ปัจจัยที่มีอิทธิพลต่อการปฏิบัติตามหลักฐานเชิงประจักษ์สำหรับการป้องกันและจัดการภาวะตกเลือดหลังคลอด ในพยาบาลผดุงครรภ์ ประเทศไทย: การวิเคราะห์พหุระดับ

FACTORS INFLUENCING THE IMPLEMENTATION OF EVIDENCE-BASED PRACTICES FOR PREVENTION AND MANAGEMENT OF POSTPARTUM HEMORRHAGE AMONG NURSE-MIDWIVES IN THAILAND : A MULTILEVEL ANALYSIS

JIRANEE PANYAPIN

Burapha University

2020

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ดุษฎีนิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปรัชญาดุษฎีบัณฑิต
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JIRANEE PANYAPIN

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR DOCTOR OF PHILOSOPHY
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The Dissertation of Jiranee Panyapin has been approved by the examining committee to be partial fulfillment of the requirements for the Doctor of Philosophy in Nursing Science of Burapha University

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JIRANEE PANYAPIN : FACTORS INFLUENCING THE IMPLEMENTATION OF EVIDENCE-BASED PRACTICES FOR PREVENTION AND MANAGEMENT OF POSTPARTUM HEMORRHAGE AMONG NURSE-MIDWIVES IN THAILAND : A MULTILEVEL ANALYSIS. ADVISORY COMMITTEE: WANNEE DEOISRES, Ph.D., NUJJAREE CHAIMONGKOL, Ph.D. 2020.

Postpartum hemorrhage (PPH) remains one of the leading causes of maternal mortality and severe maternal conditions. The aimed of the study were to examine the factors influencing the implementation of evidence-based practices (EBPs) for the prevention and management of PPH by explaining the variables at the individual and organizational levels and test the relationships and interactions between individual- and organization-level factors among nurse-midwives in Thailand. A multi-stage sampling technique was used to recruit a sample of 298 intrapartum nurses and 50 units of the delivery rooms from the community hospitals, Thailand from March to June 2019. Data were collected using a self-report questionnaire. Data were analyzed using descriptive statistics and the Multi-Level Modelling (MLM) analysis. These results revealed that the participants had majority always implementing all of the recommendation EBPs for prevention and management PPH in daily practice. The relationship between the set of independent variables at individual-level and organizational-level had effect influencing of implementation of EBP for prevention and management of PPH, significant of predictor (b = 3.741, 2.93 respectively, $p < .001$). Indicating 32% of variance of implementing of EBPs for PPH have varied between hospital, and 68 % of variance of implementing of EBPs for PPH have varied between nurses. Moreover, the analyses found second interaction between two-level of factor variables. The results of the study will be used to develop strategies to promote the use of EBPs in obstetric care and increasing the translation of evidence into practice. Future studies should be investigating this variance explained by a multi-level predictor.

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Jiranee Panyapin

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

มหาวิทยาลัยบูรพา
BURAPHA UNIVERSITY

LIST OF FIGURES

Page

CHAPTER 1
INTRODUCTION

Statements and significance of the problems

Postpartum hemorrhage (PPH) remains one of the leading causes of maternal mortality and morbidity in low-income countries and is responsible for nearly one -quarter of all maternal deaths globally (World Health Organization (WHO, 2017). The etiology of PPH does not only originate in low-resource countries, but can also be found in developed countries (Cristina Rossi & Mullin, 2012). More than half of all maternal deaths, approximately 80percent,occur within 24 hours of delivery with excessive bleeding being most commonly reported cause of death (Say et al., 2014). Non-fatal excessive bleeding can lead to further complications such as anemia and pituitary infarction, conditions linked to poor lactation and organ damage due to hypotension and shock (Leduc, Senikas, & Lalonde, 2009). Moreover, PPH has been found to be a significant contributor to severe maternal morbidity and long-term disability as well as a number of other severe maternal conditions (Khan, Wojdyla, Say, Gülmezoglu, & Van Look, 2006). California Department of Public Health reviews revealed that Failure to recognize
the severity of hemorrhaging and delays in the timely provision of appropriate therapy have been linked to preventable morbidity and mortality associated with PPH (Main, 2012).

According to the World Bank (WHO, 2014), the prevalence of PPH was reported 230 of maternal deaths per 100,000 live births in developing countries and 16 of maternal deaths per 100,000 live births in developed countries in 2013; this statistics was not limited to any population or geographic location (WHO, 2017). Every day in 2015, approximately 830 women died due to complications of pregnancy and child birth. The primary causes of death were hemorrhage, hypertension, infection and other indirect causes (WHO, 2017). These deaths have a major impact on the lives and health of the families affected. Although maternal deaths have decreased by 45 percent worldwide since 1990, approximately, 800 women continue to die each day from largely preventable causes occurring during

the antenatal, intra-partum and postpartum periods (WHO, 2015). The global goal for reducing the maternal mortality ratio by three-quarters from the 1990 level by ending preventable maternal mortality [EPMM] in 2015 remains an unfinished agenda and one of the world's most critical challenges, despite significant progress over the past decade (WHO, 2015).

PPH is also the leading cause of death in Thailand. In both in the twentieth and the twenty-first centuries, maternal deaths or the maternal mortality ratio (MMR) have been reduced to10.41 deaths per 100,000 live births in 2017 (Ministry of Public Health (MOPH, 2017). In all, 30.4 percent of deaths are directly caused by PPH (MOPH, 2016). In Thailand, 87 percent of PPH cases have been found to be referrals from community hospitals due to limitations involving obstetricians, resources and accessibility (Charoenweerakul, Srisupundit, & Tongsong, 2009).

The maternal mortality rate is one of the internationally-adopted indicators reflecting the health problems of a country (MOPH, 2016). As PPH is a preventable condition, maternal deaths represent an important problem arising from risks attributable to pregnancy and childbirth as well as poor quality of care and health service system (MOPH, 2016). Regarding maternal and child health care services in Thailand, several interventions are introduced with the aim to maintain or improve the quality of PPH care (MOPH, 2016). However, the burden of PPH persists despite the fact that substantial progress has been made toward improving the existing interventions for PPH management. Thus, the main issue focuses on the analysis of factors influencing PPH management.

The evidence has shown more than 50 percent of hemorrhage-related deaths could be preventable within a range of 54-93 percent (Berg et al., 2005). Most of these cases occur, despite women delivering in hospitals staffed by physicians, nurses and support personnel who are knowledgeable, highly motivated and well-trained (Georgia Obstetrical and Gynecological Society (GOGS, 2014). The high prevalence rates, particularly in the developing world, suggest a need for evidence-based practices in the prevention and management of PPH (Alkema et al., 2016).

A high proportion (72-90 %) of the morbidities related to obstetric hemorrhage is considered preventable if adequately managed through early recognition and adequate interventions in the early stages (Clark, 2012).

The evidence-based practices [EBPs] for the prevention and management of PPH have been summarized and are currently available through clinical practice guidelines (CPGs). Guidelines and protocols have been developed and implemented to improve the quality of care and reduce variation in practice (van Achterberg, Schoonhoven, & Grol, 2008). As such many CPGs for preventing PPH have been published worldwide under the guidance of current best evidence (WHO, 2012). The multidisciplinary consensus is concerned with the major elements of a standardized clinical protocol concerning the diagnosis and management of PPH (Fleischer & Meirowitz, 2016). Today, there are multiple databases, such as the Cochrane Collaboration (2013), recommending that the most common step in the management of PPH is prevention through active management of the third stage of labor [AMTSL] for all vaginal births as a preventive tool with evaluation of PPH risk before delivery (Brodribb, Zakarija-Grkovic, Hawley, Mitchell, & Mathews, 2013). Prevention involves identifying the risk factors used for screening and clinical management of labor (Bingham & Jones, 2012).

Adoption and implementation of the guideline recommendations for PPH prevention and management can result in a decline in PPH mortality (Shields et al., 2011; Shields, Wiesner, Fulton, & Pelletreau, 2015). Although the development and dissemination of evidence-based PPH guidelines are intended to assist professionals and patients in the prevention and management of PPH-care, this effort falls short in terms of closing the existing gap between guidelines, course-instructions and daily practice (Grol, Wensing, Eccles, & Davis, 2013; Penney & Foy, 2007). There is also substantial evidence indicating major gaps in clinical area between existing and actual practices. Reports from confidential inquiries into maternal deaths show that most PPH-related deaths involve delays and sub-standard care in the diagnosis and management of hemorrhage (Bowyer, 2008). Factors such as sub-standard care are frequently reported in the international literature, including similar reports in the Netherlands (Woiski et al., 2016). Women with PPH regularly face the substandard care problem (Berg et al., 2005). In a French study, 38 percent of women had PPH exceeding 1500 ml. and sub-optimal care factors were detected in 70 percent of women who died as a result of a PPH (Wilkinson, Trustees, & Advisers, 2011).

The factors to be considered as explanations for the variations in practice and PPH severity include the following two types: 1) factors related to the characteristics of women and deliveries and 2) factors related to medical care (Farquhar, Sadler, Masson, Bohm, & Haslam, 2011). Farquhar et al. (2011) and Geller, Koch, Martin, Rosenberg, and Bigger (2014) identified contributory and avoidable factors of maternal deaths, including organizational and staff factors such as inadequate education and training, or deficient staff knowledge (Farquhar et al., 2011; Geller, Koch, Martin, Rosenberg, & Bigger, 2014). Likewise, important variations in clinical practice related to
PPH occur between and within countries despite relatively similar national guidelines (Winter et al., 2007). According to Oladapo et al. revealed that inadequate implementation of the guideline recommendations for labor management in the nursing profession represents a disconnection between recommended and actual practice (Oladapo et al., 2009).

The ramification of this research-practice divide is that patients do not always receive the best possible care, while limited health care resources are wasted on inefficient, harmful or ineffective interventions (Harrington et al., 2009). Literature reviews of EBPs are delivered only 70 percent of the time with an improvement of only 4 percent, since 2005 (Agency for Health Care Research and Quality (AHRQ, 2015). This problem demonstrates the gap between the availability of EBPs recommendations and the use of these practices at the point of care delivery (Herr et al., 2012). The lack of routine evidence-based care can lead to adverse patient outcomes, such as PPH, previous studies have reported less than optimal management of severe PPH and failure to fully apply guidelines in approximately 40 percent of all cases (Driessen et al., 2011). In light of the fact that patients often do not receive the best or even optimal nursing care, there is considerable reason to examine what is known in the research evidence and what happens in current practice (Squires, Estabrooks, Gustavsson, & Wallin, 2011).

Without tailor-made implementation, large gaps will continue to exist between the best evidence as described in the guidelines and daily practice (Grol & Wensing, 2005). Implementation strategies are multi-faceted and many theoretical gaps exist concerning methods, approaches, persons and contexts (Estabrooks et al.,

2011; Rycroft-Malone & Bucknall, 2010). The implementation of innovations, new tools and practices in health care organizations remains a significant challenge (Rogers, 2003). Researchers have reported that the ability to implement EBP depends on several important individual factors such as attitude, understanding, knowledge and perceived ability to perform EBP activities (Majid et al., 2011). Moving evidence into practice is difficult due to a variety of reasons, including the complexity of organizations, individual health care practitioners, leadership and changing health care environments (Titler, Everett, & Adams, 2007).

The factors potentially influencing the acquisition of evidence into practice are many and varied. According to the Diffusion of Innovation process, successful implementation is a function of the interrelations between three key components influence: characteristics of the adopter, characteristics of the organization, and characteristic of the innovation (Rogers, 2003). Factors that influence the innovation-decision process include previous practice, perceived need or problem, innovativeness and norms of the social system (Rogers, 2003). Moreover, various factors and dynamics within the contemporary health care system serve to impede innovation adoption by actors within the system, particularly nurses (Schoonover, 2009). Systematic reviews of practice guideline use have identified personal characteristics, perceived guideline characteristics, awareness of the guidelines, and organizational factors as major variables influencing this adoption (Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004). Failure to implement EBPs has been attributed to individual nurse characteristics such as inadequate knowledge or insufficient research skills (Cummings, Hutchinson, Scott, Norton, & Estabrooks, 2010).

Although little-known factors influencing EBPs implementation have been investigated in Thailand, the focus has been general, not specific. Some literature reviews reveal the researchers' expression of concern about barriers and facilitators in implementing formative research. One implementation of EBPs at a Thai regional hospital found that obstacles to implementing the EBPs included the English language, time constraints, limited experience in some interventions and inadequate support from policymakers (Swadpanich, Siriwachirachai, Lumbiganon, & Laopaiboon, 2008). One previous study showed that 62.20 percent of nurses had applied research findings in their practices (Yimboonna et al., 2007). Nevertheless,

few publications in Thailand have focused on factors related to the implementation of evidence on PPH. Some studies have indicated malpractice in a new protocol or guideline; unawareness of PPH leading to non-adherence to the guidelines with initial early assessment in every case, incorrect practice of active management during the third stage of labor and visual estimates of blood loss rather than quantification of blood loss by measurement (Sirimas, Somsripang, Padklang, & Jaksujinda, 2014). Nurse-midwives fail to recognize the identification of risk factors during initial patient assessment, while team providers have deficient knowledge and fail to understand the guidelines for prevention PPH (Plodril, Vipavakarn, & Kingsley, 2016). Ineffective risk screening of standard care during the first stage of labor has also been discovered (Prabpal, 2013). Incorrect placental delivery techniques and failure to perform immediate uterine massage after birth are causes related to excessive postpartum bleeding (Anusornteerakul, 2014). Therefore, from empirical study and the previous research need to identified factors influencing on nurse' implementing EBPs in Thailand.

Although none of the previous research reports or the broader health services literature explains how such influences occur. However, to implementation of EBPs successfully, requires multi-level contextual factors to examine this issue. Because the empirical literature analyses were not found to explain the different levels of factors influencing the implementation of evidence-based practice or research utilization within the multi-level contextual factor. Naturally, the organization of hospitals can be observed at different hierarchical levels, and variables may be defined at each level (Hox, 2010). Nurses working in patient care units within hospitals can also examine the relative importance of effects at each of these levels (Wu, 1997). Even with a shift to greater focus on both organizational and individual level influences, there is little empirical support for the differential or relative importance of various levels of influence (Chu, Kim, & Bish, 2009).

Additionally, this research attempts to gain better understanding of reasons behind the ongoing gap between evidence and practices during intrapartum care for PPH prevention and management. Although knowing the contributory factors to the implementation of evidence-based practices in PPH management is necessary in order to reduce mortality rates, limited studies in such regard have been conducted in

Thailand. Therefore, the purpose of this study is to determine the relationship between the influencing factors at individual- and organizational-level on implementing of EBP for prevention and management of PPH among nurse-midwives in Thailand. Comprehensive investigation of these factors can help develop appropriate strategies for implementing EBPs in the management of PPH among nurses for the purpose of reducing or eliminating barriers. The evidence provided information and be taken under consideration for health care systems, nursing practice and improved maternal health outcomes.

Research objectives

1. To examine the factors influencing the implementation of EBPs for prevention and management of postpartum hemorrhage among nurse-midwives in Thailand by explaining the variables at the individual and organizational levels.
2. To test the relationships and interactions between individual-and organization-level factors in the implementation of evidence-based practice for prevention and management of postpartum hemorrhage by nurse-midwives in Thailand.

Research hypotheses

1. Individual variables (nurse characteristics, perceived barriers to EBPs and perceived characteristics of EBPs) have influence on the implementation of evidence-based practice for the prevention and management of PPH.
2. The organizational variables (organizational climate for EBPs, organizational support, and hospital size) have influence on the implementation of evidence-based practice for the prevention and management of PPH.
3. Individual variables have a cross-level interaction with organizational variables on the implementation of evidence-based practice for the prevention and management of PPH.

Conceptual framework

The conceptual framework for this study based on theoretical approaches to understanding how changes in practice may be required in line with Rogers' diffusion of innovations model (Rogers, 2003). Furthermore, some factors and variables from the literature review provides a conceptual framework for understanding what factors influence nurse adoption or implementation of EBPs for the prevention and management of PPH.

Rogers' diffusion of innovations, a sociological framework used to examine research utilization in nursing, healthcare, and multiple disciplines (Dobbins, Ciliska, Cockerill, Bamsley, & DiCenso, 2002; Greenhalgh et al., 2004) and its used as the conceptual model for this study. Accordingly, Rogers argues that innovation diffusion is influenced by individual, innovational and organizational characteristics in a fundamentally social and communicative process (Rogers, 2003). The adoption of a new clinical behavior by a clinician and health care system is a consequence of multiple factors of which research evidence is only one. Rogers offered the following description of an innovation: "An innovation is an idea, practice or project that is perceived as new by an individual or other unit of adoption" (Rogers, 2003, p. 12). The end result of this diffusion is that people, as part of a social system, adopt a new idea or behavior. Adoption means that a person does something differently than what they had previously (i.e., acquire and perform a new behavior, etc.). The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. It is through this that diffusion is possible.

Rogers (2003) described the innovation-decision process as "an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation" (p. 172). Form Rogers (2003), the innovation-decision process involves the following five steps: 1) knowledge; 2) persuasion; 3) decisions; 4) implementation and 5) confirmation. Concepts from Rogers' model was briefly reviewed in the following section, although the conceptual framework as applied to clinical practice guideline use in healthcare was covered in depth in Chapter II.

Rogers postulates that four prior conditions influence the innovation-decision process. These prior conditions consist of 1) previous practice, 2) perceived need or problem, 3) innovativeness, and 4) norms of the social system (Rogers, 2003).

Rogers' theory suggests that innovation adoption is influenced by the following three key components:

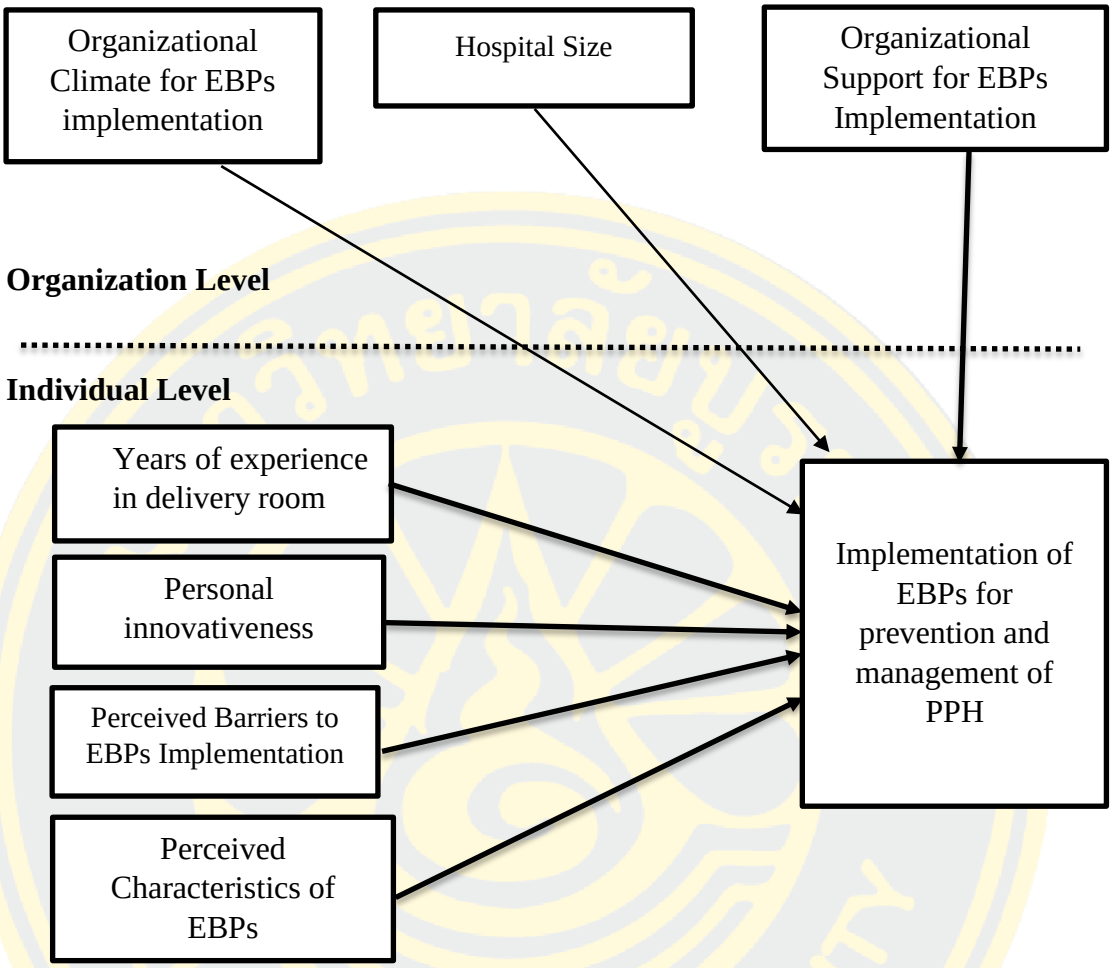
1. Characteristics of the adopter (represented as individual factors such as personal innovativeness, year of experience in delivery room shown in Figure1);
2. Characteristics of the organization (represented as organizational factors such as organizational climate for EBP and hospital size, as shown in Figure 1);
3. Characteristics of the innovation (represented as perceived EBP characteristic factors as shown in Figure 1).

Rogers (2003) developed one of the best-known theoretical approaches to the diffusion of innovation. This theoretical framework is helpful when determining the adoption of research in a health care organization and when deciding which components will require additional effort if change is to occur. In a hospital setting, norms may be expressed at the level of the organization as well as the level of the unit, often referred to as the culture of the organization or unit (Estabrooks, Midodzi, Cummings, & Wallin, 2007). Diffusion occurs through a series of communication channels over a period of time among the members of a similar social system. Communication channels of the social system influence the innovation-decision process over time. Although Rogers' original model depicts decision making as a linear process from knowledge through the confirmation stage, he acknowledged that the individual may decide to adopt or reject an innovation during any stage (Rogers, 2003).

The literature concerns the many factors influencing the adoption of research evidence. However, Roger's framework is not developed fully and, in particular, does not include a specific measures factors for hierarchical data that influence implementation EBPs. Consequently, taking into account influences at different levels of the organization and individual, it was necessary to use other theoretical perspectives, evidence from empirical studies, and the researchers' own conceptualizations to develop a multilevel model for assessment. Multilevel modeling was used to: a) apportion the variance in implementation EBPs to two levels;

individual nurse, and organization; and b) examine nursing and organizational factors that explain the variance in implementation EBPs with separate at each level by empirical study (Cummings, Estabrooks, Midodzi, Wallin, & Hayduk, 2007; Estabrooks, Midodzi, Cummings, & Wallin, 2007). It has also been suggested that there are important steps occurring within individuals, organizations and environments that determine whether research evidence was used (Estabrooks et al., 2007). Consequently, the researcher found it necessary to use other theoretical perspectives and evidence from empirical studies such as perceived barriers to implementing EBPs (represent as perceived need or problem in Roger's model) and organizational support (represent as norms of the social system in Roger's model).

Thus, the study was the first attempt at investigating the complex phenomenon of the implementation of EBPs for the prevention and management of PPH with present and different levels of measurement based on individual- and organization-level factors. It would be helpful to see how each variable at each level influence the implementation of the EBPs for PPH. Individual variables including nurse characteristics, perceived barriers to EBPs and perceived characteristics of EBPs, as well as organizational variables including organizational climate for EBPs, organization support and hospital size have influence on the implementation of evidence-based practice for the prevention and management of PPH as illustrated in Figure 1 below.



Figures 1 Conceptual framework of the study

Scope of study

This study aimed to determine the factors influencing the implementation of evidence-based practice for the prevention and management of PPH among nurse-midwives in Thailand. The participants were 298 staff nurse-midwives and 50 groups of delivery rooms at community hospitals governed by Thailand's Ministry of Public Health. Data were collected from March to June, 2019.

Definition of terms

The study variables were defined as follows:

Implementation of EBPs for the prevention and management PPH refers to the action of using the EBPs for the prevention and management of PPH in current daily practice by nurses-midwives. The process of putting to use an intervention within a specific setting through which an individual nurse passes from first knowledge of an EBP to the formation of an attitude toward EBP, adoption or rejection of the EBP, implementation and use of a new idea and confirmation of the decision made (Rogers, 2003). The above factor was measured by the evidence-based implementing activity for prevention and management of PPH [EBIA-PPH] developed by the researcher.

The recommending of the practices based upon the strength of evidence supporting the practices and national and international PPH management guidelines recommended by the WHO guideline (WHO, 2012) and *The Royal Thai* College of *the* Obstetricians and Gynaecologists [RTCOG] guideline (RTCOG, 2012) of a standardized clinical protocol were measured as the act of performing these in clinical practice. The instrument contains of two dimensions of the major procedure for the prevention and management PPH in the following four subscales: 1) risk assessment and planning for prevention; 2) prevention by following the active management of the third stage of labor; 3) evaluation and monitoring the signs and symptoms of maternal hemorrhage and 4) proper management including communication and resuscitation, monitoring and investigation.

Organizational climate for EBP implementation refers to the perception of staff nurses to practices, policies, procedures, and clinical behaviors that are rewarded, supported, and expected in order to facilitate effective implementation of evidence-based practices. The climate is properly defined and made distinct from cultural and employee perceptions of practices, policies, procedures and clinical behaviors (Ehrhart, Aarons, & Farahnak, 2014). Organization climate for EBPs implementation identifies the extent to which an employee's unit prioritizes and values evidence-based practice based on the following six domains: 1) focus on evidence-based practice; 2) educational support for evidence-based practice; 3) recognition of evidence-based practice; 4) rewards for evidence-based practice;

5) selecting evidence-based practice and 6) opting for openness. The above factor was measured by the implementation climate scale [ICS] developed by Ehrhart et al. (2014).

Organizational support for EBP implementation refers to the perception of staff nurses to the organization supports and facilitates for implementation of EBPs. The support s contains of five items as follows: 1) support from top management, 2) ready adoption of change by nurses, 3) sufficient time and training, 4) adequate number of qualified staff, and 5) equipment and supply. The above factor was measured by the organizational support scale [OS] modified from Schultz and Slevin (1975) by Edwards et al. (Edwards et al., 2004).

Hospital size refers to size of hospital with classified according to number of beds within community hospitals in Thailand as follows: small community hospitals (first-level hospital: F3) have a capacity of 10 to 30 beds; medium community hospitals (F2) have a capacity of 30-90 beds; large community hospitals (F1) have a capacity of 90-120 beds and intermediate community hospitals (M2) have a capacity more than 120 beds (MOPH, 2016). The above factor was measured by the organization information questionnaire.

Personal innovativeness refers to the degree of perception which an individual nurse finds it relatively easy to adopt new ideas compared to others in their social system in which information about EBPs is disseminated. Innovativeness define as willingness to change, is the degree to which an individual is relatively earlier in adopting new ideas (Rogers, 2003). Inherent personality characteristics that influence adoption are related to the values, beliefs and interests of an individual (Dobbins, Ciliska, Cockerill, Barnsley, & DiCenso, 2002). Innovativeness were categorized five types; innovators, early adopters, early majority, late majority, and no adopters (laggards/ traditionalists) (Rogers, 2003). The above factor was measured by the innovativeness scale developed by Hurt, Joseph, and Cook (Hurt, Joseph, & Cook, 1977).

Perceived barriers to EBPs implementation refer to nurses' perceived obstacles to the adoption of EBPs related to persons, things, or environments that hinder the use of EBPs for the prevention and management of PPH. There are factors

that slow or inhibit the process of EBP adoption (Carlon, 2008), its was measured by the BARRIERS scale developed by (Funk, Champagne, Wiese, & Tomquist, 1991).

Perceived characteristics of EBPs refer to perceived characteristics of EBPs for the prevention and management of PPH by nurses-midwives who indicate awareness about the use of EBPs in nursing care during childbirth. The five EBPs characteristics involved includes; 1) Relative advantage is the degree to which individuals perceive an innovation to be an improvement over the status quo or current recommendations. 2) Compatibility is related how consistent the innovation is with the values, experience, and needs of the potential adopters. 3) Complexity is the level of perceived difficulty of the innovation, related to its understanding and use. 4) Observability refers to the degree to which the use or results of an innovation are visible to others, as the extent to which the innovation provides tangible result, and 5) Trialability refers to the ability to use an innovation for a trial period is of greater value to the early adopter since later adopters will typically be surrounded by others who are using the innovation (Rogers, 2003).

The above factor was measured by the perceived characteristics of innovation scale [PCI-scale] developed by Hooper (Hooper, 2009) that was modified from Moore and Benbasat (Moore & Benbasat, 1991).

CHAPTER 2
LITERATURE REVIEWS

This chapter presents related literature review about influencing factors of implementation evidence-based practices for prevention and management of PPH and its relevant factors.The integrative literature review included of postpartum hemorrhage, evidence-based practice for prevention and management of PPH, implementation of evidence-based practice and gap of evidence-based implementation in nursing practice, gap of evidence-based implementation for prevention and management of PPH, and factors influencing implementation of evidence-based practices among nurses-midwifes.

Postpartum hemorrhage [PPH]

Incidence and mortality

PPH is the leading cause of maternal death and a frequent complication of pregnancy-related mortality and morbidity in the United States (Callaghan, Kuklina, & Berg, 2010). Each year, approximately 287,000 women die because of preventable causes related to pregnancy and childbirth (Say et al., 2014). More than half of all maternal deaths, approximately 80 percent, occur within 24 hours of delivery with excessive bleeding being most commonly reported cause of death (Say et al., 2014). Almost all (99 %) of these deaths occur in low-income and middle-income countries, with the largest burden in sub-Saharan Africa and South East Asia (Say et al., 2014). According to the World Bank (WHO, 2014), the prevalence of PPH was reported 230 of maternal deaths per 100,000 live births in developing countries and 16 of maternal deaths per 100,000 live births in developed countries in 2013; this figure was not limited to any population or geographic location (WHO, 2017).

Achieving the sustainable development goals [SDG] target of a global maternal mortality ratio [MMR] below 70 per will 100,000 live birth require reducing global MMR by an average of 7.5 % each year between 2016 and 2030 (WHO, 2015).

The trend for maternal mortality varies substantially within ASEAN countries. In 1990, the ASEAN-6 countries had already achieved a relatively low level of under-five mortality rate. They continued to reduce the rate and reached the target of a 2/3 reduction. Brunei Darussalam, Malaysia, Singapore Thailand and Viet Nam all have reasonably low rates. Because births attended by skilled health personnel in Brunei Darussalam, Malaysia, Singapore, Thailand and Viet Nam was as high as 88 % to 100 % (Secretariat, 2017).As a result of this alarming statistic, the Joint Commission issued a Sentinel Event Alert [JCSEA] warning to providers indicating that the incidence of maternal death was increasing, with the largest cause noted as postpartum hemorrhage, and called for a review of the standards and treatments to prevent further rise (Bingham, 2012).

Definition of PPH

PPH is an obstetric emergency associated with both the vaginal birth and cesarean section. It is typically defined as blood loss of 500 ml or greater during a vaginal delivery and blood loss of 1000 ml or greater during a cesarean delivery (Bingham & Jones, 2012). Major hemorrhage is defined as an estimated blood loss of more than 2500 ml or the transfusion of 5 or more units of blood or treatment of coagulopathy (Mukherjee & Arulkumaran, 2009). It is important to highlight that PPH refers to not only the blood loss, but also related signs and symptoms such as hypovolemia signs, low oxygen saturation, oliguria, tachycardia, and hypotension (Calvert et al., 2012). These values are arbitrary as visual estimation of blood loss is not reliable. Women with a low body mass index, they have a lower blood volume of 70 ml/kg and anemic women have fewer reserves to withstand blood loss and hence will decompensate sooner. Thus, a useful definition takes into account any blood loss that causes a major physiological change like a fall in blood pressure, as the risk of dying from PPH depends on the amount and rate of blood loss and the woman's health (Mukherjee & Arulkumaran, 2009). The average blood loss during a vaginal delivery is estimated to be 500 ml or 10 % of total blood volume and during a cesarean section [CS] to be 1000 ml or approximately 25 % of total blood volume.

Blood loss of 1000 ml has also been reported to occur during an operative vaginal delivery (forceps or vacuum) or with a third or fourth degree perineal laceration (Harvey & Dildy, 2012).

PPH is classified as primary and secondary. Primary PPH occurs within 24 hours of delivery and secondary PPH after 24 hours and within 6-12 weeks post-partum (Knight et al., 2009). The increase in plasma volume, which may be as high as 45 % of pre-pregnancy volumes, and the increase in coagulation factors and fibrinogen make the mother prepared for a blood loss of up to 1000 ml after delivery (Harvey & Dildy, 2012). These normal adaptations allow the woman to lose large volumes of blood before hypotension and tachycardia; the cardinal signs of shock ensue (Cunningham et al., 2010). This makes it critical to accurately quantify postpartum blood loss so that the nurse can recognize excessive bleeding prior to late signs such as tachycardia and hypotension (Ruth & Kennedy, 2011).

