actions needed to meet the functional and developmental goals and show self-care requisites. Therapeutic self-care demand provides a stimulus or performing self-care both from factors internal and external of the individual. These factors are named basic conditioning factors and they affect the kind and amount of self-care required. The basic conditioning factors consist of age, gender, developmental state, health state, socio-cultural orientation, health care system factors, family system factors, a pattern of living, environmental factors, and resource availability and adequacy (Orem, 2001).

In conclusion, self-care agency and self-care demand are interrelated. The self-care agency derived from the individual, while therapeutic self-care demand derived from individual internal or external of the individual. Both are impact to the compliance of individual requisites.

2.3 Components of self-care

Regarding Orems theory, individual self-care requisites include universal self-care, developmental self-care, and health deviation self-care requisites. Universal

self-care requisites (USCR) are needed to maintain body structure and function (Orem, 2001). There are six necessary requisites of self-care during pregnancy included as universal self-care requisites (Orem, 2001; Chayatab, 2006). These requisites include sufficiency of air, water, and food; elimination processes and excrements; activity and rest; solitude and social interaction; prevention of hazards; and promotion of human function and development within social groups (Orem, 2001).

Developmental self-care requisites (DSCR) are associated with the formation of human structures, function, and behavior during various stages of life (Orem, 2001). The DSCR is associated with human growth and development processes in different life stages. DSCR includes a person provisions to promote physical and mental development, engage in self-development, or interfere with development. A reciprocal manifestation of a six year old who is sleeping with parents: the child does not want to sleep alone and the parents do not want to make the child leave (The University of Tennessee at Chattanooga [UTC], 2013).

Health deviation self-care requisites (HDSCR) exist for persons who have an illness or are under medical diagnosis or treatment (Orem, 2001). UTC (2013) stated that HDSCR could happen from injury, defect, disability, or medical treatment. HDSCR focus on controlling health deviations and the effects regulation. The HDSCR is different and specific for each patient. For example, a diabetic mellitus person may know their insulin therapy effect on their blood sugar, but they may not know about their diet restriction.

In summary, self-care components explain actions on individual must take to maintain health. They are needed to both healthy and sick person. It consists of physical and mental health care in all life stages.

3. Health behaviors needed during pregnancy

Pregnant women's self-care during pregnancy can maintain sufficient air, water, and food to keep their health and the baby’s outcome. The sufficiency of air is

maintained by avoiding exposure to smoking or crowded places (Chayatab, 2006). The need of sufficient fluid can be obtained from water, milk products, and unsweetened juices. It is suggested that pregnant women consume at least 2.3 liters of water a day to prevent dehydration (European Food Safety Authority [EFSA], 2014). Pregnant women need various sources food providing energy, protein, minerals, and vitamins. Energy sources include rice, potatoes, macaroni, cereal and spaghetti, which may contain of calcium, iron, zinc, B vitamins, and vitamin C. Protein sources include beans and lentils, fish, meat, poultry and nuts. Vegetables and fruits are sources of vitamins and minerals including folate and iron to prevent anemia during pregnancy. Other protective component for the body, such as fibres and flavonoids, are also available in vegetables. Examples of vegetables and fruits are carrots, onions, beets, leeks, turnip, cabbage, spinach, lettuce, broccoli, tomatoes, apples, pears, and oranges (WHO, 2001).

Pregnant women need to limit their consumption of tea and coffee between meals because tea and coffee can interfere with iron absorption in the digestive system. Iron from meat is absorbed better than iron from plants, but pregnant women should choose varieties of meat or cut out the fat because animal fat increases risk of certain types of cancer and cardiovascular diseases. Consuming iodized salt is beneficial for the baby, but pregnant women should not consume more than 6 grams (1.5 teaspoons) a day to prevent the risk of high blood pressure and related health problems. Raw or uncooked eggs may contain some bacteria and parasites that are harmful to the baby. Cooking vegetables in the minimum boiling water for 5 to 10 minutes can avoid vitamin C loss. Eating fresh or lightly cooked vegetables is suggested every day with efforts to avoid adding fats, oils, and salt. Consuming multivitamin supplements can cause a toxic effect or interfere with the absorption of other nutrients, and thus pregnant women should not take them unless prescribed by doctors (WHO, 2001).

A balance of eliminations and excretion is needed since disorders of the urinary and bowel elimination processes usually occur during pregnancy. Pregnant women need to excrete every day and must not restrain urine for more than 3-4 hours because this could lead to cystitis (Chayatab, 2006). During pregnancy, constipation

may be caused by hormonal changes, though consuming enough fibre and water may help pregnant women with this constipation (WHO, 2009).

A balance between activity and rest is also needed to reduce stress and anxiety and to help adapt to the physical changes. It is suggested that pregnant women do not do hard work that could exhaust them. They are allowed to exercise, but not exceeding 30 minutes a day (Chayatab, 2006). Weight-bearing or non-weight bearing modes of exercise are allowed, but doing exercise depends on their comfort and safety. Non-weight bearing exercise include swimming and cycling, whereas weight bearing exercise involves walking, jogging and low impact aerobic. However, pregnant women should avoid riding bicycle during the second and third trimester because of the risk of falling (American College of Sports Medicine [ACSM], 2014). Resting for at least 8 hours a night and a half an hour to an hour each day is beneficial for pregnant women. Last, long travel should not be considered during the last period of pregnancy to prevent premature delivery (Chayatab, 2006).

Maintenance of a balance between solitude and social interaction is necessary for developing personal autonomy and social relations to foster effective function of the individual. The social warmth and closeness from this maintenance is important for continuing development and adjustment of individual. The relation promotes bonds of affection, love, and friendship. Besides that, encouragements by others provide positive affirmation that can help to deal with difficulties (Orem, 2001). According to UTC (2013), the person can interact with family and friend daily and spend time alone for an hour daily to achieve this requisite.

Pregnant women can prevent life hazards, and preserve physical functioning and well-being by maintaining body posture, not walking on wet or slippery floors, holding handrails while going up and down steps, avoiding exposure to radiation, not consuming medicines not suggested by a physician, quitting drinking alcohol and smoking, and keeping away from second hand smoke (Chayatab, 2006). It is also suggested that pregnant women avoid the risk of infectious disease, such as measles (Chayatab, 2006; WHO 2009).

Promotion of human function and development within social groups with the potential, limitations, and desires to be normal contribute to developing and maintaining a realistic self-concept and supports specific human developments. Besides that, this helps maintain and promote the integrity of human structure and function (Orem, 2001). Pregnant women can observe and find both physical and mental abnormalities and, if found, decide how to solve them (Chayatab, 2006). This can be achieved by joining programs for individuals or groups aimed at preventing or solving abnormalities (Orem, 2001).

Developmental self-care requisites during pregnancy involve pregnancy validation to ensure the person has become pregnant and preparation for physical changes. Pregnant women need to know the changes that happen and learn about desirable adjustments during pregnancy, such as the details of the growth and development of the fetus (Chayatab, 2006). In Indonesia, fetus growth and development can be assessed by doing ANC (Indonesia MoH, 2013b). Besides that, observing fetal growth, practicing holding a baby, and talking regularly to the fetus are also included on DSCR of pregnant women (Chayatab, 2006).

Health deviation self-care requisites are important to prevent health deviation (UTC, 2013). During pregnancy, examples of pregnant women's HDSCR include taking medicine as suggested by a health care professional and seeking a doctor when having abnormal symptoms, feeling ill or unwell (Chayatab, 2006). HDSCR during pregnancy influence pregnant women to become aware and protect themselves from diseases that occur during pregnancy, such as anemia and hypertension (UTC, 2013).

In summary, health behaviors during pregnancy includes all the activities of pregnant women self-care that maintain their health and the health of the fetus. Both, preventive acts and curative acts are included in these activities. The activities are necessary from the start of pregnancy until delivery.

4. Maternal SCB during pregnancy

Maternal health and birth outcome are influenced by maternal self-care behaviors during pregnancy (Chayatab, 2006; Hawkins *et al.*, 2010; Kramer, 1987). Below the behaviors that are related to maternal health and well-being during pregnancy and baby birth outcome are discussed in relation to self-care behavior during pregnancy. The behaviors are divided to behaviors to be observed (personal hygiene, iron pill consumption, eating behavior, sleep, exercise, and prenatal care/ ANC) and behaviors to be avoided (smoking and alcohol consumption) during pregnancy.

4.1 Behaviors to be observed during pregnancy

4.1.1 Personal hygiene

Personal hygiene is important to prevent infection (WHO, 2009). Sanitary care including personal hygiene is beneficial to prevent infection and create comfort during pregnancy. Chayatab (2006) suggested that pregnant women take a bath at least twice a day to adjust the perspiration glands that work harder than before being pregnant. Using the shower and avoid taking baths in rivers may prevent infections in vagina and uterus. Applying a vagina douche can negatively affect the uterus, vagina and membrane. United State Department of Health and Human services (2010) stated that douching was linked to some adverse outcomes such as pelvic inflammatory disease, vaginal irritation, and bacterial vaginosis. Moreover, brushing teeth twice a day (before bedtime and after getting up) and rinsing after meals are considered necessary. Using proper and fit bra adjusting to the size of the breast and preventing scratching that could lead to injuries is a form of breast care. Last, pregnant women should consult to health official if they face problems such as flattering inverted nipples (Chayatab, 2006).

4.1.2 Iron pills consumption

Iron can be transferred to the placenta and fetus which contribute to higher birth weight. The mechanism of increased iron and higher birth weight are unknown. Iron may improve the appetite of mother thus increasing the energy consumption which increased intrauterine growth (Cogswell *et al.*, 2003). According to MOH of Indonesia (2008), iron pills are given to pregnant woman to prevent anemia during pregnancy. A study in Nepal by Khanal *et al*. (2014) stated that the women who did not consume iron supplements during pregnancy were more likely having a LBW infant. Next, Long *et al.* (2012) found the prevalence of iron deficiency anemia (IDA) in LBW or premature infants had reduced since the increasing of hematologic indicator that was caused by the consumption of iron supplementation. Kramer (1987) stated that deficiency of iron during pregnancy can be a cause for low birth weight babies.

4.1.3 Eating behavior

The nutritional status of women before and during pregnancy has a strong impact on infant health and well-being in long and short terms. Basically, pregnant women need a 15% increase in calories and specific nutrients such as calcium, iron, and folic acid. The specific nutrient increase suggested is 10 gram protein a day (IFIC Foundation, 2009). Pregnant women are recommended to avoid consuming uncooked food such as sushi or king mackerel because the foods could contain harmful substances. Besides that, alcohol, illegal drug, cigarette smoking and caffeine are also strongly advised to quit. The alcohol can pass the placenta and cause birth defects and miscarriage, illegal drugs may result in miscarriage too, and caffeine may force the process of baby's growth immature. The consumption of caffeine should not be more than or equal to 300mg/day (Brown, 2011).

4.1.4 Sleep

Causes of sleep disturbances during pregnancy are heartburn, urination at nighttime and backache. Heartburn can be prevented by avoiding spicy,

fried, acidic foods, or elevate your pillow or raise the head of your bed by placing blocks under the bedposts. Besides that, avoid urination at nighttime can be prevented by decreasing the fluid intake shortly before bedtime (Harvard Medical School, 2014). Backache can be reduced by avoiding sleeping on the back and support the body with pillows (Burkhart, 2014). According to Facco *et al*. (2010), poor sleep quality of pregnant women increases from the first trimester to the third trimester. Poor quality of sleep negatively affects the life quality of pregnant women (Calheiros *et al*., 2013). Facco *et al.* (2010) explained that shortened duration of sleep will increase inflammation and metabolic derangements that lead to hypertension and non-insulin dependent diabetes. Besides that, obstructive sleep apnea (OSA) during pregnancy is associated with pregnancy complication (chronic hypertension, diabetes, depression, asthma) and adherence birth outcome (Louis *et al*., 2010). Bourjeilly *et al*. (2010) found that sleep disorder breathing symptoms such as loud snoring, gasping, choking and stopped breathing in pregnant women often are associated with negative delivery and fetal outcomes.

4.1.5 Exercise

Doing exercise during pregnancy has positive effects on pregnant women, and indirectly influences baby birth outcome. For instance, the risks of obesity, chronic hypertension and diabetes can be reduced by doing exercise during pregnancy (Catanzo and Artal, 2008). Nascimento *et al*. (2012) found an association between exercises during pregnancy and higher fitness of respiratory and respiratory systems and improvement of urinary symptoms (urinary incontinence and low back pain).

The Medical Center of the University of Maryland (2014) recommended exercises during pregnancy, which include walking, stationary biking, low-impact aerobic and swimming. According to the American college of obstetricians and gynecologist [ACOG] (2002), pregnant women without contraindication are encouraged to do moderate exercise at least 30 minutes a day. ACOG (2002) explained three conditions that force pregnant women to avoided exercises. The first is contraindications during pregnancy such as restrictive lung

disease, incompetent cervix, multiple gestations at risk for premature labor, persistent second-or third-trimester bleeding, placenta previa after 26 weeks of gestation, premature labor during the current pregnancy, ruptured membranes, and preeclampsia/pregnancy-induced hypertension. The second are relative contraindications such as severe anemia, unevaluated maternal cardiac arrhythmia, chronic bronchitis, poorly controlled type 1 diabetes, extreme morbid obesity, BMI less than 12, intrauterine growth restriction in current pregnancy, poorly controlled hypertension, orthopedic limitations, poorly controlled seizure disorder, poorly controlled hyperthyroidism, and heavy smoking. The third are warning sign during pregnancy which should lead to an immediate termination of the exercise, such as vaginal bleeding, dyspnea prior to exertion, dizziness, headache, chest pain, muscle weakness, and calf pain or swelling.

4.1.6 Prenatal care (PNC)/ ANC

ANC refers to health care that is held by skilled providers such as a doctor, obstetrician, nurse, midwife or village midwife (Indonesia Ministry of Health [MoH], 2013b). In Indonesia, there are services that are recommended for pregnant women during ANC such as measures of height, weight, and blood pressure, giving iron tablets, tetanus toxoid immunization, abdominal examination, information about pregnancy complication, and required laboratory tests (Indonesia MoH, 2013c). Ornella *et al.* (2014) stated that important interventions in the ANC are detection and management of obstetric complications and support using skilled birth attendance at birth and healthy behaviors. According to the Health Department (HD) of the Garut district (2013b), the standard pregnant woman visits ANC is at least four times during pregnancy: once in first trimester and second trimester; twice in the third trimester. A study in Ghana by Taiye and Lartey (2008) found that early ANC visits were associated with a significant improvement in hemoglobin (Hb) concentration of the pregnant mother.

4.2 Behaviors to be avoided during pregnancy

4.2.1 Smoking

Women's exposure to secondhand smoke during pregnancy was associated with getting low birth weight (LBW) infants and preterm delivery (Khader *et al*., 2011). Studies in Saudi Arabia showed that secondhand smoke reduces birth weight and the stature of the newborn (Wahabi *et al.*, 2013). The proportion of LBW was 22% if the mother smoked during pregnancy (Chiolero *et al*., 2005). Kramer (1987) explained that a cigarette contained three materials that had an adverse impact on health. First, carbon monoxide will replace oxygen (from hemoglobin) which may cause an oxygen deficiency in the infant's tissue. Second, nicotine increases catecholamine that causes uterine vasoconstriction. Last, cyanide affect oxidative metabolism of the fetus. All of the material will affect intrauterine growth retardation.

4.2.2 Alcohol consumption

Alcohol crosses from the mother's placenta to the baby by blood vessel and affects the baby's physical, growth and mental development (Wood, 2011; WHO, 2001). Consuming alcohol in the conception time and first 3 months of pregnancy is the most vulnerable time for the toxic effect of alcohol on the embryo. A study in Southern Brazil by Silva *et al*.(2011) found 26.3% infants born with low birth weight from mothers who consumed alcohol during pregnancy. Miyake *et al*. (2014) found that consume of alcohol during pregnancy 1 g or more per day associated with preterm birth but not LBW.

In summary, maternal SCB during pregnancy influence maternal and infant health. They affect maternal health and thereby also the fetal growth. The expected outcome can be achieved, such as by correctly doing personal hygiene, iron pill consumption, eating behavior, sleep, exercise, and prenatal care/ ANC. The unexpected outcome for mother and the infant can be avoided by do not smoking and alcohol consumption during pregnancy.

5. Health promoting lifestyle

A healthy lifestyle refers to activities of everyday life and their influence on our health status. Health promotion comprises our personal efforts directed at our well-being, personal satisfaction, and a productive living. A health promoting lifestyle includes health responsibility, physical activity, nutrition, interpersonal relations, spiritual growth, and stress management dimensions (Pender *et. al*., 2011).

The health responsibility dimension covers our awareness of our health and our attention to maintain our health. For pregnant women, it includes the responsibility to prevent a pregnancy related complications and to choose the correct nutrition for them and the unborn child. Regular physical activities, such as body movements and exercises, are seen as an obligatory part of the daily routine in order to maintain fitness and health (Walker and Hill-Polerecky, 1996; Thanoomroop, 2000).

The nutrition dimension covers the selection and consumption of food and beverages as recommended. It includes an adequate calorie intake and the avoidance of alcohol (Walker and Hill-Polerecky, 1996; Thanoomroop, 2000). Eating fruits between 2 and 4 servings each day also include in this domain (Pender *et al*., 2011)

In terms of interpersonal relations, a health promoting lifestyle includes the successful use of communication in order to establish meaningful relationships and achieved the desired intimacy or closeness with others. Pregnant women need the supportive social relationships to affirm their feelings of comfort during pregnancy (Walker and Hill-Polerecky, 1996; Thanoomroop, 2000).

The spiritual growth includes the activities to provide peace, the development of strategies to successfully overcome critical situations by transcending the pure physical existence and thereby achieving a higher spiritual state. For pregnant women it may include a reconfirmation of the purpose of their life, the discovery of new meaning in giving life and caring deeply for the newborn. It can help them to

experience life and love more intensively (Walker and Hill-Polerecky, 1996; Thanoomroop, 2000).

The stress management dimension involves activities to deal with problems and to relax in spite of unusual or more demanding living circumstances. Pregnant women can balance their work and rest phases in order to provide sufficient time for physical adjustment and recovery (Walker and Hill-Polerecky, 1996; Thanoomroop, 2000). They also need to prevent fatigue (Pender *et al*., 2011).

In this study, the maternal SCB behaviors requisites during pregnancy were grouped in the health promoting lifestyle dimension/domain involved nutrition, physical activity, stress management, and health responsibility.

6. Factor relating to maternal SCB behaviors during pregnancy

The factors related to maternal SCB during pregnancy, such as personal factors (education level, age, economic status/income, psycho-physiological), family support, knowledge of maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, perceived benefit of maternal SCB during pregnancy, and perceived barrier to maternal SCB during pregnancy explained below**.**

5.1 Personal factors

5.1.1 Educational level

Low education was included as a main factor associated with inadequate ANC use as recommended in Vietnam. Pregnant women with low education in rural area have less or limited access to sufficient services at least once during pregnancy than those who live in the urban areas (Tran *et al*., 2012). Wen *et al*. (2010) found that the mother's education level was associated with daily fruit and soft drink consumption. University women were less likely to consume less than 2 serves of fruit than less educated women. Besides that, university women were less likely to consume more than a cup of soft drink per day than those who have lower level of

education. A study by Sriumporn (2000) found that the educational level of pregnant women was associated with self-care behavior during pregnancy. Sriumporn (2000) explained the higher level of education enabled pregnant women to shape their processes of thinking and better condition of the pregnancy.

5.1.2 Age

Age indicates the individual changing over time. The individuals' age shapes the behavior of pregnant women due to their level of experience, learning and training. Age indicates the maturity of the individual which manifests through different behaviors (Panthumas *et al*., 2012). A study by Panthumas *et al*., (2012) found that age of teenage pregnant women was related to self-care behavior during pregnancy, whereas Lin *et al.*, (2009) found that age of pregnant women aged 20 or more was not associated with health promoting behaviors (such as nutrition, physical activity, stress management, interpersonal relationship, psychological wellness, health responsibility) during pregnancy. Furthermore, Kost *et al*. (1998) stated that pregnant women aged 20 to 34 were easier to quit smoking than those who were 35 or older. Pregnant women aged less than 30 were more likely to quit drinking alcohol than those who were 35 or older. Kost *et al*. (1998) explained that if a habit has been in place for a longer time it is more difficult to stop.

