筑　波　大　学

博士（看護科学）学位論文

Development of the Cambodian Version of Person-Centered Maternity Care Scale

（産婦を中心とした出産ケア尺度のカンボジア版の開発）

2021

University of Tsukuba, Graduate School of Comprehensive Human Sciences, Doctoral Program in Nursing Science

筑波大学大学院　人間総合科学研究科　看護科学専攻　博士後期課程

Yuko Takahashi Naito, RN, RNW, MPH

内藤優子

ABSTRACT

Person-centered maternity care (PCMC) is one of the significant dimensions of the World Health Organization's (WHO) Quality of Care Framework and is highlighted in the latest WHO recommendations on intrapartum care. There is no valid tool to measure PCMC in Cambodia; therefore, the aim of this study was to develop the Cambodian version of PCMC scale adapted from a validated tool and assess its psychometric properties. The standard procedures of scale development including translations, expert reviews, cognitive interviewing, field study, and psychometric assessment were conducted. The translation and pretesting were optimized to achieve acceptable cultural equivalence and content validity. The psychometric analysis supported the validity and reliability of the 20-item Kh-PCMC scale as a tool to measure women's experience of received maternity care among Cambodian postpartum women in facility settings.

Key words

Cambodia, Cross-cultural study, Cultural adaptation, Person-centered maternity care, Quality of care

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDIX

CHAPTER I: INTRODUCTION

Background

Globally, 810 women die every day worldwide due to preventable causes during pregnancy and childbirth (World Health Organization, 2019a). The reduction of unacceptably high maternal mortality has been a global priority of maternal and child health. Strategies to address high maternal mortality from preventable causes in low and middle-income countries have traditionally been focused on expanding the provision of basic obstetric services. Although coverage of health services has been expanded, it has not fully contributed to the reduction of maternal mortality (Graham & Varghese, 2012; Koblinsky et al., 2016). Even when health services were available, there was less attention paid to interpersonal quality and responsiveness to women (Larson et al., 2015). To make matters worse, there reports emerged on women's experiences of disrespect and abuse by health providers during childbirth in facility settings (Bohren, 2015; Bowser & Hill, 2010). This crucial gap called for a more comprehensive focus on the quality of care, beyond the solo coverage of essential obstetric care (Miller et al., 2016; Souza et al., 2013), towards engaging women in health care to improve women's experience of care (ten Hoope-Bender et al., 2014; World Health Organization, 2014). The global agenda has shifted from the exclusive focus on survival to the inclusion of thriving and transformation in line with the United Nations' Sustainable Development Goals (SDGs) (United Nations Inter-agency and Expert Group on MDG Indicators, 2015). Two strategies employed to accelerate reduction of preventable maternal mortality are first, addressing inequity and second, strengthen health systems to respond to women's needs and priorities (World Health Organization, 2015a). Recently, increasing evidence was incorporated into the latest World Health Organization (WHO) recommendations on intrapartum care for women's positive childbirth experience to enhance women-centered outcomes (World Health Organization, 2018). These

recommendations responded to the WHO Quality of Care Framework for Maternal and Newborn Health in terms of the care dimensions of both provision and experience (World Health Organization, 2018).

Person-centered maternity care is highlighted coherently in the WHO recommendations on intrapartum care for women's positive childbirth experience and the WHO Quality of Care Framework for Maternal and Newborn Health (Tuncalp et al., 2015). Person-centered maternity care corresponds to the "experience of care" dimension of this Quality of Care Framework, which includes intrapartum care quality dimensions such as effective communication, respect and dignity, and emotional support (Tuncalp et al., 2015). Previous studies have suggested that person-centered dimensions influence a patient's desire to seek health care (Bohren et al., 2014; Kyomuhendo, 2003; Larson, Leslie, & Kruk, 2017; Liambila & Kuria, 2014; Matsuoka, Aiga, Rasmey, Rathavy, & Okitsu, 2010; Sethi et al., 2017; Sheferaw, Mengesha, & Wase, 2016; Srivastava, Avan, Rajbangshi, & Bhattacharyya, 2015; Thaddeus & Maine, 1994); the intention to select the same facility for future deliveries (Kujawski et al., 2015; Larson, Hermosilla, Kimweri, Mbaruku, & Kruk, 2014); demand better care (Bohren et al., 2014; Kruk et al., 2009; Larson et al., 2015), satisfaction with care (Kruk et al., 2016; Larson et al., 2014; Larson et al., 2017; Srivastava et al., 2015), and the long term effect on future reproduction (McLachlan et al., 2016).