Signs and symptom

Symptoms of hemorrhage often precede the signs, which may be evidenced by unexplained anxiety and restlessness, breathlessness, or a sensation of feeling cold or generally unwell (Cunningham et al., 2010). The authors suggest the use of early-warning scores to assess for these symptoms in order to evaluate for evidence of the sometimes-subtle signs of concealed hemorrhage (Ruth & Kennedy, 2011). It is imperative for nurses to be diligent in their assessment of their patients' signs and symptoms. The high prevalence rates, particularly in the developing world, suggest the need for evidence-based practices in management and prevention of PPH (Alkema et al., 2016). PPH is unpredictable therefore every pregnant woman needs care during childbirth from a skilled birth attendant (WHO, 2012).

Causes and risk factors

PPH is commonly due to one or a combination of four processes referred to in the '4Ts' mnemonic (Mukherjee & Arulkumaran, 2009);

1. tone defined as post-delivery poor uterine contraction,
2. tissue defined as blood clots and/or retained products of conception,
3. trauma at genital tract, and 4) thrombin as coagulation abnormalities

To avoid complication postpartum during the prenatal period women are screened for predisposing factors of PPH with the identification of factors elevating

the status of the pregnancy from low to moderate or high PPH risk (Oyelese & Ananth, 2010). PPH had caused mainly by uterine atony, genital tract trauma, retained placental tissues and coagulopathies (Belfort, Lockwood, & Barss, 2013)**.** The most significant percentage of the primary PPH corresponds to uterine atony, and other causes include placental abnormalities, genital tract lacerations and trauma, coagulation disorders and retained uterine contents that can present as unique or contributing factors (Kramer, Dahhou, Vallerand, Liston, & Joseph, 2011).

Risk factors for PPH

Identification of risk factors for those etiologies of PPH is essential to prevent a minor hemorrhage from developing into severe bleeding (Cunningham et al., 2010). Previously reported risk factors for PPH are old maternal age, multiparity, obesity, placenta previa, prolonged labor, oxytocin augmentation, preeclampsia, prior cesarean delivery and chorioamnionitis (Kramer et al., 2011). Risk factors include conditions that over distention of the uterus, prolonged labor, induction and augmentation of labor, and retained placenta, but in 50 % of cases these risks are not predictive. Vaginal hematomas, another cause of postpartum hemorrhage, may result from arterial damage and are associated with risk factors that include null parity, episiotomy, and forceps delivery (Schorn & Phillippi, 2014). Significant hematomas can develop rapidly, cause intense pain, require surgical evacuation, and perhaps necessitate a blood transfusion (Bingham & Jones, 2012). Vaginal and cervical lacerations should be considered when bleeding accompanies a contracted uterus. Efforts to locate the source of bleeding and initiate treatment are imperative to avoid shock (Alexander & Wortman, 2013). An increase in the occurrence of severe PPH could be explained partly by changes in rates of cesarean delivery, induction of labor or by increases in maternal age, grand multi-parity, previous cesarean delivery, preeclampsia, chorioamnionitis, placenta previa or abruption, multiple pregnancies, fetal macrosomia and uterine fibroids (Ekin et al., 2015)**.** Literature study findings are in general agreement on risk factors for atonic postpartum hemorrhage. Atonic postpartum hemorrhage was unexpected and should be treated as preliminary and requiring confirmation in other studies. The lower risk of postpartum hemorrhage following a caesarian section [CS]

has been observed previously. Conditional logistic regression showed that multi-parity, one or two previous abortions, and smoking were associated with lower odds of atonic postpartum hemorrhage. Vaginal delivery after CS increased the odds, whereas repeat delivery by CS decreased the odds of atonic postpartum hemorrhage compared with vaginal delivery without prior CS (Lisonkova et al., 2016).

In conclusion, PPH can occur in women without identifiable risk factors. In absolute numbers, more women without risk factors have atonic PPH as compared with those with risk factors (Mukherjee & Arulkumaran, 2009). Therefore, to reduce postpartum hemorrhage rate due to seek the main cause of its.

Evidence-based practices for prevention and management of PPH

PPH is an urgent life-threatening situation that requires an immediate response. Clearly formulated, comprehensible and accessible guidelines might improve the management of PPH (WHO, 2012). Additional, development and adoption of standardized protocols as a best practice for addressing the incidence of adverse events remained a top priority during bundle development, whereas acknowledging the need for a balance between standardizing practices and allowing professionals to use clinical judgment (Simpson, 2011).The Royal College of Obstetricians and Gynecologists [RCOG] urges early or prophylactic interventional radiology for the prevention and management of PPH in high-risk cases and recommends strategies for the management of unpredicted PPH (RCOG, 2009). The Joint Commission on Accreditation of Healthcare Organizations Universal (2010) and the Society of Maternal Fetal Medicine (SMFM, 2013) recommended the adoption of protocols to address maternal death and morbidity that are associated with postpartum hemorrhage (Main et al., 2015). Streamlining PPH care for every professional, founded on evidence-based PPH guidelines.The evidence-based practices for management had been developed by multidiscipline such as the California Maternal Quality Care Collaborative (CMQCC, 2015), the American Congress of Obstetricians and Gynecologists [ACOG], and other organizations. Improving health care for women during childbirth in order to prevent and treat PPH

is an essential step towards the achievement of the millennium development goals (WHO, 2012).

Evidence-based practices for prevention of PPH

In March 2012, WHO held a technical consultation on the prevention and treatment of PPH to review current evidence and to update previously published PPH guidelines (WHO, 2012). The new WHO guidelines recommend that administration of oxytocin remains central to the implementation of Active management of the third stage of labor [AMTSL] and that the performance of controlled cord traction [CCT] is an optional component if a skilled birth attendant assists the delivery. However, in settings in which skilled birth attendants are not available, CCT is not recommended under this guidance. The uterotonic is the primary intervention, and uterine massage may add no benefit for the prevention of PPH (WHO, 2012).

AMTSL with uterotonic agents has been shown to reduce the incidence of moderate PPH > 500 mL (relative risk [RR] 0.54 (95 % CI 0.39, 0.75)) and severe PPH > 1000 mL (RR 0.60 (95 % CI 0.35, 1.00)) compared with allowing a physiological third stage of labor and is recommended for all women (Leduc et al., 2009). The most common step in the management of PPH was prevention through AMTSL for all vaginal births as a preventive tool.AMTSL when performed by skill birth attendant is the “gold standard” for prevention of PPH (Sheldon et al., 2014; WHO, 2012) and can reduce excessive blood loss by 50-70 % (Begley, Gyte, Devane, McGuire, & Weeks, 2015).

The steps of AMTSL include 1) the provision of uterotonic drugs (oxytocin or misoprostol) immediately upon fetal delivery, 2) controlled cord traction, and 3) massage of the fundus of the uterus immediately after placental delivery in the absence of uterotonic, and routine assessment of the uterine tonus every 15 minutes for the first 2 hours postpartum (WHO, 2012). Control of postpartum hemorrhage occurs by uterine contraction. Immediately after delivery, the uterine muscle contracts for 24 hours (Schorn & Phillippi, 2014). Fundal massage is the immediate intervention in preventing hemorrhage from this condition (Cohain, 2012). The majority of these could be avoided through the use of prophylactic utero-tonics during the third stage of labor by timely and appropriate management (WHO, 2012).

EBPs for management of PPH

Management of PPH, which important strategies are prevention and control has been highlighted as a key point in guidelines and documents of International Confederation of Midwives [ICM] and International Federation of Gynecologists and Obstetricians [FIGO], and training of health professionals and midwives, for proper management of the third stage of labor (WHO, ICM, & FIGO, 2004). Once a PPH is identified, four components of management should be instigated simultaneously including, communication and resuscitation, monitoring and investigation, as well as measurements to control the bleeding (RCOG, 2009).

The California maternal quality care collaborative [CMQCC] formed a multi-stakeholder organization with the aim to end preventable maternal death and create an equitable maternity care for all women in California (Bingham, Melsop, & Main, 2010). Prevention, recognition, and response to obstetric hemorrhage is addressed by the task force's Hemorrhage Care Guidelines, best practices, and cognitive tools, which are available as the open-source CMQCC obstetrics hemorrhage toolkit (CMQCC, 2015).

Recommendations to optimize management of obstetric hemorrhage including;

1. Antepartum assessment is essential to identify women at risk for obstetrical hemorrhage,
2. Responding to maternal hemorrhage, including rapid emergency blood transfusion, which requires coordination among physicians, nurses, anesthesiologists and the blood bank, nursing staff and physicians in the labor, delivery, recovery and postpartum areas
3. Trained inaccurately assessing the degree of maternal hemorrhage.
4. Use fluid resuscitation and transfusion based on the estimation of current blood loss and the expectation of continued bleeding.

Moreover, the Association for Women's Health, Obstetric and Neonatal Nurses [AWHONN] has used and adapted many of these tools and encourages members of their collaborative to use of tools (AWHONN, 2014). PPH project are employing an evidence-based educational project designed by AWHONN, which

includes the following educational modules: a) quantification of maternal blood loss; b) PPH risk assessment; c) maternal warning signs d) simulation-based training e) transfusion therapy f) team debriefing g) PPH management (AWHONN, 2014). The current focus of instruction on postpartum hemorrhage is early recognition. Inaccurate estimation of blood loss may lead to mi*SD*iagnosis and improper management of PPH (Geller et al., 2014). Overestimation may lead to an unnecessary blood transfusion. Underestimation may lead to a delay in diagnosis and treatment (Shields et al., 2011). To avoid mi*SD*iagnosis, weighing of blood-soaked pads is recommended. Hence, there is a possibility of overestimation as well, amniotic fluid and urine may misrepresent the real situation (Biguzzi et al., 2012).

In Thailand, national guideline management of PPH had been developed and disseminated to all healthcare service by the Royal Thai College of Obstetricians and Gynecology (RTCOG, 2012). The group was multidisciplinary including maternal-fetal medicine specialists, obstetricians and gynecologists, obstetrical nurses, certified nurse midwives, and anesthesiologists. During regular meetings, they build a consensus around the major elements of a standardized clinical protocol concerning the diagnosis and management of PPH from a number of sources and the best evidence-based, such as WHO guideline, ACOG and other organizations in an effort to select the ideal requirements for comprehensive approach to obstetrical hemorrhage. Elements of the standardized clinical protocol for PPH are as follows:

1. Risk assessment and identification of all women at risk for prepare monitoring before birth.

2. Using AMTSL for all vaginal births, and routine assessment of the uterine tonus every 15 minutes for the first 2 hours postpartum.

3. Diagnosis by establish a process for measuring blood loss, collecting blood in measurement containers by use of the calibrated weighing supplies, collecting bag, are significantly more accurate than estimate blood loss.

4. In the immediate postpartum period, warning signs were important to concern when a number of clinical issues are being attended, it is easy to overlook these changes in maternal condition.

5. Management of PPH through: identification of the cause of hemorrhage, fluid replacement to prevent shock, use of uterotonics as appropriate, and blood replacement and surgery. Organization of emergency transportation systems in the community.

The RTCOG have recruited an expert work group to assist hospitals in the action learning collaborative for management of maternal hemorrhage. This implementation guide was developed to support hospital leaders' efforts to successfully implement the best obstetric hemorrhage practices and tools to create active quality improvement processes to drive successful implementation (RTCOG, 2012).

In conclusion, various PPH management guidelines were developed at international, national, and local levels, which provided support to hospitals and clinicians in implementing practices to decrease maternal mortality and morbidity.

Implementation of evidence-based practices

The entry of EBPs into the nursing field created a major paradigm shift in nursing practice (Stevens, 2013; Williamson, Almaskari, Lester, & Maguire, 2015).This shift was apparent in the way nurses began to think about research results, the way nurses framed the context for improvement, and the way nurses employed change to transform healthcare (Melnyk, Fineout-Overholt, & Mays, 2008). The paradigm shift to EBPs was beginning to occur throughout the nursing profession (Grol & Wensing, 2005). As known as EBPs can improve the dependable healthcare services and increase the accountability of healthcare workers (Upton, Upton, & Scurlock-Evans, 2014; Varaei, Salsali, & Cheraghi, 2013). EBPs is important to keep nurses' knowledge up-to-date, enhance clinical judgment, and augment the existing provider-client decision making process (Facchiano & Snyder, 2012).

Implementation research studies is the processes and factors lead to associated with the widespread use and the successful integration of an evidence-based intervention (Rabin, Browson, Haire-Joshu, Kreter, & Weaver, 2008). Implementation of evidence-based interventions most likely occurs in stages and is defined as the process of putting to use an intervention within a specific setting

(Rabin et al., 2008; Rabin, Brownson, Kerner, & Glasgow, 2006). However, the task of implementing EBP has been proven to be complex as it involves factors as organization, management, culture, staff, etc. (Nilsson, Brulin, Grankvist, & Juthberg, 2017).

Rogers's theory (2003) of diffusion of innovations is useful in helping us understand how research can be disseminated to the larger community. In their adoption of the innovation diffusion theory, this study had focus on the implementation phase.

Diffusion of innovations model

Rogers' diffusion of innovations is a sociological framework that has been used to examine factors influencing research utilization within nursing and healthcare (Dobbins et al., 2002; Greenhalgh et al., 2004). Innovations, which could be an idea, technology, product, or practice, are generally perceived as something new to the population of interest (Rogers, 2003). Diffusion research has focused on five areas: 1) the characteristics of an innovation which may influence its adoption; 2) the decision-making process that occurs when individuals consider adopting a new idea; 3) the characteristics of individuals that make them likely to adopt an innovation; 4) the consequences for individuals and society of adopting an innovation; and 5) the communication channels used in the adoption process (Rogers, 2003). The Diffusion of Innovations framework encompasses four main elements, including the innovation, communication, channels, a social system, and the time or rate of adoption (Rogers, 2003).

Uncertainty is an important obstacle to the adoption of innovations. An innovation's consequences may create uncertainty: "Consequences are the changes that occur in an individual or a social system as a result of the adoption or rejection of an innovation" (Rogers, 2003, p. 436). To reduce the uncertainty of adopting the innovation, individuals should be informed about its advantages and disadvantages to make them aware of all its consequences.

Rogers (2003) described the innovation-decision process as "an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation" (p. 172). Therefore, five stages of the innovation-decision process, includes (Rogers, 2003).

1. The knowledge stage; The innovation-decision process starts with the knowledge stage. In this step, an individual learns about the existence of innovation and seeks information about the innovation. According to Rogers, the questions form three types of knowledge: 1) awareness-knowledge, 2) how-to-knowledge, and 3) principles-knowledge (Rogers, 2003).

2. The persuasion stage: The persuasion step occurs when the individual has a negative or positive attitude toward the innovation, but "the formation of a favorable or unfavorable attitude toward an innovation does not always lead directly or indirectly to an adoption or rejection" (Rogers, 2003, p. 176).

3. The decision stage; At the decision stage in the innovation-decision process, the individual chooses to adopt or reject the innovation. While adoption refers to "full use of an innovation as the best course of action available," rejection means "not to adopt an innovation" (Rogers, 2003, p. 177).

4. The implementation stage; an innovation is put into practice. However, an innovation brings the newness in which "some degree of uncertainty is involved in diffusion". Thus, the implementer may need technical assistance from change agents and others to reduce the degree of uncertainty about the consequences.

5. The confirmation stage; The innovation-decision already has been made, but at the confirmation stage the individual looks for support for his or her decision.

Diffusion occurs through a five-step decision-making process. It occurs through a series of communication channels over a period of time among the members of a similar social system. Communication channels of the social system influence the entire innovation-decision process over a period of time (Rogers, 2003).

Rogers' model depicts decision making as a linear process from knowledge through the confirmation stage, but he acknowledges the individual's ability to adopt or reject the innovation at any stage (Rogers, 2003). Rogers' five stages (steps): awareness, interest, evaluation, trial, and adoption are integral to this theory.
An individual might reject an innovation at any time during or after the adoption process. Rogers postulates that four prior conditions influence the innovation-decision process. These prior conditions consist of 1) previous practice, 2) perceived need or problem, 3) innovativeness, and 4) norms of the social system (Rogers, 2003). Rogers recognizes that need identification prior to awareness of an innovation does not occur

in all instances. Rogers describes rates of individual adoption in relation to the adopter categories of innovators, early adopters, early majority, late majority, and laggards (Rogers, 2003).

In the diffusion model, Rogers' asserts that characteristics of the decision making unit such as socioeconomics, personality variables, and communication behavior, influence the knowledge stage of the innovation-decision process. The social system is defined as a placement of interrelated units involved in the solution to a common problem to meet a common goal. Members of a unit of a social system can be individuals, informal groups, organizations and so on. Diffusion research summarizes generalizations for each of these characteristics, although Rogers also uses the term characteristics of adopter categories when describing these variables (Rogers, 2003).

The innovation adoption is influenced by the following three key components:

1. Characteristics of the adopter;
2. Characteristics of the organization; and
3. haracteristics of the innovation.

Consequently, it is a process that spreads innovation out from its discovery or creation source to the user or its adapter, a process that occurs in the society as a group process (Rogers, 2003). According to the theory of Rogers, there are four elements involved in the process of idea, practice, or object dissemination: a) it should be classified as innovation; b) it must be communicated through certain channels; c) it must be adopted among members within a social system; d) it must take into account duration or the time factor. The process begins with innovation. Innovation may be an idea, practice, or object that is perceived as new by potential adopters and should be considered as desirable to adapt.

Innovation could be adapted, the speed of its adaptation by the members of a social system constitutes the level of adoption (Rogers, 1995). The level of adoption is usually measurable on the basis of the number of the members who adopt the innovation system in a given period, and who are classified in different categories:

1. Innovators: These are people who want to be the first to try the innovation. They are venturesome and interested in new ideas. These people are very

willing to take risks, and are often the first to develop new ideas. Very little, if anything, needs to be done to appeal to this population.

2. Early adopters: These are people who represent opinion leaders. They enjoy leadership roles, and embrace change opportunities. They are already aware of the need to change and so are very comfortable adopting new ideas. Strategies to appeal to this population include how-to manuals and information sheets on implementation. They do not need information to convince them to change.

3. Early majority: These people are rarely leaders, but they do adopt new ideas before the average person. That said, they typically need to see evidence that the innovation works before they are willing to adopt it. Strategies to appeal to this population include success stories and evidence of the innovation's effectiveness.

4. Late Majority: These people are skeptical of change, and will only adopt an innovation after it has been tried by the majority. Strategies to appeal to this population include information on how many other people have tried the innovation and have adopted it successfully.

5. Laggards: These people are bound by tradition and very conservative. They are very skeptical of change and are the hardest group to bring on board. Strategies to appeal to this population include statistics, fear appeals, and pressure from people in the other adopter groups.

Rogers (2003) described the innovation-diffusion process as “an uncertainty reduction process” (p. 232), and he proposes attributes of innovations that help to decrease uncertainty about the innovation. Characteristics of innovation help to explain different levels of the adoption of innovation. Rogers (2003) defines the characteristics of innovation as causes for the adoption of innovation at different levels.

These characteristics set by Rogers are the following (Rogers, 2003):

1. Relative advantage is the extent by which a particular group of users perceive innovation as better than the idea, or practice it replaces. The bigger the perceived relative advantage of innovation by the organization, the faster the level of its adoption will be. It depends on individual perceptions and the needs of the user group.

2. Compatibility is related to lower levels of uncertainty about the innovation. Adoption is increased when the innovation is perceived to be consistent with the values, norms, and perceived needs of the individuals or social system (Rogers, 2003).

3. Complexity is the degree to which innovation is perceived as difficult to understand and use. The simpler innovation to understand, the sooner it will be adapted. Innovations that are complex to understand and use will require adopters to develop new skills (Rogers, 2003).

4. Observability refers to the degree to which the use or results of an innovation are visible to others.

5. Trialability of an innovation represents less uncertainty to the individual and leads to quicker adoption rates. The ability to use an innovation for a trial period is of greater value to the early adopter since later adopters will typically be surrounded by others who are using the innovation.

The spreading out of innovation model takes into account the dissemination of innovation among the members of the social system. The social system is defined as a placement of interrelated units involved in the solution to a common problem to meet a common goal. Members of a unit of a social system can be individuals, informal groups, organizations and so on. The social system constitutes the area in which innovation spreads out. Meanwhile, norms that may affect the spread of innovation are models of behavior created for the members of the social system (Rogers, 2003).

Stemming from Rogers' diffusion of innovations theory (2003), intervention factors are extremely influential in the success or failure of initiatives, affecting adoptability of strategies by individuals and groups. The implementation stage as the fourth stage of innovation-decision process by Roger (2003). Implementation refers to the action of using an innovation. The term adoption is commonly used in diffusion literature to describe both processes of accepting and implementing the innovation (Rogers, 2003). The process of putting the innovation into practice refer to change agents provide support for the implementation process. Behavior changes as innovation is adopted. Key features of innovation are identified to evaluate its effectiveness (Rogers, 2003).

The success of the EBPs implementation programs depended on three important strategies (1) the design and implementation; (2) the dedication of time and resources by nursing leadership; and (3) the collaboration between hospital and academia (Newhouse et al., 2005). Implementation strategies are as variable as the clinical practices recommended by guidelines. Strategies may include passive or active modes of dissemination (Rycroft-Malone et al., 2004).

Implementation strategies provide potential adopters with knowledge about a practice change and encourage them to use it (DiCenso et al., 2002). A number of implementation strategies have been used by agencies to encourage health care practitioners to adopt the practices recommended by any given guideline (Sudsawad, 2007). Because of this study focus in community hospitals, implementation of EBPs in the community poses a major challenge for the behavioral health field and the results of efforts to implement EBPs have had some disappointing results (McHugh & Barlow, 2010). Understanding the perspectives of stakeholders involved in the implementation process can provide a richer and more nuanced understanding of how best to implement EBPs in future efforts.

In Thailand, the concept of EBPs was first mentioned a decade ago. There are two organizations (i.e., the Thai Cochrane Network [TCN] and the Thai Center for Evidence Based Nursing and Midwifery [TCEBNM]) that have introduced the use of evidence-based practice in Thailand.The TCN focuses on promoting the generation and use of research syntheses relevant to health problems in Thailand and on developing a capacity to train and support Thai review authors. It received support from the Southeast Asia Optimizing Reproductive and Child Health in Developing Countries [SEA-ORCHID] (Cochrane Collaboration, 2008). Additionally, most of the guidelines produced by this organization focus on reproductive and child health.

The implementation of evidence-based into practice operates at four levels; the individual healthcare professional, healthcare groups or teams, organizations, and the larger healthcare system or environment (Cummings et al., 2007; Titler et al., 2007). This implies a multifaceted approach to disseminating EBPs and responsibility to the larger healthcare community in fostering EBP. Implementation of EBP occurs within widely diversified practice environments, or contexts. The context is

comprised of two major categories: 1) structural context factors, and 2) social dynamic context factors. Structural context factors are defined as characteristics of the setting, such as, staffing, unit size, and types of patients cared for in the unit. Social dynamic context factors pertain to the roles, relationships, and dynamics of the individuals and groups within a setting and are defined in this dissertation as unit climate for implementation. Previous research has identified structural context factors (e.g., staffing; unit/ hospital size; characteristics of patients cared for in unit) which influence EBP implementation and patient outcomes (Herr et al., 2012). However, little is known about social context factors, such as organization climates, and how these factors foster nursing unit climates that are evidence-based, promote implementation of EBPs by staff, and improve patient outcomes.

In conclusion, implementation strategies that aim to change individual nursing practice without the formal endorsement of the organization will likely be unsuccessful, both the individual practitioner and the organization are important players when implementing research findings into practice such as clinical guidelines (Estabrooks et al., 2007).

Gaps of evidence-based implementation in nursing practice

Currently, scientific evidence is presented to inform clinical decisions and ongoing discussions related to issues, methods, clinical practices, and teaching strategies for EBP (Sigma Theta Tau International, 2005). An important step to EBPs adoption is to conduct an organizational assessment of implementation readiness for personal and institutional change (Melnyk, Fineout-Overholt, & Mays, 2008). EBPs can improve patient outcomes, cost effectiveness and staff satisfaction, and nursing care should be based on the best available evidence (Bakke, 2010; Bunting, Lee, Knowles, Lee, & Allen, 2011). However, the report by the Agency for Healthcare Research and Quality [AHRQ], demonstrated that evidence-based care is delivered only 70 % of the time, an improvement of just 4 % since 2005 (AHRQ, 2015). This problem demonstrates the gap between the availability of EBPs recommendations and the use of these practices at the point of care delivery

(Herr et al., 2012; Titler, Wilson, Resnick, & Shever, 2013). To improve care delivery, quality, and patient outcomes, it is crucial to address the essential role of implementation science in connecting research findings to optimal health outcomes for all people (Newhouse, Bobay, Dykes, Stevens, & Titler, 2013). Hence, discussed the impact of EBP on nurses and on improving the quality of nursing practice may be useful for researchers to improve their knowledge about EBPs and to search for strategies for effective implementation of EBPs (Stevens, 2013).

For EBPs to be successfully adopted and sustained, nurses and other healthcare professionals recognized that it must be adopted by individual care providers, microsystem and system leaders. However, this does not happen consistently (Estabrooks et al., 2007). There is a wide gap between EBPs and current nursing practice (Davis et al., 2012). The challenge is how to find the best research evidence, incorporate the best evidence into practice in a meaningful manner, and motivate nurses or nursing leadership and organizational leadership to care about using evidence in practice with all of the challenges faced in delivering high quality nursing care (Zalon, 2012).

Multiple factors and barriers to guideline implementation continue to exist and use of EBPs recommended inconsistent should be studied.The researcher must consider nurse-midwife as individual characteristic attributes, as well as organizational, EBP characteristics, and barriers of EBPs (Estabrooks et al., 2007). The factors that influence the implementation of evidence-based or innovation diffusion is influenced by individual, innovation specifics, and organizational characteristics, and is fundamentally a social and communicative process (Rogers, 2003). Although, the adoption of an innovation will occur automatically, but the rate of diffusion is affected by the social system's communication strategies and the individual's decision-making process (Rogers, 2003). Antecedents to an individual decision making regarding the adoption of an innovation include the individual's previous practice, perception of existing needs or problems, and innovativeness, and the norms of the individual's social system (Rogers, 2003).

Gaps of evidence-based implementation of prevention and management PPH

Putting evidence-based of PPH recommendations into practice begins with the translation of evidence-based guidelines into high quality local protocols. For many care providers these protocols often are the only guide in the prevention and management of PPH in the actual care (Woiski et al., 2016). However, a recent study showed that merely the presence of PPH-protocols does not indicate a better outcome (Bailit et al., 2015). A systematic review of literature has shown that these guidelines can lower the PPH rate (Nadisauskiene, Kliucinskas, Dobozinskas, & Kacerauskiene, 2014). In addition, the best results are achieved when the guidelines are implemented during training courses and the whole team dealing with PPH attend them.

The Florida Perinatal Quality Collaborative [FPQC], in partnership with the florida department of health, ACOG developed and implemented the obstetric hemorrhage initiative [OHI] as part of a larger statewide maternal mortality prevention program. The FPQC facilitates OHI implementation through ‘‘sharing the best available scientific knowledge, teaching and applying methods for organizational change, involving experienced hospital experts, and sharing participating hospital experiences, challenges, and successes (FPQC, 2013). Participants often discussed how implementing evidence-based interventions were part of their institution’s mission and influenced their daily practices. Participants reflected positively with regards to the evidence strength, adaptability, and packaging, the complexity of the initiative adversely affected implementation experiences and required additional efforts to maximize the initiative effectiveness (Vamos et al., 2016).

The evidence-based practices implementation in Thailand

Currently, several hospitals in Thailand have implemented EBPs in their hospitals. For example, a large hospital, university affiliate, in the Northeastern region of Thailand disseminated EBPs related to pregnancy and childbirth care to physicians and nurses using workshops, journal clubs, and audit and feedback as methods of implementation (Laopaiboon et al., 2008; Swadpanich et al., 2008). The data from three studies found that the implementation of the EBPs or CPG was an effective

method to change the practices of physicians and nurses. However, the studies were done in large hospitals with university affiliates, where resources were relatively abundant. The status of using and implementing EBPs in other types of hospitals in Thailand, especially specific implementing EBPs in maternal and child unit is still unknown.

In Thailand, factors related to the implementation of EBPs on PPH had few research. According to the studies indicated malpractice in a new protocol or guideline, guideline was general obstetrics care not specified for management PPH, unawareness of PPH leading to non-adherence to the guidelines with initial early assessment in every case, incorrect practice of active management during the third stage of labor and visual estimates of blood loss rather than quantification of blood loss by measurement (Sirimas et al., 2014). Moreover, previous studies have reported less than optimal management of severe PPH and failure to fully apply guidelines, because variations in clinical practice related to PPH (Plodril et al., 2016). Related to the research that development of clinical practice guideline for prevention and management of PPH revealed that nurse-midwives fail to recognize the identification of risk factors during initial patient assessment, while team providers have deficient knowledge and fail to understand the guidelines for prevention PPH, nurse-midwives having insufficient skill to management of third stage labor, ineffective for uterine massage after placenta delivery period, insufficient skill to monitoring during early postpartum care (Plodril et al., 2016). Moreover, found that ineffectiveness risk screening of standard care during first stage of labor has also been discovered (Prabpal, 2013). Incorrect placental delivery techniques and failure to perform immediate uterine massage after birth are causes related to excessive postpartum bleeding (Anusornteerakul, 2014). This problem demonstrates the gap between the availability of EBPs recommendations and the use of these practices in maternal and child, Thailand.

In Thailand, from preference study 87 % of PPH were referral cases from community hospitals, because limitation of obstetrician, resource, and accessibility (Charoenweerakul, Srisupundit, & Tongsong, 2009). While nurse-midwives are lead care responsible for obstetric services of women and provide midwifery care at different stage of childbearing. They are able to assist in normal delivery and basic

emergency obstetric care (Thailand Nursing and Midwifery Council, 2010). In community hospitals, that nurse-midwives have the primary responsibility for monitoring and managing care delivery to optimize patient outcomes. Moreover, responsible for midwifery care and essential obstetric services of women from all catchment types of the district health network (Prakongsai, Limwattananon, & Tangcharoensathien, 2009).

Accordingly, it seems that implementing EBPs and the use of research finding should lead to better patient care outcomes because patient care decisions are conscientiously based on the best scientific evidence (Institute of Medicine (IOM, 2003). However, the development and dissemination of evidence-based PPH guidelines intended to assist professionals and patients in the prevention and management of PPH-care, but not enough to close the existing gap between guidelines, course-instructions and daily practice (Penney & Foy, 2007). Integrating evidence into daily clinical practice for improved patient outcomes has been a constant struggle for prevention PPH of nurses-midwives (Dawes et al., 2005). The gap between knowledge and practice remains an issue that requires further attention (Penney & Foy, 2007).

There is also substantial evidence indicating major gaps in the clinical area between the existing evidence and actual practice. Reports from the confidential enquiries into maternal deaths show that most deaths due to PPH involve delays and substandard care in the diagnosis and management of hemorrhage (Bowyer, 2008). Factors as substandard care are frequently reported in the international literature and there are similar reports in the Netherlands (Woiski et al., 2016).Substandard care is regularly mentioned for women with a PPH (Berg et al., 2005). In a French study, in 38 % of the women with a PPH of more than 1500 ml. and in 70 % of the women who died as a result of a PPH, suboptimal care factors were detected (Wilkinson et al., 2011).

In addition, because of concerns for the safety of the mother and fetus and for the mother's privacy, the demand for quality care, keeping the patient safe, and producing the optimum outcome has led to examine. Although, research supports the link between nurses and patient outcomes, the connection is approached cautiously (Clarke, 2005). Key responsibilities of nurses include ongoing assessments,

implementation of tailored interventions based on these assessments, and team mobilization 24 hours per day to ensure optimum outcomes for women and newborns.Based on the delivery outcomes of women under their care may provide an important new lever to improve the quality of care during childbirth (Edmonds, Hacker, Golen, & Shah, 2016). The integrative reviews identified factors that influence of PPH management found that the consequent increase in maternal deaths are associated with the lack skilled and knowledge in the prevention and management of PPH (Walton et al., 2016). The incorrect practice of active management of the third stage of labor related to increased incidence of PPH (Davis et al., 2012). Prevention by recognized identify the risk factor used for screening and clinical management of labor. Inaccurate estimation of blood loss may lead to miss diagnosis and improper management of PPH (Littleton-Gibbs & Engebretson, 2012). The impact of team-based management, lack of communication or failure team-communication (Walton et al., 2016).