5.1.3 Economic status/ income

Some studies showed that economic status/income is related to self-care behavior during pregnancy. A low economic status is seen as a main factor associated with risk for overall inadequate ANC use as stated in the national recommendations in Vietnam (Tran *et al*., 2012). Costs have been a barrier for pregnant women to visit ANC, both in rural and urban areas (Tran *et al*., 2012). A study by Sriumporn *et al.* (2000) and Lin *et al*. (2009), on the other hand, found that the family income of pregnant women was not associated with self-care behavior during pregnancy. However, Wen *et al*. (2010) stated that household income was related to the extent of vegetable consumption. Pregnant women with higher income

were less likely to consume few serves of vegetables per day than those with lower income.

5.1.4 Psycho-physiological

Psycho-physiological factors were the major factors affecting the sleep pattern changes in the second and third trimester of pregnant women (Calheiros *et al*., 2013). These factors were common in the primigravida as they were insecure and unprepared for the new situation. The psychological factors include of fear of childbirth, of death, but also the concerns of baby care can cause anxiety in pregnant women. These factors can also trigger sleeping difficulties.

Physiological factors increased along with body structure changes such as pain in the lower abdomen and spine caused by the body balance through postural adjustments. Besides that, cramps in the lower extremities can be a result of pressure to the maternal circulatory system, deficiency of potassium, magnesium and calcium. Besides that, Foxroft *et al*. (2011) found that pregnant women who reported low back pain at 12 to 20 weeks or nausea and vomiting at 20 and 28 weeks were more likely to do exercise because doing exercise alleviate the symptoms.

5.2 Family support

Family support is part of the social support. Drawing upon the definition of social support by Shumaker and Brownell (1984) social support is a resource exchange between at least two individuals, perceived by the provider or the recipient to be proposed to improve the well-being of the recipients. Lopez and Cooper (2011) stated that social support includes social relationships and interpersonal resources. The categories of interpersonal resources can be emotional, informational, and instrumental. Common forms of emotional supports are empathy, caring, love, and trust. Informational supports can be advice, suggestions, and access to information. Instrumental supports can be aid in kind, sharing of tasks and responsibilities, skills acquisition. Whether solitary or from a group, social support helps the recipient survive and adapt to stressful life event.

Family supports affect maternal and baby health outcome indirectly (Fernandez and Newby, 2010). Fernandez and Newby (2010) explained that women's pregnancy behavior is influenced by family support from husband and family member to adopt healthy behavior such as frequently visiting ANC and eating healthier diets. The influence was stronger among primiparous than among multiparous. The support can be instrumental: helping housework, cooking, money, and ride; or emotional such as company and advice. Thaewpia *et al*., (2012) found that social support was associated with health promoting behavior of older pregnant Thais. A study by Sriumporn (2000) found that social support was a predictor of self-care behavior. Sriumporn (2000) explained that the support helped the pregnant adolescent women to get useful information to perform good self-care behavior. The support for pregnant women can also come from their husband or mother. So that, even though the husband was the main source of support for the pregnant women affecting their self-care behavior during pregnancy, if there was not enough support from the husband, the mother could also be a very valuable support source. As Armstrong and Pooley (2005) explained, pregnant women need multiple support resources during pregnancy. Support can also come from other pregnant women or new mothers or from health care professionals. In the early pregnancy, pregnant women need a guide to affirm their pregnancy positively. Pregnant women expect informational and emotional support from their health care professionals about crisis experiencing and relationship issues.

5.3 Knowledge of maternal SCB during pregnancy

Studies have shown that knowledge of self-care has a positive relationship with self-care behavior during pregnancy. Knowledge of self-care behavior of Thai primigravida teenagers corresponded to self-care behavior during pregnancy (Panthumas *et al*., 2012). Simkhada *et al*. (2007) found that knowledge of ANC benefits increased the ANC utilization. Panthumas *et al*. (2012) explained that knowledge enabled pregnant women to act correct behaviors that are supportive to their condition.

5.4 Perceived self-efficacy in maternal SCB during pregnancy

Perceived self-efficacy in self-care was a predictor on self-care and health promoting behaviors of teenager and older pregnant women (Panthumas, 2012; Thaewpia *et al*., 2012; Sriumporn, 2000). Self-efficacy towards a disease creates a positive attitude that can motivate women to look for and carry on health education during childbearing (MacMullen *et al.*, 2013). Perceived self-efficacy is defined as the belief of people in their ability to successfully execute action that affect their lives. Perceived self-efficacy determines how people feel, think, motivate and behave. The belief in one own ability to act successfully can determine the self-efficacy through the cognitive, motivational, affective and selection process (Bandura, 1997).

5.5 Perceived benefits of maternal SCB during pregnancy

The perceived benefits of health promoting behavior was a predictor of actual health promoting behaviors such as physical activity, nutrition, interpersonal relations, health responsibility and stress management in mothers experiencing preterm delivery (Panyapisit, 2002). Besides that, perceived benefits of older Thai pregnant women had determined health promoting behavior during pregnancy. Perceived benefits of behavior are supported by personal or observational learning from others to engage in the behaviors. Pregnant women who believe in the benefits of healthy behavior are more likely to spend time and resources in activities to increase their chances for healthy pregnancies (Thaewpia *et al*., 2012).

5.6 Perceived barriers to maternal SCB during pregnancy

According to Pender *et al.* (2011), barriers consist of perception about availability, inconvenience, expense, difficulty or time consumption of actions. A study by Panyapisit (2002) found that perceived barriers (obstacles, difficulty and personal cost of behavior) to action in mothers experiencing preterm delivery was a second factor that could predict health promoting behaviors (physical activity, nutrition, interpersonal relations, health responsibility, spiritual growth, and stress management) during pregnancy. Perceived barriers in this study had a negative

relationship with health promoting behaviors. This explains that the pregnant women with low level of perceived barrier have good health promoting behavior.

Another study by Panthumas *et al*. (2012) found that accessibility to health services was associated with self-care behavior of pregnant women. Simkhada *et al*. (2007) explained that place of residence, distance and transport to the health care facilities influenced the pregnant women access to ANC. In Ethiopia women in urban area were more likely to use ANC service but in India women in urban area were less likely to receive ANC than women who live in rural area. In developing or developed countries, long distant to health care facilities discourage women to use ANC due to the time taken and the costs of the transportation. In rural areas, poor condition roads can make it difficult to travel to ANC services.

In conclusion, many factors are related to self-care behavior during pregnancy. Self-efficacy was found as a predictor of self-care behavior in many studies, followed by social support, perceived benefits of self-care and knowledge of self-care. Educational level, income, and perceived barrier to self-care also relate to self-care behavior during pregnancy. The age of the pregnant women was found to be a factor that related to self-care behavior during pregnancy.

7. Theory and concept relating to maternal SCB during pregnancy

The following passages explain the theory and concept of the Health Promotion Model (HPM) used to define factors relating to health behavior. HPM proposes a guide for exploring complex bio-psychosocial processes that encourage a person to engage in behavior enhancing health. The model can be used for explaining factors predicting behaviors. There are ten variables that influence health promoting behavior namely: prior related behavior, personal factors, perceived benefits of action, perceived barriers of action, perceived self-efficacy, activity related affect, interpersonal influences, situational influences, commitment to a plan of action and immediate competing demands (Pender *et al*., 2011).

Some studies of health behavior during pregnancy have been conducted using HPM. Lin *et al*. (2009) used HPM to assess health promoting lifestyles and related factors in pregnant women. The health promoting lifestyle concept had been developed by Walker, Sechrist, and Pender and consists of health responsibility, physical activity, nutrition, psychological wellness, interpersonal relationships and stress management subscales. It provides information of lifestyle, strengths and resources of the individual that can be developed. A study by Thaewpia *et al*. (2012) conducted in Thailand using HPM to predict factors for health promoting behavior of pregnant women aged 35 or older. Calaghan (2006) integrated HPM and Orem's self-care theory to investigate the relationships among health-promoting self-care behavior, self-care self-efficacy, and self-care agency in an adolescent population. Panyapisit (2002) used HPM to predict behavior during pregnancy of women that delivered preterm babies.

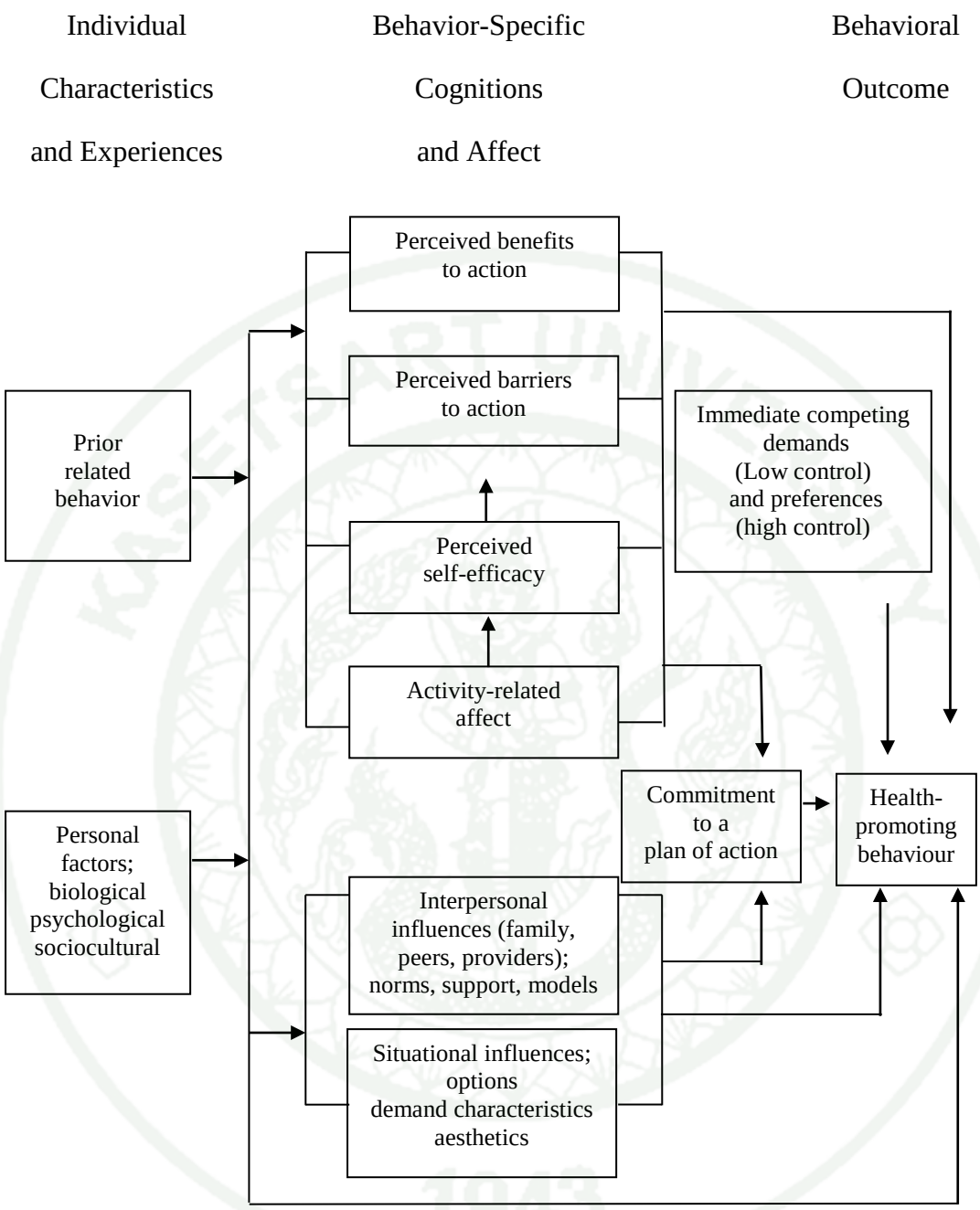

Figure 1 Health Promotion Model (Pender *et al*., 2011)

Source: Pender *et al*. (2011)

The HPM by Pender *et al*. (2011) explain individual characteristics and experiences, behavior-specific cognitions and affects, and behavioral outcome. Individual prior related behavior and personal factors include individual characteristics and experiences. Prior related behavior refers to the frequency of

similar behavior in the past. This has direct and indirect effects on the possibility to engage in health promoting behavior. Habit formation is direct effect of past behavior on current health-promoting behaviors. Emotions accompany every behavior. The indirect effects include perception of self-efficacy, benefits, barriers and activity-related affect. Positive or negative emotions on behavior provide information influencing later behaviors. Personal factors are shaped by the person's nature. Personal factors consist of biological, psychological, and sociocultural factors. Biological factors include age, body mass index, pubertal status, menopausal status, aerobic capacity, strength, agility, and balance. Self-esteem, self -motivation and perceived health status are included among psychologic factors. Race, ethnicity, acculturation, education and socioeconomic status are included as sociocultural personal factors (Pender et al., 2011).

Perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affects, interpersonal influences, and situational influences can be modified by intervention. Perceived benefits of action are positive representations of behavioral consequences. It influences behavior directly and indirectly by enhancing the commitment to improve the behaviors. Perceived barriers to action consist of perception, of availability, inconvenience, expense, difficulty, or time-consumption.

The action is unlikely to occur when the readiness to act is low and barriers are high. Perceived self-efficacy indicates an ability to manage a particular course of action. Perceived self-efficacy is influenced by activity-linked affect. Higher-level perception of efficacy is influenced by higher-level positive affect. Three components are included in activity-related affect: emotional arousal, self-acting and environment. Repeated behavior over a long period can be caused by individual feeling which occurred prior to, during, and subsequent to the act. Interpersonal influences can be behaviors, beliefs, or attitudes from family, peers or healthcare providers. The influences may be in the form of norms, social support, and modeling. Lastly, situational influences include perceptions of options available, demand characteristics, and aesthetic features of the environment. For example, the free smoking environment stipulates nonsmoking behaviors (Pender *et al*., 2011).

Commitment to a plan of action implies the use of cognitive processes. Two processes are included in this action. First is a commitment to act at a specific time, place, and with another person or alone. Second is identification of the best strategies to elicit, carry out, and reinforce the behavior. Commitment should be supported by these strategies, because strategies energize and reinforce health behavior. Commitment without strategies ensures the failure of health behavior (Pender *et al*., 2011).

The last, HPM variables are immediate competing demands or preferences. Competing demands refers to alternative individual behaviors that have a low level of control because they are influenced by others. Competing preferences are different from the barriers. Time urgency can force an individual to make a plan for positive health behavior. Health status is influenced by daily activities such as promoting health responsibility, physical activity, nutrition, interpersonal relations, spiritual growth and stress management. The components are included in a health promoting lifestyle that helps actualizing optimal well-being, personal fulfillment, and productive living (Pender *et al*., 2011).

In conclusion, HPM is useful for this study because it can well predict the factors related individual behavior. The model can be used to explain predicting factors of pregnant women's self-care behavior in the Garut district.

8. Conceptual Framework

This study determined factors predicting maternal SCB during pregnancy combining Pender's HPM and Orem's Self-Care theory. The Pender's HPM explains factors relating to maternal SCB during pregnancy as independent variables such as personal factors (income, maternal age, education level, parity, gestational age, ANC numbers, health problems, and knowledge of maternal SCB during pregnancy), perceived benefits of maternal SCB during pregnancy, perceived barrier to maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, and social support satisfaction. Pender's HPM was used to explain the factors influencing maternal SCB during pregnancy in this study for a few reasons. First,

HPM guides the exploration of complex bio-psychosocial processes to engage in behavior enhancing health. Second, it can be used to predict factors influencing the health behavior (Pender *et al.*, 2012). Last, HPM has been used by many researchers to assess women's health behavior during pregnancy and has helped many investigations with good results (Lin *et al.*, 2009; Thaewpia *et al.*, 2012; Calaghan, 2006; Panyapisit, 2002).

Maternal (SCB) during pregnancy can be explained as dependent variables using a combination of Orem's self-care requisites and the Health promotion life styles of Pender. For this study prior-related behavior and situational influence variables were not included to measure factors of maternal SCB during pregnancy. According to Pender *et al* (2011), prior related behavior is a variable that cannot be modified through interventions and the situational influences variable is more effective facilitate behaviors in varied populations. So, the study would be more effective by excluding those variables.

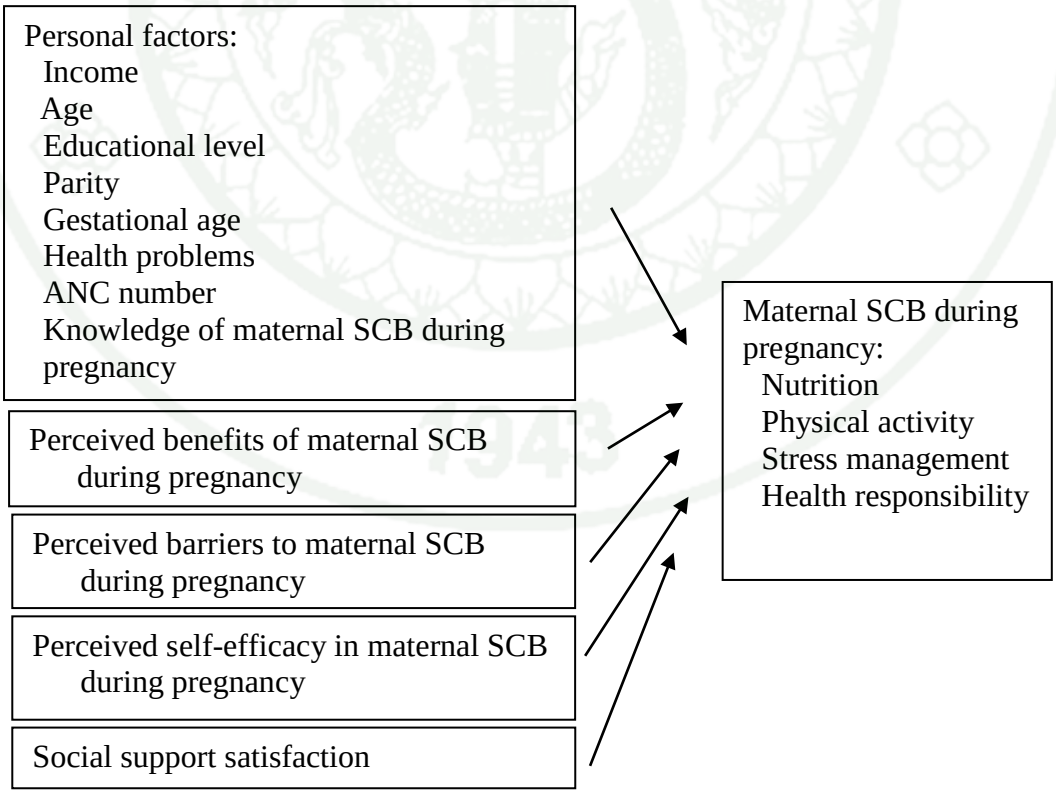

Figure 2 Conceptual study framework modified from Pender's and Orem self-care theory

9. Definition of Terms

The variables used in this study are defined as follows:

7.1 Pregnant women refer to women who are being pregnant and registered with a public health center (PHC).

7.2 Income refers to the average income per month of the pregnant woman and/ or her husband in Indonesia currency (IDR). It was classified into categories as (1) less than IDR 1,500,000, (2) from IDR 1,500,000 – to IDR 2,500,000, (3) from IDR 2,500,000 – IDR 3,500,000, and (4) more than IDR 3,500,000.

7.3 Educational level refers to the highest level of formal education attained by the pregnant woman.

7.4 Pregnancy related factors refer to factors that influence maternal behavior during pregnancy involving parity, gestational age, and ANC number.

7.5 Parity refers to the prior number of pregnancies of the pregnant woman.

7.6 Gestational age refers to the duration in months of the current pregnancy up to the time of data collection.

7.7 ANC number refers to the number of ANC visits to private clinics, public health center (PHC), or hospital during this pregnancy.

7.8 Health problems refer to illnesses that typically appear during pregnancy. They include anemia, preeclampsia/eclampsia, diabetic mellitus, and hypertension.