Cambodia is one of nine successful countries to achieve 75% reduction of their Maternal Mortality Ratio (MMR). MMR in Cambodia has significantly decreased from 1200 per 100,000 live births in 1990 to 170 per 100,000 live births in 2014 (World Health Organization, 2015c). Despite the substantial improvements, however, MMR in Cambodia remains the sixth-highest among the Asia-Pacific countries, after Myanmar, Nepal and the Lao PDR at 180 or more maternal deaths per 100,000 live births (World Health Organization, 2019b). The coverage of facility deliveries and deliveries assisted by skilled birth attendants (SBA) has increased from 22% and 44% in 2005 to 83% and 89% in 2014, respectively

(National Institute of Statistics, 2015). However, several qualitative studies revealed that Cambodian women did not always receive women-centered care during childbirth at the health facility. Women's poor perception of the interpersonal aspect of quality of care is reported to be a significant barrier to health service utilization (Ith, Dawson, & Homer, 2012; Khun & Manderson, 2007; Matsuoka et al., 2010; Sheratt, White, & Chhuong, 2006). Women's non-use of facility health services will lead to delays in care seeking behavior and delays in accessing life-saving medical intervention (Thaddeus & Maine, 1994), and significant losses for the achievement of SDG3 target (Miller et al., 2016). Despite the recognition of the importance of the quality of care, women's experience of childbirth has not been reflected in efforts to improve the quality of maternity care (van den Broek & Graham, 2009). Little is known about the ongoing situation in Cambodia because there is limited evidence and no reliable instrument is available to quantify women's experience of care.

There are various tools to measure women's childbirth experiences, but there was a lack of consensus to operationalize the constructs of person-centered maternity care. To date, there is only one validated tool that cover comprehensive dimensions of the WHO Quality of Care Framework as process indicators using standardized procedures of scale development including cognitive interviewing and psychometric analysis: the Person-Centered Maternity Care (PCMC) Scale. The PCMC scale is a validated tool to measure women's experiences of received care during childbirth in facility settings in developing countries (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). It was initially developed and validated in Kenya and subsequently in India (Afulani, Diamond-Smith, Phillips, Singhal, & Sudhinaraset, 2018) and was used in Ghana (Afulani et al., 2019). The original PCMC scale that was developed in Kenya includes 30 items with three subscales representative of the "experience of care" dimension of the WHO Quality of Care Framework: (1) dignity and respect, (2) communication and autonomy, and (3) supportive

care.

In cross-cultural instrument development, multi-dimensional factors need to be considered not only in translation but also cultural interpretation, values, and attitudes (Willis, 2015). Further, cross-cultural research requires strategies to tackle the fact that, across cultures, underlying concepts may not be identical or even comparable and, thus, an instrument that is appropriate in one context may not be adequate in another context (Harkness, Van de Vijver, & Johnson, 2003). A translated version of the questionnaire must meet two following requirements: (1) to be valid, reliable, legal, and cost-effective; (2) to exhibit appropriate levels of sematic and conceptual equivalence and minimize problems created by lack of equivalence (Behling & Law, 2000). Cross-cultural instrument development often involves translation from the source language to the target language, but simple forward and back translation techniques do not automatically maintain equivalence across cultures (Thrasher et al., 2011). In cross-cultural instrument development, researchers should assess not only technical and sematic equivalence but also conceptual equivalence and cultural relevance before data collection using multiple quantitative and qualitative methods and techniques (Squires et al., 2013). In addition, the psychometric quality of the instrument needs to be examined when used in a different geographical setting, among a different target population in a different context.

However, few studies perform adequate pretesting (Smith, 2004), and few studies describe in-depth how cultural context influence the instrument adaptation and validation process and how to address the challenges (Balqis-Ali et al., 2021). A poorly translated and adapted instrument would lack equivalence with the original instrument, leading to poor validity, reliability, and comparability (Guillemin, Bombardier, & Beaton, 1993).

Therefore, the present study aimed to develop a reliable and valid PCMC scale in the Khmer language for use in Cambodian postpartum women adapted from the validated PCMC scale from Kenya and India, considering the influence of cultural context.

Purpose of this study

The purpose of the present study is to develop the Cambodian version of PCMC (Kh-PCMC) scale in the Khmer language for the use in Cambodian postpartum women, considering the cultural context, and to assess the scale's psychometric properties.

Research question

The preliminary research question of this study was: Is the Cambodian version of PCMC scale valid and reliable tool to measure the quality of people-centered maternity care among childbearing women in Cambodia?

The specific research questions are: (1) Dose the Cambodian version of PCMC scale exhibit appropriate levels of semantic and conceptual equivalence to the original PCMC scale?; (2) Dose the Cambodian version of PCMC scale present appropriate levels of content validity?; and (3) Based on the findings of a field study, what are the estimated validity and reliability of the Cambodian version of PCMC scale?

Definitions of terms

Quality of care refers to "the extent to which health care services provided to individuals and patient populations improve desired health outcomes. In order to achieve this, health care needs to be safe, effective, timely, efficient, equitable, and people-centred" (World Health Organization, 2006a). Quality of care has three dimensions: (1) provision of care, (2) experience of care, and (3) health facility environment, which are measured by eight elements elaborated in the WHO Quality of Care Framework for Maternal and Newborn Health (Tuncalp et al., 2015).