The ramification of this research-practice divide is patients are not receiving the best possible care and limited health care resources are wasted on inefficient, harmful or ineffective interventions (Harrington et al., 2009). Despite the existence of guidelines and protocols, a gap between recommended care and delivered care often exists, which may suggest suboptimal adherence to these guidelines and protocols (van Achterberg et al., 2008). The nurse-midwife is tasked with multiple responsibilities and expectations throughout the intra-partum process all while providing care not only for the mother and the fetus but for their support system as well.

Understanding the perspective of the registered nurse within the intra-partum setting is vital in order to recognize the factors which help and hinder the provision of professional support. These factors were: a) hastening, controlling and mechanizing birth; b) facility culture and resources; c) mother's knowledge, language and medical status; d) outdated practices; e) conflict and f) professional/ ethical decline. Six factors were identified as causing a hindrance to an intra-partum care provision in which a narrative analysis (Sleutel, Schultz, & Wyble, 2007).

These registered nurses indicated that there were significant constraints posed by technological advancement, protocols and policies (Sleutel et al., 2007). Sleutel et al., (2007) went on to discuss several factors that helped nurses provide safe care during the intra-partum time period. These factors are: a) teamwork and collaboration; b) philosophy of birth as a natural process; c) facility culture and resources and d) nursing impact, experience and autonomy.

Thus, without tailor-made implementation, in general large gaps exist between best evidence as described in the guidelines and daily practice (Grol & Wensing, 2005). Gaining a greater understanding of the influencing factors behind this variability is an important goal for research and systems challenge. There is a considerable to examine what is known in the research evidence and what happens in currently practice, so that patients often do not receive the best or even optimal nursing care (Squires et al., 2011).

Factors influencing implementation of evidence-based practices

Because the process of research implementation of EBP is complex, contextual, and poorly understood (Matthew-Maich, Ploeg, Jack, & Dobbins, 2010). Implementation of EBPs is complicated with barriers and many of factors which are associated with the context of care. More than two decades of research have resulted in the accumulation of a large body of literature concerning the many factors that influence the adoption of research evidence. From an implementation perspective, influencing factors can be categorized into the individual professional, the organization, the external context (social/ physical/ regulations/ policies), and the innovation (eg., guidelines and protocols) (Grol & Wensing, 2005). Problems with implementing the innovation are addressed. Change and modification (reinvention) occur to use the innovation in a particular practice environment (Rogers, 2003). The translation of research into practice requires that nurse leaders and managers understand group dynamics, individual responses to innovation and change, and the culture of their healthcare organization (Zalon, 2012).

Many researchers identified factors influencing the adoption of EBPs in nursing practice. Both nurse-level and organization-level factors influence the

adoption and implementation of EBPs in health care organizations (Cummings et al., 2007; Estabrooks et al., 2007; Titler et al., 2007). From ours studied they separate the variables in each level and the variables was tested the relationship of causal model on implementation of EBPs in health care organizations (Cummings et al., 2007; Estabrooks et al., 2007; Titler et al., 2007). Therefore, this study used the variables and distinguished for each level following those the empirical study.

Additionally, advanced modeling of relationships among organizational characteristics, individual characteristics, EBP characteristics and implementation or adoption of EBP is necessary to understand better which factors influence research uptake in practice and to enable assertion of hypothesized on both organizational and individual levels. The details are described as the following.

1. Individual-level influences factors

In 2003, Estabrooks et al. (2007) identified 20 studies in a systematic review of the relationship of individually ascribed characteristics to research use. Characteristics were classified into six categories: beliefs and attitudes, involvement in research activities, information-seeking, professional characteristics, education, and other socioeconomic factors. Apart from a positive attitude to research, the evidence was equivocal and insufficiently robust to support claims that individually ascribed characteristics (sex, age, educational level, reading activity, etc.) influenced research use (Estabrooks et al., 2007).

Individual nurse characteristics

Individual nurse characteristics are the demographic information and unique qualities for the nurse, or the information that pertains to inherent characteristics of a segment of a population. Rogers (2003) identified ten generalizations of personality characteristics associated with increased intrinsic innovativeness. Demographic information on the nurses-midwives respondents were included self-reports of education level, age, gender, and years of experience as nurse-midwives (Olade, 2003). Nurse characteristics are important to consider when evaluating EBPs.Report of literature reviews found that examined individual nurse characteristics have influenced research utilization, there was little to suggest that any potential individual determinants influence research use (Estabrooks, 2003). Nurses' top reasons for adopting EBP have been identified as having a personal interest in the change in

practice, avoiding risk of negative consequences to the patient, and personally valuing the evidence (Brown, Wickline, Ecoff, & Glaser, 2009).

Years of nursing experience

Years in nursing have been linked as factors affecting implementation of EBP. In a correlation, cross-sectional study with a convenience sample methodology, 106 RNs from six counties in a southwestern state were given a researcher developed survey that contained both closed and open-ended questions. Subjects ranged in age from 21 to more than 50 years-old. One-half of the subjects were staff nurses (Olade, 2003, 2004).

Years of nursing experience ranged from one to 20 years, years of experience in nursing (correlation Coefficient = .10, p = .29) had no statistically significant relationship with the nurses' overall attitude toward research (Olade, 2004).

Experience and level of education preparedness have demonstrated significant correlations among nurses' perceptions of unit culture, and readiness for EBP use (Melnyk, Fineout-Overholt, & Mays, 2008)

Heydari, Mazlom, Ranjbar, and Scurlock-Evans (2014) conducted a study to determine the EBP knowledge, attitudes, and practice of clinical nurses and midwives working in Mashhad governmental hospitals in Iran, random sampling of 240 full-time nurses and midwives. The participants had a mean of 6.6 years (SD = 4.7) of clinical experience. Nurses and midwives with more years of working experience had a significantly greater negative relationship with the practice of EBP (r = -0.30, p <.001) than those who had less working experience (Heydari, Mazlom, Ranjbar, & Scurlock-Evans, 2014).

According to the study of Thai nurses who had 11-20 years of nursing experience perceived more barriers to finding research and barriers to changing practice than nurses with 1-10 or > 20 years of nursing experience. While nurses with nursing experience more than 20 years perceived more support of using EBPs than other groups. Nurses with 11-20 years of nursing experience had higher reported barriers than those with 1-10 years of nursing experience (Suwanraj, 2010).

Personal innovativeness includes those inherent characteristics contributing to an individual's decision to adopt an innovation. Nurses are responsible for

constantly questioning the service they provide in order to see whether it is performed well or not and investigating the ways by which service can be provided more efficiently, with higher quality, and cost efficiently. In order for nurses to fulfill this responsibility, they must be innovative, initiate and sustain innovation. In healthcare institutions, nurses are expected to create an innovative perspective and field of practice, raise the necessary awareness for innovation, create a working atmosphere that promotes innovation, support the nurses with innovative attempts and ideas, reward those who are successful, create projects, and lead the members of other professions in terms of innovation (ICN, 2009; Terzioglu, 2011). However, in order to be able to achieve these, nurses need to be individually innovative.

Some elements of personal innovativeness, such as higher formal nursing education, higher intrinsic innovativeness, conference attendance, reading professional journals, and Internet use have been associated with increased adoption of nursing practices or research utilization (Estabrooks et al., 2011). Use of online social networking has exploded in recent years and its impact on adoption of practice guidelines and research utilization in general is unknown (Estabrooks et al., 2007).

Personal innovativeness was related to adoption in a number of nursing and critical care studies. A study of operating room nurses found personal innovativeness was associated with compliance with a smoke evacuation policy (Ball, 2012). An interdisciplinary study of ICU clinicians found that personality types, such as a willingness to embrace change were related to improved attitudes towards guidelines (Cahill, Suurdt, Ouellette-Kuntz, & Heyland, 2010).

According to study of sample of 22 RNs from the academic medical center and 18 RNs from the regional medical center, cross-sectional hierarchical design at two inpatient oncology units in the Pacific Northwest area (Eaton, 2014). A significant relationship was found between oncology nurse certification and innovativeness (r =.46, p =.003). Perception of self as innovative was also positively related to EBP beliefs (r =.48, p =.002) (Eaton, 2014).

The study of factors influencing evidence-based practice by Iranian general practitioners (Olfati, Dastgiri, Hajebrahimi, & Jahanbin, 2013). Respondents were generally positive concerning research evidentiary use. Respondents' mean attitude score was 25.3 (*SD* =5.6, min. = 13, max. =37). Absent facilities and resources, little

authority to change practices, expected increases in patient visit durations and the poor access to research information were found to be the main Research Utilization barriers for GPs (Olfati et al., 2013).

According to a study of the level of adoption of evidence-based postoperative pain assessment practices is the individual registered nurse's perception of his or her stage in the process of adoption of three specific nursing practices recommended in clinical practice guideline (Carlon, 2008). Innovativeness addresses registered nurses' level of innovativeness or their ability to initiate or adapt to change. The mean score was 3.40 (SD = 0.54) indicating that the innovativeness of nurses was neither unsupportive nor supportive of the adoption of pain management practices including evidence-based pain assessment practices (Carlson, 2006). The study suggested the level of adoption of evidence-based practice impact on nurse's perception of his or her stage in the process of adoption.

Perceived barriers to EBP implementation

According to Funk et al. (1991), barriers to research utilization consist of four components: 1) characteristics of the potential adopter, 2) characteristics of the organization, 3) characteristics of the innovation, and 4) characteristics of the communication. The Funk's barriers to RU concept has been widely adopted by researchers since 1991, despite criticism for focusing on research findings more than the broader definition EBPs (Gerrish et al., 2007). Perceived barriers are defined as the perception of the nurse regarding obstacles that prevent him or her from using EBPs (Funk et al., 1991). Barriers and facilitators to EBPs must be addressed before the process of EBPs implementation. Identification of both barriers and facilitators to EBPs is an important step to determine factors that might discourage or support the adoption of EBPs (Graham & Logan, 2004). Recognizing that barriers and resistance exist and being able to remove those barriers and resistance is part of the challenge of bridging the gap between evidence and practice (Gale & Schaffer, 2009). There are many factors that have been identified as barriers to or facilitators of research utilization.

According to the Ottawa Model of Research Use (Graham & Logan, 2004), the process of implementing EBPs cannot be completed without exploring the barriers and facilitators. Barriers to successful implementation arise from multiple factors

including varying education and clinical experiences of nursing staff, and a lack of understanding about its' importance to optimal high quality patient care (Linton & Prasun, 2013). It should be noted that many of the studies used the same instrument, the BARRIERs scale (Funk et al., 1991), to assess barriers. Therefore, the barriers were predetermined and nurses were identifying to what extent they felt the factors were barriers to implementing EBPs.

A systematic review of 63 nursing studies used the BARRIERS scale (Funk, 2001) to identify common barriers to research utilization (Kajermo et al., 2010). The barriers included unawareness, nurse not capable of evaluating research quality, insufficient time to read or implement research, lack of authority to make practice changes, inadequate facilities, lack of support by others (Kajermo et al., 2010). Documented nurse-related barriers include lack of EBP knowledge and skills, negative attitudes toward research, perceived or real lack of support, time and resource constraints, lack of authority to make a practice change, and beliefs about organizational readiness for EBP (Melnyk & Fineout-Overholt, 2011; Ploeg, Davies, Edwards, Gifford, & Miller, 2007; Pravikoff, Tanner, & Pierce, 2005; Squires et al., 2011). Barriers to EBP include lack of time, education, authority or support to make changes (Brown et al., 2009; Kocaman et al., 2010; Koehn & Lehmen, 2008). This problem is partially attributed to a lack of understanding of the facilitators and barriers to successful implementation, as well as, effective strategies for implementing evidence into routine practice (Titler, 2010).

According to the cross-sectional study was conducted with 182 nurses from four teaching hospitals in Kerman, Iran found that most important supporting factor was mentored by nurses who have adequate EBP experience (3.65 ± 1.17) and the biggest barrier was difficult judging the quality of research papers and reports (2.46 ± 0.95) (Farokhzadian, Khajouei, & Ahmadian, 2015). Lack of time is reported consistently in the nursing literature as an important deterrent to implement the EBP. Nurses report insufficient time to read or implement new ideas in practice (Hutchinson & Johnston, 2006; Niedherhauser & Kohr, 2005). Barriers related to changing practice on the basis of evidence in nursing and midwifery have been repeatedly demonstrated in recent years (Brown, Wickline, Ecoff, & Glaser, 2009),

and figured prominently in all three samples contrasted; insufficient time at work to implement changes in practice was rated as the most prominent barrier to changing practice in all samples (Brown et al., 2009).

A systematic review of 106 articles identified 1,144 barriers for EBP, which lack of resources was the most common barrier. The summary results showed that lack of time, inadequate skills, poor access to information resources, lack of knowledge and financial shortage are the next most common barriers to the implementation and use of EBP (Sadeghi-Bazargani, Tabrizi, & Azami-Aghdash, 2014). Similar to Gerrish & Cooke (2013) study in community nurses found the greatest barrier to evidence-based practice was lack of time. Nurses also lacked confidence in finding research evidence, reviewing it, and judging its quality, with over 40 % feeling that they were at the level of a complete beginner/ novice. High levels of skills were reported around using the internet, even though it was rated lowest in terms of being a source of evidence (Gerrish & Cooke, 2013).

The report of cross-sectional data was collected from 407 nurses, the nurse's age, the number of years of nursing practice, and the number of years since obtaining the last health professional degree influenced the use of sources of knowledge and self-reported barriers. Self-reported skills in finding, reviewing and using different sources of evidence were positively associated with the use of research evidence and inversely related to barriers in the use of research evidence (Dalheim, Harthug, Nilsen, & Nortvedt, 2012).

The implementation of EBPs at a Thai regional hospital found that obstacles to implementing EBPs included English, time constraints, limited experience in some interventions, and inadequate support from policy makers (Swadpanich et al., 2008). According to the study of factors leading to success in implementation of evidence-based nursing practice professional nurses, Thailand, found that barriers of the individual's nurse include low self-efficacy, insufficient time to read or implement research, lack of authority to make practice, appraisal and evaluation the evidences (Puttaruksa, Subgranon, & Othaganont, 2016).

In summary, exploring barriers and facilitators toward EBP in these organizations can help in establishing strategies to overcome the barriers and to promote the facilitators.

Perceived evidence-based characteristics

Perceived evidence-based characteristics known to impact rates of adoption can attribute includes perceived relative advantage, compatibility, complexity, observability, and trialability (Rogers, 2003). Characteristics of best practices in the early diffusion research, Rogers (2003) found that the perceived attributes of the innovation explained 40 % of the variation in the rate of adoption, while contextual and leadership variables explained only 11 % of the variance. In previous research, most of the variance in the rate of adoption (49-87 %) is explained by five attributes of the innovation (Rogers, 2003, p. 221). Five attributes help explain approximately 50 % or more of the variance in the rate of adoption (Rogers, 2003). All of the attributes of an innovation positively correlated with the rate of adoption, except complexity. When an innovation is correlated with the four positive attributes, and, at the same time, not correlated with complexity, the innovation will more likely and more easily be adopted. All of these factors affect the stage of persuasion, whether the adopter will be persuaded to form an unfavorable or favorable attitude toward the innovation (Rogers, 2003). Perceived characteristics of the innovation are thought to influence an individual's behavior at the persuasion stage (Rogers, 2003).

Relative advantage and compatibility have the highest positive association with adoption rate, however complexity has an inverse relationship with adoption rates (Rogers, 2003). A systematic review found that relative advantage has been associated with both increased and decreased adoptions in healthcare, since evidence-based interventions are often challenged, leading to revisions (Greenhalgh et al., 2004). Higher perceived compatibility is related to lower levels of uncertainty about the innovation. If an innovation has high compatibility, it may be perceived as requiring less behavior change (Rogers, 2003). Strong, direct evidence was located to support increased adoption related to perceived compatibility in healthcare (Greenhalgh et al., 2004). Critical care nurses (n = 862) rated the value of the American Association of Critical-care Nurses [AACN] Practice Alerts on a scale of 1-5, with five being "very valuable", which may be considered an indicator of compatibility, since Practice Alert were consistent with the nurses' values (Schulman, 2005).

Rogers' (2003) definition of complexity is the level of perceived difficulty of the innovation, related to its understanding and use. Complexity negatively influences adoption rates. According to finding supported in the healthcare literature in both quantitative and qualitative studies (Brand et al., 2005; Greenhalgh et al., 2004; Prior, Guerin, & Grimmer-Somers, 2008). Complexity of the evidence being implemented (Parker et al., 2008; Toma et al., 2010). Complexity of the guideline decrease compliance whilst trialability increases it. The guideline is more likely to be used if the recommendation is clear, not controversial, do not require a change in practice (Dopson, Locock, Chambers, & Gabbay, 2001; Grol, 2001).

A systematic review of 23 physician guideline studies also supported Rogers finding. Higher complexity had lower compliance rates (42 %) compared to low complexity (56 %, $p = 0.05$) (Grilli & Lomas, 1994). Although complexity discourages innovation adoption, there are studies that provided evidence for a positive, significant association between complexity and innovation adoption (Messerschmidt & Hinz, 2013). According to a further class of conflicting evidence deals with trialability. Studies on the trialability-innovation adoption linkage are extremely mixed, with some works that offer evidences of positive, significant associations the result indicated that direct effects of attributes of innovation on the adoption decision controlling for decision makers behavioral preferences, for relative advantage ($\beta = 0.13$, $p < 0.05$), compatibility ($\beta = 0.05$, $p < 0.05$), and complexity ($\beta = 0.09$, $p < 0.05$) (Vagnani & Volpe, 2017).

Observability has been associated with increased adoption and refers to the degree to which the use or the results of an innovation are visible to others (Rogers, 2003). The degree of trialability of an innovation represents less uncertainty for the individual and leads to quicker adoption rates. The ability to use an innovation for a trial period is of greater value to the early adopter since later adopters will typically be surrounded by others who are using the innovation (Rogers, 2003). A systematic review of studies involving physicians found high trialability to be associated with high guideline compliance (56 %) vs. low trialability (37 %, $p = 0.03$) (Grilli & Lomas, 1994). Trialability and its association with adoption was also supported by another systematic review of healthcare studies (Greenhalgh et al., 2004). According to the study Predictors of AACN Verification of Feeding Tube

Placement Practice Alert adoption measured by logistic regression included BSN or higher nursing education (OR= 2.49), and the guideline characteristics of observability (OR = 1.46) and trialability (OR =1.37) (Bourgault, 2012).

The literature review of 23 randomized controlled trials measuring the effectiveness of guideline dissemination found that guidelines were perceived as relatively uncomplicated, adopted to a greater extent than those perceived as complicated (Grilli & Lomas, 1994).

In Thai nurses, Just (2008) found that her participants used standard protocols, because their availability, accessibility, and trustworthiness. Using information from policy/ procedural manual/ guideline was the most appropriate source of knowledge to get up to date and high quality EBPs (Just, 2008). According to a study of leading factors for success of the implementation of evidence-based nursing practice professional nursing in Thailand the result showed that factors of quality of research and empirical evidence were an important factor in which enhance professional nurses from developing nursing intervention based on evidence based practice to improve quality of care (Puttaruksa et al., 2016).

2. Organizational level influence factors

Based on this article and available data, it was hypothesized that the following organization-level factors emanated from senior leadership structures and practices: responsive administration, staff development, control over practice, staffing and support services, and innovative organizations. Rycroft-Malone et al. (2004) offers an exploration of the many factors that contribute to successful research implementation.

Organizational characteristics have been described as important factors affecting the implementation of EBP. These support systems include time, funding, peer and administrative support, and mentors available for consultation (Melynk, Fineout-Overholt, & Giggleman, 2010). In addition, these organizations tend to decentralize decision-making processes, adaptive clinicians who are flexible and open to change, facilitative management styles and organizational structure, and motivating leaders who provide timely and useful evaluative feedback at multiple levels (e.g., individual, team, unit, or system). Researchers have responded to this gap and are

working to understand the role that the organization plays in enhanced knowledge use (Estabrooks et al., 2007).

The literature review of implementation research in nursing that use structural context factors as covariates to control for variation of patient outcomes associated with differences between units and hospitals (Aiken et al., 2011; Titler, 2010). Organizational context factors such as professionalism, organization's mission, and capacity, including organizational resources, were found to have a significant relationship with the influence of clinical practice guideline adherence. A systematic review of guideline implementation in 144 papers, including 33 systematic reviews, reported concerns of guideline quality and underlying evidence, lack of financial support, lack of organizational support, impracticality of recommendations, patient preference, and the reluctance of clinicians to change (Prior et al., 2008). The importance of rural/ regional location as a differentiator of EBP proficiency in nursing has been highlighted previously (Sossong et al., 2009). It has been well argued in the Australian context that resource disparities (in both human and technological terms) exist in favor of metropolitan nursing sectors over their rural and regional counterparts (Bourke, Coffin, Taylor, & Fuller, 2010). Such a disparity is clearly relevant in any discussion of rural/regional nurses' EBP related competence as compared with metropolitan nurses.

Hospital size

Organizational size found related to a relationship between size and adoption of research findings (Rogers, 2003). The size of an organization may be measured by many different variables, including financial assets, number of employees, number of branches, or number of customers. Rogers (2003) reported larger size to be associated with higher levels of organizational innovativeness, although findings in nursing studies were variable when number of hospital beds were used as an indicator of size. Hospital size is reported as a significant predictor of innovation in the innovation diffusion literature. Hospital size had a positive relationship with opportunities for staff development, staffing and support services, and facilitation (Cummings et al., 2007). Large, mature, functionally differentiated, specialized organizations are believed to have more capacity to adopt innovations (Cummings et al., 2007; Estabrooks, 2003). Previous research has identified structural context factors (e.g.,

staffing; unit/ hospital size; characteristic of patients cared for in the unit) which influence EBP implementation and patient outcomes (Herr et al., 2012; Titler et al., 2016; Titler et al., 2013). Staff development opportunities led to increased support for innovation and facilitation. Opportunities for nurse-to-nurse collaboration and staff development had significant positive influences on nurses' research utilization. (Cummings et al., 2007).

According to the study of, included 4,421 nurses in 195 specialty areas in 78 acute care hospitals in Alberta, Canada, which the sample 74.8 % were classified as small (e.g., 151 beds; small and medium hospitals were collapsed into one category for analysis), and 24.4 % as large (9,151 beds) and its occasional significance (Estabrooks et al., 2007). Related to Thai nurses perceived that all the recommendations from the EBPGs acute pain were very appropriate to use in Thai hospital settings. When comparing the EBPGs acute pain recommendation that nurses use most of the time and all the time by hospital size, nurses at the large size hospitals had higher percentages of using each of EBPGs acute pain recommendations compared to those in mid-size hospitals in almost every circumstance (Suwanraj, 2010).

Organization support for EBP implementation

Many studies are confirming the importance of organizational support to promote research use and clinical guideline implementation. To promote the adoption of innovative influences, organizational support is important. Failure by organizations to provide and support staffs to create unit-specific solutions and evaluate change in practice, create an impediment to implementation (Bucknall, Manias, & Botti, 2001). As described by Estabrooks (2003) organizational support can be provided by many people including administrators, nursing leaders, peers, physicians and other health care professionals and administrative support staff.Support from directors of nursing and other nurse leaders is essential for resource allocation and any changes to decision making structures, but support at ward level is equally important to enable front line nurses to implement EBP (Fitzsimons & Cooper, 2012). According to Melnyk, Fineout-Overholt, and Giggleman also found that nurses implemented evidence-based care to a greater extent when they perceived their culture as more supportive and ready for EBP (Melynk et al., 2010). A health care organization that actively supports

EBP must have the organizational resources for ensuring that practice is based on the best evidence available(Smith & Donze, 2010).

The importance of organizational support was also evident in a recent study of 400 nurses (response rate 50 %) working in a large tertiary teaching hospital in Melbourne, Australia conducted by (Retsas, 2000). Retsas (2000) identified organizational support to use research and support from others to use research as factors that can influence the ability of nurses to base their practice on research evidence. Items found under "organizational support to use research" included nurses not feeling they had enough authority to change practice, nurses feeling isolated from colleagues with whom to discuss research findings, insufficient time on the job to read the research, inadequate facilities for implementation and insufficient time on the job to implement new ideas (Retsas, 2000). Similarly, the study of St-Pierre (2005) found that a positive, statistically significant relationship ($p < 0.0001$) in perceived levels of organizational support and nursing staff perceptions of modification to policies and procedures to reflect the new guidelines. Nursing staff surveyed perceived that their organization was supportive in facilitating implementation of the clinical guidelines. More specifically, 81 % perceived that top management had supported staff to implement clinical guidelines, 77 % thought that the organization had the equipment and supplies needed to implement clinical guidelines (St-Pierre, 2005). Although there was some support for the indirect effects of organizational support for innovation on implementation and the indirect effects of individual innovativeness on implementation (Palmer, 2010).

Resources are the supplies, equipment, and time necessary to meet work demands. Resources and support staff development in the form of continuing education about nursing research is shown to have a positive association with research utilization (Estabrooks et al., 2007). Access to this organizational attribute includes enough staff with the right expertise to perform the necessary work (Latimer, Ritchie, & Johnston, 2010). A health care organization that actively supports EBP must have the organizational resources for ensuring that practice is based on the best evidence available (Smith & Donze, 2010). These organizational resources include physical, human, and financial resources. The most important physical resource is computers with Internet access, which provide access to EBP information such as evidence-

based guidelines (Melnyk & Fineout-Overholt, 2011). Lack of these organizational infrastructure components has been found to hinder the adoption of EBP among nurses (Melnyk & Fineout-Overholt, 2011).

Organizational climate for EBP implementation

Mylle (Mylle, 1998) defined organizational climate as "...the synthetic, collective, perception of a set of relatively stable internal aspects of the organization as experienced and described by the members of that organization" (p. 1). He described four components of organizational climate: a) innovativeness, b) supportiveness,
c) purposive information flow, and d) respect for rules. Kim and Sri-vastava (1998) defined four characteristics of organizational climate: a) task interdependence,
b) communication openness, c) top management support, and d) interdepartmental conflict. They considered organizational climate to directly affect the rate of intra-organizational diffusion of technological innovations. Moreover, Climate refers to the perceptions of employees regarding what is rewarded, expected, and supported by the organization and is measured by soliciting employee perceptions using qualitative and/ or quantitative methods (Ehrhart et al., 2014). It is fundamental to promote a favorable organizational climate in order to achieve better health results and it can be observed at staff and manager levels (Estabrooks et al., 2007). Factors frequently described as influencing the success or failure process of change include organizational culture and climate (Rycroft-Malone et al., 2002).

Previous study collecting data from a sample of 287 staff nurses and 23 nurse managers from 24 medical-surgical units in 7 acute care hospitals, geographically dispersed across the Northeast and Midwest United States, examine the unique contributions of nurse manager EBP leadership behaviors and nurse manager EBPs competencies in explaining unit climate for EBP implementation from multi-unit cross sectional design found that unit climates for EBPs implementation demonstrated the largest effect ($\beta = -0.86$, $p < .01$) (Shuman, 2017).

In Thailand, the study in 447 registered nurses recruited from five regional hospitals under the Jurisdiction of the Thailand Ministry of Public Health.

The significant predictors in multiple regression were research experience, support resources, and research climate (β = .273, .256, and .244 respectively, $p < .01$), and accounted for 30.40 % of total variance in research utilization in nursing practice (β = .304 $p < .01$) (Sanluang & Aungsuroch, 2015). According to study of leading factors to success of the implementation of evidence-based nursing practice of professional nurse in Thailand the result showed that the organizational factor was the most important leading factors. The organizational factors composed of administrators support and facilitate, facilities for implementation and sufficient time, authority to change practice, and facilities of collaboration with team (Puttaruksa et al., 2016).

Multilevel different factors influencing the implementing of EBPs

The empirical literature was not found that explained in different level of the interaction of individual level and organization level to contribute the factors influencing the implementing evidence-based practice or research utilization within the multilevel context factors modeling (Estabrooks et al., 2007). Because naturally, such in organization of hospital or systems can be observed at different hierarchical levels, and variables may be defined at each level (Hox, 2010). According to Kozlowski and Klein (2000), a multilevel approach is appropriate for a phenomenon that a) is influenced by higher-level organizational entities (i.e., hospitals); b) reflects the actions and cognitions of lower-level organizational entities (i.e., individual RNs); and c) has been extensively explored. A multilevel framework necessitates the alignment of construct theoretical level, measurement, and representation for analysis, as well as the type of multilevel model, the sampling strategy, and the plan for analyzing model relationships (Kozlowski & Klein, 2000).

Because of the nature of hospital settings, with multiple levels of decision-making dispersed among a central administration and multiple hospital, decisions about implementation are rather complex (Shinn, 2003; Spillane, 1998). Nurses working in a hierarchical structure in the hospital setting. Individual nurses work within their respective nursing units. The individual nurse and nursing unit represent different hierarchical levels, and are conceptualized to influence each other. Hence,

to examine the relative importance of effects at each of these levels will explore at different hierarchical levels (Wu, 1997). Even with a shift to a greater focus on both organizational and individual level influences, there is little empirical support for the differential or relative importance of various levels of influence (Cho et al., 2016).

Organization factors influencing the implementation of EBP can be identified and measured at multiple levels (e.g., micro-, meso-, macro-), as noted by Chaudoir, Dugan, and Barr (2013). Therefore, measuring organizational factors, whether as confounding, independent, or dependent variables, requires robust and relevant statistical techniques. Alexander and Hearld (2012) recommend using multilevel modeling to analyze the relative contributions of these multiple contextual levels: nurses within units within hospitals. This approach recognizes the nested data structures and enables the examination of whether the effect on the dependent variable is due to contextual factors and at which level (e.g., unit; hospital) (Goldstein, 2011).

The process of research implementation of EBP is and many of factors which are associated with the context of care. Influencing factors can be categorized into the individual professional, the organization, the external context (social/ physical/ regulations/ policies), and the innovation (e.g., guidelines and protocols) (Grol & Wensing, 2005). Many researchers identified factors influencing the adoption of EBPs in nursing practice. Both nurse-level and organization-level factors influence the adoption and implementation of EBPs in health care organizations (Cummings et al., 2007; Estabrooks et al., 2007; Titler et al., 2007). To investigate whether interdependent relations existed between different variables, interactions between two variables. Using (multi-level) multivariate regression analysis to include data on contextual factors would address the relative contribution of intervention and contextual factors in explaining the variation of outcome variables (Brown & Prescott, 2007).

In conclusion, the evidence from the review literature provided information to support and expand on research hypotheses and illustrates the variables associated to implement the EBP. The results of the synthesis literatures are given to understand the practice for implementation the evidences. It is expected that findings from this study will provide new nursing knowledge about evaluating the impact of nursing

care on positive quality of care on postpartum hemorrhage in Thailand context and related factors.

CHAPTER 3
RESEARCH METHODOLOGY

This chapter describes the research method uses for present study including the research design, population and sample, instruments, protection of human subjects, data collection procedures and data analysis.

Research design

This study was a multi-level modeling and cross-sectional design. A multi-level modeling design was used to develop the hypothesized model of implementation of EBPs and test for the relationship and inter-action between multi-level factors. A multilevel research design reflects the hierarchical nature of the effects and allows for testing of interactions and relationships across units of analysis, modeling conceptually coherent testing within social and organizational contexts (Hox, 2010). Multilevel modeling is particularly important when the data used in studying an outcome measure were collected using a clustered study design and there is an interest in examining the levels at which different factors exert their influence on the outcome measure (Hox, 2010).

Because the implementation of EBPs is explained by a hierarchical structure of organization and individual nurse-midwife effects. Thus, to concerns the relationships between variables that are measured at a number of different hierarchical levels. The hierarchical model comprises implementation of EBPs as an outcome variable and a number of predictive variables organized into individual nurses and hospital level. As outlined in the literature review, previous studies have analyzed relevant relationships to implementation of EBPs independently of each other, but not using an analysis that mirrors the hierarchical, nested nature of nurses within nursing units and hospital. The individual nurse and nursing unit represent different units of data analysis. Testing each unit of analysis in isolation from other levels creates conceptual and statistical fallacies and biases (Hox, 2010; Hutchison, 2003).

The objectives of study were to examine factors influencing the implementation of EBP for prevention and management of PPH among nurse-

midwives in Thailand by explaining the relationship and interaction of variables between individual- level (nurse characteristics, perceived barriers to EBPs, and perceived characteristics of EBPs) and organization- level (organization climate for EBPs, organization support, and hospital size).

Population and sample

Population

The target population of this study were staff nurse-midwives and head wards, working in the delivery room at community hospitals governed by Thailand Ministry of Public Health in 2019.

Currently, nurses in Thailand about 17,584 persons that registration and had license certificates from Thailand Nursing and Midwifery Council and Public hospitals funded by the Thai government include hospitals under the Ministry of Public Health (MOPH). There were 780 community hospitals were distributed evenly cover in thirteen regional service providers (MOPH, 2016).

Sample

The sample of this study are the following: nurse-midwives have worked in the delivery room for more than six months in providing maternal and child healthcare services, and head ward nurses work in the delivery room which provides direct care and administration in their unit. Sample was drawn from the target population using a multi-stage random sampling technique to recruit the sample.