7.9 Knowledge of maternal SCB during pregnancy refers to the mother's knowledge about nutrition, physical activity, stress management, and health responsibility during pregnancy.

7.10 Perceived benefits of maternal SCB during pregnancy refers to the pregnant woman's perception of benefits of self-care behavior concerning nutrition, physical activity, stress management, and health responsibility during pregnancy to maintain physical and psychological well-being.

7.11 Perceived barriers to maternal SCB during pregnancy refer to the pregnant woman's belief or feelings that prevent her from executing the intended behavior. These are beliefs or feelings in nutrition, physical activity, stress management, and health responsibility during pregnancy.

7.12 Perceived self-efficacy in maternal SCB during pregnancy refers to the belief of the pregnant woman that she has the ability and confidence to practice self-care to maintain physical and psychological well-being. These include beliefs about nutrition, physical activity, stress management, and health responsibility during pregnancy.

7.13 Social support satisfaction refers to the pregnant woman's subjective evaluation of satisfaction about supports received from husband, mother/mother in law, family members, and health care providers in terms of emotional, appraisal, informational or instrumental support for doing self-care on pregnancy.

7.14 Maternal SCB during pregnancy during pregnancy refer to all activities of pregnant women for maintaining physical and psychological well-being of themselves and their fetus. These include nutrition, physical activity, stress management, and health responsibility during pregnancy.

MATERIALS AND METHODS

Materials

This chapter explains in detail the materials and methods used in this study. It consists of materials and methods. The materials consist of research instruments and validity and reliability test of the instruments. The methods consist of hypotheses, study design, population and samples, data collection, data analysis, and ethical consideration.

1. Research instruments

The instrument used for data collection in this study was a self-administered questionnaire. The English version of the questionnaire was verified by three experts in nutrition, behavioral, and nursing maternity sciences. It was translated into Indonesian language (Bahasa) and then back translated by Bahasa specialist and tested for reliability before collecting data. The details of the questionnaire are as follows:

1.1 Personal information

Personal information included age, income, educational level, parity, gestational age, health problems, and ANC number in the current pregnancy.

1.2 Knowledge of maternal SCB during pregnancy

This part consisted of 17 items: 8 items on nutrition, 2 items on physical activity, 1 item on stress management, and 6 items on health responsibility and contained both, negative (7, 9, 12, 13, 15 and 17) and positive (1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 14, and 16) questions. Each item had 3 options: A= true, B = false, C = do not know. Those who checked true in positive questions were scored 1, those who checked the false and do not know options were scored 0. Conversely, those who

checked false in negative questions were scored 1, those who checked true and do not know options were scored 0. The scores ranged from 0 to 17. The scores of all items were summed and classified into 3 levels of knowledge using Benjamin Bloom's Taxonomy (Bloom, 1956) as follow:

Good : 80% and above of the total score (score ≥ 14)

Fair : 60%-79% of the total score (score 10-13)

Poor : below 60% of the total score (score ≤ 9)

1.3 Perceived benefits of maternal SCB during pregnancy

The questionnaire consisted of 13 items (4 items on nutrition, 2 items on physical activity, 1item on stress management, 6 items on health responsibility) using 4-Likert scale from 0 (strongly disagree) to 3 (strongly agree). The score ranged from 0 to 39. The scores of all items were summed and classified into 3 levels of perceived benefits of self-care using Benjamin Bloom's Taxonomy (Bloom, 1956) as follows:

Good : 80% and above of the total score (score ≥ 31)

Moderate : 60%-79% of the total score (score 23-30)

Poor : below 60% of the total score (score ≤ 22)

1.4 Perceived barriers to maternal SCB during pregnancy

The questionnaire consisted of 19 items (8 items on nutrition, 2 items on physical activity, 2 items on stress management, 7 items on health responsibility) using 4-Likert scale from 0 (strongly disagree) to 3 (strongly agree). The total scores ranged from 0 to 57. The scores of all items was summed and classified into 3 levels of perceived barrier to self-care using Benjamin Bloom's Taxonomy (Bloom, 1956) as follows:

High : 80% and above of the total score (score ≥ 46)

Moderate : 60%-79% of the total score (score 34-45)

Low : below 60% of the total score (score ≤ 34)

1.5 Perceived self-efficacy in maternal SCB during pregnancy

The questionnaire consisted of 26 items using 5-point Likert scale, not at all (0) to highly confident (4). It consisted 8 items on nutrition, 4 items on physical activity, 4 items on stress management, and 10 items on health responsibility. The total scores ranged from 0 to 104. The scores of all items were summed and classified into 3 levels of perceived self-efficacy in self-care using Benjamin Bloom's Taxonomy (Bloom, 1956) as follow:

High : 80% and above of the total score (score ≥ 83)
Moderate : 60%-79% of the total score (score 62-82)
Low : below 60% of the total score (score ≤ 61)

1.6 Social support satisfaction

The questionnaire consisted of 10 items using the 4-Likert scale to measure satisfaction with social supports received from significant persons. The scale was from 0 (highly unsatisfied) to 3 (highly satisfied). The total score ranged from 0 to 30. The scores of all items were summed and classified into 3 levels of social support satisfaction using Benjamin Bloom's Taxonomy (Bloom, 1956) as follows:

High : 80% and above of the total score (score ≥ 24)
Moderate : 60%-79% of the total score (score 18-23)
Low : below 60% of the total score (score ≤ 17)

1.7 Maternal SCB during pregnancy

The questionnaire consisted of 22 items: 8 items on nutrition, 4 items on physical activity, 1 item on stress management, and 9 items on health responsibility. The questionnaire had negative items (2, 3, 8, 9, 15, 16, 17, 18) and positive items (1, 4, 5, 6, 7, 10, 11, 12, 13, 14, 19, 20, 21, 22). Negative items scored from 0 (always) to 4 (never), whereas positive items scored 4 (always) to 0 (never). The options indicated how many times pregnant women do each item per week: always = 7 times; often = 5-6 times; sometimes; 3-4 times; rarely = 1-2 times. The score were from 0 to

88. The scores of all items were summed and classified into 3 levels of self-care behavior using Benjamin Bloom's Taxonomy (Bloom, 1956) as follows:

High : 80% and above of the total score (score ≥ 70)

Moderate : 60%-79% of the total score (score 53-69)

Low : below 60% of the total score (score ≤ 52)

2. Validity and reliability of the instruments

2.1 Validity test of the instruments

The questions for knowledge of maternal SCB during pregnancy, personal information, and pregnancy related information were developed by the researcher based on literature reviews. The perceived benefits of maternal SCB during pregnancy and perceived barriers to maternal SCB during pregnancy part used the perceived benefits and perceived barriers to action by Panyapisit (2002). The perceived self-efficacy in maternal SCB during pregnancy used the Self Rated Abilities for Health Practices Scale (SRHAP), the social support satisfaction used the Support Behavior Inventory (SBI) by Brown (1986), and self-care behaviors used the self-care behaviors by Chayatab (2006). The instruments had been reviewed for content validity by three experts. The item-content validity index (I-CVI) of knowledge of maternal SCB during pregnancy, perceived benefits of maternal SCB during pregnancy, perceived barriers to maternal SCB during pregnancy, self-efficacy in maternal SCB during pregnancy, social support satisfaction, and maternal SCB during pregnancy were 0.98, 1.0, 0.73, 1.0, 0.73, and 0.96 respectively. Regard to Polit and Beck (2006) the I-CVIs should be 1.0 when the experts less than 6. The researcher revised and improved the questionnaire which I-CVI less than 1.0 based on suggestions by the experts.

2.2 Reliability test of the instruments

The reliability test of instruments was conducted by a pilot study done with 30 pregnant women who had similar characteristics with the target population in Leuwigoong PHC. The reliability was measured by using internal consistency

Cronbach's alpha coefficients. The internal consistency reliability Cronbach's alpha coefficient of knowledge of SCB, perceived benefits of SCB, perceived barriers to SCB, perceived self-efficacy in SCB, social support satisfaction, and self-care behaviors questionnaire were 0.71, 0.72, 0.76, 0.72, 0.70, and 0.73, respectively. Regarding Burns and Grove (2013), a developed instrument in the last 5 years with a Cronbach's Alpha 0.70 is considered acceptable.

Methods

The research methods consists of hypotheses, study design, population and sample, data collection, data analysis, and ethical consideration.

1. Hypotheses

Hypotheses were set according to the specific objectives of the study. The hypotheses were as follows:

1.1 There were relationship between personal factors (income, age, educational level, parity, gestational age, health problems, ANC number, and knowledge of maternal SCB) and maternal SCB during pregnancy.

1.2 There was relationship between perceived benefits of maternal SCB during pregnancy and maternal SCB during pregnancy.

1.3 There was relationship between perceived barrier to maternal SCB during pregnancy and maternal SCB during pregnancy.

1.4 There was relationship between perceived self-efficacy in maternal SCB during pregnancy and maternal SCB during pregnancy.

1.5 There was relationship between social support satisfaction and maternal SCB during pregnancy.

1.6 Personal factors, perceived benefits of maternal SCB during pregnancy, perceived barrier to maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, and social support satisfaction predict maternal SCB during pregnancy in Garut district.

2. Study design

Cross-sectional survey design was used in this study to answer the research questions and specific objectives.

3. Population and samples

3.1 Population

The population in the study was currently pregnant women in all trimesters who registered with public health centers (PHCs) in the Garut District, West Java, Indonesia. The total number of pregnant women in the Garut district in 2014 was 3.652 (health department (HD) of Garut District, 2013c).

3.2 Samples

3.2.1 Sample calculation

The sample calculation of this study used the formula from Daniel that determines an adequate sample size with a good precision (Naing *et al*., 2006). The sample in this study was calculated using the proportion (P) of pregnant women's chronic malnutrition (13%) 0.13. The confidence interval is 95% (z = 1.96) and the appropriate precision is 5% (d=0.05). Precision 5% is appropriate used if the prevalence of disease is between 10-90% (Naing *et al*., 2006). The resulting number of samples multiplied by design effect (deff = 1.5) to address the variation of sampling method used (Naing *et al*., 2006; Henry, 1990). Twenty percent was added to the total sample of respondents as an allowance for dropouts due to incomplete

data. The total sample in this study was therefore 313 respondents. The calculation is shown below:

$$n = \frac{Z^2 \ p\,(1-p)}{\sigma^2}$$

$$n = \frac{1.96^2\,(.13)(.87)}{0.05^2} = 174$$

n x (Deff = 1.5) = 174 x 1.5 = 261

Total sample: 261+20 % (261) = 313

Since multistage sampling technique was used, the number of samples was multiplied by design effect. Then, to anticipate the missing data, the number of samples increased 20% that occasionally caused by unclear instruction or intrusive questions on a survey study (Peng *et al*., 2003). Therefore 313 pregnant women were included in this study.

3.2.2 Sampling technique

The samples were selected using multistage sampling technique. The district was divided into north, central, and south. Five PHCs were randomly selected from 65 PHCs under responsibility of HD of Garut District by using probability proportional to size of each area, 2 PHCs in South, 2 PHCs in central of Garut and 1PHC in North. The participants each PHC selected by purposive sampling. The pregnant women in the study area were recruited for the study if they met the following criteria:

1) pregnant women in all trimesters,
2) being able to write and read in Indonesian language (Bahasa),
3) willing to participate in the study and sign the informed consent,
4) being registered in the PHC.

The exclusion criteria were pregnant women who were hospitalized at the time of the data collection.

The total number of pregnant women in Garut District (N) =3652

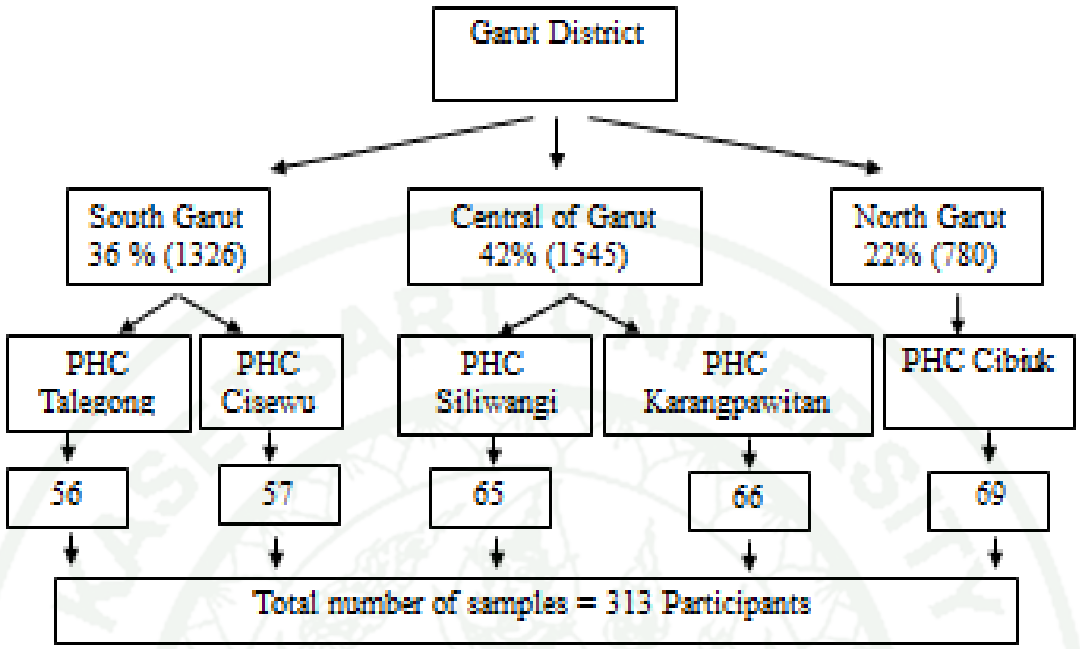

Figure 3 Sampling diagram

4. Data collection

The Ethical Review Board (ERB) committee of Boromarajonani Collage of Nursing Nopparat Vajira (BCNNV)-Bangkok Thailand approved this study with the approval number (ERB) No 48/2014. The permissions for data collection were obtained from Bakesbanglinmas or Board for National Unity and People's Protection (BNUPP) of the Garut district.

After the permission was given by the BNUPP of Garut District, West Java, the procedure of seeking further permissions was as follows:

1) The researcher used the letter from BNUPP of the Garut District to inform the Heads of Public Health center (PHC) about the data collection.

2) The researcher informed each Head of Public Health center (PHC) about collecting the data.

3) The researcher visited the respondents at home and introduced the researcher to them. The researcher selected a number of pregnant women who fulfilled the criteria. Further the researcher explained about the purpose of the study,

assured confidentiality and requested to sign the informed consent when they agreed to participate.

4) The data were collected through self-administrated questionnaires and consisted of personal factors, pregnant women's perceptions, social support satisfaction, and maternal SCB during pregnancy. The respondent would answer the questions using the answer sheets without any intervention from third parties.

5) The respondents answered the questionnaires at home. The participants allowed choosing answering the questionnaire during the first meeting or the researcher would pick the questionnaire up the following day after the respondent had finish answering the questionnaires.

6) The respondents returned the questionnaires to the researcher and the researcher provided a souvenir to respondent as gesture of appreciation.

This study was supported by 4 research assistants (RAs), who collected the data. The RAs were nursing students who had at least one previous research experience. They were trained before data collection how to collect the data from the participants. The researcher explained the purpose of the study, ethical considerations, and details of the questionnaires. The researcher had made sure that the RAs understood all the data collection procedures. A total of 313 questionnaires was collected, of which 263 were complete and consequently used in the data analysis.

5. Data Analysis

The data were first checked and verified and then analyzed using Statistical Package for the Social Sciences (SSPS Student) for Windows version 16.0 provided by Kasetsart University. The data analysis is explained below:

5.1 The personal factors (age, income, gestational age, ANC number, knowledge of maternal SCB), perceived benefits of maternal SCB during pregnancy, perceived barriers to maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, social support satisfaction, and maternal SCB during pregnancy were explained using mean (M), standard deviation (SD), frequencies,

percentage, minimum and maximum. Next, educational level was explained using frequencies and percentages; parity was explained using median, frequencies, percentage, minimum and maximum; health problems were explained using frequencies and percentage.

5.2 The correlations between income, age, parity, gestational age, ANC numbers, knowledge of maternal SCB during pregnancy, perceived benefits of maternal SCB during pregnancy, perceived barriers to maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, social support satisfaction, and maternal SCB during pregnancy were analyzed by using Pearson's Product–moment-correlation-coefficient. The correlation between educational level and maternal SCB during pregnancy was analyzed using Spearman rank correlation. The correlation between health problems and maternal SCB during pregnancy was analyzed by using the point biserial correlation coefficient.

5.3 All factors that correlated with maternal SCB during pregnancy were analyzed by stepwise multiple linear regressions to examine the predictors of maternal SCB during pregnancy. The significant level was set a prior at $p<0.05$.

6. Ethical Consideration

Initially, the study approval had been obtained from ERB, Boromarajonani Bangkok, Thailand. Further permission was approved from BNUPP of Garut District and Head of PHCs of all PHC (PHC Cisewu, PHC, Talegong, PHC Siliwangi, PHC Karangpawitan, PHC Cibiuk). The participants were given opportunities to decide whether they would participate in the study. The samples were assured that their rights and confidentiality were protected. The researcher or RAs explained the objective, procedure, and benefit of study attached in the information sheet. Additionally, the participants had ample opportunity to inquire in detail about the study in general and the items on the questionnaires. Moreover, they could withdraw and decline further collaboration at any time. (A withdrawal would of course not affect the health services provided for them in the PHC).

Information and informed consent were translated into Indonesian language (Bahasa) by an official translator before given to the participants. The informed consent form was provided for each sample and made in two copies for the researcher and the sample to sign it. The respondents were allowed to answer the questionnaire while the researcher or RAs visited them or hand it in later on.

All sample's data were safely stored in the computer with the limited access. Only the researcher and the advisor could access the data. Code numbers were used for participants in order to ensure anonymity during data analysis. The data of the participants were separated in each questionnaire. The hard copies of the questionnaires were locked in a private place. The data will be destroyed after this study is finished. The electronic data will be kept with password access for future studies.

RESULTS AND DISCUSSION

Results

This study proposed to identify factors predicting maternal SCB during pregnancy. The factors included personal factors (age, educational level, income), pregnancy related factors (ANC numbers, parity, gestational age), health problems, knowledge of self-care, perceived benefits of maternal SCB during pregnancy, perceived barriers to maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, social support satisfaction, and maternal SCB during pregnancy. The results were presented as follow: 1) demographic characteristics (age, income, and educational level), pregnancy related factors (parity, gestational age, ANC numbers), health problems, knowledge of maternal SCB during pregnancy, perceptions and maternal SCB during pregnancy; 2) the relationship between independent variables and self-care behaviors; 3) factors predicting maternal SCB during pregnancy.

1. Demographic characteristics, pregnancy related factors and health problems, knowledge of maternal SCB during pregnancy, perceptions, and maternal SCB during pregnancy

The demographic characteristics of the pregnant women shown in the table 1 consisted of age, educational level, and income. A total of 263 participants was included in the analysis. The average age of the participants was 27.7 years with a standard deviation of 6.37. Most of the participants (72.3%) were from 20 to 34 years old. The average income per month of this group is IDR 1,185,897 with SD of 857,529 and 65.4% participants have income less than IDR 1.5 million/month. The majority of the participants are junior and senior high school graduates, 32.7% and 31.9%, respectively. Only a quarter had a higher educational level than senior high school (table 1).

Table 1 Number and percentage of demographic characteristics of participants (n=263).

Demographic characteristics	Number (n)	Percentage (%)
Age (years)		
<20	29	11.0
20-34	190	72.3
≥35	44	16.7
Mean ± S.D = 27.7 ± 6.37		
Min-Max = 16-47		
Educational level		
Elementary school	27	10.3
Junior high school	86	32.7
Senior high School	84	31.9
Vocational	24	9.1
Diploma	32	12.2
University (Bachelor/Master/Doctor)	10	3.8
Income/month (IDR)		
<1.500.000	172	65.4
1.500.000-2.499.999	75	28.5
2.500.000-3.500.000	11	4.2
>3.500.000	5	1.9
Mean ± S.D = 1.185.897 ±857.529		
Min-Max = 0 -6.000.000		

The pregnancy related factors (parity, ANC numbers, and gestational age) of the pregnant women are shown in table 2. The majority of the participants (63.1%) were multigravida. Approximately 44.5% of pregnant women were in the second trimester, 36.1 % were in the third trimester and 19.4% were in the first trimester. The average duration of pregnancy was 5.47 months with SD 2.162 months. More than half (51.7%) of the participants have attended ANC more than 3 times (table 2).