Technical care refers to "the application of clinical medicine to a personal health problem"

(Donabedian, 1988) or "technical aspects to inter-personal care" (Campbell, Roland, & Buetow, 2000). Technical care is illustrated as "provision of care" dimension of quality of care (Hulton, Matthews, & Stones, 2000; Tuncalp et al., 2015) and commonly measured by the amount and scope of provided evidence-based clinical practices.

Interpersonal care refers to "the interaction of health care professionals and users" (Campbell et al., 2000). Interpersonal skills include communication, the ability to build a relationship of trust, understanding and empathy with the patient (Blumenthal, 1996) and to show humanism, sensitivity and responsiveness (Hulton et al., 2000). Interpersonal care is illustrated as the "experience of care" dimension of quality of care (Hulton et al., 2000; Tuncalp et al., 2015).

Person-centered maternity care refers to "providing maternity care that is respectful and responsive to individual women and their families' preferences, needs, and values, and ensuring that their values guide all clinical decisions" (Institute of Medicine, 2001), and similarly "providing care which takes into account the preferences and aspirations of individual service users and the cultures of their communities" (World Health Organization, 2006a). Person-centered maternity care corresponds to the "experience of care" dimension of the WHO Quality of Care Framework for Maternal and Newborn Health (Tuncalp et al., 2015). Person-centered maternity care can be measured by the PCMC scale with three theoretical domains: (1) dignity and respect; (2) communication and autonomy; and (3) supportive care.

Dignity and respect refer to "care organized for and provided to all women in a manner that maintains their dignity, privacy, and confidentiality, ensures freedom from harm and mistreatment, and enables informed choice and continuous support during labor and

childbirth" (WHO 2018, p19).

Effective communication includes the following components as a minimum: introducing oneself to the healthcare user ; calling the user by her name; offering information in an understandable way; respecting and responding to the woman's needs, preferences, and questions with a positive attitude; supporting the woman's emotional needs with empathy and compassion; ensuring women's choices; ensuring explanation and informed consent; encouraging the woman to express her needs and preferences; ensuring that privacy and confidentiality; and ensuring woman's companion of choice (WHO, 2018, p25).

Supportive care refers to emotional support including companionship during labor. The emotional support to enhance physiological processes during childbirth generates both short and long-term benefits (Olza et al., 2018).

Skilled birth attendant (SBA) refers to "an accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancy, childbirth and the immediate postnatal period, and in the identification, management and referral of complication in women and newborn" (World Health Organization, Department of Reproductive Health and Research, 2004) both primary and secondary midwives, doctors and nurses who have been trained and have graduated from medical school in Cambodia.

Cultural context refers to an object to consider, such as beneficiary's values and worldview, customs, norms, historical background, and social system (Huckle & Wals, 2015). It is both tangible and intangible, exists as a pillar that runs through the society. It is everything that is produced by human thought and action (Sekine, personal communication, 11 Jun 2020).

CHAPTER II: LITERATURE REVIEW

This chapter consists of two sections. Section 1 describes the constructs and measures of the key concepts of this study, and Section 2 describes country profiles and related health information from Cambodia.

Section1: Conceptual framework

Quality of Care

Definition

Quality of care, a multi-dimensional concept, is considered as a fundamental human right for every human being (UN Committee on Economic, Social, and Cultural Rights, 2000). Donabedian (1966; 1988) proposed a framework for assessing quality of care based on the components of the structure, process, and outcomes of care. Structure refers to the organizational factors that enable women to access a health system where care is provided (Donabedian, 1980). Process denotes the actual care delivery and receipt between providers and users (Donabedian, 1988) and outcome refers to the consequences of the interaction between individuals and a health care system (Campbell et al., 2000). Donabedian's model has been widely used for defining quality of care (Mocumbi et al., 2019; Srivastava et al., 2015).

The Institute of Medicine (IOM) proposed a definition of quality of care as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" and six dimensions of quality of care: (1) safety, (2) effectiveness, (3) patient-centredness, (4) timeliness, (5) efficiency, and (6) equity (Institute of Medicine, 2001). Subsequently, the WHO defined the quality of care as "the extent to which health care services provided to individuals and patient

populations improve desired health outcomes. To achieve this, health care needs to be safe, effective, timely, efficient, equitable, and people-centered" (World Health Organization, 2006a).

In the maternity service context, Hulton et al., (2000) proposed a framework for quality of care in maternity services with two dimensions of care, namely, "provision of care" and "experience of care". While provision of care is obviously a fundamental aspect of quality of care, a woman's experience of that care is also important. "Experience of care" refers to "the extent to which a woman feels she understands what is going on and feels that her questions have been answered adequately" and "whether she receives sufficient information that she has a right to know" (Hulton et al., 2000). Thus, quality of care can only be achieved by satisfying these two inseparable components of provision and experience. For example, it is possible that even though the care provided might be technically competent, standardized care it may not be acceptable to women, while, conversely, ineffective or even harmful care may be more familiar and, therefore, acceptable to them.