Sample size

The sample size estimation based on a multilevel linear modeling [MLM] result. In multilevel studies, the main problem is usually the sample size at the group level, because the group-level sample size is always smaller than the individual-level sample size.In general, the accuracy and power for cross-level interactions and second level effects depends more on the number of groups than on the total sample size (Hox, 2010). The recommend having at least 50 groups with a group size of 20 (Hox, 2010, p. 233). With 50 groups and group size of 5, is the smallest acceptable number for non-coverage of the 95 % confidence interval (Maas & Hox, 2004). For instance,

the researcher takes a sample of 50 groups, group size each with 5-10 nurses. This comes to a total sample size of 250 nurses. The sample size of 250 was adjusted for response rate and missing data 10 % was adopted. However, to ensure an adequate sample size, oversampling will conduct. Therefore, 275 participants from the individual- level (nurse-midwives), 50 units of the delivery rooms, from the community hospitals was recruited for this study.

Setting of study

The setting was conducted at the delivery room in community hospitals governed by Thailand Ministry of Public Health. In this study, the researcher was interested in describing actual practice of Thai nurses on using evidence-based practices for prevention and management of PPH during intrapartum care. In community hospitals, nurses-midwives were lead care responsible for obstetric services of women and provide midwifery care at different stage of childbearing. The community hospitals governed by Thailand Ministry of Public Health had responsible for midwifery care and obstetric services of women from all catchment types of district health network. Consequently, the settings of this study should be hospitals that performed surgery upon older adults.

In community hospital, different groups of nurse-midwives provide midwifery care at different stage of childbearing in a different ward. A group of 5-8 nurse provide intra-partum care in the delivery room. Consequently, the settings of this study were community hospitals that performed provide care on intra-partum period and postpartum period. However, community hospitals have a capacity more than 120 beds provide more complicated services by specialists in major areas such as general surgeon, obstetrician and pediatrician.

Hospitals in Thailand can also be categorized by bed size and hospital level. Community hospitals are located in the district level and further classified by size; (MOPH, 2016). A multi-stage random sampling technique was used to recruit the sample.

First, in Thailand consists of 13 regionals, selected four of them was by random sampling technique as the cluster regional service providers and include of;

1) region service provider 1; Chiang Rai, 2) region service provider 3; Nakhon Sawan, 3) region service provider 6; Chonburi, and 4) region service provider 9; Nakhon Ratchasima.

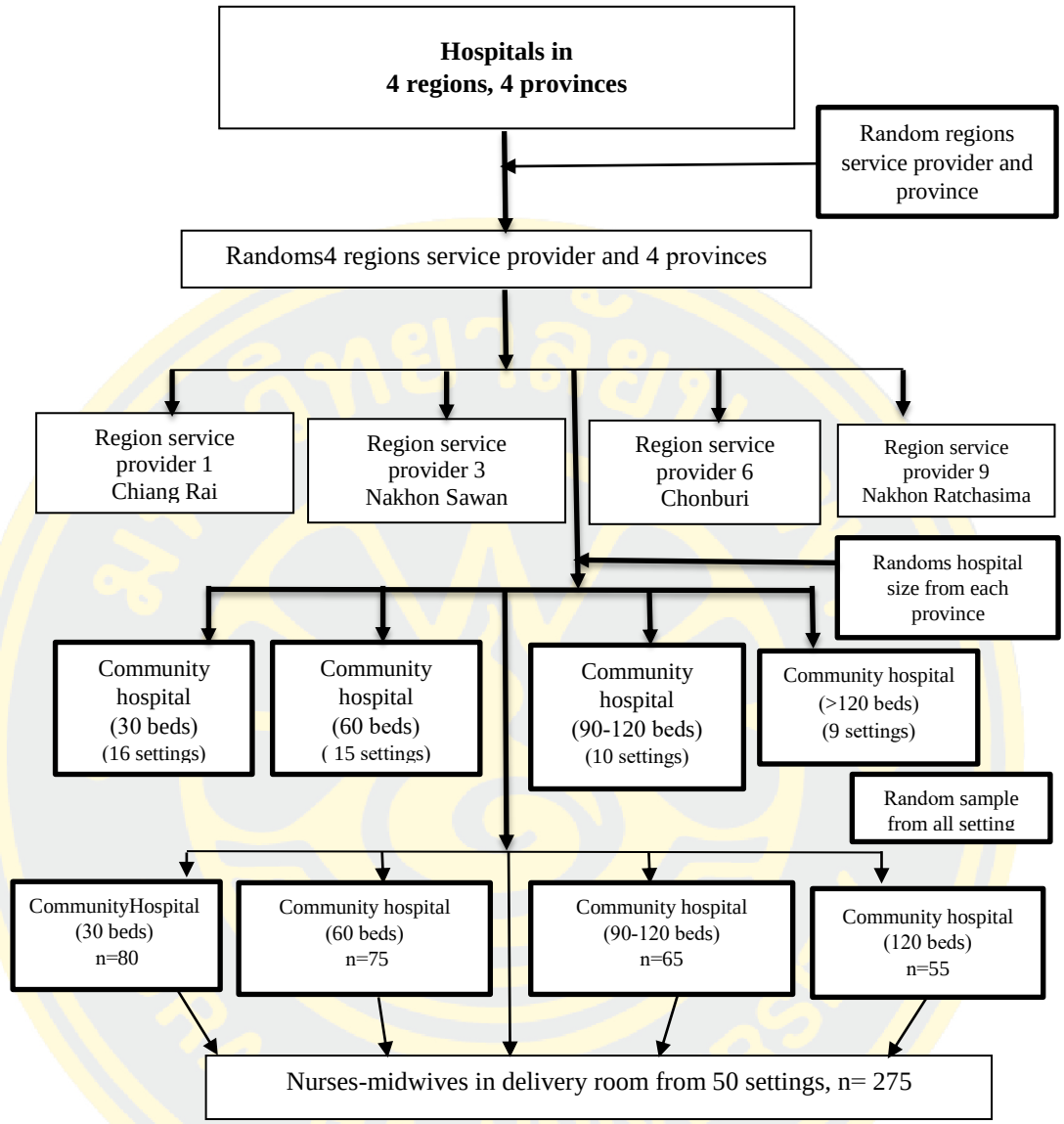
Second, a random sampling was used in choosing from level service type of community hospital in four provinces, level service type was the following:

1. Small community hospital or first-level hospital (F3) have a capacity of 10 to 30 beds: random 16 settings
2. Medium community hospitals (F2) have a capacity of 30-90 beds: random 15 settings
3. Large community hospitals (F1) have a capacity of 90-120 beds: random 10 settings
4. Middle level community hospitals (M2) have a capacity more than 120 beds): random 9 settings.

Thirds, the participants who meet the inclusion criteria was recruited using a purposive sampling technique, which difference number of participants depending on level of hospital as follows;

1. Small community hospitals (F3): 5 persons per unit; total 80 persons,
2. Medium community hospitals (F2): 6 persons per unit; total 75 persons,
3. Large community hospitals (F1): 6 persons per unit; total 65 persons, and
4. Middle level community hospitals (M2): 8 persons per unit; total 55 persons.

Therefore, included 50 settings in this study. The details of selection for the settings had involved the multi-stage technique as shown in the figure below.



Figures 2 The multi-stage stratified random sampling method used in this study

Instruments

The research instrument used in this study consists of two main sections. The first section is concerning demographic data, and the second section contains six subsections. Details of these instruments had described in the following section which the variables and related measures as shown in table 1

Tables 1 The variables and questionnaire related measures use in the analysis

Variables	measurements	Level of measurement	Items	Cronbach's alpha
Implementing of EBP for prevention and management of PPH	The evidence-based practice implementing activity for prevention and management of PPH [EBPIA-PPH] developed by researcher	Interval	28	.90
Organizational support to EBP Implementation	organizational support [OS] scale developed by Edwards et al. (2004)	Interval	5	.745
Organization Climate for EBP Implementation	The Implementation climate scale [ICS] developed by Ehrhart et al. (2014)	Interval	18	.912
Personal Innovativeness	Individual innovativeness scale [II] developed by Hurt, Joseph, and Cook (1977)	Interval	10	.810
Perceived Characteristics of EBPs implementation.	Perceived characteristics of guideline [PCG] developed by Edwards et al. (2004)	Interval	15	.71-.904
Perceived barriers to EBPs	The BARRIERS scale developed by Funk et al., (1991)	Interval	29	.847-.936
	total		105	

The research instruments were used in this study as follows:

1. Personal demographic data

Personal demographic data was measured by a demographic questionnaire. It was developed by the researcher, including age, education level, a number of years of experience as a registered nurse; years of experience in delivery room, work position, attending professional training related to management of PPH.

2. Individual innovativeness scale (II)

Personal innovativeness was measured by Thai version of the individual innovativeness scale (II). It was originally developed by Hurt et al. (1977).
The researcher had modified and translation method from the original language (English) into Thai language for this study. Innovativeness define as willingness to change, is the degree to which an individual is relatively earlier in adopting new ideas (Rogers, 2003). In order to assess personality characteristics that influence adoption of innovation that are related to the values, beliefs and interests of an individual (Dobbins et al., 2002).

This tool contains of 10 items used as a shortened version of the scale. The items are measured using a 7-point Likert scale; question measurement ranges from 1 = strongly disagree to 7 = strongly agree. For calculated the score following,

Step 1: Add the scores for items 5, 7 and 9.

Step 2: Add the scores for items 1,2,3,4, 6, 8, and 10

Step 3: Complete the following formula: II = 42 +total score for Step 2 -total score for Step 1.

Negative items are not scored inversely. The individual innovativeness score is calculated by adding 42 points to the score obtained by subtracting the negative items from the total positive score. A maximum of 70 points and a minimum of 46 points are taken from the scale. Following all analysis, According to this, the ones above two standard deviations from the mean (over 60 points) were categorized as “Innovative” are classified as Innovators, the ones between above two standard deviations and above one standard deviation (59-60 points) as “Pioneer” or Early Adopters, the ones between one standard deviation and the mean (51-58 points) as “Interrogator” or Early Majority, the ones between the mean and minus one standard deviation (47-50) points) as “Late Majority or Skeptical”, and finally the ones below

minus one standard deviation (below 47 points) as “Laggards/Traditionalists”. Scores above 60 are classified as Innovators. In general people who score above 58 and considered highly innovative, and people who score below 47 are considered low in innovativeness. Higher scores reflect a higher level of innovativeness (Hurt et al., 1977) it means earlier in adopting new ideas.

3. BARRIERS scale

Perceived barriers to EBPs questionnaire was measured by Thai version of BARRIERS scale. It was originally developed by Funk et al. (1991) and it was translated into Thai by Yimboonna et al. (2007) and Sangmanee et al. (Sangmanee , Watanasit, Kraiwong, & Boonyasopun, 2007). However, two studies have different meanings in the Thai language. Thus, the researcher modified and used forward and backward translation method from the original language (English) into Thai language for this study. The survey tool consists of 29 items grouped into four subscale, professional characteristics such as the nurse's research values, skills, and awareness (eight items) organization characteristics
such as setting barriers and limitations (eight items) the characteristics of the innovation such as the qualities of the research (six items) and characteristics of the communication such as presentation and accessibility of the research (seven items). Items are rated on a four-point scale, 1= to no extent, 2 = to a little extent, 3 = to a moderate extent, 4 = to a great extent.

The level of overall perceived barriers and the dimensions had classified as follows: score 29-58 = lowest barrier, score 58.1-87 = moderate barrier, and score 87.1-116 = highest barrier. The higher score indicated greater perceived barriers to implementation of research. The psychometric analysis of the BARRIERS scale indicated that itis a valid and reliable scale with Cronbach’s alphas ranging from .76 to .91 for the four subscales (Yimboonna et al., 2007), from .84 to .90 for the four subscales (Sangmanee et al., 2007).

4. Perceived characteristics of guideline [PCG]

Perceived characteristics of EBPs was measured by Thai version of perceived characteristics of guideline. It was originally developed by Edwards et al. (2004). The researcher modified and translation method from the original language (English) into Thai language for this study. It consists of 15 items representing

the following five Rogers' constructs:1) relative advantage (the degree to which the innovation is perceived as being better than its precursor); 2) compatibility (the degree to which the innovation is perceived as being consistent with the existing values, needs, and past experiences of the user); 3) complexity or ease of use (the degree to which the innovation is perceived as being difficult to use); 4) results demonstrability (the extent to which the uses of the innovation are apparent); 5) trialability (the degree to which the uses of the innovation may be experimented with before adoption. Each subscale is measured as a continuous variable using the total score from the Likert scales, using 1-7 Likert scale from 1 = strongly disagree to 7 = strongly agree.

The scoring procedure for the scales involves adding the ratings for each item and obtaining a mean total score for each scale. The level of overall perceived characteristics of guideline and the dimensions had classified as follows: score was 15-45 = lowest, score 45.1-75 = moderate, and score 75.1-105 = highest. The highest scores indicate heightened perception of relative advantage related to more rapid adoption in which high compatibility it may be perceived as requiring less behavior change and higher complexity indicates lower compliance rates and negative influences on adoption rates. High observability increases guideline adoption and high feasibility of trials associated with high guideline compliance. The Cronbach's coefficient alphas for the original PCI subscales ranged from .71 to .93 (Edwards et al., 2004).

5. The evidence-based practice implementing activity for prevention and management of PPH [EBPIA-PPH]

Implementation of evidence-based practice for prevention and management PPH was measured by Thai version of EBPIA-PPH. It was developed by the researcher. The recommending of the practices based upon the strength of evidence supporting the practices and national and international PPH management guidelines recommended by the WHO guideline (WHO, 2012) and RTCOG guideline (RTCOG, 2012) of a standardized clinical protocol were measured as the act of performing these in clinical practice. The instrument contains 28 items with two dimensions of the major procedure for the prevention and management PPH in the following four subscales: 1) risk assessment and planning for prevention; 2) prevention by following

the active management of the third stage of labor; 3) evaluation and monitoring the signs and symptoms of maternal hemorrhage and 4) proper management including communication and resuscitation, monitoring and investigation. Each item is scored on 1-4 points scales ranging from “never practiced” (1 point) to “all the time” (4 points). The highest scores indicating the higher use of the EBPs recommendation for prevention and management PPH in daily practice.

6. Organizational support scale

Organizational support was measured by Thai version of Organizational support for EBPs implementation, which was originally developed by Edwards et al. (2004). The instrument contains of five items as follows: 1) support from top management, 2) ready adoption of change by nurses, 3) sufficient time and training, 4) adequate number of qualified staff, and 5) equipment and supply. The instrument measures the extent to which nursing staff perceive organizational support during the implementation of the clinical guidelines. These items are rated four-point Likert scales (l=strongly disagree, 4=strongly agree). The scoring procedure for the scales involves adding the ratings for each item and obtaining a mean total score for each scale, higher scores indicate higher levels of the indicator being measured. The Cronbach’s alpha for the organizational support tool was .84 (Edwards et al., 2004).

7. The implementation climate scale [ICS]

Organizational climate for EBPs implementation was measured by Thai version of the implementation climate scale [ICS]. It was originally developed by Ehrhart et al. (2014). The researcher modified and translation method from the original language (English) into Thai language for this study. The instrument contains 18 items measuring the strategic climate for evidence-based practice implementation, which identifies the extent to which an employee’s unit prioritizes and values evidence-based practice based on the following six domains: 1) focus on evidence-based practice; 2) educational support for evidence-based practice; 3) recognition of evidence-based practice; 4) rewards for evidence-based practice; 5) selecting evidence-based practice and 6) opting for openness. The items are rated on four-point Likert-type scales ranging from “slight extent” (1 point) to “very great extent” (4 points). Subscale scores are calculated by adding the response value (1 to 4) for the items in the subscale and dividing by the number of items in the subscale.

The total score is calculated by adding the response value (1 to 4) for each item across all subscales and dividing by 18. The level of overall organizational climate and the dimensions had classified as follows: score 18-42 = lowest, score 42.1-66 = moderate, and score 66.1-90 = highest. Higher scores indicate that nurses higher perceived the organization contains a strategic climate supportive of EBP implementation and supports them in practice. Reliability evidence in previous study, Cronbach's alpha was .91 (Ehrhart et al., 2014).

8. Organizational information questionnaire

Descriptive hospital characteristics included geographic region of the Thailand in which the hospital is located, hospital level (number of beds in the hospital), and the use of EBP in the hospital with information about the use of EBP in the hospital. Open-end question, provide information of the implementation EBP. Hospital characteristics are collected to describe the setting in which the study units are embedded.

Translation of instruments

The researcher conducted back translation with permission from the developer, using the forward and backward translation methods proposed by Brislin (1970). At first, the original English versions of the scales were translated into the Thai language by two doctoral prepared bilingual (Thai and English) experts. Both are faculty members of the Faculty of Nursing, Mae Fha Luang University. After performing a separate initial translation after, the two versions were compared and the differences in translation were resolved. Next, the translation questionnaires were given to another bilingual translator who back-translated the items into English without access to the original survey by additional proficient bilingual linguists and an English teacher from the Faculty of Humanities and Social Science at Burapha University, who had never seen the original English version. Finally, the major advisor, who is a bilingual native Thai speaker and knowledgeable in the field of maternal and child healthcare, reviewed and compared the contents of each item in terms of cultural acceptability, grammatical accuracy and item structure between the original and back translated English versions of each of the tools.

Psychometric properties of the instrument

Validity

There were total 8 research instruments for this study. The content validity of 5 instruments were validated in previous studies. Hence, the researcher needs to construct face validity for 5 instruments; BARRIER scale, Individual Innovativeness scale, Organizational support scale, PCG scale, and the Implementation Climate scale, by conducting expert reviews or assessment on items of the construct. The new questionnaire (EBPIA-PPH) was tested for content validity by using the content validity index (CVI) method. The CVI method is a creditable method of estimating the content validity of the new or revised scale (Polit & Beck, 2012).The questionnaire using CVI method examines by five experts composed of one obstetrician, three expert nursing instructors from maternity nursing and midwifery and one-advance practice nurse (APN) in midwifery. After receiving feedback from the content expert panel, the content validity index (CVI) was calculated. Each item of the instruments was assessed for relevancy and accuracy on a score of 1= not relevant, 2= somewhat relevant, 3= quite relevant, and 4= very relevant (Waltz, Strickland, & Lenz, 2010).The CVI of this study was .90 which means the instrument contains content validity as excellent instruments.

Reliability

The reliability of all instruments by coefficient alpha index was accessed in this study. The accepted value of reliability is .80 (Polit & Beck, 2012). In general a reliability coefficient (alpha) of .70 or higher is considered acceptable (Tavakol & Dennick, 2011). The reliability of all of the research instruments was tested in 30 participants who works in the delivery rooms at community hospitals. The criteria for the sample and data collection procedures of the pilot study was similar to or homogeneous with the real population of the study in the following three community hospitals: Sanamchaikhet Hospital, Bangpakong Hospital and Phanomsarakham Hospital.The internal consistency reliability of all research instruments was assessed in this study. The reliability of the instruments for this study indicated the Cronbach's alphas of EBPIA-PPH, OS, ICS, II, PCG, and BARRIERS scale were .854,.745, .912, .810, .904, and .847 respectively.

Protection of human subjects

This study was approved by the Institutional Review Board [IRB] for graduate studies Faculty of Nursing, Burapha University Research (Number of the IRB approval 03-12 -2561). After receiving permission to conduct the study and the proposal submitted to the research ethics committees of ministry of public health in four provinces. Next, the researcher seek approval to conduct the study at 50 hospitals. All staff nurses-midwives and head nurse who volunteer to participate are informed about the study purpose and methods. The participants are assured of data confidentiality and voluntary. No more than minimal risks are anticipated in completing the questionnaires. The participants have the right to end participation in this study at any time without providing any reasons and with no requirement to inform the researcher. The participants was not affected by such withdrawal.

The questionnaire was assigned code numbers for strict maintenance of confidentiality. All research findings were reported as group data only. After the collection and analysis of the questionnaires, the aforementioned was sealed and placed by the researcher in locked cabinets until the study has been published. All soft files was saved in a personal computer with password and username protection; only the researcher had access to the data. All data was destroyed once the study has been completed and published for over a year.

Data collection procedures

Data collection commenced after receiving IRB approval from Faculty of Nursing, Burapha University and the research ethics committees of ministry of public health in four provinces. The researcher had made preliminary contact with the target hospitals. Data collection was conducted as follows:

1. The researcher coordinated with the nurse directors of all the community hospitals to provide information about the objectives of the study. After that coordinated with the head ward nurses of the delivery rooms at the appropriate time for collecting data after the research permission has been granted.

2. The researcher selected research coordinators from each hospital for helping with data collection procedure. One hospital staff has been requested to be

a research coordinator. The researcher had trained the research coordinators before collecting data on issues such as how to complete each questionnaire, research ethic to protect of human right, motivate completion of the questionnaires and check for completed questionnaire. The job of the research coordinators was sent the package of a questionnaire to sample and place the box for return to the researcher.

3. The researcher and the research coordinators collected all data and selected by using a purposive sampling technique the participants who met the inclusion criteria.

4. The researcher made a self-introduction and inform these following; research objectives, data collection process, research duration and right of withdrawal. The potential participants also informed that there was no risk to participate. The participants who agree to participate in this study signed informed consent forms.

5. The questionnaires had completed by the participants during their private time. Then ask them to return the completed questionnaires within the next week.

6. After completing the questionnaires, the research coordinators checked for completion. The items with no responses was confirmed. The returned questionnaires in sealed envelopes from designated boxes of each hospital had collected by the research coordinators.

7. The researcher had assigned a unique code to each questionnaire to avoid exposure of the participants' identities.

Data analyses

Data analyses was perform using a statistical software program in response to research hypotheses. The statistical significance level is set at $p < .05$. Assumptions of the statistical tests were tested to determine its appropriateness in analyzing particular statistics.

1. The demographic characteristics of the sample describe using descriptive statistics by frequency, percentage, mean and standard deviation.

2. The relationships between independent variable factors and dependent variable of each level, individual and organization, analysis by using multiple regression analysis which enter method.

3. A multilevel linear modeling analysis was performed to analyzes statistically estimate simultaneously the effects between variables that were measured at different hierarchical levels and specific in this study for illuminate any cross-level interactions using two-level hierarchical linear models [HLM] analyses.

CHAPTER 4
RESULTS

This chapter presents the results of data analyses. This study has two purposes: 1) to examine the factors influencing the implementation of EBPs for the prevention and management of postpartum hemorrhage among nurse-midwives in Thailand by explaining the variables at the individual and organizational levels and 2) To test the relationships and interactions between individual- and organization-level factors in the implementation of evidence-based practice for the prevention and management of postpartum hemorrhage by nurse-midwives in Thailand.

The first section describes the demographic data of the subjects, hospitals and nurses. The second section presents the descriptive data characteristics of independent variables and dependent variables for individual- and organization-level, the third section presents analysis conducted to determine if statistical assumptions have been met the hypothesis testing could be completed, the fourth section presents the relationships between independent variable factors and dependent variable of each level, individual and organization, analysis by using multiple regression, the fifth section presents result of estimate simultaneously the effects of individual-level and organization-level factors on implementation of EBP for prevention and management of PPH, by multilevel analysis using the hierarchical linear modeling [HLM] and used to examine interaction across level.

Demographic data

The initial sample was 275 subjects from 50 community hospital under the Ministry of Public Health, Thailand. After the invitation asking for a hospital's cooperation to participate in this study, the participants have more than initial estimate, so oversampling was conducted. Therefore, the response rate was higher than 100 %. Potential participants numbering 298 and meeting the inclusion criteria were approached within the 50 settings, whilst they agreed to complete the self-administered questionnaires. Therefore, there were a total of 298 subjects for data analysis.

Individual characteristics

Table 2 contains information relating to the characteristics of the nurses included in the analyses. A majority (28.2 %) of the participants were ages ranging from 23 to 30 years. Their mean age was 37.90 (*SD* = 9.209). They held Bachelor degree in nursing and master degree at 96.0 % and 4.0 %, respectively. A large majority (84.9 %) of nurses not have been trained in any specialty course of Nursing (4 month), 15.1 % reported certification in a nursing specialty. The range of RN experience were between 1-38 years (*M* = 15.57, *SD* = 9.525) and the range of working experience in delivery rooms were between 1-35 (*M* = 11.01, *SD* = 7.377). A large majority (66.5 %) of nurses have been trained once or twice in light of EBPs implementation for PPH prevention and management. A one-third (33.2 %) of the nurses worked in medium community hospitals (F2)

Tables 2 Demographic characteristics of the sample (n = 298)

Characteristics	n	%
Age (years) (*M* = 37.90, *SD* = 9.209, min = 23, max = 60)		
23-30 years	84	28.2
31-38 years	78	26.2
39-46 years	80	26.8
47-53 years	33	11.1
≥54 years	23	7.7
Highest level of nursing education		
Bachelor of Science in Nursing	286	96.0
Master of Science in Nursing	12	4.0
Training specialty course of Nursing		
No	253	84.9
Yes	45	15.1

Table 2 (continued)

Characteristics	n	%
Years of experience as a registered nurse		
1-7 years	73	24.49
9-14 years	77	25.84
15-21 years	54	18.13
22-28 years	64	21.48
≥29 years	30	10.06
(*M* = 15.57, *SD* = 9.525, min = 1, max = 38)		
Years of experience in delivery room		
>6 months-1 year	7	2.35
2 -10 years	158	53.02
11-19 years	93	31.21
20-28 years	33	11.07
>29 years	7	2.35
(*M* = 11.01, *SD* = 7.377, min = 1, max = 35)		
Training in implementing the prevention and management of PPH		
Never	15	5.0
1-2 times	198	66.5
> 2 times	85	28.5
Level of hospital with their working		
Middle level community hospitals (M2)	74	24.8
Large community hospitals (F1)	60	20.1
Medium community hospitals (F2)	99	33.2
Small community hospitals (F3)	65	21.8

Organization characteristic

Organization characteristics are summarized in Table 3. The nurse participants were from 50 hospitals. The studies were conducted at the delivery room in fifty community hospitals governed by Thailand Ministry of Public Health.Overall,

hospital size was evenly distributed from small to middle level. A majority (34.0 %) of location was conducted in Nakhon Ratchasima province (region service provider 9). A majority (36.0 %) of community hospital was at the average level (F2). In these hospitals, there were 5-13 staff nurse-midwifes working in delivery rooms (*M* = 6.795, *SD* = 2.462). A majority (64.0 %) hospitals had no obstetrician. However, 10 hospitals had only one obstetrician and fewer of 2 hospitals had more than three obstetricians. There was no c-section procedure or emergency operation in most (64.0 %) hospitals, while 36.0 % of them had c-section procedure or emergency operation.

Tables 3 Characteristics of the hospital level (n = 50)

Characteristics	**n**	**%**
Number of hospitals in each location		
Chiang Rai (region service provider 1)	16	32.0
Nakhon Sawan (region service provider 3)	9	18.0
Chonburi (region service provider 6)	8	16.0
Nakhon Ratchasima (region service provider 9)	17	34.0
Level of hospital		
Middle level community hospitals (M2)	10	20.0
Large community hospitals (F1)	9	18.0
Medium community hospitals (F2)	18	36.0
small community hospitals (F3)	13	26.0
Number of staff nurse-midwifes working in delivery room		
M = 6.795, *SD* = 2.462, min = 5, max = 13		
Number of Obstetrician		
No	32	64.0
1 person	10	20.0
2 persons	6	12.0

Table 3 (continued)

Characteristics	n	%
> 3 persons	2	4.0
Procedure of C-section in hospital		
No	32	64.0
Yes	18	36.0

Descriptive statistics of major study variables

The conceptual framework of this study had guided by Rogers' diffusion of innovations model (2003). Furthermore, some factors and variables from the literature review provides a theoretical framework for understanding what factors influence nurse adoption or implementation of EBPs for the prevention and management of PPH with present and different levels of measurement based on individual-and organization-level factors.

Descriptive statistics for each variable had described as follows.

1. Individual-level factors

Individual-level variables consisted of years of experience in delivery room, personal innovativeness, perceived barriers to EBPs and perceived characteristics of EBPs.

1.1 Personal innovativeness

These results indicated that personal innovativeness both overall and its subscales had a mean of sum score was 57.98 (*SD* = 1.411). The ten-item scale have a possible sum score range of 46-70. A majority (76.2 %) had score range 51-58 points, as "Interrogator" or Early Majority, indicating that a majority of participants have skeptical or timid attitudes towards innovation, 14.4 % had score 59-60 points, as "Pioneer" or Early Adopters, 8.7 % had score 47-50 points, as "Late Majority or Skeptical", and finally 0.7 % had score 46 points, as "Laggards/ Traditionalists" (see Table 4).

Tables 4 Descriptive statistics of personal innovativeness score (n = 298)

Variable	**Possible range**	**Actual range**	***M***	***SD***
Personal innovativeness overall	46-70	46-70	**57.98**	**1.411**
Degree of Innovativeness (scores)		**n**		**%**
Innovators (≥60)		-		-
Early adopters (59-60)		43		14.4
Early majority (51-58)		227		76.2
Late majority (47-50)		26		8.7 %
Traditionalists (46)		2		0.7 %

1.2 Perceived characteristics of EBPs

The overall mean score of perceived characteristics of EBP results among nurses-midwifes was moderate level (overall score = 89.25) for average guideline characteristics were *M* = 5.952, *SD* =. 7194. When taking five domains of perceived characteristics of EBP results into the consideration, it was found that sum score of all domains, relative advantage (5 items, items 1-5) 32.05 (*SD* = .678), compatibility (3 items, items 6-8) 18.45 (*SD* =.679), complexity (4 items, items 9-12) 24.58 (*SD* = .683), observability (2 items, items 1-5) 8.18 (*SD* = .961), and trialability (1 items, items 15) 6.09 (*SD* = .707) (see Table 5). According to result scores, high perception of relative advantage indicated more rapid adoption, in which moderate compatibility it may be perceived as requiring less behavior change, and moderate complexity indicates lower compliance rates and negative influences on adoption rates. Moderate observability increases guideline adoption and high feasibility of trials associated with high guideline compliance.

Tables 5 Descriptive of perceived characteristics of EBPs (n=298)

Variable	Possible range	Actual range	*M*	*SD*	Level
Perceived characteristics of EBPs (overall)	15-105	15-105	89.25	.719	moderate
- Relative advantage (5 items)	5-35	10-35	32.05	.678	high
- Compatibility (3 items)	3-21	9-21	18.45	.679	moderate
- Complexity (4 items)	4-28	8-28	24.58	.683	moderate
- Observability (2 items)	2-14	4-14	8.18	.961	moderate
- Trialability (1 item)	1-7	5-7	6.09	.707	high

1.2 Perceived barriers to EBPs implementation

A moderate level of overall mean score of perceived barriers to the nurse-midwifes' application of nursing research findings was found (*M* = 60.9, *SD* =.757). The score 29-58 = lowest barrier, score 58.1-87 = moderate barrier, and 87.1-116 = highest barrier. The higher score indicated greater perceived barriers to implementation of research.When taking four domains of barrier in application of research results into the consideration, it was found that mean score of all domains, namely barriers related to characteristics of research communication was at moderate levels (*M* = 18.56, *SD* = .045), barriers related to characteristics of research was at lowest levels (*M* = 11.76, *SD* = .044), barriers related to characteristics of organization was at moderate levels (*M* = 14.35, *SD* = .045), barrier related to characteristics of nurses was at moderate levels (*M* = 18.00, *SD* = .049) (Table 6).

Tables 6 Descriptive of perceived barriers to EBPs implementation (n = 298)

Variable	Possible range	Actual range	*M*	*SD*	Level
Perceived barriers to EBPs implementation (overall)	29-116	29-116	60.9	.757	Moderate
- Characteristics of research communication (8 items)	8-32	8-32	18.56	.045	Moderate
- Characteristics of research (6 items)	6-24	6-24	11.76	.044	Moderate
- Characteristics of organization (7 items)	7-28	7-28	14.35	.045	Moderate
- Characteristics of nurses (8 items)	8-32	8-32	18.00	.049	Moderate

2. Organizational level

The final sample used to describe organizational-level variables were 298 nurses and head nurses in delivery room, with no missing items. Head nurse and staff nurse total and subscale scores were calculated did not separate.

Organizational-level variables consisted of hospital size, organizational climate, and organizational support. Descriptive statistics for each variable had described as follows.

2.1 Organizational climate scale [ICS]

These results indicated that organizational climate for EBPs implementation both overall and its subscales had the ICS total score was 66.33 (*SD* = 10.957), overall mean score was 3.66 (*SD* = .836), indicated were moderate level of all domains. Subscale scores suggest that practice climates was moderate focus for EBP (*M* = 11.56, *SD*=.822) and moderate educational support for EBP (*M* = 10.77, *SD* =.911), moderate recognizing staff for EBP (*M* = 10.69, *SD* =.836), moderate rewards for EBP (*M* = 11.29, *SD* =.795), moderate selection staff who value EBP (*M* = 11.06, *SD* =.828), and selection for Openness (*M* = 10.96, *SD* =.787) (see Table 7).