Table 2 Number and percentage of pregnancy related factors of participants (n=263).

Pregnancy related factors		Number (n)	Percentage (%)
Parity			
Primi:	0	25	9.5
	1	72	27.3
Multi :	2	92	35.0
	3	53	20.2
	≥4	21	8.0
Median: 2			
Min-Max = 0 –9			
Gestational Age			
1st Trimester		51	19.4
2nd Trimester		117	44.5
3rd Trimester		95	36.1
Mean (month) ± S.D = 5.47 ± 2.162			
Min-Max = 1 – 9			
ANC numbers			
<4		127	48.3
≥4		136	51.7
Mean ± S.D = 4.08 ± 2.529			
Min-Max = 1-15			

Out of 263 participants 26.2% had health problems. Pregnancy related health problems of pregnant women included anemia 18.6%, hypertension 4.9 %, and both anemia and hypertension 2.7% (table 3).

Table 3 Number and percentage of pregnancy related health problems of participants (n=263).

Pregnancy Related Health Problems	Number (n)	Percentage (%)
Anemia	49	18.6
Hypertension	13	4.9
Anemia & Hypertension	7	2.7
No problems	194	73.8

The knowledge of the participants ranged from 3-16 out of the total score of 17, with the mean score of 9.93 and standard deviation of 2.368. The knowledge score was classified into: good, fair, and poor using cut off points 80% and 60% of total score, respectively. Almost half of participants had a fair level of knowledge (48.7%), followed by poor level (45.2%), and good level (6.1%) (table 4).

Table 4 Number and percentage of levels of participants' knowledge of maternal SCB during pregnancy (n=263).

Knowledge	**Number**	**Percentage**
Good	16	6.1
Fair	128	48.7
Poor	119	45.2
Mean ± S.D = 9.93±2.368		
Min-Max = 3-16		

The mean score of self-care knowledge in the nutrition domain was 4.33 (SD=1.460). The knowledge score regarding physical activity was 1.55 (SD= 0.627), about stress management 0.84 (SD=0.365), and regarding health responsibility 3.22 (SD=1.205) (table 5).

Table 5 The distribution of knowledge of maternal SCB during pregnancy by domains.

Domain	Min	Max	Total score	$\bar{x}$	SD
Nutrition	0	8	8	4.33	1.460
Physical activity	0	2	2	1.55	0.627
Stress management	0	1	1	0.84	0.365
Health responsibility	0	6	6	3.22	1.205

Table 6 shows the knowledge of participants in details. It shows that some questions were answered correctly by less than 55% pregnant women. These questions included the impact of the nutritional status of the pregnant women on the fetus (36.1%), the benefits of iodized salt for the fetus (54.4%), the risks of a high consumption of salt and sweet food regarding hypertension and diabetes (47.9%), the benefit of consuming iron tablets (33.8%), and the dangerous effect of a Rubella infection on to fetal health (42.2%). The lowest knowledge level showed in the questions on the effect of tea and coffee consumption on the nutrient absorption (22.4 %) and on doing a dental check in the early pregnancy 26.6%.

Table 6 The distribution of participants' knowledge of maternal SCB during pregnancy.

Knowledge Items	Correct Answer	
	N	%
Nutrition		
Drinking at least 2 Liter of water daily (n=263)	212	80.6
Drinking alcohol can damage fetal brain structure (n =262)	221	84.0
Consuming tea and coffee disturb nutrient absorption (n=262)	59	22.4
Nutritional status of pregnant women impact to fetus (n =261)	98	37.3
Consuming vegetables and fruits can prevent anemia (n=262)	183	69.6
Raw /uncooked eggs harmful for the fetus (N =260)	95	36.1
Iodized salt is not beneficial for fetus (N =251)	143	54.4
Consuming high salt and sweet food increase hypertension and diabetes (n=254)	126	47.9
Physical activity		
Exercise during pregnancy (n=263)	206	78.3
Take a nap during day time (n=262)	262	76.4
Stress management		
Effect over stress to pregnant women (n=261)	220	83.7
Health responsibility		
Benefit consuming at least 90 iron tablets (n=262)	89	33.8
Inhaled air of pregnant women affect fetal (n=258)	152	57.8
Smoking or inhaling cigarette smoke cause low birth weight (n=263)	203	77.2
Effect of Rubella infection to fetal health (n=261)	111	42.2
Visiting ANC in the first trimester (n=262)	219	83.3
Doing dental check in the early pregnancy (n=262)	70	26.6

Out of total score of 39, the scores of perceived benefits of self-care behaviors during pregnancy ranged from 15-39 with the mean score of 26.29 and a standard deviation of 4.797. The perceived benefits of self-care behavior were classified into three levels: good, moderate and poor, using cut off points at 80% and 60% of total score, respectively. Table 7 shows that half of participants (58.2) were classified as having moderate perceptions about the benefits of self-care during pregnancy.

Table 7 Number and percentage of levels of participants' perceived benefits of maternal SCB during pregnancy (n=263).

Perceived benefits	**Number**	**Percentage**
Good	56	21.3
Moderate	153	58.2
Poor	54	20.5
Mean ± S.D = 26.29±4.797		
Min-Max =15-39		

The mean score of perceived benefits of self-care in the nutrition domain was 8.17 (SD=2.011). The mean score of physical activity was 3.34 (SD=1.391), stress management was 2.33 (SD=0.673), and health responsibility was 12.45 (SD=2.520). (table 8).

Table 8 The distribution of perceived benefits of maternal SCB during pregnancy by domains.

Domain	Min	Max	Total score	$\bar{x}$	SD
Nutrition	1	12	12	8.17	2.011
Physical activity	0	6	6	3.34	1.391
Stress management	0	3	3	2.33	0.673
Health responsibility	5	18	18	12.45	2.520

Table 9 shows the level of perceived benefits of self-care of the participants in detail. Most pregnant women in this study "agree" and "strongly agree" to the statements. However, many of them had misunderstandings about self-care behavior during pregnancy. About one-third of this group disagreed on the benefits of taking iron pills. Approximately 37% pregnant women disagreed on the benefits of exercise, regular sleep, and following doctor's suggestions.

Table 9 The distribution of participants' perceived benefits of maternal SCB during pregnancy.

Perceived benefits items	Strongly disagree	Dis-agree	Agree	Strongly agree
	%	%	%	%
Nutrition				
Drinking 2 liter/day prevents dehydration (n=262)	4.6	7.3	67.6	20.6
Eating vegetables prevent anemia (n=262)	2.3	11.8	66.0	19.9
Eating protein sources build fetal organ growth (n=258)	0.8	19.0	57.0	23.2
Drinking milk strengthen fetus bone and teeth (n=263)	4.2	7.6	60.1	28.1
Physical activity				
Exercise 30 minutes 3x/ week keeps healthy (n=261)	6.5	31.4	52.5	9.6
Sleeping consecutively 8 hours at night avoid hypertension and diabetes (n=262)	10.7	27.1	42.7	19.5
Stress management				
Rest and relaxation reduce stress (n=262)	0.8	9.1	46.2	43.9
Health responsibility				
Taking iron 90 tablets prevent anemia (n=263)	14.8	18.3	43.3	23.6
Breathing in clear air maintenance fetus health (n=263)	2.3	13.3	58.2	26.2
Quitting smoking/ avoid cigarette smoke prevent low birth weight baby (n=262)	4.6	6.5	45.0	43.9
Following doctor' suggestion maintain mother and fetus health (n=261)	18.4	19.5	45.6	16.5
Visiting antenatal care (ANC) monitor mother and fetal condition (n=263)	1.1	7.2	44.0	47.9
Reporting unusual sign and symptoms avoid complications during pregnancy and childbirth (n=263)	0.8	3.8	53.6	41.8

Out of total score of 57, the scores of perceived barriers to self-care behavior during pregnancy ranged from 0-45 with the mean score of 14.16 and standard deviation 7.998. The perceived barriers of self-care scores were classified into three levels: high, moderate and low using cut off point at 80% and 60% of total score, respectively. Table 10 shows that almost 99% of participants perceived low barriers to self-care behavior during pregnancy.

Table 10 Number and percentage of levels of participants' perceived barriers to maternal SCB during pregnancy (n=263).

Perceived barrier	Number	Percent
Moderate	3	1.1
Low	260	98.9
Mean ± S.D = 14.16±7.998		
Min-Max = 0-45		

The mean score of perceived barriers to self-care in the nutrition domain was 5.40 (SD=3.846). The mean score regarding physical activity was 3.19 (SD=1.552), on stress management 1.49 (SD=1.508), and in the area of health responsibility 4.07 (SD=3.376) (table 11).

Table 11 The distribution of perceived barriers to maternal SCB during pregnancy by domains

Domain	Min	Max	Total score	$\bar{x}$	SD
Nutrition	0	19	24	5.40	3.846
Physical activity	0	6	6	3.19	1.552
Stress management	0	6	6	1.49	1.508
Health responsibility	0	17	21	4.07	3.376

Table 12 shows perceived barriers to self-care during pregnancy in detail. Most pregnant women in this study strongly disagreed and disagreed to the statements. However, some severe misunderstandings about self-care behavior during pregnancy occurred among them. Most of them agreed that exercise in the nine months of gestational age is beneficial (73.8%). More than 40 percent agreed that drinking a tablespoon of coconut oil may facilitate the delivery process (46%), that consuming raw yellow egg enhances energy for the delivery process (42.6%), and that exercise in the early pregnancy is harmful (44.7%).

Table 12 The distribution of participants' perceived barriers to maternal SCB during pregnancy

Perceived barriers items	Strongly Disagree	Dis-agree	Agree	Strongly agree
	%	%	%	%
Nutrition				
Drinking milk makes nausea or vomiting (n=263)	52.5	26.6	13.3	7.6
Eating a lot spicy food get easier delivery process (n=263)	83.6	11.5	4.2	0.8
Consuming snail race or 'tutut' during pregnancy leads sleepy during delivery or delivery complication (n=263)	52.9	21.7	20.1	5.3
Eating chayote squash during pregnancy makes delivery complication (n=263)	73.8	22.1	3.4	0.8
Drinking at least a tablespoon of coconut oil every day since 7 month makes easier of delivery process (n=263)	30.4	23.6	21.7	24.3
Consuming raw yellow egg enhances energy for delivery (n=263)	35.7	21.7	23.6	19.0
Eating orange influences delivery yellow baby (n=263)	81.1	15.4	3.1	0.4
Eating nuts during pregnancy impact less of breast milk production after delivery (n=263)	70.0	17.1	11.0	1.9
Physical activity				
Exercise in the end of last month of pregnancy is beneficial (n=263)	9.5	16.7	48.3	25.5
Exercise in the early pregnancy are harmful for womb (n=263)	27.1	28.2	32.1	12.6
Stress management				
Talking problems to anyone made humiliated (n=263)	62.7	18.6	17.5	1.1
Showing love and care to other people is embarrassing (n=261)	45.6	22.2	26.4	5.8
Health responsibility				
Afraid of being scolded by doctors or nurses at the clinic (n=262)	58.0	29.8	11.1	1.1
Doctor's instructions are difficult to follow (n=262)	53.1	32.4	9.2	5.3
Taking a very long time to go to ANC (n=258)	68.2	17.1	8.1	6.6
Going to healthcare facilities are costly (n=263)	74.7	15.3	8.8	1.1
Giving services of ANC is less of maintained of privacy (n=263)	55.5	22.8	14.1	7.6
Taking medicine or iron supplements will cause big infants or difficult delivery (n=263)	74.9	14.4	6.1	4.6
I cannot prohibit anyone smoking near me (n=263)	37.3	46.4	12.9	3.4

Out of total score of 104, the perceived self-efficacy in self-care behaviors during pregnancy scores ranged from 22-103 with the mean score of 74.64 and a standard deviation of 13.692. The scores of perceived self-efficacy in self-care were classified into three levels: highly confident, moderately confident, and lowly confident, using cut off points at 80% and 60% of the total score, respectively. Table 13 shows that half of the participants had a moderate level of perceived self-efficacy in self-care. One-third of the participants' was at the high level of perceived self-efficacy in self-care.

Table 13 Number and percentage of levels of participants' perceived self-efficacy in maternal SCB during pregnancy (n=263).

Perceived self-efficacy	**Number**	**Percent**
High	87	33.1
Moderate	132	50.2
Low	44	16.7
Mean ± S.D = 74.64±13.692		
Min-Max = 22-103		

The mean score of self-efficacy in self-care in the nutrition domain was 22.50 (SD=4.812). Regarding physical activity it was 10.49 (SD=2.529), in stress management 10.15 (SD=3.032), and in health responsibility 31.68 (SD=6.266) (table 14).

Table 14 The distribution of perceived self-efficacy in maternal SCB during pregnancy by domains

Domain	Min	Max	Total score	$\bar{x}$	SD
Nutrition	9	32	32	22.50	4.812
Physical activity	4	16	16	10.49	2.529
Stress management	0	16	16	10.15	3.032
Health responsibility	4	40	40	31.68	6.266

Table 15 shows the perceived self-efficacy of pregnant women in practicing self-care during pregnancy. The table shows that almost 34% of the participants strongly believe in their ability in avoiding drinking tea and coffee one hour before and after meals. Approximately 24% of the pregnant women were highly confident

about daily intake of iron supplements. Only around 13% of the participants were highly confident to eat more lean meat or eggs and who were highly confident to consume at least 5 cups of fruits and vegetables per day, 26 % of the participants were highly confident to sleep or rest during the day, and only 8.8% were confident to avoid crowded place. More than a quarter of participants were highly confident to manage stress and less than 30% were highly confident to avoid feeling lonely.

Table 15 The distribution of participants' perceived self-efficacy in maternal SCB during pregnancy

Perceived self-efficacy items	Not at all	Not confident	Un-certain	Confident	Highly confident
	%	%	%	%	%
Nutrition					
Drinking water 2 liter every day (n=263)	0.4	2.7	36.5	33.4	27.0
Avoid drinking tea and coffee an hour before and after meals (n=262)	15.6	12.6	25.6	12.6	33.6
Avoid drinking alcohol (n=262)	17.6	0.8	1.1	9.2	71.4
Buy healthy foods (n=261)	0.4	0.4	18.4	37.1	43.7
Eat lean meat/egg than usual (n=263)	0.8	10.3	46.4	29.6	12.9
Drink a glass of milk a day (n=261)	0.4	4.2	29.5	30.3	35.6
Eat fruits and vegetables at least 5 cups a day (n=260)	1.9	11.9	46.9	26.2	13.1
Eat 3 meals a day (n=262)	1.1	3.0	19.1	23.7	53.1
Physical activity					
Exercise 30 minutes a day at least 3x/week (n=263)	6.1	12.2	52.5	22.0	7.2
Keeping from get hurt during exercise (n=263)	4.6	9.9	40.3	26.2	19.0
Sleep 8 hours a night (n=263)	1.1	3.0	20.2	30.0	45.7
Sleep or rest 1 hour during day (n=262)	1.9	4.2	35.9	32.0	26.0
Stress management					
Manage stress (n=263)	5.3	8.7	32.3	33.5	20.2
Keeping from feeling lonely (n=263)	4.5	6.1	33.5	27.0	28.9
Do things made feel good (n=263)	2.2	6.1	22.8	31.9	36.9
Talk to friend and family (n=262)	9.5	20.2	45.8	13.0	11.5

Table 15 (Continued)

Perceived self-efficacy items	Not at all	Not confident	Un-certain	Confident	Highly confident
	%	%	%	%	%
Health Responsibility					
Take iron supplement (n=262)	1.1	2.7	43.9	28.2	24.1
Avoid crowded place (n=263)	4.2	7.6	53.2	26.2	8.8
Brush my teeth twice a day (n=258)	0.4	3.5	10.4	28.7	57.0
Avoid hazard (n=263)	1.5	1.1	10.3	20.9	66.2
Quit smoking or avoid people who smoking (n=263)	2.7	1.5	11.0	16.4	68.4
Watch for negative changes in the body (n=260)	3.9	4.2	24.2	20.8	46.9
Recognize symptoms should be reported (n=262)	3.4	3.4	15.7	22.8	54.6
Use medication as health care professional suggestion (n=263)	2.3	2.3	6.8	27.0	61.6
Visit ANC at least 4 times (n=263)	1.1	2.3	8.0	27.5	61.2
Avoid people with infectious diseases (n=262)	3.4	4.2	9.9	18.7	63.8

Out of total score of 30, the social support satisfaction scores ranged from 9-30 with the mean score of 21.7 and a standard deviation of 4.228. The social support was classified into three levels: high, moderate and low, using cut off points at 80% and 60% of the total score, respectively. Table 16 shows that the majority (62.7%) of the participants were highly satisfied with the social supports they received. Approximately a third (33.5%) was moderately satisfied with the social support they received with only 3.8% were lowly satisfied with the social support they received (table 16).

Table 16 Number and percentage of levels of participants' social support satisfaction (n=263).

Social support satisfaction	Number	Percent
High	165	62.7
Moderate	88	33.5
Low	10	3.8
Mean ± S.D = 21.7±4.228		
Min-Max = 9-30		

Table 17 shows the social support satisfaction sources and forms of pregnant women. The prevailing four sources are family members, husbands, mothers/in law, and health care providers. The strongest social support satisfaction was in two items, where more than 50% of the participant expressed high satisfaction: meal provision by family members (54.7%) and motherly support in overcoming difficulties (54%).

Table 17 The distribution of participants' satisfaction toward social support they received during pregnancy.

Social support satisfaction items	Highly Un-Satisfied	Un-Satisfied	Satisfied	Highly Satisfied
	%	%	%	%
Family members help to do house works (n=260)	18.5	9.2	24.2	48.1
Husband provided sufficient and balanced meal (n=263)	17.5	2.7	37.2	42.6
Family members provided sufficient and balanced meal (n=263)	0.8	4.6	39.9	54.7
Husband allow to exercise during pregnant (n=263)	7.7	31.4	22.2	38.7
Mother share experience related how taking care during pregnancy (n=261)	2.7	12.3	42.5	42.5
Mother in law share experience related taking care during pregnancy (n=263)	9.5	12.6	44.1	33.8
Mother is strengthening overcome the difficulty (n=261)	2.7	8.4	34.9	54.0
Mother in law listening my complaints (n=261)	7.0	15.0	39.0	39.0
Health provider give me knowledge to understand the condition/ or changes of pregnancy easier (n=263)	1.1	13.0	46.4	39.5
Health provider convince to deal with the changes condition during pregnancy (n=263)	1.5	11.0	45.3	42.2

Out of total score of 88, the self-care behaviors during pregnancy scores ranged from 48-80 with the mean score of 64.14 and standard deviation of 5.952. The self-care behaviors scores were classified into three levels: good, fair, and poor using cut off points at 80% and 60% of the total score, respectively. Table 18 shows that 76.4% and 19.4% of participants' self-care behaviors were at fair and good levels respectively.

Table 18 Number and percentage of levels of maternal SCB during pregnancy (n=263).

Self-care	Number	Percent
Good	51	19.4
Fair	201	76.4
Poor	11	4.2
Mean ± S.D = 64.14±5.952		
Min-Max = 48-80		

The mean score of self-care behaviors in the nutrition domain was 24.49 (SD=3.171), in the domain of physical activity 10.57 (SD=2.010), in stress management 2.41(SD=0.846), and in health responsibility 26.68 (SD=3.187) (table 19).

Table 19 The distribution of maternal SCB during pregnancy by domains

Domain	Min	Max	Total score	$\bar{x}$	SD
Nutrition	12	31	32	24.49	3.171
Physical activity	5	16	16	10.57	2.010
Stress management	0	4	4	2.41	0.846
Health responsibility	17	34	36	26.68	3.187

Table 20 shows maternal SCB during pregnancy. Some SCB during pregnancy were satisfactorily carried out by the participants, but many SCB during pregnancy need to be improved. Most importantly 95.8% never drink alcohol and 89% never smoke. More than half of them never eats raw or uncooked eggs (62%) and do not drink tea or coffee during their meals.