Based on Donabedian (1966) and Hulton (2000) models of quality of care, the WHO developed the "Quality of Care Framework for Maternal and Newborn Health" to identify the action points towards improving the quality of care provided in facilities (Tuncalp et al., 2015) (**Figure 1**). This framework conceptualizes the quality of care for maternal and newborn health within the context of the health system. Process of care has interlinked dimensions of provision and experience of care and the environment of the health care facility. The provision of care dimension includes: (1) "evidence-based practices for routine and emergency care"; (2) "actionable information systems where record-keeping enables review and audit mechanisms"; and (3) "functional referral systems between levels of care should be in place". The experience of care dimension includes: (4) effective communication, "a woman (or her family if required) should feel that she understands what is happening, what to expect and knows her rights"; (5) respect and dignity, "she should receive care with

respect and dignity"; (6) emotional support, "she should have access to the social and emotional support of her choice". And the following two components that are related to health facility environment: (7) competent and motivated human resources; and (8) the availability of essential physical resources (Tuncalp et al., 2015). Quality process of care leads to desired health outcomes: coverage of key practices, and people-centered outcomes, at both individual and facility levels.

The quality of care is typically evaluated in three domains: structure, process, and outcome (Donabedian,1966). Maternal mortality is one of the health outcomes of the quality of care and maternal mortality ratio (MMR) is used as an outcome indicator of the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs). However, it is not suitable for assessing the quality of care (Maine & Rosenfield, 2001), because "ratio" represents an estimated value and limited data availability (Alkema et al., 2016). A high maternal mortality ratio could indicate severity, but it does not identify where problems exist. On the other hand, process indicators are useful to identify the specific aspects of quality of care to be improved (Maine & Rosenfield, 2001).

"Process" can be further divided into technical (or clinical) care and patient experience (or interpersonal care) (Campbell et al., 2000; Donabedian, 1988). Technical care refers to "the application of clinical medicine to a personal health problem" (Donabedian, 1980). Technical care should be appropriate and necessary because care is often overused (provided when inappropriate) and underused (not provided when necessary) (Brook, McGlynn, & Cleary, 1996). The termination of both clinical care and technical care has been used to describe more bio-medically oriented aspects of health professionals' behavior, but it is better to describe technical aspects of inter-personal care (Campbell et al., 2000). Interpersonal care describes the interaction of health care professionals and users (Campbell et al., 2000). Interpersonal skills include communication, the ability to build a relationship of trust, understanding, and empathy with the patient and to show humanism, sensitivity, and

responsiveness (Hulton et al., 2000).

Person-Centered Maternity Care

Definition

Person-centeredness is one of the six aims of the Institute of Medicines Health Care Quality Initiative (Institute of Medicine, 2001) and one of the principles of the SDGs (World Health Organization, 2015d). Person-centered maternity care emphasizes quality of care that is "respectful of and responsive to individual preferences, needs, and values" (Institute of Medicine, 2001). The IOM also endorsed six dimensions of patient-centered care which stated that care must be: (1) respectful to patients' values, preferences, and expressed needs; (2) coordinated and integrated; (3) provide information, communication, and education; (4) ensure physical comfort; (5) provide emotional support – relieving fear and anxiety; and (6) involve family and friends. Person-centered maternity care corresponds to the" experience of care" dimension of the WHO Quality of Care Framework for Maternal and Newborn Health (Tuncalp et al., 2015). The WHO's operational definition of "people-centered" is "providing care which takes into account the preferences and aspirations of individual service users and the cultures of their communities" (World Health Organization, 2006a). Person-centered maternity care places women's values, decision-making, and cultural backgrounds at the center of maternity care. Relational aspects of quality of care were considered to be more important for women than inputs, such as equipment or cleanliness (Larson et al., 2015).

Person-centeredness is an essential part of the quality of care for three reasons. Firstly, every woman has a right to be treated with respect and dignity (Larson, Sharma, Bohren, & Tunçalp, 2019). The Universal Rights of Childbearing Women Charter, for example, declared that "every woman has a right to dignified, respectful, sexual and reproductive health, including during childbirth" (White Ribbon Alliance, 2011).

Secondly, person-centered maternity care increases health service utilization and health outcomes (Larson et al., 2019). Previous studies suggested that those who had negative care experiences in the facility were less likely to seek health care (Bohren et al., 2014; Kyomuhendo, 2003; Larson et al., 2017; Liambila & Kuria, 2014; Matsuoka et al., 2010; Sethi et al., 2017; Sheferaw et al., 2016; Srivastava et al., 2015; Thaddeus & Maine, 1994); intention to select the same facility for future deliveries (Kujawski et al., 2015; Larson et al., 2014); demand better care (Bohren et al., 2014; Kruk et al., 2009; Larson et al., 2015); and have better satisfaction (Kruk et al., 2016; Larson et al., 2014; Larson et al., 2017). On the other hand, one study by Larson et al., (2015) suggested that the greatest predictor of women's preference regarding health facilities was the kind care and treatments by the providers. Person-centered maternity care can contribute to the timely provision of care, improved patient-provider communication, and increased adherence to treatments, all of which can improve maternal and neonatal outcomes (Koblinsky et al., 2016; S. Miller et al., 2016).