Tables 7 Descriptive statistics of ICS total score and subscale (n = 298)

Variable	Possible range	Actual range	*M*	*SD*	Level
Organizational climate (overall)	18-90	18-90	66.33	10.957	Moderate
- Focus on EBP (3 items)	3-15	6-30	11.56	.822	Moderate
- Educational Support for EBP (3 items)	3-15	6-30	10.77	.911	Moderate
- Recognition for EBP (3 items)	3-15	6-30	10.69	.836	Moderate
- Rewards for EBP (3 items)	3-15	6-30	11.29	.795	Moderate
- Selection for EBP (3 items)	3-15	6-30	11.06	.828	Moderate
- Selection for Openness (3 items)	3-15	6-30	10.96	.787	Moderate

2.2 Organizational support [OS]

Total OS scale was 16.5 (in the range of 5-20) and its subscales of OS for overall mean score was 3.30 (*SD* = .667) (in the range of 1-4). These results indicated a moderate level of participants' perception of organizational support both in its overall picture and its subscales. Nursing staff perceptions at moderate level of organizational support included: support by top management, readily adopt changes required to implement best practice guidelines, being provided with sufficient time and training, an adequate number of qualified staff and the equipment and supply needed to implement the clinical guideline recommendations.

Tables 8 Descriptive statistics of OS total score and subscale (n = 298)

Variable	Possible range	Actual range	*M*	*SD*	Level
Organizational support (overall)	5-20	5-20	16.50	.667	Moderate
- Support by top management	1-4	1-4	3.51	.615	Moderate
- Readily adopt changes required to implement EBP	1-4	2-4	3.61	.541	Moderate
- Given sufficient time and training	1-4	1-4	3.20	.720	Moderate
- Adequate number of ualified staff	1-4	1-4	2.94	.810	Moderate
- The equipment and supply	1-4	2-4	3.31	.646	Moderate

Implementation of EBPs for prevention and management PPH [EBPIA-PPH]

A summary of practice adoption or implementation of EBPs for prevention and management PPH is presented in Table 9. The results indicated that the participants had majority always implementing all of the recommendation EBPs for prevention and management PPH in daily practice. A majority of nurse-midwives always practiced of EBPs for risk assessment and planning for prevention (Practice EBP 1-3). A majority of nurse-midwives always practiced of EBPs for prevention by following the active management of the third stage of labor (Practice EBP 4-8). A majority they always practiced of EBPs for evaluation and monitoring the signs and symptoms of maternal hemorrhage (Practice EBP 9-17). A majority of nurse-midwives always practiced of EBPs for proper management including communication and resuscitation, monitoring and investigation (Practice EBP 18-28).

Tables 9 Frequency and percentages of nurse-midwife implementing of EBPs for prevention and management PPH (n = 298)

Practice recommend	Always practices n (%)	Sometimes practices n (%)	Seldom practices n (%)	Never practices n (%)
Risk assessment and planning for prevention				
Practice EBP 1	277(93.0)	21(7.0)	-	-
Practice EBP 2	234(78.5)	61(20.5)	3(1.0)	-
Practice EBP 3	151(50.7)	106(35.6)	38(12.8)	3(1.0)
Following AMTSL				
Practice EBP 4	251(84.2)	31(10.4)	9(3.0)	7(2.3)
Practice EBP 5	226(75.8)	59(19.8)	9(3.0)	4(1.3)
Practice EBP 6	172(57.7)	41(13.8)	51(17.1)	34(11.4)
Practice EBP 7	267(89.6)	26(8.7)	4(1.3)	1(0.3)
Practice EBP 8	232(77.9)	62(20.8)	3(1.0)	1(0.3)
Evaluation and monitoring the signs and symptoms				
Practice EBP 9	257(86.2)	40(13.4)	-	1(0.3)
Practice EBP 10	246(82.6)	45(15.1)	6(2.0)	1(0.3)
Practice EBP 11	195(65.4)	84(28.2)	19(6.4)	-
Practice EBP 12	153(51.3)	97(32.6)	39(13.1)	9(3.0)
Practice EBP 13	263(88.3)	28(9.4)	7(2.3)	-
Practice EBP 14	270(90.6)	26(8.7)	2(0.7)	-
Practice EBP 15	241(80.9)	54(18.1)	3(1.0)	-
Practice EBP 16	278(93.3)	20(6.7)	-	-
Practice EBP 17	288(96.6)	10(3.4)	-	-

Table 9 (continued)

Practice recommend	Always practices n (%)	Sometimes practices n (%)	Seldom practices n (%)	Never practices n (%)
Proper management				
Practice EBP 18	270(90.6)	22(7.4)	6(2.0)	-
Practice EBP 19	259(86.9)	33(11.1)	4(1.3)	2(0.7)
Practice EBP 20	283(95.0)	15(5.0)	-	-
Practice EBP 21	172(57.7)	95(31.9)	-	-
Practice EBP 22	236(79.2)	45(15.1)	12(4.0)	5(1.7)
Practice EBP 23	191(64.1)	93(31.2)	12(4.0)	2(0.7)
Practice EBP 24	241(80.9)	50(16.8)	7(2.3)	-
Practice EBP 25	251(84.2)	45(15.1)	2(0.7)	-
Practice EBP 26	220(73.8)	62(20.8)	16(5.4)	-
Practice EBP 27	268(89.9)	27(9.1)	2(0.7)	1(0.3)
Practice EBP 28	220(73.8)	74(24.8)	4(1.3)	-

Assessing EBPIA-PPH score explained with descriptive statistic shows in Table 10. The results indicated that the participants had total score 104.72 (*SD* = .224) (in the range of 28-112) and overall mean score was 3.74 (*SD* = .462) (in the range of 1-4) on implementing of the EBPs for prevention and management PPH in daily practice. They practiced following the recommendation EBPs for risk assessment and planning for prevention (*M* = 11.07, *SD* = 1.056). They practiced following the recommendation EBPs for the active management of the third stage of labor (*M* = 18.30, *SD* = 1.889). They practiced following the recommendation EBPs for evaluation and monitoring the signs and symptoms of hemorrhage (*M* = 34.02, *SD* = 2.257). They practiced following the recommendation EBPs for proper management of PPH (*M* = 41.36, *SD* = 3.220) (Table 10).

Tables 10 Descriptive statistic of the EBPIA-PPH total score and subscale (n = 298)

Variable	Possible range	Actual range	*M*	*SD*
Overall implementing of the recommendation EBPs	28-112	28-112	104.72	.224
- risk assessment and planning for prevention (3 items)	3-12	3-12	11.07	1.056
- following the active management of the third stage of labor (5 items)	5-20	5-20	18.30	1.889
- evaluation and monitoring the signs and symptoms of hemorrhage (9 items)	9-36	9-36	34.02	2.257
- proper management of PPH (11 items)	11-44	11-44	41.36	3.220

Evaluation of assumptions

Testing for meeting statistical assumptions for multivariate analysis, including multi-level modeling [MLM] and multiple linear regression analysis were necessary. Statistical assumptions must meet to determine the appropriate statistic to utilize, to reduce the potential for distortion and bias in the results, and to facilitate an estimation process for the interpretation of the results (Barbara G. Tabachnick & Linda S. Fidell, 2007). The traditional multiple regression models estimate the associations between a set of exposure variables and an outcome measure at a single level, usually the individual level. These regression models make several assumptions: a) normal distribution of variables; b) normal distribution of residuals; c) residuals have a constant variance σ^2; d) the observations are unique and independent of each other; and e) exposure variables have linear relationships with the outcome variable (Hox, 2010; Tabachnick & Fidell, 2007).

Before test assumption, in regression analysis the predictor variables (i.e., the variables that explain/ predict the outcome variable) have to be interval or ratio scaled (Tabachnick & Fidell, 2007). However, hospital size variable was categorized for 4 groups that it was nominal variable. Because nominal and ordinal scaled variables have no nicely defined scales with fixed intervals, they are not well-suited as predictor (x) variables in regression models. To include them in these models their categories have to be transformed into so-called 'dummy' variables first. In this lies the solution for the problem of including nominal and ordinal scaled variables in regression models: convert all their categories into dichotomous variables with a 0/1 coding (Tabachnick & Fidell, 2007). Therefore, hospital size variable needs to dummy variables to 3 variables; middle level coding MHS, large community coding F1HS, and medium community coding F2HS, before analysis.

Assumptions of multi-level modeling include normally distributed dependent variables, linear relationship between dependent and independent variables, homoscedaticity (variance of the error is the same across all levels of the independent variable), and absence of multicollinearity of independent variables (Tabachnick & Fidell, 2007).

These assumptions need to be met for the estimated effects and associations to be unbiased and reliable. However, in reality, some of these assumptions are often violated at some point during the data collection, analysis, or interpretation of results. Most surveys, for many reasons, use a clustered study design for data collection. This clustering of observations violates the assumption of independence as individuals within a group have similar characteristics and are no longer providing unique information, thus reducing the effective sample size. Clustering affects the sampling variance; this effect is called the design effect. Hox (2010) described this design effect as the ratio of the operating sampling variance to the sampling variance under the assumption of simple random sampling (Hox, 2010).Ignoring the hierarchical structure of the clustered data can lead to biased results and inferences due to increased Type 1 error (Hox, 2010; Raudenbush & Bryk, 2002). In such situations, the use of multilevel models becomes relevant.

First, missing data had first checked. The total samples in this study were originally 298. However, the results showed that there were no missing data. Second,

univariate outliers were examined to confirm free of data outlier. According to Tabachnick and Fidell (2007), standardized scored was used to assess univariate outlier. If any case is the score less than -3.29 standard deviation or more than 3.29 standard deviation, it is an outlier. The data shown had 5 case of univariate outlier. Mahalanobis distance is the statistic used to identify multivariate outliers, otherwise known as influential cases. Mahalanobis distance can be evaluated for each case by using the χ^2 distribution. A case of χ^2 value equal to or less than 0.001 is labeled as a multivariate outlier (Barbara G. Tabachnick & Linda S. Fidell, 2007). In this study, Mahalanobis distance value 3.987 was more than 1 (minimu*M* = 0.077, maximum= 16.214). Therefore, 298 cases had tested for normality of distribution, linearity, and multicollinearity.

Another test for outliers related to regression analysis is Cook's distance. Cook's distance is used in regression analysis to find influential outliers in a set of predictor variables. Interpretations for Cook's distance is as follows: if a mean Cook's distance (D) value is more than 1, the variable is an outlier and needs to be deleted from statistical analyses. The results presented that the mean Cook's D was less than one (.006) for the regression analysis, thus, no outliers were found using the Cook's distance method.

Normality was tested by examining the statistics and using graphical methods (Hair, Black, Babin, & Anderson, 2010; Barbara G. Tabachnick & Linda S. Fidell, 2007).

A symmetric distribution of skewness and a peakiness distribution of kurtosis were zero, and the critical ratio for both of them was between -1.96 and 1.96 that presented normal distribution (Hair et al., 2010; Barbara G. Tabachnick & Linda S. Fidell, 2007). The results of each variable's skew and kurtosis values were presented in Table 11.

Table 11, the data shown perceived characteristics of guideline, organizational support, personal innovativeness, and perceived barriers were reasonably normally distributed (Skewness coefficient = 0.03, 1.32, -1.25, 1.60 respectively, Skew coefficient < 2), found severe skew in Implementing of EBP for prevention and management of PPH, and organizational climate (Skewness coefficient = -17.39, 20.71 respectively, Skew coefficient > 10), found skew in years

of delivery room experience and hospital size (Skewness coefficient = 6.40, -7.09 respectively, Skew coefficient > 5). While perceived barriers, organizational climate and personal innovativeness kurtosis value was less than 1.96 meet the criteria. The results shown that EBPIA-PPH and organizational climate were significantly severe skewness, and beyond the normal limits, indicating the normality assumption of this study had violated.

Tables 11 Test of normality of distribution for selected variables (n = 298)

Variables	Skewness	Skew/ S.E Skewness	Kurtosis	Kurtosis/ S.E Kurtosis
- Implementing of EBP for prevention and management of PPH [EBPIA-PPH]	-2.45	-17.39	6.83	24.31
- Organizational support to EBP Implementation [OS]	.186	1.32	2.52	8.97
- Organization climate to EBP Implementation [OC]	-2.92	-20.71	-.125	-0.44
- Personal Innovativeness [INNO]	-.215	-1.52	-.122	-0.43
- Perceived Characteristics of Guideline [PCG]	0.004	0.03	5.45	19.39
- Perceived barriers to EBPs [BAR]	.226	1.60	-.313	-1.11
- Year of experience in delivery room [Exp]	.902	6.40	.530	1.89

Finally, multicollinearity assumption had tested. Multicolinearity is a correlation matrix problem that occurs when variables are too highly correlated (i.e. values of 0.90 and above) (Tabachnick & Fidell, 2007). There were three ways to test multicollinearity including using Pearson correlation coefficients between variables, tolerance value, and variance inflation factor [VIF]. The tolerance value

should be higher than 0.20 and variance inflation factor [VIF] should be more than 10 (Tabachnick & Fidell, 2014). A tolerance value had a ranged from 0.680 to 0.994indicated no problem of multicolinearity because the value of 0.1 or less is an indicator of multicollinearity (Table 10). The VIF results indicated had no evidence of multicolinearity because all the existing VIF values ranged from 1.006 to 1.472 less than 2, do not exceed a value of 10. Consequently, no evidence of multicollinearity had found among the study variables.

Tables 12 Testing for multicolinearity of study variables

Variables	Tolerance	VIF
Organizational support to EBP Implementation [OS]	.676	1.480
Organization climate to EBP Implementation [OC]	.668	1.497
Middle level community hospital [MHS]	.619	1.614
Large community hospital [F1HS]	.658	1.519
Medium community hospital [F2HS]	.596	1.677
Personal Innovativeness [INNO]	.991	1.009
Perceived Characteristics of Guideline [PCG]	.835	1.197
Perceived barriers to EBPs [BAR]	.826	1.211
Year of experience in delivery room [Exp]	.973	1.028

Linearity assumption had determined by using Pearson's correlation coefficient (Tabachnick & Fidell, 2007). The multivariate correlation between the study variables did not show a nonzero correlation, it shows up in a correlation matrix in Table 11-12. Multicollinearity was a problem of correlation matrix that occurred when variables are too highly correlated ($r \geq 0.90$). Table 13-14 the results revealed that the strength of the correlation coefficients between all combinations of variables was from 0.04 to 0.566, indicating that multicolinearity was not found in these variables.

Table 13 presents the Pearson Product Moment correlational data for each predictor of individual-level. Year of experience in delivery room (r = 0.278), perceived characteristic of guideline (r = .239), and personal innovativeness

(r = 0.116) were positively and significant related to EBPIA-PPH scores; but perceived barriers to EBPs (r = -0.276) was negatively and significantly related to EBPIA-PPH scores.

Tables 13 Correlation coefficient between independent variables of individual level, and dependent variable (n = 298)

	EBPIA-PPH	**Exp**	**INNO**	**PCG**	**BAR**
EBPIA-PPH	1.000				
Exp	.278**	1.000			
INNO	.116**	.055**	1.00		
PCG	.239**	.181**	-.004**	1.000	
BAR	-.276**	-.120**	.049**	-.260**	1.000

** p< .01

Table 14 presents the Pearson product moment correlational data for each predictor of organizational-level. Organization climate to EBP implementation (r =.381), Organizational support to EBP implementation (r = .352), and Large community hospital (r =.198) were positively and significant related to EBPIA-PPH scores; but middle level community hospital (r = -.037) and medium community hospital (r = -.032) were negatively and no significantly related to EBPIA-PPH scores.

Tables 14 Correlation coefficient between independent variables of organizational level and dependent variable (n = 298)

	EBPIA-PPH	**OS**	**OC**	**MHS**	**F1HS**	**F2HS**
EBPIA-PPH	1.000					
OS	.352**	1.000				
OC	.381**	.567**	1.000			
MHS	-.037	.008	.092	1.000		
F1HS	.198**	-.013	-.003	-.280	1.000	
F2HS	-.032	.010	-.015	-.408	-.352	1.000

** p< .01

Homoscedasticity of residuals was supported by an overall rectangular shape of the residual pattern with an absence of widening of predicted values (in Appendix; Tabachnick & Fidell, 2007). In addition, scatter plots of the natural logs of dependent variables were examined but were not superior to actual values.

Hypothesis testing

The first hypotheses: Individual variables (nurse characteristics, perceived barriers to EBPs and perceived characteristics of EBPs) have effect on the implementation of evidence-based practice for the prevention and management of PPH.

Therefore, to examine the relationships between independent variable factors and dependent variable of each level, individual and organization, these study analyses by using multivariate linear regression.

Multivariate analyses were conducted for two purposes: the selection of the effective independent variables in the models, and the detection of multicollinearity among the possible independent variables. Multiple linear regression analyses were conducted to examine the relationship between implementation of EBP for the prevention and management of PPH and various potential predictors.

The full multiple linear regression model was conducted on 298 cases and

the four significant variables at individual-level (year of experiences in delivery room, perceived barrier of EBP implementation, personal innovativeness, and perceived characteristics of CPG). Using enter method for elimination four variables. Table 15 summarizes the descriptive statistics and analysis results.

Tables 15 Predictors of implementation of EBPs for prevention and management of PPH (Individual-level) (n = 298)

Predictors	B	SE	Beta	t	p-value
Constant	3.621	.195	-	18.588	.000
Year of experience in LR	.007	.002	.235	4.322	.000
Personal innovativeness	.034	.015	.118	2.217	.027
Perceived characteristic of CPG	.070	.027	.144	2.589	.010
Perceived barriers	-.109	.030	-.205	-3.699	.000
$R = .412$, $R^2 = .170$, adjusted $R^2 = .159$, SE = .206, F change = 15.013, *p*-value<.01					

The relationships between all factors (individual-level) and EBPIA-PPH are indicated in Table 15. The results of the multiple linear regression analysis revealed that year of experiences in delivery room, perceived barrier of EBP implementation, personal innovativeness, and perceived characteristics of CPG, were the independent factors at individual-level, had significant influence on the implementation of EBP for prevention and management of PPH ($\beta = .235, -.205, .144$, and $.118$, $p < .01, .05$ respectively). These four predictors could explain 15.9 % of the variance on implementation of EBP for prevention and management of PPH, and significant of predictor (adjusted $R^2 = 0.159$, $p < .01$). On the whole, the higher effect influencing factors of independent was year of experiences in delivery room, followed by perceived barrier of EBP implementation, and perceived characteristics of CPG, respectively. However, personal innovativeness had a weak effect influencing factors on the implementation of EBP for the prevention and management of PPH (Beta coefficients < 0.2).

Additionally, indicating that nurse-midwife who had more experiences worked in delivery room, better perceived characteristics of CPG, and better personal innovativeness are likely to stronger adoption or implementation of EBPs for prevention and management of PPH. However, higher perceived barriers of EBPs was negatively correlated with adoption or implementation of EBP for prevention and management of PPH.

The second hypotheses: Organizational variables (organizational climate for EBPs, organizational support and hospital size) have effect on the implementation of evidence-based practice for the prevention and management of PPH.

The result indicated in Table 16, the multiple regression analysis revealed that at organizational-level variables; organizational support, organization climate, and large community hospitals, had significant influence on the implementation of EBPs for prevention and management of PPH (β = .205, .263, and .229 respectively, p <.01). All of the three predictors could explain 20.2 % of the variance on implementation of EBP for prevention and management of PPH, and significant of predictor (adjusted R^2 = 0.202, p < .01).

Tables 16 Predictors of implementation of EBP for prevention and management of PPH (organizational-level) (n = 298)

Predictors	**B**	**SE**	**Beta**	***t***	***p*-value**
Constant	3.049	.085	-	35.816	.000
Organizational support	.089	.028	.205	3.249	.001
Organization climate	.097	.023	.263	4.148	.000
Middle level community hospital	.014	.034	.026	.398	.691
Large community hospital	.130	.036	.229	3.583	.000
Medium community hospital	.029	.032	.061	.913	.362

R = .464, R^2 = .215, adjusted R^2 = .202, SE = .200, F change = 15.990, p-value<.01

The variable of hospital size was identified from the multiple linear regressions for each category, four categories. However, at the level of middle level, medium level of hospital was a weak effect and no significant influence factors on the implementation of EBPs for PPH (correlation coefficients < 0.2), therefore, excluded these variables. On the whole, the higher effect influencing factors was organization climate for EBPs implementation, followed by large community hospitals, and organizational support for EBPs implementation. Therefore, indicating that nurse-midwife who had a better organizational climate for EBPs implementation, better organizational support for EBPs implementation, and worked in large community hospitals, are likely to adoption or implementation of EBPs for prevention and management of PPH.

Additionally, the result of multivariate linear regression revealed that the relationship between the set of independent variables at individual-level and organizational-level had influence on the implementation of EBP for prevention and management of PPH.

The third hypotheses: Individual variables (nurse characteristics, perceived barriers to EBPs and perceived characteristics of EBPs) have a cross-level interaction with organizational variables (organizational climate to EBP, organizational support and hospital size) on the implementation of EBP for the prevention and management of PPH.

Multilevel model analysis was run to estimate the influencing between individual and organizational factors and EBPs implementation for prevention and management of PPH. For this study, hierarchical models were examined using the Hierarchical linear models [HLM] 7.0 Student Version. Subsequently, the following statistical hypothesis was tested with p-value .05 level of significant. This level of significance was used because of the relatively complex analysis for the small sample size of 298 nurses.

Model Specification

Two-level HLM consist of two sub-models representing levels 1 and 2. Based on the variable examinations, the researcher fit two random intercept models (see Table 15). Model 1 an unconditional or null model without any predictors specified. For Model 2 as fully unconditional model, Level 1 included year of

experiences in delivery room, perceived barrier of EBP implementation, personal innovativeness, and perceived characteristics of CPG as independent variables, and Level 2 included organizational climate to EBP, organization support and hospital size as an independent variable, dependent variable was the implementation of EBPs for the prevention and management of PPH [EBPIA-PPH]. For both models, independent variables computed from the data after checked for missing data, was used. These models were random intercept models, as technical limitations had existed for the analysis of random slope hierarchical generalized linear models (Hox, 2010; Raudenbush & Bryk, 2002).

Tables 17 The result of fully equation model with hierarchical generalized linear models

Model	Formula
Model 1	
Level 1=	$\eta_{jj} = \beta_{0j} + r_{0j}$
Level 2=	$\beta_{0j} = \gamma_{00} + \mu_{0j}$
Mixed=	$\eta_{jj} = \gamma_{00} + \mu_{oj}$
Model 2	
Level 1=	$SUMEBP_{ij} = \beta_{0j} + \beta_{1j}*(DELIVERY_{ij}) + \beta_{2j}*(SUMINNO_{ij}) + \beta_{3j}*(SUMCPG_{ij}) + \beta_{4j}*(SUMBARRI_{ij}) + r_{ij}$
Level 2=	$\beta_{0j} = \gamma_{00} + \gamma_{01}*(SUMSUP_j) + \gamma_{02}*(SUMCLIMA_j) + \gamma_{03}*(LARGE_j) + u_{0j}$
	$\beta_{1j} = \gamma_{10} + \gamma_{11}*(SUMSUP_j) + \gamma_{12}*(SUMCLIMA_j) + \gamma_{13}*(LARGE_j)$
	$\beta_{2j} = \gamma_{20} + \gamma_{21}*(SUMSUP_j) + \gamma_{22}*(SUMCLIMA_j) + \gamma_{23}*(LARGE_j)$
	$\beta_{3j} = \gamma_{30} + \gamma_{31}*(SUMSUP_j) + \gamma_{32}*(SUMCLIMA_j) + \gamma_{33}*(LARGE_j)$
	$\beta_{4j} = \gamma_{40} + \gamma_{41}*(SUMSUP_j) + \gamma_{42}*(SUMCLIMA_j) + \gamma_{43}*(LARGE_j)$
Mixed=	$SUMEBP_{ij} = \gamma_{00} + \gamma_{01}*SUMSUP_j + \gamma_{02}*SUMCLIMA_j + \gamma_{03}*LARGE_j + \gamma_{10}*DELIVERY_{ij} + \gamma_{11}*SUMSUP_j*DELIVERY_{ij} + \gamma_{12}*SUMCLIMA_j*DELIVERY_{ij} + \gamma_{13}*LARGE_j*DELIVERY_{ij} + \gamma_{20}*SUMINNO_{ij} + \gamma_{21}*SUMSUP_j*SUMINNO_{ij} + \gamma_{22}*SUMCLIMA_j*SUMINNO_{ij} + \gamma_{23}*LARGE_j*SUMINNO_{ij} + \gamma_{30}*SUMCPG_{ij} + \gamma_{31}*SUMSUP_j*SUMCPG_{ij} + \gamma_{32}*SUMCLIMA_j*SUMCPG_{ij} + \gamma_{33}*LARGE_j*SUMCPG_{ij} + \gamma_{40}*SUMBARRI_{ij} + \gamma_{41}*SUMSUP_j*SUMBARRI_{ij} + \gamma_{42}*SUMCLIMA_j*SUMBARRI_{ij} + \gamma_{43}*LARGE_j*SUMBARRI_{ij} + u_{0j} + r_{ij}$

Where γ_{ij} is the dependent variable measured on the i_{th} level 1 unit, β_{0j} is the intercept for the jth level 2 unit, $X_{ij}$is the level 1 predictor or covariate, β1j is the regression coefficient associated with level 1 predictor X for the jth level 2 unit.

where:γ_{00}= mean of the intercepts across hospitals;$\gamma_{01=}$ mean of the slopes across hospitals.

Table 17 shows two-level hierarchical linear models consists of two sub-models representing Levels 1 and 2. Level 1 refers to individuals, such as nurses; Level 2 refers to organizational, such as hospital. This study summarized equation model for Level 1 is the fully unconditional model, and level 2 is hypothetical model. The Level 2 model takes into account the differences between organizational and explains these differences in terms of organizational characteristics. The analysis these variables were aggregated as group means at hospital levels because they were conceptualized as organizational factors.

The first step in the hierarchical linear modeling process involved determining how the variation in implementation of EBPs for PPH was distributed among the two different levels: individual (nurse), and organization (hospital). This was accomplished by estimating the fully unconditional model with no predictors at any of the two levels. It also allows for the estimation of the proportion of variation that is within individual, among individual within organizations, and among organizations. That is,

$\sigma 2 / (\sigma 2 + \tau\beta)$ is the proportion of variance within individual (individual-level);

$\tau\beta / (\sigma 2 + \tau\beta)$ is the proportion of variance among organizations (organizations -level variance across organizations).

The variance component of dependent variable was distinguished for each level. The result from hierarchical linear modeling analyses indicating;

Variance component of individual-level $\sigma^2 = 0.02811$

Variance component of organizational-level $\tau_{00} = 0.01292$

The estimation of the grand mean of implementation of EBPs for PPH across organizations (the fixed effect) is 3.404. Decomposing the total variability in implementation of EBPs for PPH into its' two components the estimates for the variability among individual within organization (σ^2), and among institutions (π) were 28.11, and 12.92, respectively (see Table 18).

Tables 18 HLM estimation of unconditional model

Fixed effects	**Coefficient**	**S.E**	***t*-ratio**
γ_{000}: average nurse implementation of EBPs for PPH score	3.404	0.148	22.937
Random effects	**Variance component**	***df***	**Chi-square**
σ^2: variance among nurse within organization	28.05		
τ_{00}: variance among organization	12.92	46	174.818**

Final estimation of variance components

Random effect	**Standard deviation**	**Variance component**	***df***	χ^2	***p*-value**
INTRCPT1, u_0	0.11368	0.01292	46	174.81773	<0.001
level-1, r	0.16749	0.02805			

Statistics for current covariance components model

Deviance = -58.323480

Number of estimated parameters = 2

**P< .01

The intra-class correlation (ρ) indicates the proportion of the variance explained by the grouping structure in the population. The intra-class correlation can also be interpreted as the expected correlation between two randomly drawn organization that are in the same group. Interclass correlational analysis was completed to identify the proportion of the overall variation in the outcome explained by variables at the organization level. The ICC formula in the equation below was used for the organization level model (level-2). Organization level ICC was defined similar to the individual level ICC. However, the numerator was changed to 2.
To study individual level differences in the implementation of EBPs for PPH scores between organizations, four random effects were included in model 2.

The use of the intraclass coefficient [ICC] in linear models is based on the distinction between the level-1 variance and variance of other levels. The ICC can be calculated using the σ^2 (level-1) and τ (level-2)

ICC (ρ) = τ_{00} / (τ_{00} + σ^2) = 0.01292/ (0.01292+0.02805) = 0.315

The ICC is the proportion of variance on the implementation of EBPs for PPH attributable to contextual factors at these levels. The ICC showed that only a small proportion (.315) was present between organizations. This result suggests that around 32 percent of variance in implementing of EBPs for PPH is accounted by the organization' characteristics, and 68 percent of variance in implementing of EBPs for PPH is accounted for by the individual nurse within their organization.

Although the ICC at individual and organization levels were small, at both levels it was significant, indicating that contextual nursing factors at these levels are important to some extent. A smaller ICC value at the organization levels indicated more importance of organizational factors in predicting and explaining variability of implementing the EBPs among nurses. The relatively large percentage of ICC at Level 1 indicated that differences in implementing of EBPs for PPH were due more to compositional (i.e., individual) characteristics than contextual (i.e., organization level) characteristics.

Deviance and the number of the estimated parameters were-94.164628, and 2 for Model-1, -58.323480 and 2 for Model -2, respectively. The difference in the deviances between Models -1 and -2 was -35.84, χ^2 value for df= 2 and p = .01. Therefore, Model -2 fit the data better than did Model 1.

In the main analysis, using the null model, a univariate analysis was performed first to determine the significance of each factor to be included in the analysis. Then, individual-level analysis was performed using Model 1 to examine the predictive relationship between individual-level factors and implementation of EBP for PPH. Analysis settings. Group-mean centering was used for the Level-1 independent variables for Models 2, and grand-mean centering was used for the Level-2 independent variable.

Tables 19 Significant individual and organization variables tested on dependent variable (n = 297)

	Estimate	**SE**	***t***	***p*-value**
Fixed effects				
Intercept 1	3.741611	.433195	8.332	.000
Exp.	.007450	.001656	4.498	.000
INNO	.082626	.031358	2.635	.009
PCG	.132244	.065148	2.030	.043
BAR	-.187422	.057404	-3.265	.001
Intercept 2	2.930137	.225117	13.016	.000
F1HS	.110586	.044744	2.472	.017
OS	.046619	.098189	.475	.637
OC	.173001	.072151	2.398	.020

Table 19 revealed that when used to statistically estimate simultaneously the effects of individual-level and organization-level factors on implementation of EBPs for prevention and management of PPH. The hierarchical linear modeling [HLM] analysis found that the relationships between individual- level and organization-level with explanatory variables on the implementation of EBP for PPH.

Model 1 (Intercept 1)-fixed effect (γ_{00}): all individual factors had effect on implementation of EBPs for PPH management. The present analysis results supported the relationship between individual factors and implementation of EBPs for PPH management (B = 3.741, $p < .001$). According to the direction of relationship between individual factors and implementation of EBPs for PPH management indicated that have more experiences worked in delivery room, perceived less barriers on EBPs implementation, more innovativeness, and perceived greater characteristic of CPG, are likely to implementation of EBPs for PPH (b =.007, -.187, -.083, .132 respectively, $p < .05$). Besides, the findings also showed that EBPs implementation for PPH management was predicted significantly by individual factors that may vary across hospitals.

Model 2 (Intercept 2) Fixed effect (γ_{00}) of organizational factors had effect on implementing of EBPs for PPH. The results of the present analysis support the relationship between organizational factors and implementing of EBPs for PPH (B = 2.93, $p < .001$). According to the direction of relationship between individual factors and implementation of EBPs for PPH management indicated that nurse who worked in large community hospital, and had better organizational climate of EBPs implementation are likely to implementation of EBPs for PPH (b =.110, .173 respectively, p <.05).

This result was related the preliminary results from multiple regression analysis in this study. Assessment of the models using Chi-square was significant indicating that both models are predictors of implementing of EBPs for PPH. An assessment of the model was done by examining -2 Log Likelihood and Chi-square. A significant chi-square was noted for each model, indicating that the models predict the dependent variable beyond what would be expected by chance (Tabachink & Fidell, 2007).