However, some practices related to eating should be improved. For example, less than 15 percent of the pregnant women regularly consume enough fruits and vegetables. Similarly the daily consumption of lean meat and eggs (7.2%), iron supplements (21.7%), milk (31.6%), and never drink tea and coffee during meals (55.9%) should be increased. Moreover, their dental hygiene also leaves space for

improvement: with infrequent dental checks (12.9) and irregular brushing of teeth (33.5%).

Table 20 The distribution of maternal SCB during pregnancy.

Self-care behavior items	Always	Often	Some-times	Rarely	Never
	%	%	%	%	%
Nutrition					
Drinks 2 liter water (n=263)	34.6	36.1	24.3	5.0	0.0
Drink tea or coffee during meals (n=263)	3.8	3.0	21.7	15.6	55.9
Drink alcohol (n=262)	1.2	1.5	0.0	1.5	95.8
Eat 3 meals (n=261)	68.6	18.0	9.6	2.7	1.1
Eat vegetables and fruits (n=262)	14.9	35.9	42.8	6.5	1.9
Eat more lean meat or eggs (n=263)	7.2	24.7	51.0	16.7	0.4
Drink a glass milk (n=263)	31.6	37.3	25.1	5.7	0.4
Eat raw or uncooked eggs (n=258)	2.7	2.3	18.6	14.4	62.0
Physical activity					
Work until exhausted (n=263)	1.5	2.3	27.8	19.0	49.4
Exercise 30 minutes a day (n=262)	9.2	12.2	38.5	20.6	19.5
Sleep 8 hours (n=261)	49.4	24.5	20.3	5.0	0.8
Sleep or rest 1 hour (n=261)	21.8	28.4	40.6	8.4	0.8
Stress management					
Provide a time for rest or fun (n=263)	11.4	29.7	47.5	11.0	0.4
Health responsibility					
Take medicine or iron supplement as suggestion of health care professional (n=263)	21.7	46.4	26.6	4.2	1.1
Stay in crowded place	3.0	7.6	53.6	29.3	6.5
Smoke (n=263)	1.1	0.4	1.9	7.6	89.0
Stay near smoking people (n=261)	3.8	2.7	23.0	26.8	43.7
Visit people with infectious disease (n=261)	0.8	1.1	3.5	14.9	79.7
Take a bath (n=263)	43.7	38.0	12.2	2.7	3.4
Brush teeth (n=263)	33.5	28.1	25.5	8.7	4.2
Dental check (n=263)	12.9	8.0	28.9	25.1	25.1
See the health care professional (n=256)	73.8	15.6	7.8	2.0	0.8

2. The relationships between independent variables and maternal SCB during pregnancy

Table 21 shows the correlation among age, income, parity, gestational age, ANC numbers, educational level, health problems, knowledge of maternal SCB during pregnancy, perceived benefits of maternal SCB during pregnancy, perceived barriers to maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, social support satisfaction, and maternal SCB during pregnancy. According to table 21, there were a positive, significant correlation between knowledge of maternal SCB during pregnancy, perceived benefits of maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, social support satisfaction and maternal SCB during pregnancy ($r = .130$, $p < .05$; $r = .271$, $p < .01$, $r = .438$, $p < .01$; $r = .312$, $p < .001$, respectively).

The results showed that pregnant women who had higher knowledge of maternal SCB during pregnancy or who had higher perceived benefits of maternal SCB during pregnancy or who had higher perceived self-efficacy in maternal SCB during pregnancy or who had had higher social support satisfaction would have better SCB during pregnancy. However, other variables including income, age, education level, parity, gestational age, health problems had no significant correlation with maternal SCB during pregnancy in this study.

Table 21 Correlation between independent variables and maternal SCB during pregnancy (n = 263).

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age[a]	-	.200**	.648**	.110	.058	.163**	.110	.024	-.006	-.088	-.067	-.003	-.004
2. Income[a]		-	107	.043	.125*	.318**	-.080	.171**	.071	-.144*	.067	-.049	.086
3. Parity[a]			-	.106	.109	-.049	-.037	-.051	-.012	-110*	.117	-.048	.000
4. Gestational age[a]				-	.737**	.017	-.015	.019	.-.147*	-.140*	-.046	-.002	.052
5. ANC numbers[a]					-	-.027	-.036	.129*	-.181**	-.299**	-.051	-.126*	.096
6. Educational level[b]						-	-.026**	.190**	.061	.056	-.041	.181**	.003
7. Health Problems [c]							-	.068	-.007	.061	-.024	.052	.039
8. KSC[a]								-	.027	-.204**	-.015	.129*	.130*
9. PBSC[a]									-	.046	.388**	.285**	.271**
10. PBRSC[a]										-	.057	.159**	-.068
11. PSESC[a]											-	.242**	.438**
12. SS Satisfaction[a]												-	.312**
13. Maternal SCB													-

Note: ([a]) = Pearson Product-Moment correlation coefficient; ([b]) = Spearman Rho**;** ([c]) Point Biserial correlation coefficient

**: Correlation is significant at the .01 level (2-tailed); * : Correlation is significant at the .05 level (2-tailed); KSC = knowledge of maternal SCB during pregnancy; PBSC = perceived benefits of maternal SCB during pregnancy; PBRSC= perceived barrier to maternal SCB during pregnancy; PSESC= perceived self-efficacy in maternal SCB during pregnancy; SS satisfaction: social support satisfaction

3. Predictive factors of maternal SCB during pregnancy

Multiple linear regression analysis was conducted to examine the variables that significantly predicted the self-care behavior. From the analysis of correlations between the independent variables and maternal SCB, it was found that knowledge of SCB during pregnancy, perceived benefits of maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, and social support satisfaction were significantly associated with the maternal SCB during pregnancy and were entered into multiple regressions.

As shown in table 22, the result of multiple linear regression analysis showed that the model accounted for 25.3% (R^2 = .253) of the variation of maternal SCB during pregnancy. However, only three variables (perceived self-efficacy in maternal SCB during pregnancy, social support satisfaction, and knowledge of maternal SCB during pregnancy) significantly predicted to maternal SCB during pregnancy ($p < 0.001$, $p< 0.01$, $p< 0.05$, respectively).

Table 22 Multiple correlation between predictor variables and maternal SCB during pregnancy (n= 263).

Predictors	**B**	***SE***	**Beta**	**t**	***P***
Perceived self-efficacy in maternal SCB during pregnancy	.159	.026	.367	6.204	.000
Social support satisfaction	.265	.081	.189	3.294	.001
Perceived benefits of maternal SCB during pregnancy	0.89	.074	.072	1.207	.229
Knowledge of maternal SCB during pregnancy	.276	.137	.110	2.029	.044
Constant (a) = 42.54					

Note: R^2= .253; Adjusted R^2 = .242

Table 23 Stepwise multiple regression between the predictive factors and maternal SCB during pregnancy (n= 263).

Predictors	**B**	***SE***	**Beta**	**t**	***P***
Perceived self-efficacy in maternal SCB during pregnancy	.170	.024	.391	7.022	.000
Social support satisfaction	.285	.079	.202	3.608	.000
Knowledge of maternal SCB during pregnancy	.277	.137	.110	2.029	.044
Constant (a) = 42.54					

Note: R^2= .249; Adjusted R^2 = .240

Table 23 shows that perceived self-efficacy in maternal SCB during pregnancy, social support satisfaction, and knowledge of maternal SCB during pregnancy combined accounted for 25% (R^2 = .249) of the variation of maternal SCB during pregnancy. The strongest predictor of maternal SCB during pregnancy was perceived self-efficacy in maternal SCB during pregnancy (Beta =.391), followed by social support satisfaction (Beta= .202) and knowledge of maternal SCB during pregnancy (Beta = .110). An equation to predict the self-care behaviors by these mean score as follow:

Maternal SCB during pregnancy = 42.54 + .170 (Perceived self-efficacy in maternal SCB during pregnancy) + .285 (Social support satisfaction) + .277 (knowledge of maternal SCB during pregnancy)

The model of maternal SCB during pregnancy shows, increase 1 score of perceived self-efficacy in maternal SCB during pregnancy can increase maternal SCB during pregnancy by .170, increase 1 score of social support satisfaction can increase maternal SCB during pregnancy by .285, and increase 1 score of knowledge of maternal SCB during pregnancy can increase maternal SCB during pregnancy by .277.

Discussion

The purpose of this study was to explore predictive factors (parity, gestational age, ANC number, health problems, income, age, educational level, knowledge of maternal SCB during pregnancy, perceived benefits of maternal SCB during pregnancy, perceived barrier to maternal SCB during pregnancy, perceived self-efficacy in maternal SCB during pregnancy, and social support satisfaction) in the Garut District. In this section the demographic characteristics and maternal SCB during pregnancy, the relationship between independent variables and self-care behaviors, as well as strengths and limitations of the study will be discussed.

1. The demographic characteristics and maternal SCB during pregnancy in Garut District

The findings showed that all pregnant women had finished a formal education of at least elementary school level. Although the participants' educational level differed, more than half of them have a fair and good level of knowledge of maternal SCB during pregnancy. Approximately 80% of participants had moderate and good levels in perceiving the benefits of maternal SCB during pregnancy. Results from the correlation showed that their perception did not seem to be influenced by their educational levels. The perceived barriers to maternal SCB during pregnancy in the majority of this group were low (98.9% of the participants).

It was shown that maternal SCB during pregnancy generally was on fair or good level (95.8%). This unexpectedly high percentage of SCB deserves particular interest, when considering the variation in the educational background of the sample group (elementary to university) and their disadvantageous financial conditions, with 65.4 % of them belonging to the lowest level of income (IDR less than 1,500,000). As presented in Table 18, only 4.2 % pregnant women showed a poor level of maternal SCB during pregnancy. It showed that the maternal SCB during pregnancy level in this study were more influenced by other factors than educational and income level. The factors that more influenced maternal SCB during pregnancy in this study were their knowledge in maternal SCB, perceptions, and social support satisfaction.

As shown in the tables 7, 10, 13, and 16 only 20.5% had a poor level of perceived benefits of maternal SCB during pregnancy, approximately 99% of the participants had a low level of perceived barriers to maternal pregnancy, 16.7% were lowly confident in self-efficacy in maternal SCB during pregnancy, and only 3.8% had a low level of social support satisfaction. Pender *et al*. (2011) explained that perceived benefits, perceived barriers, perceived self-efficacy, and social support involve as significant factors that might influence behavior and factors that easily to change by intervention.

A study in Thailand carried out by Chayatab (2006) found that 42.5% of the participants suffered from anemia. In this study, approximately 21% of the pregnant women suffered from anemia. This percentage was below the rate reported by the Garut HD (2013b) where 45 percent of the pregnant women suffered from anemia. As this report pointed out for the years 2010 to 2012, a considerable percentage of pregnant women did not follow the recommendations to consume iron pills during pregnancy, which otherwise could have significantly improved their blood. According to MoH Indonesia (2009) and WHO (2001), consuming iron pills, vegetables and fruits as well as avoiding tea and coffee during meals are beneficial to prevent anemia during pregnancy. Similarly, in the present study, self-care behavior of the pregnant women was not consistent enough to prevent anemia. As the data shows, only 55.9 % of the participants never drank tea or coffee during meals, 1.9 % of the participants never ate vegetables and fruits, and only 21.7% participants regularly consumed iron supplements as suggested by the health services. These practices might be due to a lack of self-care knowledge (see table 6). While only 22.4% knew that consuming tea and coffee during meals can disturb nutrient absorption, 30.4% of the participants did not know that anemia can be prevented by consuming a sufficient amount of vegetables and fruits. An astounding majority of 66.2 percent did not know the benefits of consuming at least 90 iron tablets during pregnancy.

2. Relationship between independent variables and maternal SCB during pregnancy

2.1 Relationship between personal factors (parity, gestational age, health problems, ANC number, income, age, educational level, knowledge of maternal SCB during pregnancy) and maternal SCB during pregnancy.

This study revealed that various factors had no significant correlations with self-care behavior among pregnant women in this group ($p>0.05$). These included parity, gestational age, and health problems. The finding was in line with Lin *et al*. (2009) who found that the gestational age, parity and maternal health problems of 172 pregnant women aged at least 18 had no significant association with the lifestyle of pregnant women ($p> 0.05$) in Taiwan. The findings were also supported by Larranaga *et al*. (2013), who similarly stated no correlation between these factors and the self-care behavior ($p>0.05$) of pregnant women in Spain. However, Pender *et al* (2011) stipulated that individual characteristics influence behaviors. In this study, as explained above, pregnant women' experience more influence their SCB during pregnancy.

The results of this study indicate that the number of ANC visits was not significantly related to self-care behavior in general, which, however, contradicts a study by Sen *et al.* (2012), who found the frequency of ANC visits was related to health practices of pregnant women in Turkey ($p<0.01$). This could be due to the fact that all pregnant women attended ANC clinic and received the same health information disregarding the frequency of their visit. As stated in Sen *et al*. (2012), adequate prenatal care can increase the pregnant women's awareness about their health practices. Therefore, many participants in this study might have had an increased awareness about self-care practices due various ANC numbers during previous pregnancies.

The findings furthermore point out that income was not significantly associated with self-care behaviors. This was in line with Thaewpia *et al*. (2012), who found that income had no relationship with health promoting behavior (self-

actualization, health responsibility, exercise, nutrition, interpersonal support and stress management) of pregnant women aged more than 34 in Thailand ($p>0.05$). On the contrary, Kavlak *et al*. (2012) found that in Turkey the monthly income was related to pregnant women's lifestyle (self-actualization, health responsibility, exercise, nutrition, interpersonal support and stress management) ($p<001$). One possible explanation for the lack of influence of income on the self-care behavior could be most participant found had less and zero income. They might rely their daily living needs to other family members, thus make they can take decision to their self-care behaviors.

Likewise, the results of the Garut study do not back up a significant relation between maternal age and self-care behavior of the participants ($p>0.05$). This finding corresponds to the study by Lin *et al*. (2009), who found that in Taiwan the age of pregnant women aged between 13 to 21 years was not associated with their behavior during pregnancy ($p>0.05$). This can be explained that the majority of participants were young adulthood, which is in the transition period to adulthood. In this transition period, this group needs supports such as from parent and community to maintain their health status (Pender *et al*., 2011).

This study did not find a significant correlation between the educational level of pregnant women in Garut and their self-care behavior during pregnancy. This result is in contradiction to various recent studies such as Lin *et al*. (2009), Larranaga *et al*. (2013), and Onat and Aba (2014). Lin *et al*. (2009) and Larranaga *et al*. (2013) who found that educational level was correlated with self-care behavior of pregnant women ($p<0.001$ and $p< 0.01$, respectively). Onat and Aba (2014) found that level of education of pregnant women in Turkey was correlated with health promoting lifestyle (health responsibility, physical activity, nutrition, psychological wellness, interpersonal relationship, stress management) ($p<0.05$). In the sample group from Garut, however, the knowledge of self-care was mostly (48.7%) on a moderate level, independent of their differing educational background, which could account for the missing influence of the educational background on the self-care behavior.

In addition, knowledge of self-care was weakly associated with self-care behaviors during pregnancy in this study. The finding was in line with Panthumas *et al*. (2012), who found that knowledge of self-care of Thai teenager had only weak positive correlations with self-care behavior during pregnancy ($r=0.28$; $p<0.001$). It can be explained that knowledge is needed by pregnant women to perform self-care behaviors correctly (Panthumas *et al*., 2012).

2.1 Relationship between perceived benefits of maternal SCB during pregnancy and maternal SCB during pregnancy

The findings indicate that perceived benefits of maternal SCB during pregnancy have a significant relationship with self-care behavior during pregnancy. This result is supported by the studies in Thailand. Thaewpia *et al*. (2012) found that the perceived benefits of health promoting behaviors related to the health promoting behaviors of pregnant women aged 35 or more ($r=.375$, $p<0.01$). Panyapisit (2002) found that perceived benefits of health promoting behaviors of mother who experiencing preterm delivery related to health promoting behaviors (health responsibility, physical activity, nutrition, interpersonal relation, spiritual growth, stress management) during pregnancy ($r=.619$, $p<0.001$). As explained by Pender *et al*. (2011), perceived benefits can enhance the commitment to engage behaviors directly or indirectly.

2.2 Relationship between perceived barriers to maternal SCB during pregnancy and maternal SCB during pregnancy

The finding in this study indicates that the perceived barrier to self-care did not significantly correlate with self-care behavior during pregnancy. This study was in line with Thaewpia *et al.* (2012). Thaewpia *et al*. (2012) found that perceived barriers to health promoting behaviors (HPB: health responsibility, physical activity, nutrition, psychological wellness, interpersonal relationship, stress management) was not significantly related to HPB of pregnant women aged 35 or more in Thailand ($r=0.161$; $p>0.05$). One possible reason for the deviating results in Garut could be that most participants (98.9%) in this group perceived no barriers to maternal SCB during

pregnancy. Besides that, most of the participants (83.3%) have high and moderate levels of perceived self-efficacy in self-care behaviors. As explained by Pender *et al*. (2011), perceived self-efficacy indirectly effect perceived barrier in health-promoting behaviors, higher of perceived self-efficacy influence lowering of perceived barriers.

2.3 Relationships between perceived self-efficacy in maternal SCB during pregnancy and maternal SCB during pregnancy.

This study shows that perceived self-efficacy in self-care was significantly and moderately associated with self-care behavior during pregnancy in this study ($r=0.438$; $p<0.01$). This was supported by previous studies in Thailand. Perceived self-efficacy was related to pregnant women self-care and health promoting behaviors during pregnancy, teenager or older (Panthumas, 2012; Thaewpia *et al*., 2012). Panthumas *et al*. (2012) found that perceived self-efficacy in self-care among pregnant teenagers was moderately associated with self-care behaviors during pregnancy ($r=0.47$; $p<0.001$). Thaewpia *et al*., (2012) also found a moderate correlation between self-efficacy and health promoting behaviors (HPB) in pregnant women aged 35 and more ($r=613$; $p<0.01$). As stated by Lin *et al*. (2009) pregnant women who have higher perceived self-efficacy scores are more frequent practicing health promoting lifestyle than who have lower of perceived self-efficacy (Lin *et al*., 2009). Perceived self-efficacy enhances personal expectation and commitment to influence the action (Pender *et al*., 2011)

2.4 Relationships between social support satisfaction and maternal SCB during pregnancy

The finding indicated that social support satisfaction was significantly and moderately related to self-care behavior during pregnancy ($r=0.312$; $p<0.01$). This is in line with Panthumas *et al*. (2012), who found among Thai primigravida teenagers a significant and moderate correlation between the perceived social support from family and self-care during pregnancy ($r=0.34$; $p<0.001$). Also Thaewpia *et al*. (2012) found a significant relationship between social support and health promoting behavior among pregnant women aged more than 34 years ($r=0.534$; $p<0.01$). These studies

seem to support the general assumption that health habits and behavior can be enhanced if pregnant women perceived and receive sufficient social support (Lin *et al.*, 2012). As stated by Armstrong and Pooley (2005), pregnant women need multiple supporting resources from other pregnant women or new mothers and health care professional as a guide to ensure they are in good health condition. Besides that, Neamsakul (2008) explained that different support resources during pregnancy convince pregnant women to accept their motherhood.

2.5 Predictive factors of self-care behaviors during pregnancy

This study shows that perceived self-efficacy in self-care, social support satisfaction, and knowledge of self-care were found to predict 24.9% of the variance in pregnant women's self-care behavior during pregnancy. This finding was similar to prior studies which found self-efficacy and social support predicted women's health promoting behaviors among Thai pregnant women aged more than 34 years (Thaewpia *et al*. 2012); Perceived social support from family and knowledge of self-care behaviors also predicted (25%) of the variance in self-care behaviors during pregnancy in Thai Primigravida teenagers (Panthumas *et al*. 2012). Perceived self-efficacy was included as a predictor of health promoting behavior of pregnant women in southern Taiwan (Lin *et al.*, 2012). The 75.1% residual of pregnant women's self-care behaviors during pregnancy in this study might be explained by other factors within the theoretical framework of Pender's Health Promotion Model such as self-esteem, self-motivation, and perceived health status as factors that can be modified.