Thirdly, person-centeredness is crucial for health care in terms of addressing the asymmetry of power between women and providers (Kruk et al., 2018). There are an increasing number of reports from women on mistreatment during facility delivery in many settings (Bohren, 2015; Bowser & Hill, 2010). This research stemmed from the result of a broader interest in gender inequality (Jewkes, 2015). Normalization and internalization of power relationships between women and providers made women accept poor quality of care (Freedman et al., 2018). Thus person-centeredness can help to improve communication between the health worker and patient and thereby reduce information asymmetry.

In summary, quality of care starts with the people who receive the care. For women's their health care realities such as accessibility to and acceptability of care need to be taken into consideration. Making care more patient-centered can improve various areas of quality of care.

Measurement

Person-centeredness measures regarding quality of care need to distinguish between the objectives of usage, namely, “experience of care” as a process indicator and “satisfaction with care” as an outcome indicator (Larson et al., 2019). Assessment of “experience of care” which refers to the interactions that patients have with the health system (Larson et al., 2019), can be used to identify gaps or evaluate changes in quality resulting from interventions or policies. Findings can help identify specific target areas for interventions towards quality improvement for health care. Assessment of “satisfaction with care”, which refers to patients’ evaluation of the care provided relative to their expectations (Larson et al., 2019), can be used to evaluate whether the provided care meets the individual’s needs and expectations. Satisfaction measurements are useful for identifying areas of service provision that are important to individuals. Satisfaction with care may be influenced by patient demands, values, or expectations, and as such, qualitative studies would be useful to understand underlying causes. Satisfaction measurements can be used to identify aspects of services that are valuable to women, but they might not be useful for revealing ways in which the actual care itself might be improved.

Patient-reported measures to assess the quality of patient-centered care could be leveraged to inform care providers about where improvements are required from the patient’s perspective (Tzelepis, Sanson-Fisher, Zucca, & Fradgley, 2015). Patient-reported measures are crucial to the reliable measurement of patient-centered care because only the patient knows whether they received the level of information desired, communication was appropriate and understandable, and care was responsive to their values and needs (Tzelepis et al., 2015).

To date, there is a lack of agreement on a consistent operational definition and standardized summary measurements of person-centered maternity care due to the

multifaceted nature of maternal health. A recent theoretical rapid review on patient-centered care that included 39 studies revealed the common elements of patient-centered care to be: exchanging information (73.5%); fostering the patient-clinician relationship (64.7%); decision-making (47.1%); enabling patient self-management (44.1%); and responding to emotions (35.3%) (Ramlakhan et al., 2019). Another systematic review identified 36 instruments to measure women's childbirth experiences that demonstrated a wide range of purpose, content, and quality of psychometric properties (Nilvér, Begley, & Berg, 2017). "Women's childbirth experience" was measured by the following varied terms and concepts: childbirth experience (27.8%); satisfaction with care / birth / childbirth (36.1%); perception of birth / care (13.9%); control (11.1%); support (8.3%); fear of childbirth (5.6%); childbirth trauma (2.8%); birth memories (2.8%); and childbirth schema (2.8%) (Nilvér et al., 2017).

Available studies in the field of person-centered maternity care assessment varied in conceptualization, operational definition, and standard measures. There are few existing instruments to quantitatively measure women's perception of maternity care provided in health facilities. To our knowledge, there are five validated instruments to measure women's perception of childbirth: the Childbirth Experience Questionnaire (CEQ), the Respectful Maternity Care (RMC) scale, the Mothers on Respect Index (MORi), the Person-Centered Maternity Care (PCMC) and the Women's perception of respectful maternity care (WP-RMC) scale.

The Childbirth Experience Questionnaire (CEQ) was developed by Dencker and colleague (2010) in Swedish to assesses women's perceptions and feelings during childbirth in four dimensions; own capacity, professional support, perceived safety; and participation, and later validated in English, Spanish, and Chinese (Dencker, Taft, Bergqvist, Lilja, & Berg, 2010).

Respectful Maternity Care (RMC) scale was developed by Sheferaw and colleague (2016) to measure women's perception of respectful maternity care in public health facilities

in Ethiopia. The RMC scale includes 15-items scored using a five-point Likert scale accross four components: (1) friendly care, (2) abuse-free care, (3) timely care, and (4) discrimination-free care (Sheferaw, Mengesha, & Wase, 2016).

The Mothers on Respect Index (MORi) was developed in British Columbia by Vedam and colleagues (2017) to assess the patient-provider interactions and relationship, and was validated in both Canada and the USA. The MORi includes 14-items that were originally measured by three or four response options, which were modified to suit the larger context of Canada as a whole and the USA. The MORi scale measures a sense of comfort, behavior, and perception of racism and discrimination when women interact with primary maternity care providers (Vedam et al., 2017).