To calculate a measure of effect size, calculate the variance (r^2) explained by the level-1 predictor variable in the outcome variable using Equation;

$r^2 = \sigma^2$null-σ^2random / σ^2null

r^2 = 0.0281-0.013/ 0.0281, = 0.537

Using the values and the specified equation, the results indicate that individual nurse factors explains 53.7 % of the variance on implementing of EBPs for prevention and management of PPH.

For a measure of effect size, the explained variance in the outcome variable, by the level-2 predictor variable can be computed using Equation

$r^2 = (\tau^2$null-τ^2means) / τ^2 null

r^2 = 0.008-0.003/ 0.008 = 0.625

The results confirm that organizational factors explained 62.5 % of the between measures variance on implementing of EBPs for prevention and management of PPH. The relatively higher percentage of implementing of EBPs for PPH explained by these factors at the organizational levels, compared to none at the individual level

(Level 1), suggests that these sets of predictors reflected better organizational attributes of EBPs implementation for PPH than the individual predictors.

Combined model: Analysis of all predictors at the two levels

Simultaneously model is an extension in Table 20. First, individual-level variables were introduced in the model containing only significant individual variables, and then hospital-level variables were introduced. Indicating across organization (hospital) the mean score of year of delivery experience and mean score of perceived barriers of EBP implementation have effect on implementation of EBP for PPH, depend of mean score of large community hospital and organizational climate of EBP in each hospital differently. The objective of this analysis is to assess whether there is a significant difference in mean scores of implementing of EBPs for PPH across hospital adjusted for appropriate covariates.

Table 20 shows the multilevel analysis results, analyzed using HLM with intercepts and slopes as outcomes modeling to illuminate any cross-level interactions. The overall adjusted mean score of implementing of EBPs for PPH is estimated as $\gamma_{00} = 3.404$. indicating that individual variables (level 1) has little effect on this overall adjusted mean; the regression coefficient associated with the level 2 covariate, organizational climate to EBPs implementation, is estimated as $\gamma_{02} = 0.095$, and large community hospital is estimated as $\gamma_{03} = 0.116$ by HLM/2L.

Indicating that this mean score of the implementation of EBPs for PPH in each hospital (Intercepts β_{0j}) = 3.404, examined that across all hospital (γ_{00}) was the intercept of the fixed effect had influence on the implementation of EBPs for PPH with significant level at *p*-value .01. This model warrants continued multilevel investigation as more of the variance in implementation of EBP for PPH is attributed to organization-level, or contextual, differences. Significant intrahospital differences were found by comparing variation on implementation of EBP for PPH among organizations. After adjusting for important individual and organization characteristics, two factors significant organization characteristic associated with higher levels of implementation of EBP for PPH remained-organizational climate of EBPs implementation, and hospital size (large community hospital) ($p < .05$). Both

organizational-level variables had a significant impact on average EBPs implementation for PPH prevention and management across hospitals.

The final step is to test for interactions between the two -level predictor variables (level-1 and level-2). When enter all of independent variables to analyses. The following four individual-level variables. The analyses found second interaction between individual- and organization-level. HLM results revealed that the two interaction was found to be statistically significant (B = -0.008, 0.135 respectively, p = .02), providing support that there was cross-level interaction between the level-1 and level-2 predictors. This interaction was found to be statistically significant suggesting that nurse-midwife who working in a large community hospital and had more worked experience in delivery room, resulting are likely to implementation of EBP for PPH (B = -0.008, p = .02). The second interaction was found to be statistically significant with the organizational climate of EBPs implementation (B = 0.135, p = .02) affecting the perceived barrier to EBPs implementation (Table 20). Indicating that nurse-midwife who working in a community hospital that had higher organizational climate of EBPs implementation and perceived less barriers to EBPs, resulting are likely to implementation of EBPs for PPH.

An interaction implies that the magnitude of the relation between one predictor and the criterion varies as a function of at least one other predictor. It is often convenient to think of one predictor as a focal predictor and all other predictors involved in product terms with the focal predictor as moderators hypothesized to affect the relationship between the focal predictor and the criterion (although this distinction is arbitrary given the symmetry of the interaction) (Preacher, Curran, & Bauer, 2006). In HLM with two predictors, interactions may occur between two Level 1 predictors (Case 1), between two Level 2 predictors (Case 2), or between Level 1 and Level 2 predictors (Case 3, or cross-level interaction). A cross-level interaction (Case 3) occurs when the random slope of a Level 1 predictor is predicted by a Level 2 predictor (Preacher et al., 2006).

Tables 20 Multilevel modeling model with combined model (n = 283)

Fixed Effect	**Coefficient**	**Standard error**	***t*-ratio**	**Approx. d.f.**	***p*-value**
For INTRCPT1, β_0					
INTRCPT2, γ_{00}	3.404820	0.143451	23.735	46	<0.001
OS, γ_{01}	-0.009928	0.052303	-0.190	46	0.850
OC, γ_{02}	0.095436	0.035430	2.694	46	0.010*
F1HS, γ_{03}	0.116219	0.049494	2.348	46	0.023*
For Exp. slope, β_1					
INTRCPT2, γ_{10}	0.016264	0.013132	1.239	232	0.217
OS, γ_{11}	-0.004464	0.005371	-0.831	232	0.407
OC, γ_{12}	0.001745	0.003226	0.541	232	0.589
F1HS, γ_{13}	-0.008658	0.003703	-2.338	232	0.020*
For INNO slope, β_2					
INTRCPT2, γ_{20}	0.035563	0.109505	0.325	232	0.746
OS, γ_{21}	-0.004931	0.041072	-0.120	232	0.905
OC, γ_{22}	0.008788	0.027730	0.317	232	0.752
F1HS, γ_{23}	0.020949	0.037357	0.561	232	0.575
For PCG slope, β_3					
INTRCPT2, γ_{30}	-0.103451	0.199205	-0.519	232	0.604
OS, γ_{31}	0.131459	0.070362	1.868	232	0.063
OC, γ_{32}	-0.069640	0.047548	-1.465	232	0.144
F1HS, γ_{33}	-0.100712	0.065594	-1.535	232	0.126
For BAR. slope, β_4					
INTRCPT2, γ_{40}	-0.076084	0.254989	-0.298	232	0.766
OS, γ_{41}	-0.145584	0.085125	-1.710	232	0.089
OC, γ_{42}	0.135225	0.057642	2.346	232	0.020*
F1HS, γ_{43}	-0.072375	0.079999	-0.905	232	0.367

* P< .05

In addition, the researcher has the option of entering custom df for tests of simple intercepts, tests of simple slopes, or both simple intercepts and simple slopes. However, it is limited to the case in which there is a cross-level interaction between a single Level 1 (focal) predictor and two Level 2 moderators(Preacher et al., 2006).

In the corresponding data, working in a large community hospital is categorized into a 4-group, and was treated as a dummy variable coded as 0 and 1.

This may be awkward in the interpretation, and therefore the dummy variable may also be centered around its grand mean or by using effect coding. Nurse experience in delivery room is recorded in years, with the amount of experience ranging from 1 to 35 years. There are no pupils with a zero experience, and this explains why adding the cross-level interaction between worked at community hospital and nurse experience in delivery room to the model results in an appreciable change in the regression slope from -0.008 to 0.135. Thus, two variables of individual-level (year of experience in delivery room and perceived barrier) and two variable of organizational-level (organizational climate and large community hospital) had cross-level interaction effects were demonstrated in this study.

If the interaction is significant, it is best to include both direct effects in the regression too. The regression coefficient of one of the variables in an interaction could be interpreted as the regression coefficient for individuals with an 'average' score on the other variable (Hox, 2010). Finally, the intercepts model and slopes-as outcomes model were simultaneously tested with all predictor variables tested in the model to test the presence of any interactions between predictor variables. Therefore, this study found second interaction between individual- and organization-level. This interaction suggesting that nurse-midwife who working in a large community hospital and had more worked experience in delivery room, resulting are more likely to implementation of EBP for PPH. Moreover, nurse-midwife who working in a community hospital that had higher organizational climate of EBPs implementation and perceived less barriers to EBPs, resulting are likely to implementation of EBPs for PPH.

Summary of the hypotheses testing results

Hypothesis number one: There were individual-level variables included; year in delivery room experiences, perceived barrier of EBPs implementation, personal innovativeness, and perceived characteristics of CPG, were influencing factors effect on implementing of EBPs for prevention and management of PPH, among nurses-midwifes in Thailand. Those factor variables, year in delivery room experiences, perceived barrier of EBP implementation, perceived characteristics of CPG, and personal innovativeness, had fewer relationships with implementing of

EBPs for prevention and management of PPH (β = .235, -.205, .144, and .118, p <.01,<.05 respectively). The multiple regression analysis revealed that all these variables accounted for 15.9 % (adjusted R^2 = .159) of the variance on implementation of EBPs for prevention and management of PPH, and significant of predictor (p < .05). The most predictor of variance was year of experiences in delivery room (β = 0.235, p < .01), followed by perceived barrier of EBP implementation (β = -0.205, p <.01), perceived characteristics of CPG (β = 0.144, p <.01), and personal innovativeness (β = 0.118, p < .05) explained on implementation of EBPs for PPH. Thus, hypotheses number 1 was accepted.

Hypothesis number two: There were organizational-level variables included; organizational climate for EBPs implementation, organizational support and hospital size were influencing factors effect on mean score of implementing EBPs for prevention and management of PPH among nurses-midwifes in Thailand. Those factor variables had lower positive relationships with implementing of EBPs for PPH (β = .208, .264, and .193 respectively, p <.01). The multiple regression analysis revealed that all these variables accounted for 20.2 % (adjusted R^2 = .202) of the variance on implementation of EBP for prevention and management of PPH, and significant of predictor (p < .01). The most predictor of variance was organizational climate for EBPs implementation explained on implementation of EBPs for PPH (β = 0.264, p <.01), followed by organizational support for EBPs implementing (β = 0.208, p <.001), and worked in large community hospitals (β = 0.193, p<.01). Thus, hypotheses number 2 was accepted.

Hypothesis number three: Multilevel model analysis was using HLM analysis found that the relationships between individual- level and the organizational-level, explanatory variables on the implementation of EBP for PPH. The results shown that implementing of EBPs for PPH was predicted significantly by individual factors such as year of experience in delivery room, perceived barriers, personal innovativeness, and perceived characteristic of CPG (B = 3.741, p < .001). Likewise, the organizational factors (e.g. working in large community hospital and organizational climate of EBPs implementation) also significantly predicted EBPs implementation (B = 2.93, p < .001). The HLM analyses results in an ICC of.315. This result suggests that 32 % of the variance in EBPs implementation for PPH varied

among the group level and 68 % varied among individual level. Both individual- and organizational-level variables had a significant impact on average EBPs implementation for PPH prevention and management across hospitals.

However, HLM results revealed that the second interaction between individual- and organization-level had a statistical significance. This suggested that nurse-midwife who working in a large community hospital and had more worked experience in delivery room, resulting are likely to implementation of EBP for PPH (B = -0.008, p =.02). The second interaction was found to be statistically significant with the organizational climate of EBPs implementation (B = 0.135, p = .02) affecting the perceived barrier to EBPs implementation. It indicated that nurse-midwife who working in a community hospital that had higher organizational climate of EBPs implementation and perceived less barriers to EBPs, resulting are likely to implementation of EBPs for PPH. Thus, hypothesis number three was partially accepted.

CHAPTER 5
DISCUSSION AND CONCLUSION

This chapter summarizes and discusses the study results as well as the limitation of the study. Moreover, to provide the implication of findings for nursing practice, nursing administration and nursing education. Additionally, recommendation for the future study are also presented in this chapter.

Summary of the study findings

This study aimed to examine the factors influencing the implementation of EBPs for the prevention and management of PPH among nurse-midwives in Thailand by explaining the variables at the individual and organizational levels and test the relationships and interactions between individual- and organization-level factors in the implementation of EBPs for the prevention and management of PPH by nurse-midwives in Thailand. A multi-stage sampling technique was used to recruit a sample of nurse-midwives have worked in the delivery room for more than six months in providing maternal and child healthcare services, and head ward nurses work in the delivery room which provides direct care and administration in their unit. A total of 298 RNs, 50 groups (unit) of the delivery rooms, from the community hospitals were selected from four randomly technique as the cluster regional service providers in Thailand.

The questionnaires included EBPIA-PPH score, Organizational Support (OS) scale, The Implementation Climate scale (ICS), Individual Innovativeness scale (II), Perceived Characteristics of Guideline (PCG), BARRIERS scale, and organizational information questionnaire. The reliability of the instruments for this study indicated the Cronbach's alphas of EBPIA-PPH, OS, ICS, II, PCG, and BARRIERS were .854, .745, .912, .810, .904, and .847 respectively.

The data analysis was performed using descriptive analysis to describe the demographic data of the subjects and variables. The multiple regression analysis was used to examine the relationships between independent variable factors and dependent variable of each level, individual and organization, implementation of EBPs for the

prevention and management of PPH and various potential predictors. A multilevel linear modeling analysis was performed to analyzes the relationships between variables that are measured at different hierarchical levels and specific in this study for illuminate any cross-level interactions using two-level hierarchical linear models (HLM) analyses.

The results of this study are presented as follows:

1. The individual nurse's characteristic found that a majority (28.2 %) of participants were at the age of 23-30 years, their mean age was 37.90 (*SD* = 9.209). They held Bachelor degree in nursing and master degree at 96.0 % and 4.0 %, respectively. The ranged of RN experience were between 1-38 years (*M* = 15.57, *SD* = 9.525) and the ranged of working experiences in delivery rooms were between 1-35 years (*M* = 11.01, *SD* = 7.377). A large majority (66.5 %) of nurses have been trained once or twice in light of EBPs implementation for PPH prevention and management. A majority (33.2 %) of the nurses worked in medium community hospitals (F2).

2. The organizational characteristic, the studies were conducted at the delivery room in fifty community hospitals governed by MOPH. A majority (36.0 %) of community hospital was at the average level (F2). In these hospitals, there were 5-13 staff nurse-midwifes working in delivery rooms (*M* = 6.795, *SD* = 2.462). A majority (64.0 %) hospitals had no obstetrician. There was no c-section procedure or emergency operation in most (64.0 %) hospitals, while 36.0 % of them had c-section procedure or emergency operation. Almost (100 %) of these hospitals used EBPs for prevention and management of PPH. Almost (100 %) of these hospitals have adequate blood transfusion supply for emergency obstetric situation.

3. The results of the multiple linear regression analysis revealed that year of experiences in delivery room, perceived barrier of EBP implementation, personal innovativeness, and perceived characteristics of CPG, were the independent factors at individual-level, had significant influence on the implementation of EBP for prevention and management of PPH (β = .235, -.205, .144, and .118, p <.01, .05 respectively). These four predictors could explain 15.9 % of the variance on implementation of EBP for prevention and management of PPH, and significant of

predictor (adjusted $R^2 = 0.159$, $p < .01$). At organizational-level; organizational support, organization climate, and large community hospitals, had significant influence on the implementation of EBPs for prevention and management of PPH ($\beta = .205, .263$, and $.229$ respectively, $p < .01$). All of the three predictors could explain 20.2 % of the variance on implementation of EBP for prevention and management of PPH, and significant of predictor (adjusted $R^2 = 0.202$, $p < .01$).

4. A Multilevel Linear Modeling by using the two-level HLM analyses found the significant differently predictors by comparing variation in implementation of EBP for PPH among hospitals. The results shown that implementing of EBPs for PPH was predicted significantly by individual factors such as year of experience in delivery room, perceived barriers, personal innovativeness, and perceived characteristic of CPG ($B = 3.741$, $p < .001$). Likewise, the organizational factors (e.g., working in large community hospital and organizational climate of EBPs implementation) also significantly predicted EBPs implementation ($B = 2.93$, $p < .001$). The HLM analyses results in an ICC of.315. This result suggests that 32 % of the variance in EBPs implementation for PPH varied among the group level and 68 % varied among individual level. Moreover, HLM analysis showed that the second interaction between individual- and organization-level had a statistical significance. This suggested that nurse-midwife who working in a large community hospital and had more worked experience in delivery room, resulting are likely to implementation of EBP for PPH ($B = -0.008$, $p = .02$). The second interaction was found to be statistically significant ($B = 0.135$, $p = .02$) indicated that nurse-midwife who working in a large community hospital had higher organizational climate of EBPs implementation and perceived less barriers to EBPs, resulting are likely to implementation of EBPs for PPH.

Discussion of findings

Findings are discussed based on the conceptual framework of this study. The two objectives of the study: to examine the factors influencing the implementation of EBPs for the prevention and management of postpartum hemorrhage among nurse-midwives in Thailand, and test the relationships and interactions between individual- and organization-level factors on the implementation of evidence-based practice for the prevention and management of postpartum

hemorrhage by nurse-midwives in Thailand. Analyses of findings regarding each level variable are discussed in this section.

The factors influencing the implementation of EBPs for prevention and management of PPH.

Accordingly, the study result revealed that most participants always implemented all EBPs recommendations for PPH management in daily practice. Also, the participants had total score 104.72 (*SD*= .224) (in the range of 28-112) and overall mean score was 3.74 (*SD* = .462) (in the range of 1-4) on implementing of the EBPs for prevention and management PPH in daily practice. The higher percentage of implementation or adoption of EBPs related to many studies. Practice adoption for practices one, two, and three, the major practice recommendations from the guideline, were high, ranging from 84-94 %. Unfortunately, partial adoption was practiced by the majority of nurses; only 18-21 % of nurses reported adopting practices two and three all of the time (Fulbrook, Bongers, & Albarran, 2007). Practice one, using a variety of methods to predict tube location following initial feeding tube insertion, had the highest rate of full adoption (78 %). Adoption of practice two (94 %), recommended or encouraged radiographic confirmation was higher than previously reported (35 %) (Fulbrook et al., 2007).

The present findings support the previous study that several existing factors on individual nurse- and organizational-level were significantly associated with EBPs implementation for PPH management among nurse-midwives in Thailand. These results were explained based on the delivery outcomes of women under their care may provide an important new lever to improve the quality of care during childbirth (Edmonds et al., 2016). Adoption and implementation of the guideline recommendations for PPH prevention and management can result in decline PPH mortality (Shields et al., 2011; Shields et al., 2015). The results of this study support the evidence of their studies.

Regarding previous literature, the influential factors to the implementation of evidence-based diffusion were affected by individual, innovation-specific and organizational characteristics and fundamentally regarded as social and communicative process (Rogers, 2003). Many researchers identified the influential factors to EBPs adoption in nursing practice. Both nurse- and organizational-level factors influence

EBPs adoption and implementation in health care organizations (Cummings et al., 2007; Estabrooks et al., 2007; Titler et al., 2007). Therefore, the section is organized by opening with discussion of the results of the findings followed by each level of factors influencing;

1. Influencing individual-level factors

The finding of these study revealed that individual personal factors that year of experiences in delivery room, perceived barrier of EBP implementation, personal innovativeness, and perceived characteristics of CPG, had significant influence on the implementation of EBP for prevention and management of PPH. Additionally, indicating nurse-midwife who had more experiences worked in delivery room, better perceived characteristics of CPG, and better personal innovativeness are likely to stronger adoption or implementation of EBPs for prevention and management of PPH. However, higher perceived barriers of EBPs was negatively correlated with adoption or implementation of EBP for prevention and management of PPH. The present findings support previous study that several factors existing on individual nurse-levels were significantly associated with implementation of EBP for prevention and management of PPH among nurse-midwives in Thailand when using multiple linear regression analyses.

Because of an individual decision making regarding the adoption of an innovation include the individual's previous practice, perception of existing needs or problems, and innovativeness, and the norms of the individual's social system (Rogers, 2003). It was reported that the nurses' top reason for EBPs adoption was a personal interest in changing the practice to avoid risk of negative consequences on patients and personal valuation of evidences (Brown, Wickline, Ecoff, & Glaser, 2009). Discussion of the relationships and variables, along with corroboration with existing research is discussed below for each variable;

Year of experiences in delivery room

In the present study, year of experiences in delivery room was higher effect influencing factors on EBPs implementation in this study ($\beta = .235$, $p < .01$). The mean years of experience as staff nurse in delivery room was 11.01 (range = 1-35 years). This study was consistent with studies of nurses and midwives

with more years of working experience had a significantly greater negative relationship with the practice of EBP (Heydari et al., 2014), but contrasted in the relationship, because in the present study, year of experiences had a significantly greater positive relationship with the practice of EBP. From current study indicated that nurse-midwife who had more experiences worked in delivery room are likely implementation of EBPs for PPH. Also, it agreed with a study on Thai nurses with 11-20 years of nursing experience. They perceived more barriers in changing practice when compared to those with 1-10 or >20 years of nursing experience. Besides, nurses with nursing experience over 20 years perceived more support of EBPs than the other groups. Similarly, nurses with 11-20 years of nursing experience had more reports about barriers than those with 1-10 years of nursing experience (Suwanraj, 2010). Therefore, more years of working experience correlated with higher influencing factors on EBPs implementation for PPH prevention and management.

Perceived characteristics of CPG

In the present study, the result of the examination of perceived characteristics of CPG for PPH prevention and management in this particular research indicated influential factors on EBPs implementation ($\beta = .144$, $p < .01$). Perceived guideline characteristics, this factor was measured by participants who indicated awareness of the CPG. Mean scores for guideline characteristics were: relative advantage 6.37, compatibility 6.41, complexity 2.39, observability 6.44, and trialability 6.40 out of a possible seven points. According to result scores, high perception of relative advantage indicated more rapid adoption, in which high compatibility it may be perceived as requiring less behavior change, and lower complexity indicates lower compliance rates and negative influences on adoption rates. High observability increases guideline adoption and high feasibility of trials associated with high guideline compliance. These findings indicated that better perceived characteristics of CPG are likely implementation of EBPs for PPH. This study examined perception characteristics of CPG by nurse-midwives.

Higher perceived levels for all innovation characteristics are known to increase adoption, except for complexity, which is inversely related to adoption (Rogers, 2003). Also, it supported the previous study that, in the hospital setting, the delivery room nurses possibly worked in closer proximity to other unit;

therefore, they could see the difference between two disciplines related to the observability of guidelines (Greenhalgh et al., 2004). The researcher must consider nurse-midwife as individual characteristic attributes, as well as organizational, EBP characteristics, and barriers of EBP (Estabrooks et al., 2007). Regarding the study of influential factors to nurses' decisions to adopt guidelines in an organization, the research results revealed that perceived guideline characteristics of AACN Practice Alert were measured by participants with the awareness of Practice Alert, while high trialability was also a predictor of guideline adoption. A finding was consistent with a systematic review of guideline adoption (Bourgault, 2012). Low complexity was associated with adoption in previous guideline studies and relative advantage had mixed affected on adoption (Greenhalgh et al., 2004). Compatibility has not been associated with guideline adoption (Greenhalgh et al., 2004). Therefore, better perceived characteristics of CPG correlated with higher influencing factors on implementation of EBPs for PPH.

Perceived barrier of EBP implementation

In the present study, perceived barrier to EBPs implementation was the influential factor with higher effect on EBPs implementation (β = -.205, p =.000). However, higher perceived barriers of EBPs was negatively correlated with adoption or implementation of EBP for prevention and management of PPH. Indicating that nurse who perceived less barriers to EBPs implementation are more likely to practice followed EBPs for PPH. Specifically, many factors have been identified as barriers to or facilitators of research utilization. One of the biggest barriers to EBPs implementation for Thai nurses was that most research reports or articles were published in English (Suwanraj, 2010). One of the three barriers to EBPs utilizations was the publication of research reports or articles in English resulting in the difficulty of understanding (58.4 %). This particular issue was reported by Thai nurses as an important barrier in both research subscale and subcategories. A study of Thai nurses revealed that they used standards, protocols and textbooks the most due to their availability, accessibility and trustworthiness (Suwanraj, 2010). Although internet access in Thailand might not be an issue, only 41 percent of Thai nurses reported that their internet skills were good/very good (Just, 2008). Using information from a policy/ procedural manual/guideline was the most appropriate source of knowledge

to get up to date and high quality EBPs. Thai nurses also use less information from internet sources (M = 3.25, SD =.97), although most reported access to the internet (Just, 2008). Thai nurses' failure to use the internet may be due to either an unawareness of internet resources or a lack of internet skills (Suwanraj, 2010). This study was consistent with the one regarding EBPs implementation at a Thai regional hospital indicating that obstacles to EBPs implementation included English language, time constraints, limited experience in some interventions and inadequate support from policymakers (Swadpanich et al., 2008). To concerning knowledge and perception about access to EBPs showed that, although Thailand had the highest reported internet access, overall only ten percent of participants reported using PubMed (Martis, Ho, & Crowther, 2008). Therefore, perceived less barriers to EBPs implementation correlated with higher influencing on implementation of EBPs for PPH.

Personal innovativeness

Personal innovativeness as factor was small effect influencing factors on EBPs implementation in this study ($\beta = .118$, $p < .05$). Indicating nurse who better innovativeness are more likely to stronger adoption or implementation of EBPs for prevention and management of PPH. In the present study, a majority (76.2 %) had score range 51-58 points, as "Interrogator" or Early Majority, indicating that a majority of participants have timid attitudes towards innovation.

Innovativeness as the "degree to which an individual (or other unit of adoption) is relatively earlier in adopting new ideas than the other members of a system" (Rogers, 2003). The values, beliefs and interests of the individual were the inherent personality characteristics influencing the adoption (Dobbins et al., 2002). A number of studies on nursing and critical care indicated the association between personal innovativeness and EBPs adoption. Likewise, a study on operating room nurses revealed that the personal innovativeness and compliance of smoke evacuation policy were related (Ball, 2012). This study was consistent with an interdisciplinary study of ICU clinicians found that personality types such as willingness to embrace change were related to improved attitudes towards for guidelines implementation (Cahill et al., 2010). Respecting the registered nurses' level of innovativeness or their ability to initiate or adapt to change, this study revealed that nurses were neither unsupportive nor

supportive of the adoption of pain management practices and of evidence-based pain assessment practices (Carlson, 2006). Likewise, factors associated with higher levels of innovativeness include organizational size, organizational slack (size is often a surrogate measure for this construct), interconnectedness, and complexity. However, centralization and formalization negatively affect organizational innovativeness (Rogers, 2003). Therefore, better innovativeness correlated with higher influencing on implementation of EBPs for PPH.

1. Influencing organizational-level factors

In the present study revealed that the organizational-level factors such as organizational support, organization climate, and worked in large community hospitals had significant influence on the implementation of EBP for prevention and management of PPH. Additionally, indicating nurse-midwife who had a better organizational climate for EBPs implementation, better organizational support for EBPs implementation, and worked in large community hospitals, are likely to adoption or implementation of EBPs for prevention and management of PPH. The present findings support previous study that several factors existing organizational-levels, discussion of the relationships and variables, along with corroboration with existing research is discussed below for each variable;

Organizational support to EBPs implementation

In the present study, organizational support was the influential factors with a higher effect on EBPs implementation in this study ($\beta = .208$, $p = .001$). Indicating, nurse-midwife who had a better organizational support to EBPs implementation, are likely to adoption or implementation of EBPs for prevention and management of PPH. Because to promote the adoption of innovative influences, organizational support is important. Failure by organizations to provide and support staffs to create unit-specific solutions and evaluate change in practice created an impediment to the implementation (Bucknall et al., 2001).**T**he previous study also unveiled that nurses implemented evidence-based care to a greater extent when they perceived their culture as more supportive and ready for EBP (Melnyk et al., 2010). Similarly, according to the study of St-Pierre, there was a relationship with positively statistical significance ($p < 0.0001$) between perceived levels of organizational support and

nursing staff's perceptions of policy and procedure modification to reflect new guidelines (St-Pierre, 2005). Resources and support staff development in the form of continuing education about nursing research was shown to have a positive association with research utilization (Estabrooks et al., 2007).

Moreover, related to support resources had a significant positive relationship with research utilization in nursing practice [RUNP], indicated that high support resources increased RUNP d (Sanluang & Aungsuroch, 2015). These organizational resources include physical, human, and financial resources. The most important physical resource is computers with Internet access, which provide access to EBP information such as evidence-based guidelines (Melnyk & Fineout-Overholt, 2011). Therefore, better organizational support to EBPs implementation correlated with EBPs implementation.

Organizational climate of EBPs implementation

Organizational climate of EBPs implementation was the influential factor with a higher effect and contributed to a stronger EBPs adoption or implementation for PPH management (β = .264, *p* =.000). Indicating, nurse-midwife who had a better organizational climate to EBPs implementation, are likely to adoption or implementation of EBPs for prevention and management of PPH. It was the variable factor that generated a direct effect on the rate of intra-organizational diffusion of technological innovations (Ehrhart et al., 2014). **T**he previous study also unveiled that examined the unique contributions of nurse managers in light of their EBPs leadership behaviors and competencies in explaining unit climate for EBPs implementation based on multi-unit cross sectional design. It was found that an unit climates for EBPs implementation demonstrated the largest effect (β = -0.86, *p* <.01). Post hoc mediation analyses provided preliminary evidence suggesting the relationship between nurse manager EBP leadership behaviors and fall rates is mediated by unit climate for EBP implementation (Shuman, 2017). Similarly, it was found in the study in Thailand that the significant predictors in multiple regression were research experience, support resources and research climate (β = .273, .256 and .244 respectively (*p* <.01). They accounted for 30.40 % of variance in research utilization in nursing practice (R^2 = .304 *p* <.01) (Sanluang & Augsuroch, 2015). Nurses working in better contexts (i.e., contexts characterized by a positive culture, good leadership, and positive

evaluation or performance feedback) reported significantly more research utilization, more staff development, and lower rates of patient and staff adverse events than did nurses working in less positive contexts in regard to culture, leadership, and evaluation(Cumming et al., 2007). Therefore, better organizational climate to EBPs implementation correlated with EBPs implementation.

Hospital size

In the present study, hospital size referred to the fact that working in large community hospitals was the influential factor with a higher effect in possessing a stronger EBPs adoption or implementation for PPH management ($\beta = .193$, $p < .01$). Indicating, nurse-midwife who worked in large community hospital, are likely to adoption or implementation of EBPs for prevention and management of PPH. Hospital size was reported as a significant predictor of innovation in the innovation diffusion literature and had a positive relationship with opportunities for staff development, staffing and support services and facilitation (Cumming et al., 2007). The large organizations with maturity, functional differentiation and specialization were believed to have more capacity to adopt innovations (Estabrooks, 2003; Cumming et al., 2007). Thai nurses perceived that all EBPGs acute pain recommendations were very appropriate to be used by nurses in Thai hospital settings at most or all of the time according to the hospital size. It was also found that, in almost every circumstance, nurses in large hospitals had higher percentage of using each of EBPGs acute pain recommendations when compared to those in mid-size ones (Suwanraj, 2010). Size functions as a surrogate or proxy variable for other factors, and a more fruitful line of inquiry is to investigate its underlying structure to understand what features of large organizations account for increased levels of innovation diffusion (Rogers, 1995) and research utilization (Estabrooks, 2003). Therefore, nurse who working in large hospital size correlated effect of EBPs implementation.

In summary, the findings revealed that at individual-level, nurse-midwife who had more experiences worked in delivery room, better perceived characteristics of CPG, and better personal innovativeness are likely to stronger adoption or implementation of EBPs for prevention and management of PPH. At organizational-level, nurse who working in large community hospital, had better organizational

support, and had better organizational climate for EBPs implementation are the influential factors with a positive effect are likely to stronger adoption or implementation of EBPs for prevention and management of PPH. However, perceived less barrier to EBPs implementation is the influential factor with negative effect are likely to stronger adoption or implementation of EBPs for prevention and management of PPH.

The different level and the interaction of factors influencing the implementing EBPs for prevention and management of PPH

Multilevel modeling was used to analyze organization-, and individual-level characteristics that influence EBPs implementation for PPH among nurse-midwives. Original features of this study were the partitioning of variance in EBPs implementation for PPH into organization, and individual levels; and the simultaneous modeling of variables at these levels to explain variation in the results. The results shown that implementing of EBPs for PPH was predicted significantly by individual factors such as year of experience in delivery room, perceived barriers, personal innovativeness, and perceived characteristic of CPG (B = 3.741, $p < .001$). Likewise, the organizational factors (e.g., working in large community hospital and organizational climate of EBPs implementation) also significantly predicted EBPs implementation (B = 2.930, $p < .001$). Both organizational-level variables had a significant impact on average EBPs implementation for PPH prevention and management across hospitals. Moreover, HLM results revealed that the two interaction was found to be statistically significant providing support that there was cross-level interaction between the level-1 and level-2 predictors. Therefore, the results of this model should be interpreted with caution. The first interaction was between the level-1 (year of experience in delivery room) and level-2 (large community hospital) predictors. This interaction was found to be statistically significant suggesting that nurse-midwife who working in a large community hospital associated with more worked experience in delivery room, resulting are likely to implementation of EBP for PPH. The second interaction was between individual-level (perceived barriers) and organization-level (organizational climate) .This interaction was also found to be statistically significant meaning that nurse-midwife who working in a large community hospital had higher organizational climate of EBPs

implementation and perceived less barriers to EBPs, resulting are likely to implementation of EBPs for PPH.