3. Strength of the study

This study contributes to the existing literature by determining factors predicting maternal SCB during pregnancy, since there are few studies focusing on maternal self-care behaviors during pregnancy in this district.

4. Limitation of the study

The limitations of the present study are:

4.1 This study uses a cross-sectional design, the correlations among variables does not imply the causal relations among these variables. Due to the complex nature of the correlations and potential cause-effect relations, these relations should be investigated by further studies.

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4.2 Data collection used self-administrated questionnaire where the participants could choose to fill out the questionnaire while the researcher/RAs was waiting for them or to take the forms home and hand them in another day. These varying conditions could lead to biased responses.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study focused on factors predicting maternal SCB during pregnancy in Garut District. More than 20% of pregnant women in Garut district had anemia. The factors such as perceived self-efficacy in maternal SCB during pregnancy, social support satisfaction, and knowledge of maternal SCB during pregnancy were predictors of the overall maternal SCB during pregnancy. The perceived benefits of maternal SCB during pregnancy were significantly associated with but did not predicting maternal SCB during pregnancy. Other factors that were not significantly associated with maternal SCB during pregnancy included parity, gestational age, health problems, ANC number, income, age, educational level and perceived barriers to maternal SCB during pregnancy.

Recommendations

Based on the results and limitations, there were some recommendations as follow:

1. Nursing practice

1.1 As the results of this study showed that most women were not convinced of the benefits of regular physical activity during pregnancy, community nurses should emphasize these benefits and encourage the pregnant women to be physically active. Additionally, health centers could organize regular courses for pregnant women, such as pregnancy exercise or yoga.

1.2 Regarding the maternal SCB, community nurses in the Garut district should try to improve maternal SCB during pregnancy. Particular attention should be paid to stress management.

1.3 Community nurses should also provide information about maternal SCB during pregnancy to improve the pregnant women's knowledge that might enhance their self-care behavior or habits during pregnancy. In order to prevent anemia in pregnant women, community nurse should encourage maternal SCB during pregnancy by enhancing maternal knowledge of the disadvantages of consuming tea and coffee during meals, the advantages of eating fresh vegetables and fruits, as well as consuming at least 90 iron tablets during pregnancy.

1.4 To prevent anemia, community nurses should promote perceived self-efficacy in maternal SCB during pregnancy, such as eating more lean meat or eggs, consuming at least 5 cups of fruits and vegetables per day, avoiding consume tea and coffee during meals, and increasing intake of iron supplements. Regarding perceived self-efficacy in the stress management domain, community nurse should train pregnant women how to be relaxed and provide them to avoid feeling lonely by join mother class.

1.5 This study –as well as some related studies before– clearly confirms the vital importance of varied social support from husbands, family members, health care providers, and the community. Nurses should therefore check upon and ensure supportive resources (husbands, family members, mother/in law, and community member) for the pregnant women in their community.

2. Nursing education

Regarding maternal and child problems in the Garut district, maternal SCB during pregnancy concepts should be included in the maternity nursing curriculum. The relevant factors investigated in this study should be promoted to improve pregnant women's self-care behaviors.

3. Research

To achieve better understanding, it might be more beneficial to include other variables that were not analyzed in this study, such as self-esteem and perceived

health status. As stated by Pender *et al*. (2011), when model involved many factors, the variation of model will ranged higher than a few factors. Self-esteem can increase positive personal feeling that increasing health function (Pender *et al*., 2011; p 204). Besides that, intervention study should focus more on perceived self-efficacy, social support satisfaction, and knowledge to enhance self-care practices of pregnant women. In order to limit the bias on the result, data collection procedure is same to all participants.

LITERATURE CITED

Annesi, J.J. 2011. Self-regulatory skills usage strengthens the relations of self-efficacy for improved eating, exercise, and weight in the severely obese: toward an explanatory model. **Behavioral Medicine** 37 (71–76).

American college of obstetricians and gynecologist (ACOG). 2002. Exercise during pregnancy and the postpartum period. **Obstet Gynecol** 99 (171-173)

American College of Sports Medicine [ACSM], 2014. **Exercise during pregnancy**. Available Source: http://www.acsm.org/docs/current-comments/exerciseduringpregnancy.pdf?sfvrsn=4. Cited on 4 June 2014.

Amrstrong, T.M. and J.A Pooley. 2005. Being pregnant: A qualitative study of women's lived experience of pregnancy. **Journal of Prenatal and Perinatal and Health** 20(1).

Bandura, A. 1997. **Self-efficacy the exercise of control**. W.H. Freman Company. New York.

Becker, H., A. Stuifbergen, H. Oh, and S. Hall. 1993. Self-rated abilities for health practices: A health self-efficacy measure. **Health Values** 17(42-55).

Becker, M.H. 1974. **The health belief model and personal health behavior**. Society for public health education. San Francisco.

Bloom, B.S.1956. **Taxonomy education objectives: the classification of educational goals by a committee of college and university examiners**. Longman. New York.

Brewer, N.T., G.B. Chapman, F.X. Gibbons, M. Gerrard, K.D McCaul, and N.D. Weinstein. 2007. Meta-Analysis of the relationship between risk perception and health behavior: the example of vaccination. **Health Psychol** 26 (136-45).

Bricker, J.B., J. Liu,B. A. Comstock, A. V. Peterson, K.A Kealey, and P.M. Marek. 2010. Social Cognitive Mediators of Adolescent Smoking Cessation: Results from a Large Randomized Intervention Trial. **Psychol Addict Behav** 24(436-45).

Butterworth, M.K. 2009. **Knowledge, perception, and practices: mosquito-borne disease transmission in South Virginia**. Thesis master of science in geography. Virginia Politechnic Institute and state University

Bourjeily, G., C.A. Raker, M. Chalhoub, and M.A. Miller. 2010. Pregnancy and fetal outcomes of symptoms of sleep-disordered breathing. **Eur Respir J** 36 (849–855).

Brown, L.S. 2011. **Nutrition requirements during pregnancy**. Jones and Bartlett. Publisher. USA.

Brown, M.A. 1986. Marital support during pregnancy. **JOGNN** (475-483).

Burke, E. 2014. **The Health Belief Model**. Available source: http://www.iccwa.org.au/useruploads/files/soyf/2013_resources_videos/the_health_belief_model.pdfevan_burke.pdf. cited on 30 March 2014.

Burns, N. and S.K. Grove. 2013. **The Practice of Nursing Research: Appraisal, Synthesis, and Generation of Evidence (17th Edition)**. Saunders Elsevier Inc. United States of America.

Burkhart, L. 2014. **Proper sleeping ergonomics**. Available source: http://www.cleveland.edu/media/cms_page_media/667/SleepErgonomics.pdf. Cited on 9 June 2014.

Calaghan, D. 2006. Basic conditioning factors' influences on adolescents' healthy behaviors, self-efficacy, and self-care. **Issues in Comprehensive Pediatric Nursing** 29 (191–204).

Calheiros, A.A.P., D.D.O. Grijo, E.O.M.A Rodrigues, F.N.A. Carvalho, S.D.C. Vilela, E.P.R.C. Leite, and M.M.D.J Silva. 2013. Factors those interfere in the quality of sleep of pregnant women in the second and third gestational trimester. **J Nurs UFPE on Line** 12 (6808-13).

Catanzo, R. and R. Artal. 2008. **Physical activity and exercise in pregnancy**. Humana Press. Totowa, NJ.

Centers for Disease Control and Prevention (CDC). 2014. **Pregnancy Complications**. Available Source: http://www.cdc.gov/reproductivehealth/maternalinfanthealth/pregcomplications.htm. Cited on 1 June 2014.

Chayatab, S. 2006. **Self-care behavior and selected factors affecting outcomes of pregnancy in adolescent mothers**. Thesis. Faculty of Graduate Studies. Mahidol University.

Chiolero, A., P. Brovet, and F. Paccaud. 2005. Association between maternal smoking and low birth weight in Switzerland: the EDEN study. **Swiss Med Wkly** 135 (525-530).

Cogswell, M. E., I. Parvanta, L. Ickes, R. Yip, and G.M. Brittenham. 2003. Iron supplementation during pregnancy, anemia, and birth weight: a randomized controlled trial. **Am J Clin Nutr**. 78 (773-81).

Cohen, W.R. 2000.C**omplications of pregnancy**. Lippincot Williams and Wilkins. Philadelphia.

Crawley, H. 2013. E**ating well in pregnancy a practical guide to support teenagers**. First Steps Nutrition Trust. London.

Dutki, M. 2010. **Male involvement in the prevention of mother to child transmission of HIV (PMTCT) program in Kayunga District.** Available source: http://musphcdc.ac.ug/files/pdf/Mary_Dutki.pdf. cited on 31 April 2014.

EFSA (European Food Safety Authority). 2010. Scientific opinion on dietary reference values for water. **Efsa Journal**. 8(1-48).

Ekhtiari S.Y., D. Shojaeizadeh, A.R. Foroushani, F. Ghofranipour, and B. Ahmadi. 2013. The Effect of an Intervention Based on the Precede-Proceed Model on Preventive Behaviors of Domestic Violence Among Iranian High School Girls. **Iran Red Cres Med J**. 15 (21-8).

Facco, F.L., J. Kramer, K.H. Ho, P C. Zee, and W.A. Grobman,2010. Sleep Disturbances in Pregnancy. **Obstet Gynecol** 115(77–83).

Fernandez, L.E. and A. Newby. 2010. Family support and pregnancy behavior among women in two border Mexican Cities. **Frontera Norte** 22 (7-34).

Foxroft K.F., I.J. Rowlnad, N.M. Byrne, H.D. Mclntyre, L.K. Callaway. 2011. Exercise in obese pregnant women: The role of social factors, lifestyle and pregnancy symptoms. **BMC Pregnancy and Childbirth** 11(1-7).

Glanz, K. B.K. Rimer, and K. Viswanath. 2008. **Health behavior and health education: Theory, research, and practice**. John Wiley and Son. Inc. United States of America.

Harvard Medical School. 2014. **Getting a good night's sleep during pregnancy**. Available source:

http://www.health.harvard.edu/newsweek/Getting_a_Good_Nights_Sleep_During_Pregnancy.htm. Cited on 8 June 2014.

Harvey J. N. and V. L. Lawson. 2009. The importance of health belief models in determining self-care behavior in diabetes. Diabet. Med. 26(5–13).

Health Department of Garut (HD of Garut). 2013a. **Health Development.** Garut, Indonesia.

HD of Garut. 2013b. **Garut regency health profile in 2012**. Garut, Indonesia.

HD of Garut. 2013c. **Health development of Garut District 2008-2012**. Garut, Indonesia.

Henry, G.T., 1990. Sample size. **Sage Publication, Inc**. Thousand Oaks.

Howat, P., S. Jones, M. Hall, D. Cross, and M. Stevenson. 199.7. The Precede-Proceed model: application to planning a child pedestrian injury prevention program. **Injury Prevention** 3 (282-287).

International Food Information Council (IFIC) Foundation. 2009. **Healthy Eating During Pregnancy**. Available Source: http://www.foodinsight.org/Content/3651/RevisedHealthyEatingPregnancy809.pdf Cited on 25 May 2014.

International Food Information Council (IFIC) Foundation. 2009. **Healthy Eating During Pregnancy**. Available Source: http://www.foodinsight.org/Content/3651/RevisedHealthyEatingPregnancy809.pdf Cited on 25 May 2014.

Hawkins JW., S. Cynthia, C. Alice, C., M.C. Christina, and O.R. Kathleen. 2010. Women's reported self-care behaviors during pregnancy. **Health Care for Women International** 19 (529-538).

Kapadia, F., L.B. Finer, and E. Klukas. 2011. Associations between perceived partner support and relationship dynamics with timing of pregnancy termination. **Womens Health Issues** 21 (8-13).

Kavlak, O., S.U. Atan, A. Sirin, E. Sen, S.E. Guneri, and H.Y. Dag. 2013. Pregnant Turkish women with low income: their anxiety, health promoting lifestyle, and related factors. **International Journal of Nursing Practice** 19 (507-515).

Khader, Y.S., N. Al-Akor, I.M. AlZubi, and I. Lataifeh. 2011. The association between second hand smoke and low birth weight and preterm delivery. **Matern Child Health J** 15 (354-459).

Khanal, V., Y. Zhao, and K. Sauer. 2014. Role of antenatal care and iron supplementation during preganancy in preventing low birth weight in Nepal: comparison of naional surveys 2006 and 2011. **Archives of Public Health** 72 (1-10).

Kost, K., D.J. Landry, and J.E. Darroch. 1998. Predicting maternal behaviors during pregnancy: does intention status matter?. **Family Planning Perspectives** 30 (79-88).

Kramer, M.S. 1987. Determinant of low birth weight: methodological assessment and meta-analysis. **Buletin of the WHO** 65 (663-737).

Larranaga, I., L.S. Marina, H. Begiristain, M. Machon, M. Vrijheid, M. Casas, A. Tardon, A.F. Somoano, S. Llop, C.L.R. Bernal, and M.F. Fernandez. 2013. Socio-economic inequalities in health habits and self-care du ring pregnancy in Spain. **Matern Child Health J** 17 (1315-1324).

Lin, Y.H., E.M. Tsai, T.F. Chan, F.H.Chou, and Y. L. Lin. 2009. Health promoting lifestyles and related factors in pregnant women. **Chang Gung Med J** 32(650-61).

Lizewski, L. and Maguire, K. 2010. **The health belief model**. Wayne State University. Available Source: http://lawrencelizewski.com/attachments/File/HBM.pdf

Long, H., J.M. Yi, P.L. Hu, Z.B. Li, W.Y. Qiu, F. Wang and S. Zhu. 2012. Benefits of Iron supplementation for low birth weight infants: A systematic review. **MC Pediatrics** 12(1-11).

Lopez, M.L. and L. Cooper. 2011. **Social support measures review**. National Center for Latino child and family research. Los Angeles. Available source: http://www.first5la.org/files/SSMS_LopezCooper_LiteratureReviewandTable_02212011.pdf cited on 27 May, 2014.

Ministry of Health (MoH) of Indonesia. 2009. **Indonesia Health Profile 2008**. Jakarta. MoH of Indonesia.

Ministry Of Health (MoH) of Indonesia. 2013a. **Basic Health Research 2013**. Jakarta. MoH of Indonesia.

MoH of Indonesia. 2013b. **Indonesian Demographic and Health Survey 2013**. Ministry of Health August. Jakarta.

MOH of Indonesia. 2013c. **Presentation of the Results Principles Health Research 2013 (translate)**. Available source: www.depkes.go.id. Cited on 31 March 2014

MacMullen,N.J., S. Telleen, M. Ismail, L.F. Samson, and P. Jones. A longitudinal study of knowledge, attitudes and self-efficacy in pregnant asthmatics**. Open Journal of Nursing** 3 (524-531).

Miyake, Y., K. Tanakan, H. Okubo, S. Sasaki, and M, Arakawa. 2014. Alcohol consumption during pregnancy and birth outcomes: the Kyushu Okinawa maternal and child health study. **BMC Pregnancy and Childbirth** 14 (1-7).

Morton, S., K.R. Mc Leroy, and M.L. Wendel. 2012. **Behavior theory in health promotion practice and research**. Jones and Bartlett Learning. United States of America

Naing, L., T. Winn, and B.N. Rusli. 2006. Practical Issues in Calculating the Sample Size for Prevalence Studies. **Archives of Orofacial Sciences** 1 (9-14).

Nascimento, S.L., F.G. Surita, and J. G. Cecatti. 2012. Physical exercise during pregnancy: a systematic review. **Curr Opin Obstet Gynecol** 24 (000–000).

National Health Service (NHS) United Kingdom. 2009. **The pregnancy book**. Available Source: http://www.tamesideandglossopccg.org/uploaded_files/files/Your_Health/Childrens_Health/The_Pregnancy_Book.pdf. Cited on 31 May 2014.

National Population and Family Planning Board. 2013. **Indonesia Demographic and Health Survey 2012**. MoH of Indonesia. Indonesia

Neamsakul, W. 2008. **Unintended Thai Adolescent Pregnancy:A grounded Theory Study**. Doctor of philosophy. Graduate Divission. University of California, San Francisco.

Newell, M., N. Modeste, H. H. Marshak, and C. Wilson. 2009. Health beliefs and the prevention of hypertension in a black population living in London. **Ethnicity & Disease** 19 (35-41).

Nurhayani, N.M. Reskiani, Balqis, and Darmawansyah. 2014. The correlation between behavior of pregnant women and antenatal care utilization at Antang Primary Health Care. **Int.J.Curr.Res.Aca.Rev.** 2(20-26).

Onat, G and Y.A. Aba. 2014. Health-promoting lifestyles and related factors among pregnant women. **Turk J Public Health** 12 (69-79).

Orem, D.E. 2001. **Nursing concept of practice sixth edition**. USA. Mosby inc.

Ornella L., S.M., Anoh, P. Gomez, and S. Munjanja. 2014. **Antenatal Care**. Available source: http://www.who.int/pmnch/media/publications/aonsectionIII_2.pdf. Retrieved 11 January 2014.

Panthumas, S., W. Kittipichai, S. Pitikultang, and K. Chamroonsawasdi. 2012. Self-care behaviors among Thai Primigravida Teenagers. **Global Journal of Health Science** 4(139-147).

Pender, N., C. Murdaugh, and M. A. Parsons. 2011. **Health Promotion in nursing practice**. Pearson. New Jersey.

Panyapisit, R. 2002. **Perceived benefits of action, perceived barriers to action, and health promoting behaviors during pregnancy of mothers experiencing preterm delivery**. Thesis. Faculty of Graduate Studies. Mahidol University.

Peng, C.Y.J., M. Harwell, S.M. Liou, and L.H. Ehman. 2003. **Advances in missing data methods and implications for ducational research**. Available source: http://www.indiana.edu/~leeehman/missrerfin.pdf

Pickens, J. 2005. **Attitude and perception**. Available source: http://healthadmin.jbpub.com/borkowski/chapter3.pdf. 47688_CH03_043_076.qxd 3/9/05 4:49 PM Page 43

Polit, D.F and C.H. Polit. 2006. The content validity index: are you sure you know what's being reported? critique and recommendations. **Res Nurs Health** 29 (489-497).

Proprietary Association of Great Britain (PAGB). 2006. **Self-care aware: joining up self-care in the NHS**. Available Source: http://www.selfcareforum.org/wp-content/uploads/2011/07/JUSCFullReport.pdf. Cited on 23 May 2014

Queensland Government. 2013. **Healthy eating during pregnancy**. Available source: http://www.health.qld.gov.au/nutrition/resources/antenatal_ngpl.pdf cited on 25 May 2013.

Raatikainen, k., N. Heiskanen, and S. Heinonen. 2007. Under-attending free antenatal care is associated with adverse pregnancy outcomes. **BMC Public Health** 7 (1-8).

Reisi M., SH. Javadzade, H. Shahnazi, G. Sharifi rad, A. Charkazi, and M. Moodi. 2014. Factors affecting cigarette smoking based on health-belief model structures in pre-university students in Isfahan, Iran. **J Edu Health Promot**.3 (1-15).

Say, L., D. Chou, A. Gemmill, O. Tunçalp, A. B. Moller, J. Daniels, A. M. Gulmezoglu, M. Temmerman, and L. Alkema 2014. Global causes of maternal death: a WHO systematic analysis. **Lancet Glob Health** 2 (e323–33)

Silva, I.D., L.D.A. Quevedo, R.A.D. Silva, Oliveira, S.S.D, and R.T. Oliveira. 2011. Association between alcohol abuse during pregnnacy and birth weight. **Rev Saude Publica** 45 (864-9).

Shumaker, S.A and A.Brownell. 1984. Toward a theory of social support: closing conceptual gaps. **Journal of Social Issues** 40 (11-36).

Sen, E., S.E. Guneri, E. Yanikkerem, A.Hadimli, O. Kavlak,A. Sirin, and A. Saruhan. 2012. Detrminant of knowledge requirements and health practices of adolescent pregnant women. **International Journal or Caring Sciences** 5 (171-178).

Simkhada, B., E.R. Teijlingen, M porter, and P. simkhada. 2007. Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature. **Journal Compilation** 61 (244-260).