Person-Centered Maternity Care (PCMC) Scale was developed by Afulani and colleagues to assess women's childbirth experiences (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). It was initially validated in Kenya and subsequently in India (Afulani et al., 2018), and was used for studies in Ghana (Afulani et al., 2019). The scale includes 30 items with three subscales representative of the "experience of care" dimension of the WHO Quality of Care Framework: (1) dignity and respect, (2) communication and autonomy, and (3) supportive care. The items are scored using a four-point Likert scale.

Women's perception of respectful maternity care (WP-RMC) scale was developed by Ayoubi and colleagues (2020) in Iran and includes 19 items to assess women's comfort, participatory care, and mistreatment (Ayoubi et al., 2020).

The descriptions and quality of psychometric properties of selected instruments are presented in **Table 1.**

Exiting instruments can be modified and adapted for new settings. Adaptation of an instrument means "to render questions culturally or linguistically appropriate in a cross-national context" (Harkness, Van de Vijver, & Johnson, 2003, p27). When choosing the instrument, we need to examine the existing instrument's specific applications carefully and

choose the best fit to our purpose, setting, population, and cultural context. Because the focus of the present study is on the "experience of care" dimension of the WHO Quality of Care Framework as it pertains to maternal and newborn health within health care facilities (Tuncalp et al., 2015), the PCMC scale is the only instrument currently available that is able to measure the exact constructs of the study.

The PCMC scale was considered to be the most appropriate instrument to use in this study because it covers comprehensive dimensions of person-centered maternity care that correspond to the WHO Quality of Care Framework, and, similar to our study setting, it was validated in two low- and middle-income countries using standard procedures for scale development (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017; Afulani et al., 2018).

Another strength of using the PCMC scale is that it is a process indicator. By using the process indicators, it will enable us to make concrete suggestions on what kind of maternity care should be provided. A recent study reported on the use of the PCMC scale to measure the effectiveness of simulation training emphasizing dignity and respect, communication and autonomy, and supportive care in Ghana (Afulani et al., 2019). Compared to the baseline survey, women at the end-line survey six months later reported improved person-centered maternity care; especially significant was an 87% increase for communication and autonomy. The findings suggested that simulation trainings gave health providers the opportunity to learn, practice, and reflect on their provision of care for improvement (Afulani et al., 2019). The PCMC scale was also used in the recent PCMC quality improvement intervention study in India, which using a matched case-control design. The study showed that the mean PCMC score of the intervention group increased by 22.9 points compared to the control group (Montagu et al., 2020). Changing PCMC requires changing the process of care, indicating that the PCMC scale is a useful tool for routine monitoring and accountability of PCMC in progress (Afulani et al., 2020).

As the original 30-item PCMC scale developed in Kenya was validated in India with

27 items and in Ghana with 24 items, further evaluation of validity and reliability is needed when applying it to different settings. It is recommended that the quality of an instrument's psychometric properties is assessed according to standard tools such as the COnsensus-based Standards for the Selection of health status Measurement Instruments (COSMIN) checklist (https://www.cosmin.nl/) (Mokkink et al., 2010; Mokkink, Prinsen, Bouter, Vet, & Terwee, 2016; Mokkink et al., 2018b; Terwee et al., 2007).

Section2: County profile

Cambodia is a lower-middle-income country in South East Asia bordering the Gulf of Thailand, between Thailand, Vietnam, and Laos, with a landmass of approximately 180,000 square kilometers (Ministry of Foreign Affairs of Japan, 2021, July 2). The total population is 15.3 million, 78% of which live in rural areas, and 29 % is younger than 15 years of age (National Institute of Statistics, 2020). Over 90% of the population belongs to the Khmer ethnic group, and minorities include Chinese, Vietnamese, Cham, and Khmer Loeu. The official language is Khmer, which is derived from Sanskrit and Pali. The prevailing religion, adhered to by approximately 95% of the population, is Buddhism (Ministry of Foreign Affairs of Japan, 2021, July 2). There is significant internal migration from rural communities to the capital Phnom Penh for seeking employment (World Health Organization. Regional Office for the Western Pacific, 2015).

Historical background

Cambodia experienced a history of colonialism, domestic conflict, and genocide during the Khmer Rouge regime (1975-1979), which destroyed the entire health system including infrastructures and skilled human resources. The United Nations Transitional Authority in Cambodia (UNTAC) supported Cambodian refugees living on the Thai border and consolidated peace in the Paris Peace Agreements. Multilateral and bilateral donor agencies and international NGOs played a major role in the reconstruction of the health system and Cambodia has made progress in rebuilding its society. Political stability and security have accelerated its economic growth and, by 2015, Cambodia reached lower-middle-income status (World Health Organization. Regional Office for the Western Pacific, 2015).

Socio-Economics Demographics information

The Cambodian Demographic Health Survey (CDHS) indicated the following trends regarding the country's socioeconomic improvements (National Institute of Statistics, 2000; 2005; 2010; 2014).