According to the study, hospitals are complex organizations with multiple-levels of decision-making, decisions to offer prevention of disease in hospitals are influenced by a variety of factors. Research grounded in the diffusion of innovations theory (Rogers, 2003), systems models (Estabrooks & Glasgow, 2006) and recent reviews of the literature have identified some community-, organizational-, and individual-level factors that are correlated with the translation of evidence-based to practices (Durlak & DuPre, 2008). There is a dearth of research understanding the factors that promote adoption, implementation of EBPs (Durlak & DuPre, 2008).

This finding supports the evidence that larger hospitals with high or partially high contexts were able to provide more staffing and support services and opportunities for staff development than did smaller hospitals, but, perhaps more importantly, large hospitals with low or partially low (i.e., less positive) contexts provided less staffing and support services and fewer opportunities for staff development than did smaller hospitals with more positive contexts. The relationships were graphed among unit and individual characteristics and their ability to predict research utilization (Cumming et al., 2007). In organizations where nurses perceive more favorable culture, leadership, and evaluation, research use was, on average, higher than among those nurses with lower perceptions of their context; that is, a better or higher context of research implementation was associated with more research use (Estabrooks, 2003). The hospital level, innovative organization, responsive administration, and staffing support were significant predictors of research utilization. The likelihood of research utilization increased for each additional unit of increase in mean scores of innovative organization (37 %), responsive administration (28 %), and staffing support (40 %) (Estabrooks et al., 2003). Nurses have significantly different workplace access and patterns of use than either physicians or the public at large (Estabrooks et al., 2003). Second, regardless of nurses' use of the Internet, it remains at this time a static source of practice relevant knowledge for a profession whose knowledge requirements are highly dynamic, socially constructed, and context-specific (Chang, Hughes, & Mark, 2005; Estabrooks et al., 2007).

Similarly, findings about relationship between years as RN on current unit and unit climate implementation. Even after controlling for confounding variables (years as RN on current unit and education) and the nesting effects of units in hospital, the effect of leadership behaviors on implementation climate scores remained significant (b= 0.64, $p < .0001$) (Shuman, 2017). Consequently, nurse who allocate rewards with consideration of nurses' EBP implementation and use are actively embedding a climate supportive of EBP implementation (Aarons, Ehrhart, Farahnak, & Sklar, 2014).

This result of this study could be explained that such organization of hospitals or systems can naturally be observed at different hierarchical levels and variables may be defined at each level (Hox, 2010). The individual nurse and nursing unit represent different hierarchical levels, and are conceptualized to influence each other. The study results similarly results of the degree of adherence to guidelines was influenced by two practice characteristics (solo or group practice and rural or urban location) and all patient characteristics (age, gender, mean costs, mean volume) (Stewart, Vroegop, Kamps, Van Der Werf, & Meyboom-de Jong, 2003). The statistical issue may be another potential problem of data aggregation. In this instance, the process of aggregating to the higher level may inflate the estimates of the true relationship between variables because aggregated data eliminates within-hospital variance (Cho et al., 2016).

The studies presented here address gaps in the literature by exploring the relationships and interaction between factors at several levels of the ecological framework and EBPs adoption, implementation and sustained use of evidence-based practices for prevention and management of PPH in organizations (hospitals).

Strength and limitations of the study

Strength of the study; little is known about how individual nurses and organization factors influence the implementation of EBPs for prevention and management of PPH. Overall, the current studies addressed several factors at different hierarchical levels. to explore the complex relationships between factors from a variety of contexts (i.e., the organization, provider, and EBPs) and implementation

of evidence-based practices. This study provided an example of multilevel analysis that examines the relationship between variables that are measured at different hierarchical levels. The individual nurse and nursing unit represent different hierarchical levels, and are conceptualized to influence each other. Because multilevel models acknowledge hierarchical data, researchers should not move aggregation or disaggregation variables to a single level. Thus, to examine the relative importance of effects at each of these levels will explore at different hierarchical levels.

Limitation of the study; The study findings should be considered in light of several limitations. First, a limitation was assessment of the implementation of EBPs activity for management of PPH part, if nurse-midwife who not had been experience in the actual EBPs practice for PPH management, they could not answer of this part. Another limitation of the current studies, the instrument also asked about use of the EBPs recommendation for prevention and management PPH in daily practice, as well as barriers and facilitators implementation of using EBPs for PPH, perceive organizational support, and climate during the implementation of the clinical guidelines. Some questions represented the expected nursing role toward those topics. Thai nurses may have answered the questions congruent with prevailing social values, which may create a social desirability response bias. The third limitation of the study, this study has the limitation on how general findings may be construed. Participants of this study are from hospitals under MOPH so the study may not be generalized to other Thai hospitals under other affiliates.

Implications of this studies

Implications for nursing practice

Given that research results to promoting the implementation of EBPs for nursing care in daily practice, promoting the use of EBPs might be challenging. The findings presented elucidate potential organizational and individual targets for increasing implementation of evidence-based practices, and should be used to guide interventions to promote EBPs implementation by decease perceived barriers of EBPs implementation establishing strategies to overcome the barriers and promote the facilitators. Because nurse perceived more barriers such as, lack of resources to reference EBPs (e.g., internet access, research databases, computers, textbooks,

nursing journals, EBP experts) might impede their use. In countries where resources are inadequate, such as Thailand. Most hospitals in Thailand cannot afford to buy expensive research databases for seeking information to guide practice. Public access databases might help to alleviate this problem. Specialty in obstetric care, currently there are various EBP/ research databases that provide open access to the public that could promote easy to use EBPs. Moreover, the Thai Center of Evidence-based Nursing and Midwifery Center provides a translated EBPs related to nursing, to supporting research databases for seeking information to guide practice. Because the best CPG was important, if nurse perceived high advantage of CPG they more likely to implementation of EBPs.

Implication for nursing administration and policies

Organizational climate, and organizational support were higher effect influencing factors tend to possess stronger adoption or implementation of EBP for PPH. Findings from this study suggest that nurse's manager or health care administrator provided the good organizational climate, and the importance of organizational support to promote research use and clinical guideline implementation. Support from directors of nursing and other nurse leaders is essential for resource allocation and any changes to decision making structures, but support at ward level is equally important to enable staff nurses to implement EBPs. Nurses have implemented evidence-based care to a greater extent when they perceived their culture as more supportive and ready for EBP. Resources are the supplies, equipment, and time necessary to meet work demands. This study investigating implementation of EBP have primarily focused on nurse adoption and use, with little attention given to the influence of nurse managers in fostering climates supportive of EBP implementation. This is concerning because the practice context bears significant influence on implementation success or failure and is highlighted in numerous implementation. The results of this study, as well as others, also demonstrated that dissemination strategies should focus on encouraging organizations to promote the routine reading and use of research evidence in daily practice and decision making.

Implications for education

At undergraduate level, where a research course is commonly taught, incorporating simple EBP processes (e.g., ask clinical question in PICOT format,

search for the best evidence, and critical appraisal of the evidence) will help nursing students to gain more understanding regarding EBPs concepts and encourage future use of EBPs in their practice. At graduate level, where graduate nurses are prepared for the role of educator, researcher, nurse practitioner, or clinical nurse specialist, EBPs plays an even more important role in their career and their future. Thai nursing institutions should be promoting academic-practice partnerships to accelerate the use of EBPs into practice.

Recommendations for future research

The findings from this study provide a guide for future research:

1. This study had examined several factors influenced to implementing of EBPs. From research finding should be used to guide the intervention, that combine all two levels of interventions aimed to promote implementing of EBPs. Interventions should also help nurse identify relevant EBP climate embedding mechanisms that can better create climates supportive of EBP.

2. The findings from this study may assist nurse-midwifery develop the interventions to promoting the implementation of EBPs for nursing care in obstetric, by decease perceived barriers of EBPs implementation and establishing strategies to overcome the barriers.

3. More research is necessary to understand factors influencing nurses' decisions to adopt guidelines and their recommended practices in the clinical setting. Factors influencing adoption decisions are multifaceted, especially when adoption takes place within the context of an organization, by using multilevel analysis.

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APPENDICES

APPENDIX A

The institutional review board and ethical document

THE INSTITUTIONAL REVIEW BOARD (IRB) FOR GRADUATE STUDIES
FACULTY OF NURSING, BURAPHA UNIVERSITY, THAILAND

Thesis Title Factors Influencing the Implementation of Evidence-based Practices for Prevention and Management of Postpartum Hemorrhage among Nurse-midwives in Community Hospital Thailand: A Multilevel Analysis

Name Mrs. Jiranee Panyapin
ID: 59810007
Doctor of Philosophy in Nursing Science (International Program)

Number of the IRB approval 03 – 12 – 2561

The Institutional Review Board (IRB) for graduate studies of Faculty of Nursing, Burapha University reviewed your submitted proposal. The contingencies have been addressed and the IRB **approves** the protocol. Work on this project may begin. This approval is for a period of one year from the date of this letter and will require continuation approval if the research project extends beyond **January 28th, 2020**.

If you make any changes to the protocol during the period of this approval, you must submit a revised protocol to the IRB committee for approval before implementing the changes.

Date of Approval January 28th, 2019

Chintana Wacharasin, R.N., Ph.D.

Chairperson of the IRB
Faculty of Nursing, Burapha University, THAILAND

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เอกสารชี้แจงผู้เข้าร่วมการวิจัย
(สำหรับพยาบาลผดุงครรภ์)

การวิจัยเรื่อง ปัจจัยที่มีอิทธิพลต่อการนำหลักฐานเชิงประจักษ์ไปใช้สำหรับการป้องกันและการจัดการภาวะตกเลือดหลังคลอด ในพยาบาลผดุงครรภ์ ประเทศไทย: การวิเคราะห์พหุระดับ

รหัสจริยธรรมการวิจัย 03-12-2561

ชื่อผู้วิจัย นางจิราณี ปัญญาปิน

การวิจัยครั้งนี้ทำขึ้นเพื่อ ศึกษาและทดสอบปัจจัยความสัมพันธ์ที่มีอิทธิพลต่อการปฏิบัติตามหลักฐานเชิงประจักษ์สำหรับการป้องกันและการจัดการภาวะตกเลือดหลังคลอด ตามการรับรู้ทั้งในระดับของพยาบาลผดุงครรภ์ และระดับองค์กร

ท่านได้รับเชิญให้เข้าร่วมการวิจัยครั้งนี้เนื่องจากท่านเป็นผู้ให้การดูแลผู้คลอดในระยะคลอดและหลังคลอด ที่ปฏิบัติงานในหน่วยงานห้องคลอด ในโรงพยาบาลชุมชน สังกัดกระทรวงสาธารณสุข ซึ่งมีประสบการณ์การทำงานในห้องคลอดมากกว่า 6 เดือนขึ้นไป ซึ่งการวิจัยนี้ต้องการพยาบาลผดุงครรภ์ จำนวน 275 ท่าน ระยะเวลาที่ใช้ในการเก็บข้อมูลในการทำวิจัยครั้งนี้อยู่ระหว่างเดือน กุมภาพันธ์ ถึง พฤษภาคม พ.ศ. 2562

เมื่อท่านเข้าร่วมการวิจัยแล้ว สิ่งที่ท่านจะต้องปฏิบัติคือ ตอบแบบสอบถามตามความเป็นจริงด้วยตัวของท่านเอง แบบสอบถาม 1 ชุด มี 7 ตอน คือ 1) ข้อมูลทั่วไป 2) แบบสอบถามการปฏิบัติการพยาบาลเพื่อป้องกันและจัดการภาวะตกเลือดหลังคลอด 3) แบบสอบถาม**ลักษณะบุคคลที่ยอมรับนวัตกรรมสิ่งใหม่** 4) แบบสอบถามการรับรู้**คุณลักษณะของแนวปฏิบัติทางคลินิก** 5) **แบบสอบถามการสนับสนุนขององค์กรในการปฏิบัติตามหลักฐานเชิงประจักษ์** 6) แบบสอบถามบรรยากาศองค์กรในการปฏิบัติตามหลักฐานเชิงประจักษ์ และ 7) แบบสอบถามการรับรู้อุปสรรคในการใช้หลักฐานเชิงประจักษ์ซึ่งจะใช้เวลาทั้งสิ้นประมาณ 40 นาที

ประโยชน์ของการวิจัยครั้งนี้ อาจจะไม่ได้เป็นประโยชน์กับท่านโดยตรงแต่ผลการวิจัยจะเป็นข้อมูลพื้นฐานในการพัฒนาการดูแลผู้คลอดในระยะคลอด และจะช่วยหน่วยงานของท่านในการพัฒนากลยุทธ์ในการส่งเสริมการนำหลักฐานเชิงประจักษ์สำหรับการป้องกันและการจัดการภาวะตกเลือดหลังคลอดไปใช้ในการดูแลผู้คลอดให้เกิดประสิทธิภาพมากที่สุดเพื่อลดอัตราการเสียชีวิตและลดความรุนแรงของภาวะตกเลือดหลังคลอด

การเข้าร่วมการวิจัยของท่านครั้งนี้เป็นไปด้วยความสมัครใจ ท่านมีสิทธิการเข้าร่วมโครงการวิจัยหรือถอนตัวออกจากโครงการวิจัยได้ตลอดเวลาโดยไม่มีมีผลกระทบใดๆ ทั้งสิ้น และไม่ต้องแจ้งให้ผู้วิจัยทราบล่วงหน้าผู้วิจัยจะเก็บรักษาข้อมูลของท่านโดยใช้รหัสตัวเลขแทนการระบุชื่อ ชั้น และสิ่งใดๆ ที่อาจอ้างอิงหรือทราบได้ว่าข้อมูลนี้เป็นของท่าน ข้อมูลของท่านที่เป็นกระดาษแบบสอบถามจะถูกเก็บอย่างมิดชิด และปลอดภัยในตู้เก็บเอกสารและล็อคกุญแจตลอดเวลา สำหรับข้อมูลที่เก็บในคอมพิวเตอร์ของผู้วิจัยจะถูกใส่รหัสผ่าน ข้อมูลที่กล่าวมาทั้งหมดจะมีเพียงผู้วิจัยและอาจารย์ที่ปรึกษาเท่านั้นที่สามารถเข้าถึงข้อมูลได้ ผู้วิจัยจะรายงานผลการวิจัย และการเผยแพร่ผลการวิจัยในภาพรวม โดยไม่ระบุข้อมูลส่วนบุคลของท่าน ดังนั้นผู้อ่านงานวิจัยจะทราบเฉพาะผลการวิจัยเท่านั้น สุดท้ายหลังจากผลการวิจัยได้รับการตีพิมพ์เผยแพร่ในวารสารเรียบร้อยแล้วข้อมูลทั้งหมดจะถูกทำลาย

หากท่านมีปัญหาหรือข้อสงสัยประการใด สามารถสอบถามได้โดยตรงจากผู้วิจัยในวันทำการรวบรวมข้อมูล หรือสามารถติดต่อสอบถามเกี่ยวกับการวิจัยครั้งนี้ได้ตลอดเวลาที่ นางจิราณี ปัญญาปิน หมายเลขโทรศัพท์ 081-568-3372 หรือที่ รองศาสตราจารย์ ดร.วรรณี เดียวอิศเรศ อาจารย์ที่ปรึกษาหลัก หมายเลขโทรศัพท์ 082-993-3483

นางจิราณี ปัญญาปิน
ผู้วิจัย

หากท่านได้รับการปฏิบัติที่ไม่ตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงนี้ ท่านจะสามารถแจ้งให้ประธานคณะกรรมการพิจารณาจริยธรรมฯ ทราบได้ที่ เลขานุการคณะกรรมการจริยธรรมฯ ฝ่ายวิจัย คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา โทร. 038-102823

ใบยินยอมเข้าร่วมการวิจัย

หัวข้อวิทยานิพนธ์เรื่องปัจจัยที่มีอิทธิพลต่อการนำหลักฐานเชิงประจักษ์ไปใช้ในการป้องกันและการจัดการภาวะตกเลือดหลังคลอดในพยาบาลผดุงครรภ์ประเทศไทย: การวิเคราะห์พหุระดับ

วันให้คำยินยอมวันที่……เดือน……พ.ศ. ……..

ก่อนที่จะลงนามในใบยินยอมเข้าร่วมการวิจัยนี้ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยถึงวัตถุประสงค์ของการวิจัยวิธีการวิจัยประโยชน์ที่จะเกิดขึ้นจากการวิจัยอย่างละเอียดและมีความเข้าใจดีแล้วข้าพเจ้ายินดีเข้าร่วมโครงการวิจัยนี้ด้วยความสมัครใจและข้าพเจ้ามีสิทธิที่จะบอกเลิกการเข้าร่วมในโครงการวิจัยนี้เมื่อใดก็ได้และการบอกเลิกการเข้าร่วมการวิจัยนี้จะไม่มีผลกระทบใด ๆ ต่อข้าพเจ้า

ผู้วิจัยรับรองว่าจะตอบคำถามต่าง ๆ ที่ข้าพเจ้าสงสัยด้วยความเต็มใจไม่ปิดบังซ่อนเร้นจนข้าพเจ้าพอใจข้อมูลเฉพาะเกี่ยวกับตัวข้าพเจ้าจะถูกเก็บเป็นความลับและจะเปิดเผยในภาพรวมที่เป็นการสรุปผลการวิจัย

ข้าพเจ้าได้อ่านข้อความข้างต้นแล้วและมีความเข้าใจดีทุกประการและได้ลงนามในใบยินยอมนี้ด้วยความเต็มใจ

ลงนาม……ผู้ยินยอม

(……)

ลงนาม……พยาน

(……)

ลงนาม……ผู้วิจัย

(นางจิราณี ปัญญาปิน)

APPENDIX B

Permission letter for data collection

ที่ ศธ ๖๒๐๖/ ๐๑๕๓

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๒๕ กุมภาพันธ์ ๒๕๖๒

สำนักงานสาธารณสุข
จังหวัดนครราชสีมา
รับที่ 4156
วันที่ ๒๒ ก.พ. ๒๕๖๒

สำนักงานสาธารณสุขจังหวัดนครราชสีมา
กลุ่มงานพัฒนายุทธศาสตร์สาธารณสุข
รับที่ 315
วันที่ 25 กพ 62

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลเพื่อดำเนินการวิจัย

เรียน นายแพทย์สาธารณสุขจังหวัดนครราชสีมา

สิ่งที่ส่งมาด้วย ๑. ผลการพิจารณาจริยธรรมการวิจัย
๒. เครื่องมือที่ใช้ในการวิจัย

ด้วย นางจิราณี ปัญญาปิน นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "Factor influencing the implementation of evidence-based practice for prevention and management of postpartum hemorrhage among nurse-midwives in Thailand: A multilevel analysis" โดยมี รองศาสตราจารย์ ดร.วรรณี เดียวอิศเรศ เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

ในการนี้ คณะฯ จึงขอความอนุเคราะห์จากท่านอำนวยความสะดวกให้นิสิตเก็บรวบรวมข้อมูลจากกลุ่มตัวอย่าง คือ พยาบาลวิชาชีพและหัวหน้างานที่ปฏิบัติงานในหน่วยงานห้องคลอด ณ พื้นที่โรงพยาบาลในจังหวัดนครราชสีมา ระหว่างวันที่ ๔ มีนาคม - ๓๑ พฤษภาคม พ.ศ. ๒๕๖๒ โดยกำหนดขอบเขตพื้นที่การเก็บรวบรวมข้อมูล ดังนี้

๑. โรงพยาบาลปักธงชัย	จำนวน ๘ ราย	๑๐. โรงพยาบาลจักราช	จำนวน ๕ ราย
๒. โรงพยาบาลบัวใหญ่	จำนวน ๘ ราย	๑๑. โรงพยาบาลคง	จำนวน ๕ ราย
๓. โรงพยาบาลด่านขุนทด	จำนวน ๘ ราย	๑๒. โรงพยาบาลห้วยแถลง	จำนวน ๕ ราย
๔. โรงพยาบาลพิมาย	จำนวน ๘ ราย	๑๓. โรงพยาบาลหนองบุญมาก	จำนวน ๕ ราย
๕. โรงพยาบาลครบุรี	จำนวน ๖ ราย	๑๔. โรงพยาบาลโนนไทย	จำนวน ๕ ราย
๖. โรงพยาบาลโชคชัย	จำนวน ๖ ราย	๑๕. โรงพยาบาลวังน้ำเขียว	จำนวน ๕ ราย
๗. โรงพยาบาลประทาย	จำนวน ๖ ราย	๑๖. โรงพยาบาลเทพารักษ์	จำนวน ๕ ราย
๘. โรงพยาบาลชุมพวง	จำนวน ๖ ราย	๑๗. โรงพยาบาลบัวลาย	จำนวน ๕ ราย
๙. โรงพยาบาลโนนสูง	จำนวน ๖ ราย		

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ด้วย จะเป็นพระคุณยิ่ง

เรียน นพ.สสจ.นม.
- เพื่อโปรดพิจารณา
- ตามที่ นิสิตปริญญาเอก สาขาวิชาพยาบาลศาสตร์ ม.บูรพา ได้ขอทำดุษฎีนิพนธ์ โดยเก็บข้อมูลในกลุ่มพยาบาลผดุงครรภ์ในหน่วยงานห้องคลอด ตั้งแต่วันที่ ๔ มีค - ๓๑ พค ๖๒
- เห็นควรอนุญาตให้เก็บข้อมูลตามที่ขอ โดยประสานกลุ่มการพยาบาลก่อน
24 กพ 62

ขอแสดงความนับถือ

อนุญาต

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

(นายวิชาญ คิดเห็น)
ผู้อำนวยการโรงพยาบาลสูงเนิน ปฏิบัติราชการแ
นายแพทย์สาธารณสุขจังหวัดนครราชสีมา
27 ก.พ. 2562
26 ก.พ. 2562

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๐๘ โทรสาร (๐๓๘) ๓๙๓๔๗๖
ผู้วิจัยโทร ๐๘-๑๕๖๘-๓๓๗๒

สำเนาเรียน ผู้อำนวยการโรงพยาบาลปักธงชัย ผู้อำนวยการโรงพยาบาลบัวใหญ่ ผู้อำนวยการโรงพยาบาลด่านขุนทด ผู้อำนวยการโรงพยาบาลครบุรี ผู้อำนวยการโรงพยาบาลพิมาย ผู้อำนวยการโรงพยาบาลโชคชัย ผู้อำนวยการโรงพยาบาลประทาย ผู้อำนวยการโรงพยาบาลชุมพวง ผู้อำนวยการโรงพยาบาลโนนสูง ผู้อำนวยการโรงพยาบาลจักราช ผู้อำนวยการโรงพยาบาลคง ผู้อำนวยการโรงพยาบาลห้วยแถลง ผู้อำนวยการโรงพยาบาลหนองบุญมาก ผู้อำนวยการโรงพยาบาลโนนไทย ผู้อำนวยการโรงพยาบาลวังน้ำเขียว ผู้อำนวยการโรงพยาบาลเทพารักษ์ และผู้อำนวยการโรงพยาบาลบัวลาย

ที่ ศธ ๖๒๐๖/ ๐๒๕๕

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๕ กุมภาพันธ์ ๒๕๖๑

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลเพื่อดำเนินการวิจัย

เรียน นายแพทย์สาธารณสุขจังหวัดเชียงราย

สิ่งที่ส่งมาด้วย ๑. ผลการพิจารณาจริยธรรมการวิจัย
๒. เครื่องมือที่ใช้ในการวิจัย

ด้วย นางจิราณี ปัญญาปิน นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "Factor influencing the implementation of evidence-based practice for prevention and management of postpartum hemorrhage among nurse-midwives in Thailand: A multilevel analysis" โดยมี รองศาสตราจารย์ ดร.วรรณี เดียวอิศเรศ เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

ในการนี้ คณะฯ จึงขอความอนุเคราะห์จากท่านอำนวยความสะดวกให้นิสิตเก็บรวบรวมข้อมูลจากกลุ่มตัวอย่าง คือ พยาบาลวิชาชีพและหัวหน้างานที่ปฏิบัติงานในหน่วยงานห้องคลอด ณ พื้นที่โรงพยาบาลในจังหวัดเชียงราย ระหว่างวันที่ ๔ มีนาคม - ๓๑ พฤษภาคม พ.ศ. ๒๕๖๒ โดยกำหนดขอบเขตพื้นที่การเก็บรวบรวมข้อมูล ดังนี้

๑. โรงพยาบาลแม่จัน	จำนวน ๘ ราย	๙. โรงพยาบาลเวียงเชียงรุ้ง	จำนวน ๕ ราย
๒. โรงพยาบาลพาน	จำนวน ๘ ราย	๑๐. โรงพยาบาลขุนตาล	จำนวน ๕ ราย
๓. โรงพยาบาลแม่สาย	จำนวน ๘ ราย	๑๑. โรงพยาบาลแม่ลาว	จำนวน ๕ ราย
๔. โรงพยาบาลเชียงของ	จำนวน ๖ ราย	๑๒. โรงพยาบาลพญาสังวร	จำนวน ๕ ราย
๕. โรงพยาบาลเทิง	จำนวน ๖ ราย	๑๓. โรงพยาบาลป่าแดด	จำนวน ๕ ราย
๖. โรงพยาบาลเวียงป่าเป้า	จำนวน ๖ ราย	๑๔. โรงพยาบาลพญาเม็งราย	จำนวน ๕ ราย
๗. โรงพยาบาลเชียงแสน	จำนวน ๖ ราย	๑๕. โรงพยาบาลแม่ฟ้าหลวง	จำนวน ๕ ราย
๘. โรงพยาบาลแม่สรวย	จำนวน ๖ ราย	๑๖. โรงพยาบาลเวียงแก่น	จำนวน ๕ ราย

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ด้วย จะเป็นพระคุณยิ่ง

เรียน นพ.สสจ.อร.
- เพื่อโปรดพิจารณา
- งานวิจัยนี้ได้รับการรับรองจริยธรรมการวิจัย จากคณะกรรมการจริยธรรมมหาวิทยาลัยบูรพาแล้ว
- ลงนามหนังสือ

ภัสนันท์ 25/2/62

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

	บริหาร.....		โรคไปยัง
	ด้านตรองฯ		ภาครัฐ
	ส่งเสริมฯ		ประกัน
	โรคติดต่อ		เอกชน
	ทันตฯ		วิชาการ
	แพทย์แผนไทย		บุคลากร
	ยาเสพติด	✓	ทรัพยากรฯ
	ชายแดน		

(ลงชื่อ).....
18 ก.พ. 2562

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, (๐๒๘๐๘ โทรสาร (๐๓๘) ๓๙๓๔๗๖
ผู้วิจัยโทร ๐๘-๑๕๖๘-๓๓๙๖ (นายทศเทพ บุญทอง) ๒๔ มี.ค. ๒๕๖๒

สำเนาเรียน ผู้อำนวยการโรงพยาบาลแม่จัน ผู้อำนวยการโรงพยาบาลพาน ผู้อำนวยการโรงพยาบาลแม่สาย ผู้อำนวยการโรงพยาบาลเชียงของ ผู้อำนวยการโรงพยาบาลเทิง ผู้อำนวยการโรงพยาบาลเวียงป่าเป้า ผู้อำนวยการโรงพยาบาลเชียงแสน ผู้อำนวยการโรงพยาบาลแม่สรวย ผู้อำนวยการโรงพยาบาลเวียงเชียงรุ้ง ผู้อำนวยการโรงพยาบาลขุนตาล ผู้อำนวยการโรงพยาบาลแม่ลาว ผู้อำนวยการโรงพยาบาลพญาสังวร ผู้อำนวยการโรงพยาบาลป่าแดด ผู้อำนวยการโรงพยาบาลพญาเม็งราย ผู้อำนวยการโรงพยาบาลแม่ฟ้าหลวง และผู้อำนวยการโรงพยาบาลเวียงแก่น

ที่ นว ๐๐๓๒/๑๓๓๓ สำนักงานสาธารณสุขจังหวัดนครสวรรค์
อำเภอเมืองฯ จังหวัดนครสวรรค์ ๖๐๐๐๐

๒๖ กุมภาพันธ์ ๒๕๖๒

เรื่อง แจ้งอนุญาตให้เก็บข้อมูลการวิจัย

เรียน คณบดีคณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

อ้างถึง หนังสือคณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ที่ ศธ ๖๒๐๖/๐๑๕๔ ลงวันที่ ๑๔ กุมภาพันธ์ ๒๕๖๒

ตามหนังสือที่อ้างถึง คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ขอความอนุเคราะห์ให้นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) เก็บข้อมูลวิจัยในกลุ่มตัวอย่าง คือ พยาบาลวิชาชีพและหัวหน้างานที่ปฏิบัติงานในหน่วยงานห้องคลอดของโรงพยาบาลในสังกัดสำนักงานสาธารณสุขจังหวัดนครสวรรค์ จำนวน ๙ แห่ง ระหว่างวันที่ ๔ มีนาคม – ๓๑ พฤษภาคม ๒๕๖๒

สำนักงานสาธารณสุขจังหวัดนครสวรรค์ ขอแจ้งว่าอนุญาตให้ผู้วิจัยดำเนินการเก็บข้อมูลการวิจัยจากกลุ่มตัวอย่างในสถานบริการสาธารณสุขดังกล่าว ตามโครงการวิจัยที่ผ่านการอนุมัติจริยธรรมการวิจัยในคนจากคณะอนุกรรมการจริยธรรมการวิจัยในคน คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

(นายเอกรินทร์ อุ่นอบ)
ผู้อำนวยการโรงพยาบาลเก้าเลี้ยว
รักษาราชการแทน นายแพทย์สาธารณสุขจังหวัดนครสวรรค์

กลุ่มงานพัฒนายุทธศาสตร์สาธารณสุข
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มีน้ำใจ โปร่งใส สามัคคี

APPENDIX C

Permission to use the instruments from the authors

Permission of BARRIERS Scale

Jiranee Panyapin <jiranee.pan@mfu.ac.th>

Inquiry for your permission to use the instruments

2 messages

Jiranee Panyapin <jiranee.pan@mfu.ac.th> Tue, Nov 20, 2018 at 8:21 PM
To: "sfunk@email.unc.edu" <sfunk@email.unc.edu>

Mrs. Jiranee Panyapin

Institution: Burapha University

Department: Faculty of Nursing

Address: 169 Longhard road. Muang district.

City/State/Zip : Chonburi, Thailand.

Dear Sir: Professor Dr. Sandra G. Funk

I am a doctoral nursing candidate from Burapha University, Thailand writing my dissertation titled, Factors influencing the implementation of evidence –based practice for prevention and management of postpartum hemorrhage among nurse-midwives in Thailand: A Multilevel Analysis, My research is being supervised by my professor, Associate Professor Dr.Wannee Deoisres, who can be reached at 038-102836. The Burapha University IRB Committee Chair can be contacted at 038-102823 or by mail at @nurse.buu.ac.th.

I read your instrument and I am very interested in your tool named "BARRIERS Scale" Therefore, I would like your permission to use the BARRIERS instrument in my research study. I would like to use and print your survey under the following conditions:

- I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send a copy of my completed research study to your attention upon completion of the study.

I trust that your tool will be greatly benefited to this research for healthcare provider and women in childbearing in protecting better to the near future.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail: jiranee.pan@mfu.ac.th.

I would like to thank you in advance for your kindness and any of your attention given to this request is greatly appreciated.

Sincerely,

Jiranee Panyapin

Doctoral Candidate

Sent from Mail for Windows 10

Funk, Sandra G <sfunk@email.unc.edu> Tue, Nov 20, 2018 at 11:51 PM
To: Jiranee Panyapin <jiranee.pan@mfu.ac.th>

Dear Mrs. Jiranee Panyapin:

Yes, everything seems to be in order in your email, so you have our permission to use the BARRIERS Scale. Thank you for agreeing to the conditions, and I look forward to receiving the information you indicate via email (if you plan a "translation" of the scale, we would appreciate receiving that as well, but since your English is so good, I bet you don't need to translate it; I don't know if the Scale recipients will speak English as well as you do, however).

Best of luck with your research!

Sandy Funk

~~~~~~~~~~~~~~~~~

Sandra Funk, PhD, FAAN

Professor Emerita

UNC School of Nursing
~~~~~~~~~~~~~~~~~

Permission of Innovativeness scale

Jiranee Panyapin <jiranee.pan@mfu.ac.th>

Welcome to RightsLink
1 message

no-reply@copyright.com <no-reply@copyright.com> Tue, Oct 30, 2018 at 8:47 PM
To: jiranee.pan@mfu.ac.th

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Sincerely,

Copyright Clearance Center

Tel: +1-855-239-3415 / +1-978-646-2777
customercare@copyright.com
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Oct 30, 2018

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Publisher of your work	Faculty of Nursing, Burapha University
Expected publication date	Jan 2022
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Total	0.00 USD
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Institution name	Faculty of Nursing, Burapha University
Expected presentation date	Jan 2022
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Permission of Perceived Characteristics of Innovating (PCI)

[Quoted text hidden]

Nancy Edwards <Nancy.Edwards@uottawa.ca> Thu, Nov 22, 2018 at 12:11 AM
To: Jiranee Panyapin <jiranee.pan@mfu.ac.th>

I see that you sent this request again. I already replied affirmatively. See below.