Sriumporn, S. 2000. **Relationship between self-esteem, social support, selected factors and self-care behavior in pregnant adolescent**. Thesis. Faculty of Graduate Studies. Mahidol University.

Taiye, F.A.K. and A. Lartey. 2008. Antenatal care and pregnancy outcome in Ghana, the importance of women's education. **African Journal of food agriculture nutrition and development** 3 (291-303).

Tarkang, E.E. 2014. Factors associated with perception of risk of contracting HIV among secondary school female learners in Mbonge subdivision of rural Cameroon. **The Pan African Medical Journal** 17 (1-9).

Thaewpia,S., M. J. Clark, L.C. Howland, and K.S. James. 2012. Factors predicting health promoting behaviors among older pregnant Thais. **Pacific Rim Int J Nurs Res** 16(113-123).

Thanomroop, W. 2000. **Health promoting behaviors in pregnant women: A study of perceived benefits and barriers to action**. Thesis. Faculty of Graduate Studies. Mahidol University.

Thitpad, C. and P. Banchonhattakit. 2012. Effects of eating behavior for pregnant women with weight gain during pregnancy in ANC clinic, tertiary hospital, Khon Kaen Province. **Srinagarind Medical Journal** 27 (347-353).

The Society of Obstetricians and Gynecologists of Canada (SOGC). 2014. **Healthy eating, exercise and weight gain-before and during pregnancy**. Available source: http://sogc.org/publications/healthy-eating-exercise-and-weight-gain-beforeand-duringpregnancy/ cited on 7 May 2014

The University of Tennessee at Chattanooga (UTC). 2013. **Theory Based Nursing Practice (TNBP**). Available Source: http://www.utc.edu/nursing/pdfs/classes/orem-handbook.pdf Cited on 24 May 2013.

Tran, T.K., K. Gottvall. H.D. Nguyen. H. Ascher, and M. Petzold. 2012. F actors associated with antenatal care adequacy in rural and urban contexts-results from two health and demographic surveillance sites in Vietnam. **BMC Health Services Research** 12 (1-10).

United Nations Children's Fund (UNICEF). 2009. **The state of the world's children 2009, maternal and newborn health**. Available source: http://www.unicef.org/sowc09/docs/SOWC09-FullReport-EN.pdf cited on 28 may 2014.

United Nations Children's Fund (UNICEF). 2012. **Maternal and newborn health**. Available sources: http://www.unicef.org/health/index_maternalhealth.html cited on 27 June 2014.

University of California San Francisco (UCSF). 2014. **Pregnancy the three trimester**. Available source: http://www.ucsfhealth.org/conditions/pregnancy/trimesters.html. Cited on 25 May 2014.

University of Maryland Meical Center. 2014. **Exercise during pregnancy**. Available source: http://umm.edu/health/medical/pregnancy/staying-healthy-during-pregnancy/exercise-during-pregnancy cited on 11 April 2014.

U.S. Department of Health and Human Services. 2010. **Douching**. Available source: http://womenshealth.gov/publications/our-publications/fact-sheet/douching.pdf. Cited on 1 June 2014.

Wang, C., S.M . O'Neill, N. Rothrock, R. Gramling, A. Sen, L.S. Achesone, W.S. Rubinstein, D.E. Nease, and M.T. Ruffin. 2009. Comparison of risk perceptions and beliefs across common chronic diseases. **Preventive Medicine** 48 (197–202)

Wahabi, H.A., R.A. Alzeidan, A.A. Fayed, A. Mandil, G. Al-shaikh, and S.A. Esmaeil. 2013. Effects of secondhand smoke on the birth weight of term infants and the demographic profile of Saudi exposed women. **BMC Public Health** 13(1-6)

Wen, L.M., V.M. Flood, J.M. Simpson, C. Rissel, and L. A. Baur. 2010. Dietary behaviors during pregnancy: findings from first-time mothers in Southwest Sydney, Australia. **International Journal of Behavioral Nutrition and Physical Activity** 7 (1-7).

Williams, L., L.B. Zapata, D. V. D'Angelo, L.Harrison. and B. Morrow. 2012. Associations between preconception counseling and maternal behaviors before and during pregnancy. **Matern Child Health J**. 16 (1854–1861).

World Health Organization. 2009. **Self-care in the context of primary health care**. Report of Regional Consultation. Available Source: http://www.searo.who.int/entity/primary_health_care/documents/sea_hsd_320.pdf. Retrieved 23 April 2014.

WHO. 2001. Healthy eating during pregnancy and breastfeeding. Available source: http://www.euro.who.int/__data/assets/pdf_file/0020/120296/E73182.pdf. Cited on 30 May 2014.

Walker, S.N and D.M. Hill-Polerecky. 1996. **Psychometric evaluation of the Health-Promoting Lifestyle Profile II**. Available source: http://www.unmc.edu/nursing/docs/HPLPII_Abstract_Dimensions.pdf

Woods, S.M., J.L Melville, Y. Guo, and A. Gavin. 2010. Psychosocial stress during pregnancy. **Am J Obstet Gynecol**. 202 (61.e1–61.e7)

Yanikkerem, E. S. Ay, and N. Piro. 2013. Planned and unplanned pregnancy Effects on health practice and depression during pregnancy. J. Obstet. Gynaecol Res. 39 (180–187).

APPENDICES

Appendix A
Participant information sheet

INFORMATION SHEET

Title of study project: "Factors Predicting Maternal Self-care Behavior during Pregnancy in Garut District, West Java, Indonesia

Principle Researcher's Name: Tantri Puspita

Position: Student in Master of Nursing Science (Family and Community) of Graduate School, Kasetsart University of Thailand

Office address: Jl. Nusa Indah No 24, Garut, West Java, Indonesia

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Participants are being invited to take part in this study. Before participant decide to participate, it is important for participant to understand about the background, objective, and procedure of this study. Please take time to read carefully the following information and do not feel hesitate to ask if there is anything unclear or if participant would like to ask more information.

The purpose of this study is to identify the main factors that affecting pregnant women on self-care behavior during pregnancy in Garut district.

The characteristics of participants in this study are women in all trimester. The participants should be able to write and read in Bahasa Indonesia. Besides that, the participants should be registered on the PHC and agree to joint in the study by signing an informed consent. Participant having high risk, hospitalized and not willing to participate are not included in the study. The reason why pregnant women invited of this study is particularly to know the relation between pregnant women factors on their self-care behavior during pregnancy in Garut District. It will be beneficial to improve maternal health as Chayatab (2006), Joellen (2010) and Kramer (1987) stated that maternal health during pregnancy is influenced by maternal self-care behaviors.

The researcher plan to enroll about 313 participants from 5 PHCs after got approval from Ethics Review Committee for Research Involving Human Research Subjects, Boromarajonani College of Nursing Nopparat Vajira (EBCNNV), permission letter from Board for National Unity, Politic and People's Protection (BNUPP) of Garut district, Department of health in Garut District and the Head of each PHC.

The researcher or research assistants will explain about the purpose, benefits, and procedure to participants. After participant understand all information of the study, participants will be asked to sign two copies of informed consent form (for participant and researcher) as an agreement that participant are willing to join the study. Next, the researcher will ask to fill the questions on the papers including participants general information (e.g , age, income, education level), self-care during pregnancy, willingness and confident on self-care, benefits of self-care and barrier of self-care, if the participants agree to participate. It will take time about 1 hour 30 minutes. Participants will be allowed to choose answer the questionnaire at first meeting or the researcher picks it up next day after the respondent finish answer the questionnaires. After the participants completed the questionnaires and give it back to the researcher, the researcher will give a souvenir as appreciation to be participant in the study.

This study will be less physical and mental harm for participant. There are no direct benefits for the participants, but the information from the participants will be benefits as a based to provided health policy and health preventing intervention of maternal self-care behavior during pregnancy in Garut district and also as references of future study that of self-care behavior of pregnant women or studies that related.

The participants are voluntary and have right to deny and/or withdraw from the study, no need to give any reason, and there will be no negative impact upon that participant from the Public Health Centre or from the researcher. Participants will still receive the health care services in public nursing home as usual. All information which is collected about participant will be kept strictly confidential. The information on the papers from the participants will be

kept in the sealed envelope in a locked file cabinet. After 2 years, the paper will be destroyed. The result of the study will be reported as total picture. Any information which could be able to identify participant will not be appeared in the study.

If participant have any further questions or would like to obtain more information participant may contact me as a principal study (Tantri Puspita), Master of Nursing Science Program, Boromarajonani College of Nursing Nopparat Vajira, affiliated institution of Kasetsart University Thailand, on following phone number +66909964046 (Thailand) or +6281320420692 (Indonesia). I can be reached at all the time. If participant are not treated as indicated in the information sheet, participant can report to the Ethics Review Committee for Study Involving Human Study Subjects, Boromarajonani College of Nursing Nopparat Vajira 681 Ramintra Road, Khannayao, Bangkok 10230, Thailand, Tel. 02-540-6500 ext 257, 246.

If participant are willing to be the participant in this study, please fill in the participant consent form. In this great opportunity I would like to thank participant for taking time to read this information sheet. The participation in this study will be highly valued and much appreciated.

Sincerely Yours

(Tantri Puspita)

Appendix B
Informed consent

Address .....
Date.....
Code number of participant.....

I who have signed here below agree to participate in this study.

Title : Factors Predicting Maternal Self-Care Behavior during Pregnancy in Garut District, West Java, Indonesia
Principle researcher's name : Tantri Puspita
Contact Address : Rabbany Regency No. H6 Garut, West Java, Indonesia
Telephone : +62-813-2042-0692
Email : tantri_undip@yahoo.co.id

I have been informed about rationale and objective of study, what I will be engaged with in details, risk/harm, and benefits of the study. The researcher has explained to me and I clearly understand with satisfaction.

I willingly agree to participate in this study and consent the researcher to response to questionnaires about 30 minutes to 1 hour. I also have the opportunity to ask questions to the researcher. The questionnaires will be stored in locked file cabinets that only researcher can access for three years and destroyed after that.

I have the right to withdraw from this study at any time as I wish with no need to give any reason. This withdrawal will not have any negative impact upon me.

The researcher has guaranteed that procedure acted upon me would be exactly the same as indicated in the information sheet. Any of my personal information will be kept confidential. Results of the study will be reported as total picture. Any of personal information which could be able to identify me will not appear in the report.

If I am not treated as indicated in the information sheet, I can report to the Ethics Review Committee for Research Involving Human research Subjects, Boromarajonani College of Nursing Nopparat Vajira 681 Ramintra road, Khannayao, Bangkok 10230, Thailand, Tel. +662-540-6500 ext 257, 246.

I also have received a copy of information sheet and informed consent form.

Sign …….. Sign ……..
(Tantri Puspita) (……)
Researcher Participant

Sign ……
(……..)
Witness

Appendix C
Questionnaires

Address .....

Date.....

Code number of participant.....

Part 1. Personal Information

Please fill in the blank or check box as appropriate.

1. Age : …… years
2. Family income a month : …… rupiah
3. Parity (include miscarriage and abortion) : ……pregnancy
4. Gestational age : …… month
5. How many times you have visited/ANC :…… times
6. Highest level of education completed:
   - ☐ No education
   - ☐ Elementary school
   - ☐ Junior high school
   - ☐ Senior high school
   - ☐ Vocational
   - ☐ Diploma
   - ☐ University (Bachelor/Master/Doctoral)
7. Have you suffered from anemia during current pregnancy
   ☐ Yes ☐ No
8. Have you suffered from hypertension during current pregnancy
   ☐ Yes ☐ No
9. Have you suffered from edema AND hypertension (preeclampsia/eclampsia) during current pregnancy
   ☐ Yes ☐ No
10. Have you suffered from diabetic mellitus during current pregnancy
    ☐ Yes ☐ No

Part 2. Knowledge of Self-Care

Please respond to the following questions by placing check mark (√) in the appropriate box below.

A: True B: False C: Do not know

No	Question	Options		
		A	B	C
	Nutrition			
1	Pregnant women should drink at least 2 Liter of water daily			
2	Drinking alcohol can damage fetal brain structure			
3	Consuming tea and coffee between and after meals cannot disturb nutrient absorption			
4	Nutritional status of pregnant women is not impact either to fetus nutritional status or their health after birth			
5	Spinach, carrots, broccoli, tomatoes, and others vegetables and fruits can prevent anemia			
6	Raw /uncooked eggs may contain of bacteria's or parasites' which harmful for the fetus			
7	Iodized salt is not beneficial for fetus			
8	Consuming high salt and sweet food increase hypertension and diabetes			
	Activity			
9	Exercise is Prohibit to women with pregnancy			
10	Pregnant women need to take a nap during day time			
	Stress management			
11	Over stress make pregnant women to trouble sleeping, headaches, loss of appetite, a tendency to overeat or other health problem affecting fetus health			
	Health responsibility			
12	Taking at least 90 iron tablets is not provide a benefits on fetal growth			
13	Health of fetal is not affected by mother inhaled air			
14	Smoking or inhaling cigarette smoke during pregnancy can cause low birth weight			
15	Rubella infection during pregnancy cannot affect fetal health			
16	Pregnant women should start Visit to ANC in the first trimester			
17	Doing dental check in the early pregnancy is not a necessity			

Part 3. Perceived Benefit

Please respond to the following questions by placing check mark (√) in the appropriate box below.

0 = strongly disagree; 1= Disagree; 2 = Agree; 3=Strongly agree

No	Perceived Benefits	0	1	2	3
	Nutrition				
1	If I drink water at least 2 liter a day, I can avoid dehydration				
2	If I eat spinach, carrots, broccoli, tomatoes, or others vegetables every day, I can prevent anemia				
3	I believe that eating meat and other protein sources can build fetal organ growth				
4	I think drinking milk can strengthen fetus bone and teeth				
	Activity				
5	I believe that exercise 30 minutes three times a week during pregnancy can keep me healthy				
6	I believe that sleeping consecutively at least 8 hours at night can avoid hypertension and diabetes				
	Stress management				
7	I think having time for rest and relaxation can help reduce stress				
	Health Responsibility				
8	If I take iron at least 90 tablets during pregnancy, I can prevent anemia				
9	I believe that fetus health can maintenance by breathing in clear air				
10	I think quitting smoking or avoid cigarette smoke during pregnancy can prevent low birth weight baby				
11	I think following the suggestion of a doctor is not enough to maintain me and my fetus health during pregnancy				
12	If I visit antenatal care (ANC), I can monitor my health and fetal condition				
13	I believe that reporting to doctors at beginning of unusual sign and symptoms can help avoid complications during pregnancy and childbirth				

Part 4. Perceived Barrier

Please respond to the following questions by placing check mark (√) in the appropriate box below.

0= strongly disagree; 1= Disagree; 2= Agree; 3=strongly agree

No	Perceived Barriers	0	1	2	3
	Nutrition				
1	If I drink milk, I will be nausea or vomiting				
2	If I eat a lot spicy food, I will get easier delivery process				
3	I believe consuming snail race or 'tutut' during pregnancy leads sleepy during delivery or delivery complication				
4	If I eat chayote squash during pregnancy, I will deliver with complication				
5	I believe that drinking at least a tablespoon of coconut oil every day since 7 month will make easier of delivery process				
6	If I consume raw yellow egg at least one a day in last month of pregnancy, I will enhance energy for delivery				
7	If I eat orange, I will delivery yellow baby				
8	I believe that eating nuts during pregnancy can impact less of breast milk production after delivery				
	Activity				
9	I think exercise everyday such as walking around will be beneficial if I did in the end of last month of pregnancy				
10	I believe that doing exercise in the early pregnancy are harmful for my womb				
	Stress management				
11	If I talk my problem to anyone, I will be humiliated				
12	I think showing love and care to other people is embarrassing				
	Health responsibility				
13	I think I am afraid of being scolded by doctors or nurses at the clinic				
14	I think doctors' instructions are difficult to follow				
15	I think It takes a very long time to go to ANC.				
16	I think transportation to distant healthcare facilities are time taken and costly				
17	I think services of ANC less of maintained of privacy				
18	If I take medicine or iron supplements from health care provider, I will have big infants and difficult delivery				
19	I think smoking is a right, so I cannot prohibit anyone smoking near me				

Part 5. Perceived Self-Efficacy in Self-care

Give (√) sign in the box required of following questions whether you are **ABLE TO PERFORM AND CONFIDENT IN PERFORMING** various health practices within the context of your lifestyle and any disabilities you may have. Read each statement and use the following scale to indicate how well you are able to do and confident in doing each of the health practices despite the obstacles or challenges you may encounter such as time constant, temptation etc., **NOT HOW OFTEN** you actually do it.

0 = Not at all; 1 = not confident; 2 = uncertain; 3 = confident; 4 = highly confident

No	Questions:	0	1	2	3	4
	Nutrition					
1	I believe I can drink water at least 2 liter every day					
2	I believe I can avoid drinking tea and coffee at least an hour before and after meals					
3	I believe I can avoid drinking alcohol					
4	I believe I can buy healthy foods					
5	I believe I can eat lean meat or egg than usual					
6	I believe I can drink a glass of milk a day					
7	I believe I can eat fruits and vegetables at least 5 cups a day					
8	I believe I can eat 3 meals a day					
	Activity					
9	I believe I can exercise 30 minutes a day at least 3times/week					
10	I believe I can keep from getting hurt when I exercise					
11	I believe I can sleep 8 hours a night					
12	I believe I can sleep or rest 1 hour during day					
	Stress management					
13	I believe I can manage stress if happen					
14	I believe I can keep myself from feeling lonely					
15	I believe I can do things that make me feel good about myself					
16	I believe I can talk to friend and family about the					

	things that are bothering me					
	Health responsibility					
17	I believe I can take iron supplement as suggestion of health care professional					
18	I believe I can avoid crowded place					
19	I believe I can brush my teeth twice a day					
20	I believe I can avoid hazard (smoke, slippery floor, high heels, etc.) to my pregnancy					
21	I believe I can quit smoking or avoid people who are smoking					
22	I believe I can watch for negative changes in my body's condition (pressure sores, breathing problems)					
23	I believe I can recognize what symptoms should be reported to a doctor or nurse					
24	I believe I can use medication as health care professional suggestion					
25	I believe I can visit ANC at least 4 times during pregnancy					
26	I believe I can avoid people with infectious diseases such as influenza, TBC, and measles					

Part 6. Social Support

The following questions are asked to find your satisfaction with support behavior from persons such as husband, mother/mother in law, family members and health provider on emotional, appraisal, informational or instrumental support. Give mark (√) in the column to the best answer of each item according to your feeling.

Highly satisfied *When you received the support you felt very satisfied*
Satisfied *When you received the support you felt moderate satisfied*
Unsatisfied *When you receive the support you felt unsatisfied*
Highly unsatisfied *When you never receive the support or you felt very unsatisfied*

No	Contents	Satisfied			
		Highly Unsatisfied	Un-satisfied	Satisfied	Highly satisfied
1	My Family members help me do house works				
2	My husband provided me sufficient and balanced meal				
3	My Family members provided me sufficient and balanced meal				
4	My Husband allow me to exercise during pregnant				
5	My mother share experience related how to take care myself during pregnancy				
6	My mother in law share experience related how to take care myself during pregnancy				
7	My mother is strengthen me in overcoming the difficulty				
8	My mother in law is listening to my complaints when I face any difficulty				
9	Health provider give me knowledge to understand my condition/ or changes of pregnancy easier				
10	Health provider convince me that I can deal with the changes condition during pregnancy				

Part 7. Self-Care Behavior during Pregnancy

These sentences below describe your behaviors during pregnancy. Read each sentences and indicate how much it is like you by putting (√) in the box that best describes you.