- The proportion of the population living below the national poverty line declined from 53.2% in 2004 to 20.5 in 2011
- Gross domestic product per capita increased from 608 in 1993 to 2,454 in 2012
- The fertility rate declined from 6.0 in 1990 to 2.7 in 2014
- Female literacy increased from 66% in 2000 to 81% in 2014
- Girls net enrollment in primary education increased from 76% in 1997 to 97 % in 2012
- Access to clean water increased from 31% in 1990 to 67% in 2011
- Access to improved sanitation increased from 9% in 1990 to 33% in 2011
- Electricity coverage increased from 16.6% in 2000 to 56 % in 2014
- The median birth interval increased from 40 months in 2010 to 43.8 months in 2014
- The median age at first birth increased from 22.3 years in 2000 to 22.4 years in 2014
- The proportion of pregnant women who attended at least 4 visits or more, increased from 9% in 2000 to 76% in 2014

Belief

About 90% are Khmer people who traditionally adhere to Theravada Buddhism. The most significant cultural beliefs and practices among Cambodian women were based on Theravada Buddhism (Kelley, 1996). Cambodian people's beliefs are deeply integrated into their way of life and their identity. When the concept of women-centered care was introduced

and adapted to the Cambodian context, Cambodian midwives described women-centered care as “merciful heart” representing Buddha and valued “family-like” care (Japan International Cooperation Agency, 2019, Matsumoto, 2015). A qualitative study on cultural consideration among Cambodian refugees in the US described this close integration of faith and Cambodian identity as “to be Cambodian is to be a Buddhist” and that, in Cambodia, the Buddha and the King are placed within a well-defined hierarchical structure (Kelley, 1996). The study also revealed that the Cambodian people valued having children as the desired outcome of marriage (Kelley, 1996).

Health policy

The health system including infrastructure, personnel, and services was severely damaged during decades of civil conflict in Cambodia. The Government of Cambodia shows a very strong commitment toward improving maternal and child health, which was the priority of the Health Sector Strategic Plan 2008-2015 (HSP2) (Ministry of Health Cambodia, 2008). The Fast-Track Initiative (FTI) was launched to promote reproductive health, maternal, newborn, and child health (RMNCH) in 2008 (Ministry of Health Cambodia, 2010a). One of the principal measures was to improve the numbers and the quality of midwives, which fell within the purview of the National Strategic Development Plan (NSDP 2009-2013) , a program that emphasized human resource development (Ministry of Planning Cambodia, 2010).

Maternal mortality

The maternal mortality ratio (MMR) is defined as the number of maternal deaths during pregnancy and childbirth or within 42 days of termination of pregnancy per 100,000 live births during the same time period (World Health Organization, 2019b).

The disease pattern of Cambodia was dominated by maternal and child mortality and

infectious diseases caused by poor nutrition due to poverty and an unhygienic environment. The Ministry of Health Cambodia showed a strong commitment to the reduction of MMR by their goal of increasing the number of midwives at the health center level, through salary increases and incentives for midwives, and by strengthening midwifery education and training (Sheratt et al., 2006). The government also made health centers operate 24 hours per day, added maternity waiting for houses, and extend delivery rooms at health centers for the training of midwives to make maternity services more accessible (Miller et al., 2003). Cambodia became one of nine successful countries to achieve the MDG5 target (Miller et al., 2003), with an MMR reduction from 1200 per 100,000 live births in 1990 to 170 per 100,000 live births in 2014 (World Health Organization, 2015c). The successful reduction of MMR in Cambodia was also related to declines in fertility, socio-economic and educational improvements, and better road conditions (World Health Organization, 2015b).

Facility-based delivery assisted by Skilled Birth Attendants

There are two different health indicators for delivery: the proportion of health facility deliveries and deliveries assisted by skilled birth attendants. Because the distribution of health facilities was insufficient, at least attendance from a skilled birth attendant is needed in low-income countries like Cambodia. The Cambodian Demographic Health Survey (CDHS) showed that the coverage of facility delivery and delivery assisted by skilled birth attendants had increased from 22% and 44% in 2005 to 83% and 89% in 2014, whereas the MMR decreased from 472 to 170, respectively (National Institute of Statistics, 2005; 2014) (**Figure 4**).

The significant increase in the number of facility-based deliveries may be due to performance-based contracting schemes started in late 2005 as a supply-side financing strategy to improve the performance of public health facilities (Takahashi & Chuemchit, 2016). Outsourcing management to international organizations has been implemented in

Cambodia since 1990. The contracting has been financed by donors or domestic funding. Contracted facilities receive incentives by certain process and output indicators. It also provides incentives for staff' capacity building, and basic pharmaceuticals, and materials. The performance of contracted facilities has improved to the extent where they ensure the Minimum Package of Activities (MPA) (Ir, Horemans, Souk, & Van Damme, 2010). The findings of another study suggested that Government-funded Midwifery Incentive Schemes (GMIS) were an effective mechanism to make midwives change their behavior and practice from promoting home delivery to facility delivery (Ir et al., 2015).