Nancy Edwards, RN, PhD, FCAHS
Professor Emeritus / Professeur émérite

School of Nursing / École des sciences infirmières

University of Ottawa / Université d'Ottawa

Room 205 - 1 Stewart St. Ottawa, ON K1N 6N5 Canada

613-562-5800, ext. 8395

From: Nancy Edwards
Sent: November 8, 2018 7:59:58 AM
To: Jiranee Panyapin
Subject: Re: Inquiry for your permission to use instrument

Ok with me for you to use the instrument.
Good luck with your research.

Nancy Edwards, RN, PhD, FCAHS
Professor Emeritus / Professeur émérite

School of Nursing / École des sciences infirmières

University of Ottawa / Université d'Ottawa

Room 205 - 1 Stewart St. Ottawa, ON K1N 6N5 Canada

613-562-5800, ext. 8395

From: Jiranee Panyapin <jiranee.pan@mfu.ac.th>
Sent: October 21, 2018 10:02:26 AM
To: Nancy Edwards
Subject: Inquiry for your permission to use instrument

[Quoted text hidden]

Jiranee Panyapin <jiranee.pan@mfu.ac.th> Thu, Nov 22, 2018 at 9:59 AM
To: Nancy Edwards <Nancy.Edwards@uottawa.ca>

Permission of Implementation Climate scale (ICS)

Dear Sir: Professor Dr. Mark G. Ehrhart

I am a doctoral nursing candidate from Burapha University, Thailand writing my dissertation titled, Factors influencing the implementation of evidence –based practice for prevention and management of postpartum hemorrhage among nurse-midwives in Thailand: A Multilevel Analysis, My research is being supervised by my professor, Associate Professor Dr.Wannee Deoisres, who can be reached at 038-102836. The Burapha University IRB Committee Chair can be contacted at 038-102823 or by mail at @nurse.buu.ac.th.

I read your instrument and I am very interested in your tool named "Validating the Implementation Climate Scale (ICS)" Therefore, I would like your permission to use the ICS instrument in my research study. I would like to use and print your survey under the following conditions:

- I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send a copy of my completed research study to your attention upon completion of the study.

I trust that your tool will be greatly benefited to this research for healthcare provider and women in childbearing in protecting better to the near future.
If these are acceptable terms and conditions, please indicate so by replying to me through e-mail: jiranee.pan@mfu.ac.th.
I would like to thank you in advance for your kindness and any of your attention given to this request is greatly appreciated.

Sincerely,
Jiranee Panyapin
Doctoral Candidate

Mark Ehrhart <markehrhart@gmail.com> Thu, Oct 18, 2018 at 8:00 PM
To: jiranee.pan@mfu.ac.th

Hello Jiranee,

Permission of PCI and Oranzization Support scale

Jiranee Panyapin <jiranee.pan@mfu.ac.th>

Inquiry for your permission to use instrument

4 messages

Jiranee Panyapin <jiranee.pan@mfu.ac.th> Sun, Oct 21, 2018 at 9:02 PM
To: nedwards@uottawa.ca

Mrs. Jiranee Panyapin

Institution: Burapha University

Department: Faculty of Nursing

Address: 169 Longhard road. Muang district.

City/State/Zip : Chonburi, Thailand.

Dear Sir: Dr. Nancy Edward

I am a doctoral nursing candidate from Burapha University, Thailand writing my dissertation titled, **Factors influencing the implementation of evidence –based practice for prevention and management of postpartum hemorrhage among nurse-midwives in Thailand: A Multilevel Analysis**, My research is being supervised by my professor, Associate Professor Dr.Wannee Deoisres, who can be reached at 038-102836. The Burapha University IRB Committee Chair can be contacted at 038-102823 or by mail at @nurse.buu.ac.th.

I read your instrument and I am very interested in your tool named "Perceived Characteristics of Innovating (PCI) for BPG Implementation" and Organizational Support for Best Practice Guidelines Implementation" that you modified from the original. Therefore, I would like your permission to use the two instruments in my research study. I would like to use and print your survey under the following conditions:

- I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send a copy of my completed research study to your attention upon completion of the study.

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If these are acceptable terms and conditions, please indicate so by replying to me through e-mail: jiranee.pan@mfu.ac.th.
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[Quoted text hidden]

Nancy Edwards <Nancy.Edwards@uottawa.ca> Thu, Nov 22, 2018 at 12:11 AM
To: Jiranee Panyapin <jiranee.pan@mfu.ac.th>

I see that you sent this request again. I already replied affirmatively. See below.

Nancy Edwards, RN, PhD, FCAHS
Professor Emeritus / Professeur émérite

School of Nursing / École des sciences infirmières

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From: Nancy Edwards
Sent: November 8, 2018 7:59:58 AM
To: Jiranee Panyapin
Subject: Re: Inquiry for your permission to use instrument

Ok with me for you to use the instrument.
Good luck with your research.

Nancy Edwards, RN, PhD, FCAHS
Professor Emeritus / Professeur émérite

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APPENDIX D

Instruments

แบบสอบถามเพื่อการวิจัย

ปัจจัยที่มีอิทธิพลต่อการปฏิบัติตามหลักฐานเชิงประจักษ์สำหรับการป้องกันและจัดการภาวะตกเลือดหลังคลอด ในพยาบาลผดุงครรภ์ ประเทศไทย: การวิเคราะห์พหุระดับ

คำชี้แจง

แบบสอบถามแบ่งเป็น 7 ส่วน แบบสอบถามแต่ละส่วนมีคำแนะนำในการทำซึ่งได้แสดงในแต่ละส่วนของแบบสอบถามนั้น ในการวิจัยครั้งนี้ **"การปฏิบัติตามหลักฐานเชิงประจักษ์"** (Evidence-BasedPractice) หมายถึง การบูรณาการการใช้หลักฐานเชิงประจักษ์ที่ดีที่สุด (best evidence) ร่วมกับความเชี่ยวชาญทางการพยาบาลในการป้องกันและการจัดการภาวะตกเลือดหลังคลอด เพื่อการตัดสินใจเลือกการดูแลที่เหมาะสม โปรดตอบคำถามให้ครบทุกข้อ เพื่อประโยชน์ในการวิเคราะห์ และรวบรวมข้อมูล

ส่วนที่ 1 ข้อมูลทั่วไป

คำชี้แจง กรุณาเขียนรายละเอียดหรือทำเครื่องหมาย ✓ลงในช่อง ( )ตามความเป็นจริงมากที่สุด

1. ปัจจุบันท่านอายุ….....ปี
2. ระดับการศึกษาสูงสุดของท่าน

( ) ปริญญาตรีหรือเทียบเท่า

( ) .....

( ) ……..

3. การอบรมหลักสูตรการพยาบาลเฉพาะทาง

( ) ไม่มี ( ) มี ระบุ .....

4. ระยะเวลาการทำการปฏิบัติการพยาบาล ตั้งแต่จบการศึกษาจนถึงปัจจุบัน .....ปี
5. ระยะเวลาที่ทำการปฏิบัติงานในหน่วยงานห้องคลอดจนถึงปัจจุบัน….....ปี
6. ในปัจจุบันท่านปฏิบัติงานในตำแหน่ง

( ) พยาบาลวิชาชีพประจำการ

( ) หัวหน้างาน

( ) อื่น ๆ โปรดระบุ.....

7. ท่านเคยได้รับการอบรม/ประชุม/สัมมนา หลักฐานเชิงประจักษ์เพื่อการป้องกันและการจัดการภาวะตกเลือดหลังคลอด

( ) ไม่เคย

( ) เคย ระบุจำนวนครั้ง……..ครั้ง

ส่วนที่ 2 แบบสอบถามการปฏิบัติการพยาบาลเพื่อป้องกันและการจัดการภาวะตกเลือดหลังคลอด

คำแนะนำ คิดทบทวนเกี่ยวกับการปฏิบัติการพยาบาลของท่านตามขั้นตอนวิธีปฏิบัติ เพื่อการป้องกันและการจัดการภาวะตกเลือดหลังคลอด

คำชี้แจง: โปรดระบุความคิดเห็นของท่านต่อข้อความ ดังต่อไปนี้ว่า**บ่อยครั้งเพียงใดที่การปฏิบัติ**ของท่านตรงกับแนวปฏิบัติแต่ละข้อ แล้วทำเครื่องหมาย✓เพื่อเลือกข้อความคิดเห็นที่เหมาะสมกับท่านมากที่สุด

ตลอดเวลา หมายถึง แนวทางการปฏิบัตินี้มีการนำมาปฏิบัติการพยาบาลเป็นประจำทุกครั้ง
บ่อยครั้ง หมายถึง แนวทางการปฏิบัตินี้มีการนำมาปฏิบัติการพยาบาลเกือบทุกครั้ง
บางครั้ง หมายถึง แนวทางการปฏิบัตินี้มีการนำมาปฏิบัติการพยาบาล เป็นบางครั้ง
ไม่เคยเลย หมายถึง แนวทางการปฏิบัตินี้ไม่ได้มีการนำมาปฏิบัติการพยาบาลโดยแท้จริง

ข้อที่	แนวการปฏิบัติเพื่อการป้องกันและจัดการภาวะตกเลือดหลังคลอด	ไม่เคยเลย (1)	น้อยครั้ง (2)	บ่อยครั้ง (3)	ตลอดเวลา (4)
1.	ท่านประเมินผู้คลอดตั้งแต่แรกรับว่ามีปัจจัยเสี่ยงสูงต่อการตกเลือดหลังคลอดเช่น รกเกาะต่ำ มีภาวะซีด (HCT <30 %) เกร็ดเลือดต่ำ โรคที่เกี่ยวกับการแข็งตัวของเลือดผิดปกติ หรือมีปัจจัยเสี่ยงปานกลาง เช่น ผ่านการคลอดเกิน 4 ครั้ง ตั้งครรภ์แฝด สงสัยทารกในครรภ์มีน้ำหนักเกิน 4,000 กรัม เป็นต้น				
2.	ท่านประเมินปัจจัยเสี่ยงต่อการตกเลือดหลังคลอดอย่างต่อเนื่องในระยะรอคลอด เช่น ได้รับยากระตุ้นการหดรัดตัวของมดลูกนานเกิน 24 ชั่วโมง ได้รับยาแมกนีเซียมซัลเฟต มีการติดเชื้อในถุงน้ำคร่ำ เป็นต้น				
3	ท่านทำคลอดเพื่อให้มีการบาดเจ็บต่อช่องทางคลอดน้อยที่สุด โดยตัดฝีเย็บเท่าที่จำเป็น ไม่ตัดฝีเย็บเป็นกิจวัตร (routine)				
4	……..				
5	…….				

ส่วนที่ 3 แบบสอบถามลักษณะบุคคลที่ยอมรับนวัตกรรมสิ่งใหม่

คำชี้แจง: โปรดระบุความคิดเห็นของท่านแล้วทำเครื่องหมาย✓เพื่อเลือกข้อความที่ตรงกับความคิดเห็นมากที่สุด

ไม่เห็นด้วยอย่างยิ่ง หมายถึง ไม่เห็นด้วยอย่างยิ่งกับข้อความนั้นทั้งหมดเลย
ไม่เห็นด้วย หมายถึง ไม่เห็นด้วยกับข้อความเพียงบางส่วน
ไม่เห็นด้วยปานกลาง หมายถึง ไม่เห็นด้วยกับข้อความเพียงครึ่งหนึ่ง
ยังไม่ตัดสินใจ หมายถึง ยังไม่แน่ใจกับข้อความนั้นว่าตรงหรือไม่ตรงกับความคิดเห็น
เห็นด้วยปานกลาง หมายถึง เห็นด้วยกับข้อความเพียงครึ่งหนึ่ง
เห็นด้วยมาก หมายถึง เห็นด้วยกับข้อความเป็นส่วนมาก
เห็นด้วยอย่างยิ่ง หมายถึง เห็นด้วยอย่างยิ่งกับข้อความนั้นทั้งหมด

ข้อ	รายละเอียดการรับรู้	ไม่เห็นด้วยอย่างยิ่ง (1)	ไม่เห็นด้วย (2)	ไม่เห็นด้วยปานกลาง (3)	ยังไม่ตัดสินใจ (4)	เห็นด้วยปานกลาง (5)	เห็นด้วยมาก (6)	เห็นด้วยอย่างยิ่ง (7)
1	โดยทั่วไปแล้วท่านระมัดระวังเกี่ยวกับแนวคิดหรือวิธีการใหม่ๆ							
2	ท่านไม่ค่อยเชื่อแนวคิดหรือวิธีการใหม่ๆ จนกว่าท่านจะได้เห็นว่าคนส่วนใหญ่รอบตัวยอมรับในความคิดหรือวิธีการใหม่นั้นแล้ว							
3	ท่านพบว่าแนวคิด พฤติกรรมของท่าน ได้รับอิทธิพลจากการใช้หลักฐานเชิงประจักษ์							
4	.....							
5	.....							
6	.....							

ส่วนที่ 4 แบบสอบถามการรับรู้คุณลักษณะของแนวปฏิบัติทางคลินิก

ในการตอบแบบสอบถามส่วนนี้ เป็นคำถามเกี่ยวกับแนวปฏิบัติทางคลินิกเพื่อการป้องกันและการจัดการภาวะตกเลือดหลังคลอด โดยแนวปฏิบัติทางคลินิก หมายถึง ขั้นตอนวิธีปฏิบัติในการป้องกันและการจัดการภาวะตกเลือดหลังคลอด ซึ่งเป็นข้อตกลงตามแนวนโยบายวิธีปฏิบัติที่พัฒนาเพื่อใช้ในหน่วยงานของท่าน

คำชี้แจง: โปรดระบุความคิดเห็นของท่านแล้วทำเครื่องหมาย✓เพื่อเลือกข้อความที่ตรงกับความคิดเห็นมากที่สุด

ไม่เห็นด้วยอย่างยิ่ง หมายถึง ไม่เห็นด้วยกับข้อความเพียงบางส่วน
ไม่เห็นด้วยปานกลาง หมายถึง ไม่เห็นด้วยกับข้อความเพียงครึ่งหนึ่ง
ยังไม่ตัดสินใจ หมายถึง ยังไม่แน่ใจกับข้อความนั้นว่าตรงหรือไม่ตรงกับความคิดเห็น
เห็นด้วยปานกลาง หมายถึง เห็นด้วยกับข้อความเพียงครึ่งหนึ่ง
เห็นด้วยมาก หมายถึง เห็นด้วยกับข้อความเป็นส่วนมาก
เห็นด้วยอย่างยิ่ง หมายถึง เห็นด้วยอย่างยิ่งกับข้อความนั้นทั้งหมด

ข้อ	รายละเอียดการรับรู้	ไม่เห็นด้วยอย่างยิ่ง (1)	ไม่เห็นด้วย (2)	ไม่เห็นด้วยปานกลาง (3)	ยังไม่ตัดสินใจ (4)	เห็นด้วยปานกลาง (5)	เห็นด้วยมาก (6)	เห็นด้วยอย่างยิ่ง (7)
1.	การใช้แนวปฏิบัติทางคลินิกช่วยให้ท่านให้การดูแลที่มีประสิทธิภาพมากขึ้น							
2.	การปฏิบัติตามแนวปฏิบัติทางคลินิกช่วยเพิ่มคุณภาพการดูแลผู้ป่วย							
3.	……							
4.	……..							
5.	…….							
6.	…….							
7	…….							

ส่วนที่ 5 แบบสอบถามการสนับสนุนขององค์กร ในการปฏิบัติตามหลักฐานเชิงประจักษ์

คำชี้แจง: โปรดระบุความคิดเห็นของท่านแล้วทำเครื่องหมาย✓เพื่อเลือกข้อความที่ตรงกับความคิดเห็นมากที่สุด

ไม่เห็นด้วยอย่างยิ่ง หมายถึง ข้อความนั้นไม่ตรงกับความคิดเห็นเลย

ไม่เห็นด้วย หมายถึง ข้อความนั้นไม่ตรงกับความคิดเห็นเป็นบางส่วน

เห็นด้วย หมายถึง ข้อความนั้นตรงกับความคิดเห็นเป็นส่วนใหญ่

เห็นด้วยอย่างยิ่ง หมายถึง ข้อความนั้นตรงกับความคิดเห็นมากที่สุด

ลำดับ	ข้อความ	ไม่เห็นด้วยอย่างยิ่ง (1)	ไม่เห็นด้วย (2)	เห็นด้วย (3)	เห็นด้วยอย่างยิ่ง (4)
1	ผู้อำนวยการและหัวหน้าฝ่ายการพยาบาลให้การสนับสนุนแก่พยาบาลในการปฏิบัติตามแนวปฏิบัติทางคลินิกเพื่อป้องกันและจัดการภาวะตกเลือดหลังคลอด				
2	พยาบาลในหน่วยงานของท่านมีความพร้อมต่อการเปลี่ยนแปลง ในการปฏิบัติตามแนวปฏิบัติทางคลินิกเพื่อป้องกันและจัดการภาวะตกเลือดหลังคลอด				
3	.....				
4	.....				
5	.....				

ส่วนที่ 6 แบบสอบถามบรรยากาศองค์กร ในการปฏิบัติตามหลักฐานเชิงประจักษ์

คำชี้แจง: แบบสอบถามนี้สร้างขึ้นเพื่อประเมินความรู้สึกของท่านที่มีต่อสภาพแวดล้อมในการทำงาน ซึ่งเกี่ยวข้องกับบรรยากาศหน่วยงานเพื่อสนับสนุนการปฏิบัติตามหลักฐานเชิงประจักษ์ การศึกษาครั้งนี้องค์กร หมายถึง หอผู้ป่วยที่ท่านปฏิบัติงานอยู่ รวมถึงฝ่ายการพยาบาล

โปรดระบุความคิดเห็นของท่านแล้วทำเครื่องหมาย✓ เพื่อเลือกข้อความที่ตรงกับความคิดเห็นมากที่สุด เกี่ยวกับสิ่งแวดล้อม/บรรยากาศที่เกิดขึ้น

ไม่เห็นด้วยอย่างยิ่ง หมายถึง ข้อความนั้นไม่ตรงกับความคิดเห็นเลย
เห็นด้วยเล็กน้อย หมายถึง ข้อความนั้นตรงกับความคิดเห็นเพียงเล็กน้อย
เห็นด้วยปานกลาง หมายถึง ข้อความนั้นตรงกับความคิดเห็นครึ่งหนึ่ง
เห็นด้วยมาก หมายถึง ข้อความนั้นตรงกับความคิดเห็นเป็นส่วนใหญ่
เห็นด้วยอย่างยิ่ง หมายถึง ข้อความนั้นตรงกับความคิดเห็นมากที่สุด

ข้อที่	รายละเอียด	ไม่เห็นด้วยอย่างยิ่ง (1)	เห็นด้วยเล็กน้อย (2)	เห็นด้วยปานกลาง (3)	เห็นด้วยมาก (4)	เห็นด้วยอย่างยิ่ง (5)
1	บุคลากรทางการแพทย์ (แพทย์, พยาบาล, เภสัชกร ฯลฯ)ที่มีการนำหลักฐานเชิงประจักษ์มาใช้เป็นบุคคลที่ได้รับความชื่นชมในหน่วยงานของท่าน					
2	หน่วยงานของท่านเอื้ออำนวยหรือจัดสรรเวลาให้มีการปฏิบัติตามหลักฐานเชิงประจักษ์					
3	การปฏิบัติตามหลักฐานเชิงประจักษ์ถือเป็นสิ่งสำคัญอันดับแรกในหน่วยของท่าน					
4	.....					
5	.....					
6	.....					
7	.....					
8	.....					

ส่วนที่ 7 แบบสอบถามอุปสรรคในการนำหลักฐานเชิงประจักษ์ไปใช้

คำชี้แจง: โปรดระบุความคิดเห็นของท่านแล้วทำเครื่องหมาย✓ เพื่อเลือกข้อความที่ตรงกับความคิดเห็นมากที่สุด

ไม่เป็นอุปสรรค หมายถึง รับรู้ว่าไม่เป็นอุปสรรคในการนำหลักฐานเชิงประจักษ์ไปใช้
เป็นอุปสรรคเล็กน้อย หมายถึง รับรู้ว่าเป็นอุปสรรคเพียงเล็กน้อยในการนำหลักฐานเชิงประจักษ์ไปใช้
เป็นอุปสรรคปานกลาง หมายถึง รับรู้ว่าเป็นอุปสรรคปานกลางในการนำหลักฐานเชิงประจักษ์ไปใช้
เป็นอุปสรรคมาก หมายถึง รับรู้ว่าเป็นอุปสรรคมากในการนำหลักฐานเชิงประจักษ์ไปใช้

ข้อที่	รายละเอียดข้อคำถาม	ไม่เป็นอุปสรรค (1)	เป็นอุปสรรคเล็กน้อย (2)	เป็นอุปสรรคปานกลาง (3)	เป็นอุปสรรคมาก (4)
1	หลักฐานเชิงประจักษ์หรือผลงานวิจัยหาอ่านได้ยาก				
2	การนำผลงานวิจัยหรือหลักฐานเชิงประจักษ์ไปใช้ในการปฏิบัติยังไม่ชัดเจน				
3	การรายงานผลการวิเคราะห์ทางสถิติในงานวิจัยหรือหลักฐานเชิงประจักษ์เป็นสิ่งที่เข้าใจยาก				
4	…….				
5	…….				
6	…….				
7	…….				
8	…….				

แบบสอบถามข้อมูลเกี่ยวกับองค์กร

คำแนะนำ: โปรดตอบคำถามดังต่อไปนี้ ตามข้อมูลความเป็นจริงมากที่สุด ในองค์กรของท่าน

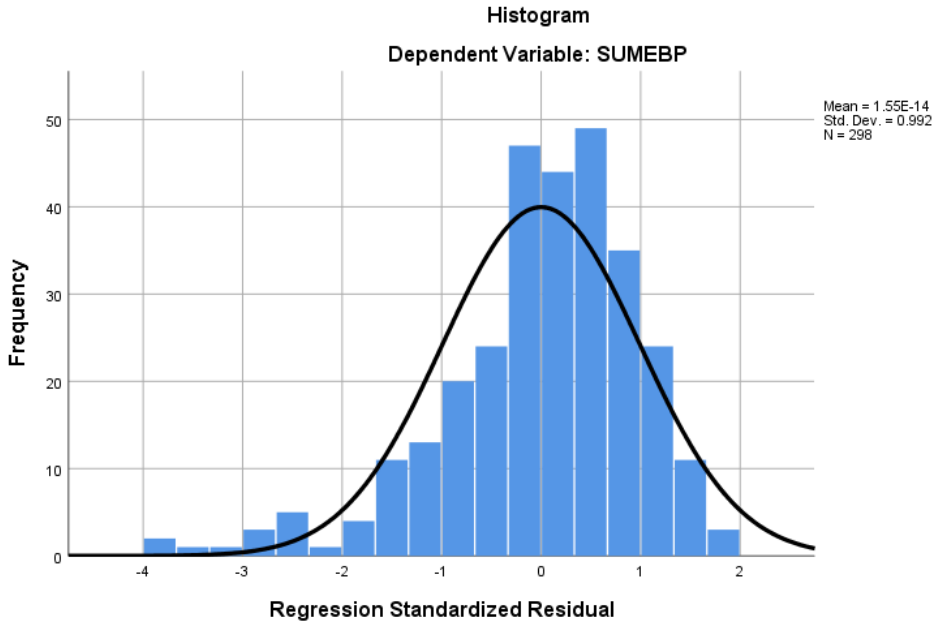
1. ข้อมูลองค์กร (โรงพยาบาล)
   1.1 ชื่อโรงพยาบาล.....
   1.2 ที่อยู่.....
2. กรุณาเลือกประเภทของโรงพยาบาล (โปรดเลือกเพียงคำตอบเดียว)
   - □ ……
   - □ ……
   - □ ……
3. จำนวนเตียงทั้งหมดในโรงพยาบาล .....
4. จำนวนพยาบาลทั้งหมดในโรงพยาบาล.....
   จำนวนพยาบาลที่ปฏิบัติงานในหน่วยงานห้องคลอด .....
   จำนวนสูตินรีแพทย์ในโรงพยาบาล.....
5. โรงพยาบาลของท่านมีการให้บริการผ่าตัดฉุกเฉินหรือผ่าตัดคลอดบุตรทางหน้าท้องหรือไม่.....
6. โรงพยาบาลของท่านมีคลังเลือดสำรองเพียงพอสำหรับการให้แบบฉุกเฉินหรือไม่ .....
7. การใช้แนวปฏิบัติจากหลักฐานเชิงประจักษ์ที่เกี่ยวข้องกับการป้องกันและจัดการภาวะตกเลือดหลังคลอดในโรงพยาบาล
   - □ ไม่มี
   - □ มี (โปรดระบุรายละเอียดในตารางต่อไปนี้)

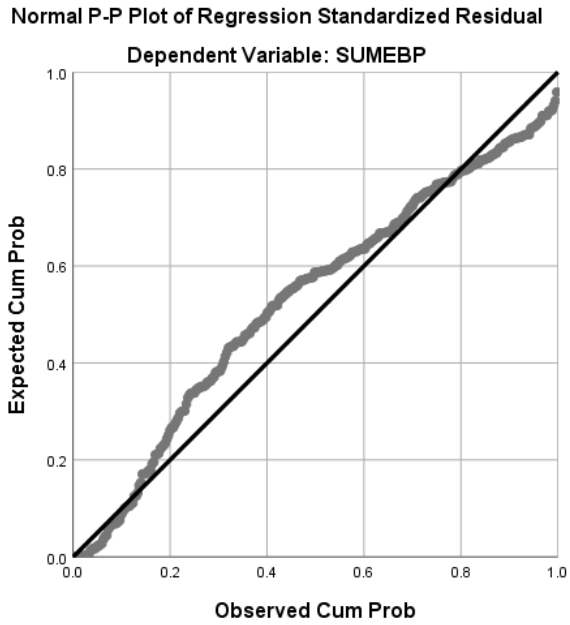
APPENDIX E

Evaluation of assumptions

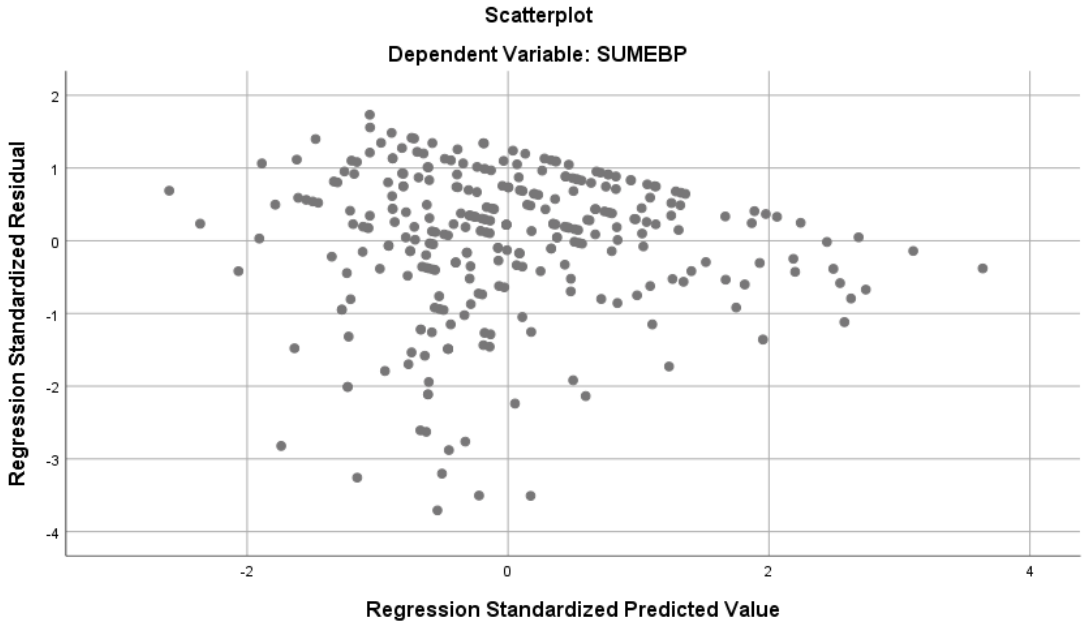
Testing for assumptions

Normality





Homoscedasticity



Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.4891	4.0686	3.7416	.10501	298
Std. Predicted Value	-2.404	3.114	.000	1.000	298
Standard Error of Predicted Value	.020	.100	.028	.006	298
Adjusted Predicted Value	3.4978	4.1266	3.7417	.10570	298
Residual	-.75355	.37615	.00000	.19828	298
Std. Residual	-3.768	1.881	.000	.992	298
Stud. Residual	-3.811	1.897	.000	1.001	298
Deleted Residual	-.77085	.38267	-.00014	.20230	298
Stud. Deleted Residual	-3.903	1.906	-.002	1.008	298
Mahal. Distance	2.032	72.737	4.983	4.259	298
Cook's Distance	.000	.057	.003	.007	298
Centered Leverage Value	.007	.245	.017	.014	298

a. Dependent Variable: SUMEBP

APPENDIX F

Psychometric properties of the instrument

The result of Content Validity Index of instrument

Item	Level				
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5
1	4	4	4	3	4
2	3	4	4	4	4
3	4	3	4	4	3
4	4	4	4	4	3
5	4	4	4	2	4
6	4	4	4	3	4
7	3	4	4	3	3
8	4	4	4	4	2
9	4	3	4	4	3
10	3	4	4	4	3
11	3	4	4	3	4
12	4	4	4	4	4
13	4	4	4	4	4
14	4	3	4	3	4
15	4	4	4	3	3
16	4	4	4	2	2
17	4	4	4	3	3
18	4	3	4	4	4
19	4	3	4	4	3
20	3	3	4	3	3

$$CVI = \frac{\sum R_{3,4}}{N} = \frac{18}{20} = 0.90$$

Reliability of instrument

1. The evidence-based practice implementing activity for prevention and management of PPH scale [EBPIA-PPH]

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.854	.900	28

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.795	2.867	3.967	1.100	1.384	.058	28
Inter-Item Covariances	.027	-.057	.382	.439	-6.640	.001	28

2. Personal Innovativeness

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.810	.819	10

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	5.517	5.133	5.900	.767	1.149	.054	10
Inter-Item Covariances	.235	.014	.683	.669	49.500	.021	10

3. Perceived Characteristics of Guideline implementation

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.904	.931	15

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Variances	.524	.271	1.361	1.090	5.017	.087	15

4. Organizational support for EBPs implementation

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.745	.787	5

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Variances	.350	.230	.740	.510	3.220	.048	5

5. Organizational implementation climate for EBPs

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.912	.912	18

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Variances	.514	.300	.892	.592	2.973	.027	18

6. Perceived barriers to EBPs implementation

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.847	.936	29

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Variances	1.720	.378	30.616	30.238	80.960	30.920	29

APPENDIX G

Expert panel

EXPERT PANEL

No.	Name	Institution
1.	Assist. Prof. Dr. Supit Siriarunrat	Maternal and Child Nursing Division, Faculty of Nursing, Burapha University
2.	Assist. Prof. Dr. Tatirat Tachasuksri	Maternal and Child Nursing Division, Faculty of Nursing, Burapha University
3.	Assist. Prof. Dr. Chompunut Sopajaree	Maternitynursing and Midwifery Division school of Nursing, Mae Fha Luang University
4.	Doctor. Suthit Khunpradit	Obstetric and Gynecology, Lumphun hospital
5.	Dr. Pimrat Boonyapuk	Psychiatric and Mental Health Nursing, Mae Fha Luang University
6.	Ms. Panuttita Khunbunyung	Delivery room, Naknon Pathom hospital

BIOGRAPHY

NAME	Jiranee Panyapin
DATE OF BIRTH	10 May 1974
PLACE OF BIRTH	Chiang Rai Province
PRESENT ADDRESS	139 moo. 6, Yonok subdistrict, Chiang Saen district, Chiang Rai Province, 57150
POSITION HELD	2013-present Lecturer in Maternity nursing and Midwifery Division school of Nursing, Mae Fha Luang University
EDUCATION	1992-1996 Bachelor degree of Nursing Science, Faculty of Nusing, Boromarajonani College of Nursing, Phayao 2008-2010 Master of Nursing Science, (Midwifery Nursing) Chiang Mai University 2016-2020 Doctor of Philosophy in Nursing Science (International Program) Faculty of Nursing, Burapha University, Chonburi, Thailand