Never *: if you never done*

Rarely *: if you ever do but less than sometimes or 1-2 times/week*

Sometimes *: if you do occasionally or 3-4 times/week*

Often *: if you do almost every time or 5-6 times /week*

Always *: if a week you do regularly or 7 times /week*

No	Behavior	Always	Often	Some-times	Rarely	Never
Example : Clean the bath room				√		
	Nutrition					
1	Drinks 2 liter water a day					
2	Drink tea or coffee one hour before and after meals					
3	Drink alcohol					
4	Eat 3 meals a day					
5	Eat vegetables and fruits at least 5 cups a day					
6	Eat more lean meat or eggs					
7	Drink a glass milk a day					
8	Eat raw or uncooked eggs					
	Activity					
9	Work until exhausted					
10	Exercise 30 minutes a day					
11	Sleep 8 hours a night					
12	Sleep or rest 1 hour during day					
	Stress management					
13	Provide a time for rest or fun					

	Health responsibility					
14	Take medicine or iron supplement as suggestion of health care professional					
15	Stay in crowded place					
16	Smoke (cigarette or local cigarette)					
17	Stay near smoking people					
18	Visit people with infectious disease					
19	Take a bath twice a day					
20	Brush teeth twice a day					
21	Have dental check during pregnancy					

Please answer as above instruction

Never *: if you never done*

Rarely *: if you ever do a quarter time from all condition*

Sometimes *: if you ever do a half time from all condition*

Often *: if you ever do three quarter times from all condition*

Every time *: if you do all the time you get the condition*

No	**Behavior**	**Every time**	**Often**	**Some-times**	**Rarely**	**Never**
22	See the health care professional when feeling ill or unwell					

Appendix D
Approval letter

COA No. 48 / 2014

ETHICAL REVIEW BOARD

Baromarjonnani College of Nursing Nopparat Vajira

681 Ramintra Road, Khannayao, Bangkok 10230, Thailand, Tel. 02-540-6500 ext 222

Certificate of Approval The Institutional Review Board of the Baromarjonnani College of Nursing Nopparat Vajira 681 Ramintra Road, Khannayao, Bangkok Thailand, has approved the following study which is to be carried out in compliance with the International guidelines for human Research protection as Declaration of Helsinki, The Belmont Report.

Study Title: Factors Predicting to Maternal Self-Care Behavior during Pregnancy in Garut District, West Java, Indonesia.

Study Center: Indonesia

Principal Investigator: Ms. Tantri Puspita

Document Reviewed:

1. Principal Investigator (PI)
2. Proposal Version 2
3. Patient Information Sheet Version 2

The principal investigator (PI) must report the status of the project and apply for the continued Approval annually before the anniversary date of approval through out study period.

Signature..... Signature.....

(BENJAMAS SIRIKAMONSATHIAN) (SUSHEEWA WICHAIKULL)

Chairperson of Ethical Review Board Secretary of Ethical Review Board

Date of Approval: 17 September 2014

Approval Expire Date: 16 September 2015

PEMERINTAH KABUPATEN GARUT

BADAN KESATUAN BANGSA DAN POLITIK

Jalan Patriot No. 10 A Telp. (0262) 2247473 Garut 44151

Garut, 23 September 2014

No : 072 / 477 – Bakesbangpol / 2014
Lampiran : -
Perihal : *Ijin Penelitian*

Kepada :

Yth. Sdr. Kepala PKM Cibiuk,
Sdr. Kepala PKM Siliwangi,
Sdr. Kepala PKM Karangpawitan,
Sdr. Kepala PKM Talegong,
Sdr. Kepala PKM Cisewu dan
Sdr. Kepala PKM Leuwigoong
Kabupaten Garut
di
Garut

Dalam rangka membantu Penelitian Mahasiswa/i Boromarajonani College of Nursing Nopparat Vajira (BCNNV), bersama ini terlampir **REKOMENDASI PENELITIAN NOMOR : 072 / 477 – BAKESBANGPOL / 2014, TANGGAL 23 SEPTEMBER 2014 ATAS NAMA, TANTRI PUSPITA,** akan melaksanakan penelitian dengan judul *"Factor Predicting to Maternal Self Care Behaviour During Pregnancy In Garut District* (Faktor Yang Memprediksi Perilaku Perawatan Diri Ibu Selama Masa Kehamilan Di Kabupaten Garut)" Dengan mengambil lokasi di PKM Cibiuk, PKM Siliwangi, PKM Karangpawitan, PKM Talegong, PKM Cisewu dan PKM Leuwigoong Kabupaten Garut.

Demi kelancaran pelaksanaan penelitian ini, mohon bantuan dan kerjasamanya untuk membantu penyediaan data dan informasi.

Demikian atas perhatian dan kerjasamanya diucapkan terima kasih.

Badan Kesatuan Bangsa dan Politik
Kabupaten Garut
Kepala,

ASEP SUPARMAN, S.IP, M.Si.
Pembina TK.I IV/b
NIP. 19710601 199003 1 001

Tembusan, disampaikan kepada :

1. Yth. Kepala BAPPEDA Kabupaten Garut (sebagai laporan);
2. Yth. Director Boromarajonani College of Nursing Nopparat Vajira (sebagai laporan);
3. Yth. Ketua STIKes Karsa Husada Garut (sebagai laporan);
4. Arsip.

PEMERINTAH KABUPATEN GARUT

BADAN KESATUAN BANGSA DAN POLITIK

Jalan Patriot No. 10 A Telp. (0262) 2247473 Garut 44151

REKOMENDASI PENELITIAN

Nomor : 072 / 477 – Bakesbangpol / 2014

a. Dasar : 1. Peraturan Menteri Dalam Negeri Nomor 41 Tahun 2010 tentang Organisasi dan Tata Kerja Kementrian Dalam Negeri (Berita Negara Republik Indonesia Tahun 2010 Nomor 316), sebagaimana telah diubah dengan Peraturan Menteri Dalam Negeri Nomor 14 Tahun 2011 tentang Perubahan Atas Peraturan Menteri Dalam Negeri Nomor 41 Tahun 2010 tentang Organisasi dan Tata Kerja Kementrian Dalam Negeri (Berita Negara Republik Indonesia Tahun 2011 Nomor 168);

2. Peraturan Menteri Dalam Negeri Nomor 64 Tahun 2011 Tentang Pedoman Penerbitan Rekomendasi Penelitian.

b. Menimbang : Surat dari Ketua STIKes Karsa Husada Garut Nomor: 1029/STIKes-KHG/UM/IX/2014 Tanggal 20 September 2014 dan Surat dari Director Boromarajonani College of Nursing Nopparat Vajira Bangkok Nomor : 0203.09327/1199 Tanggal 18 September 2014.

KEPALA BADAN KESATUAN BANGSA DAN POLITIK KABUPATEN GARUT, memberikan rekomendasi kepada :

a. Nama Peneliti : **TANTRI PUSPITA**
b. Alamat Peneliti : Kp. Cikapol RT.002 RW.014 Ds/Kel. Sindangsari Kecamatan Leuwigoong Kabupaten Garut.
c. Untuk : Melaksanakan Penelitian
   1. Judul Penelitian : *"Factor Predicting to Maternal Self Care Behaviour During Pregnancy in Garut District* (Faktor Yang Memprediksi Perilaku Perawatan Diri Ibu Selama Masa Kehamilan Di Kabupaten Garut)"
   2. Tujuan Penelitian : Penyusunan Tesis
   3. Lokasi/Tempat Penelitian : PKM Cibiuk, PKM Siliwangi, PKM Karangpawitan, PKM Talegong, PKM Cisewu dan PKM Leuwigoong Kab. Garut.
   4. Tanggal/Lama Penelitian : 23 September 2014 s/d 23 Nopember 2014
   5. Bidang/Status Penelitian : Kesehatan / Perorangan
   6. Nama Penanggung Jawab : H. Engkus Kusnadi, S.Kep., M.Kes.
   7. Anggota Pelaksanaan Penelitian : -
d. Catatan :
   1. Mengumpulkan hasil pelaksanaan Penelitian setelah selesai Pelaksanaan Penelitian ke Badan Kesatuan Bangsa dan Politik Kabupaten Garut;
   2. Menjaga dan menjunjung tinggi norma atau adat istiadat dan Kebersihan, Ketertiban, Keindahan (K3) masyarakat setempat dilokasi pelaksanaan Penelitian;
   3. Tidak melakukan hal-hal yang bertentangan dengan hukum dan atas dasar adat istiadat di lokasi Pelaksanaan Penelitian atau sesuatu yang dapat meresahkan masyarakat dan desintegrasi bangsa.

Demikian rekomendasi ini dibuat untuk digunakan seperlunya.

Garut, 23 September 2014
Badan Kesatuan Bangsa dan Politik
Kabupaten Garut
Kepala,

ASEP SUPARMAN, S.IP, M.Si.
Pembina TK.I IV/b
NIP. 19710601 199003 1 001

Appendix E
Statement letters

ELRA TRANING AND CONSULTANCY
TRANSLATION SERVICE DIVISION
www.elra.or.id email:elra4universe@gmail.com

CERTIFICATE OF TRANSLATION

I hereby that I have translated the document from English to Bahasa Indonesia for Ms. Tantri Puspita attached to this certificate using the very best of my knowledge while respecting the original content faithfully as an authorized translator of ELRA.

Bandung, October 1, 2014

Adhia Virginia

Representative Office:
Jl. Indramayu Kav.52 Antapani - Bandung (phone) 02270912801

Head office:
Jl.Desa Cipadung no. 09 Cibiru-Bandu 40614

YAYASAN
ENGLISH BEST FOUNDATION
ENGLISH COM
Denpasar, Bali – Indonesia
Jl. Mahendradatta No. 96 Padangsambian
Denpasar Barat, Bali – Indonesia
Telp. (0361) 2786029 email: ec.eduenglish@yahoo.com English Com Bali

DECLARATION LETTER OF TRANSLATION

To Whom it May Concern

I, the undersigned

Name : I MADE SUWITRA, S.S., M.HUM

Profession : English Teacher/Lecturer
Indonesian Teacher for Foreigners, Translator & Interpreter at English Best Foundation (English Com Bali), Denpasar –Bali, Indonesia

Education : Master's in Linguistics, Postgraduate Studies, Udayana University (2010)

hereby declare that it is true that I was appointed as an authorized translator for Ms. Tantri Pusnita. The letter that I have translated from Indonesian to English is: **Questionnaire** for the Research, title: **Factors Predicting Maternal Self-care Behaviors During Pregnancy in Garut District, West Java, Indonesia.**

I also hereby guarantee that to the best of my knowledge and belief the translation of the questionnaire is a true and correct English Language Version. Thus, this Declaration Letter is truly drawn up and it can be applied where necessary.

Denpasar -Bali, 3 October 2014
Truly Yours,

I MADE SUWITRA, S.S., M.HUM.

Appendix F
Permission for using questionnaires

Perceived Benefits of Self-Care, Perceived Barriers to Self-Care, and Self-Care Behaviors during Pregnancy Questionnaires

บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล
๒๙/๒๙ ถ.พุทธมณฑลสาย ๔ ศาลายา นครปฐม ๗๓๑๗๐
โทร. ๐๒๔๔๑-๔๑๒๙ ต่อ ๑๐๙-๑๑๑ โทรสาร ๐๒-๔๔๓๗๔๓๙

ที่ ศธ ๐๕๑๗.๐๒/๑๐๐๖๑
วันที่ ๒๔ พฤศจิกายน ๒๕๕๗
เรื่อง อนุญาตให้ใช้เครื่องมือวิจัย
เรียน ดร. พีระนันท์ จีระยิ่งมงคล

ตามที่ Miss Tantri Puspita นักศึกษาหลักสูตรปริญญาโท วิทยาลัยบรมราชชนนี มหิดล กำลังจัดทำโครงการวิจัย เรื่อง "Factors Predicting to Maternal Self-Care Behavior during Pregnancy in Garut District. " โดยมี ดร. พีระนันท์ จีระยิ่งมงคล เป็นอาจารย์ที่ปรึกษาโครงการวิจัย และนักศึกษามีความประสงค์จะขออนุญาตใช้เครื่องมือวิจัย คือ

๑) Perceived benefit of self-care

๒) Perceived barrier of self-care

ซึ่งเป็นส่วนหนึ่งของวิทยานิพนธ์ตามหลักสูตรพยาบาลศาสตรมหาบัณฑิต สาขาวิชาการพยาบาลแม่และเด็ก คณะพยาบาลศาสตร์ พ.ศ. ๒๕๔๕ เรื่อง "การรับรู้ประโยชน์การรับรู้อุปสรรคของการปฏิบัติพฤติกรรมและพฤติกรรมส่งเสริมสุขภาพของมารดาที่คลอดก่อนกำหนด (PERCEIVED BENEFITS OF ACTION, PERCEIVED BARRIERS TO ACTION, AND HEALTH PROMOTING BEHAVIORS DURING PREGNANCY OF MOTHERS EXPERIENCING PRETERM DELIVERY)" ของ นางสาววัชตา บัญญาพิสิทธิ์ ซึ่งมี รศ.สุปราณี อัทธเสรี ทำหน้าที่อาจารย์ที่ปรึกษาวิทยานิพนธ์หลัก

๓) Self-care behavior

ซึ่งเป็นส่วนหนึ่งของวิทยานิพนธ์ตามหลักสูตรพยาบาลศาสตรมหาบัณฑิต สาขาวิชาการพยาบาลมารดาและทารกแรกเกิด คณะพยาบาลศาสตร์ พ.ศ. ๒๕๔๙ เรื่อง "พฤติกรรมการดูแลตนเองและปัจจัยคัดสรรที่มีผลต่อผลลัพธ์ของการตั้งครรภ์ในมารดาวัยรุ่น (SELF-CARE BEHAVIOR AND SELECTED FACTORS AFFECTING OUTCOMES OF PREGNANCY IN ADOLESCENT MOTHERS.)" ของ นางศิริพร ฉายาทับ ซึ่งมี ผศ.ดร.เยาวลักษณ์ เสรีเสถียร ทำหน้าที่อาจารย์ที่ปรึกษาวิทยานิพนธ์หลัก

บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล ได้พิจารณาแล้วไม่ขัดข้องอนุญาตให้ Miss Tantri Puspita ใช้เครื่องมือวิจัยดังกล่าวได้ เนื่องจากเป็นการศึกษาวิจัยทางด้านวิชาการ แต่ทั้งนี้ขอได้โปรดระบุให้ชัดเจนด้วย

...../ ๒.

ว่าเครื่องมือวิจัยดังกล่าว มาจากวิทยานิพนธ์ของนักศึกษาหลักสูตรพยาบาลศาสตรมหาบัณฑิต คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล ถ้าหากมีการละเมิดเกิดขึ้นข้าพเจ้ายินยอมให้ คณะพยาบาลศาสตร์ ดำเนินการตามกฎหมาย อนึ่งคณะพยาบาลศาสตร์ ได้แนบ**แบบฟอร์มหนังสือรับรองการนำผลงานวิจัยหรืองานสร้างสรรค์ไปใช้ประโยชน์มาด้วย เพื่อให้ดำเนินการกรอกแบบฟอร์มและส่งคืนไปยังสำนักงานหลักสูตรบัณฑิตศึกษา คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล** และขอให้ดำเนินการชำระค่าบริการขอใช้เครื่องวิจัยดังกล่าวข้างต้น จำนวน ๒๐๐ บาท (สองร้อยบาทถ้วน) ต่อเครื่องมือวิจัย ๑ ชุด โดยสั่งจ่ายในนาม **ป.ณ. ศิริราช**

หลักสูตรบัณฑิตศึกษา (เพื่อการขอใช้เครื่องมือวิจัย)
คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล
เลขที่ ๒ ถนนพรานนก แขวงศิริราช
เขตบางกอกน้อย กรุงเทพมหานคร ๑๐๗๐๐
โทร. ๐-๒๔๑๙-๗๙๖๖-๘๐ ต่อ ๑๔๑๑, ๑๔๑๒

จึงเรียนมาเพื่อโปรดทราบ และดำเนินการต่อไปด้วย จักขอบพระคุณยิ่ง

ขอแสดงความนับถือ

(รองศาสตราจารย์ ทพญ.ดร.อารยา พงษ์หาญยุทธ)
รองคณบดีฝ่ายวิชาการ
ปฏิบัติงานแทน คณบดีบัณฑิตวิทยาลัย

Support Behaviors Inventory (SBI) Questionnaire

UNIVERSITY OF WASHINGTON
SCHOOL OF NURSING

Office of the Dean
Box 357260
Seattle, WA 98195-7260
206/543-8732
FAX 206/543-3524

Office of Academic Programs
Box 357260
Seattle, WA 98195-7260
206/543-8736
FAX 206/685-1613

Office of Nursing Research and Practice
Box 357265
Seattle, WA 98195-7265
206/685-1525
FAX 206/685-9264

Biobehavioral Nursing and Health Systems
Box 357266
Seattle, WA 98195-7266
206/543-8577
FAX 206/543-4771

Family and Child Nursing
Box 357262
Seattle, WA 98195-7262
206/543-8775
FAX 206/543-6858

Psychosocial and Community Health
Box 357263
Seattle, WA 98195-7263
206/543-6960
FAX 206/685-9551

Dear Colleague:

I am delighted about your interest in the Support Behaviors Inventory and have enclosed three different versions for your examination. The first version is the original 45 item scale, in which half of the items make direct reference to pregnancy and half are more general. In the second version, I have removed all references to pregnancy and improved the expression of the ideas. The second version could be used with any population. In the third version, I reduced the number of items from 45 to 11 and was able to maintain an internal consistency reliability of .91. I believe, however, that the longer scale offers richer data and is preferable unless questionnaire space is a major issue for you. If you decide to use the original version, you may wish to improve clarify some of the items as they are in the second version.

At this time I have received over 50 requests for use of the SBI in research endeavors, most addressing perinatal populations. While I did not undertake another research project specifically for the purposes of instrument development, data from these other studies has provided evidence of content, construct, criterion and predictive validity. The Cronbach alpha reliability coefficients have remained high ranging from .90 to .96. The study findings vary in regard to the association between partner support and other support. Correlations between the two types of support range from none to moderate, with some studies showing no relationship between the two while other reveal a weak to moderate (.1-.4) relationship. This data suggests that the two types of support are distinctive and the presence of one type of support cannot be counted on to serve as a marker for the other type of support. Data has also suggested there are no differences in the partner support scores between married women and single women living with their partner. The items are also designed to accommodate Gay and Lesbian couples, although I do not have any data comparing gay and straight couples.

Please note that the SBI is unique among support scales in that it provides the opportunity to obtain a measure of satisfaction with "partner" (spouse, mate, boyfriend, etc.) support separate from "others" support. All of my work, however, has been with family members or individuals who have a "steady partner." If your sample will include some unpartnered or single people, several options come to mind: 1) leave scale as is and change the directions (in a VERY obvious way since I've found people don't usually read directions!) and direct respondents to leave the partner column blank or mark a large X through that column, and 2) make only one column and change the question/directions to have people consider all the people in their life at one time while answering. I have

also thought that if option one was used, it would be very interesting to ask everyone who did have a partner, spouse, lover, boyfriend, etc. to complete the partner column and then include a question about exactly what kind of relationship people were involved in (i.e. living together or not, married or not, gay or straight, steady or casual boyfriend) in order to compare the groups. My clinical experience tells me that support from a boyfriend or partner even if people are not married or living together is important to assess and can make a substantial contribution to the individual's well-being. Also, in terms of format, some investigators have preferred to repeat the items in the scale first giving the instruction to answer in regard to partner and then give instruction to answer in regard to other people instead of the current two columns next to each other format. If you are interested in using the Shortened Version, the psychometrics of the scale indicate that all of the items are very highly intercorrelated. It would also be appropriate then for you to select 10-15 items that are most relevant to your particular study to form the shortened version.

Scoring for the SBI is simple and involves summing the responses with a higher score indicating greater support satisfaction. I used the satisfaction with partner support subtotal as a variable separate from the satisfaction with others support subtotal in some analyses. I also combined the two subtotals to create an overall support satisfaction score, depending on the research question I was asking. If you choose to implement a more creative strategy with both partnered and unpartnered subjects, then you will have some challenges in creating analysis strategies as well. The possible responses in the answer column of the SBI are somewhat unique and were developed through the process of several pilot tests. I found that initially people's responses were heavily weighted in the satisfied direction, so I developed more graduations of satisfied to increase the variability in the responses.

I am pleased that you are considering using the SBI, feel free to modify it to suit your specific needs. This letter serves as your permission for use. However, if you decide to use the SBI, I would sincerely appreciate receiving a summary of the results of your study, particularly any information you glean on reliability and validity. I wish you the very best in your dissertation research endeavors.

Sincerely,

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