Quality of maternity care

According to the WHO, quality of care reflects both how care is provided and how care is experienced, within the available health facility environment. The quality of maternity care in Cambodia can be overviewed using the following eight elements of the WHO Quality of Care Framework as it pertains to maternal and newborn health within facilities.

Provision of care

The provision of care is commonly evaluated by the amount and scope of care provided.

(1) Evidence-based practices for routine and emergency care

High quality care should be evidence-based and implemented technically qualified individuals. Good care, according to Hulton et al., refers to “the use of technologies that have been justified scientifically” (2000). Providing evidence-based care is important to keep the childbirth process safe and normal (Begley, Sedlicka, & Daly, 2018; Rubashkin & Minckas, 2018).

Evidence-based practices for routine and emergency care were referred from WHO’s

practical guide and guideline, such as “Care in Normal birth” (Technical Working Group, World Health Organization, 1997), “Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice” (World Health Organization, United Nations Population Fund, World Bank & United Nations Children's Fund (UNICEF), 2015), “WHO recommendations: intrapartum care for a positive childbirth experience” (WHO, 2018), and so on. Locally, “Safe motherhood clinical management protocols” for health centers (Ministry of Health Cambodia, 2010b) and referral hospital (Ministry of Health Cambodia, 2013b) were used to strengthen technical skills and evidence-based interventions in Cambodia.

A qualitative study that explored how Skilled Birth Assistants (SBAs) perceived their clinical practices during labor indicated that actual SBA practices were not inconsistent with the WHO practical guide on managing complications in pregnancy and childbirth (Ith, Dawson, & Homer, 2013). This finding was consistent with a previous quantitative study on practices of SBA in Cambodia (Ith et al., 2012) and subsequent studies. A previous study found that all the women at target hospitals in Cambodia gave birth in the supine position (Sandin-Bojö, Hashimoto, Kanal, & Sugiura, 2012), while the evidence from a later Cochrane review showed the benefit of non-supine position during childbirth (Gupta, Sood, Hofmeyr, & Vogel, 2017). In turn, liberal use of episiotomy was found in Cambodia (Ith, Dawson, Homer, & Whelan, 2013); however, routine episiotomy is not recommended (Technical Working Group, World Health Organization, 1997; WHO, 2018). These findings are in accordance with the findings of a midwifery review from Cambodia, which found that more than 50 % of Cambodian midwives had not enough confidence to provide essential care to manage normal birth (Sheratt et al., 2006). Poor evidence-based practices are deeply related to the health system including education, recruitment, and retention.

A project to improve evidence-based practices of SBAs and enhance women and baby-friendly care in Cambodia was carried out between 2010 to 2015 by the Ministry of Health

Cambodia and Japan International Cooperation Agency (JICA). The intervention included participatory training on evidence-based practices, midwifery philosophy, addressing adverse attitudes and behaviors of SBAs, and environmental improvement, etc. The project evaluation survey showed significant improvements in target facilities through the interventions. The frequency of practices that are demonstrably useful and should be encouraged (CATEGORY A) increased as follows: offering oral fluids during labor and delivery increased from 37% in 2010 to 65% in 2014; respecting women's choice of companions during labor and birth increased from 5% in 2010 to 94% in 2014; and freedom in position and movement throughout labor increased from 43% in 2010 to 87% in 2014. In addition, the frequency of practices that are harmful or ineffective and should be eliminated (CATEGORY D) decreased as follows: routine use of the supine position during labor decreased from 96% in 2010 to 11% in 2014; directed bearing down efforts (Valsalva maneuver) during the second stage of labor decreased from 59% in 2010 to 14% in 2014; and routine revision (manual exploration) of the uterus after delivery decreased from 68% in 2010 to 2% in 2014 (Japan International Cooperation Agency, Human Development Department, 2014 September; Takahashi, June 2021). Unfortunately, the latest evidence on Cambodia's progress in developing evidence-based practices of SBAs and enhancing women- and baby-friendly care is not available due to lack of research after 2014.

Emergency Obstetric and Newborn Care (EmONC) is one of the essential programs aimed at reducing high maternal and newborn mortality. The number of EmONC facilities and their signal functions are indicators to assess the provision of care. EmONC represents a set of clinical interventions including vacuum extraction, manual removal of placenta, and antibiotics use, which address each of the direct causes of maternal deaths. The number of facilities that provide Basic Emergency Obstetric and Newborn Care (BEmONC) and Comprehensive Emergency Obstetric and Newborn Care (CEmONC) has increased from 25 and 19 in 2009 to 96 and 36 in 2013, respectively (Ministry of Health Cambodia, 2015).

The WHO's recommended essential cesarean rate is 10% to 15%. The overuse of cesarean sections is a big concern worldwide, to address which the WHO proposed the Robson classification system as a global standard for applying cesarean sections. (World Health Organization, 2015e). In Cambodia, cesarean sections can be provided only at CEmONC facilities, and the cesarean section rate of 8.12% was under the standard (Verma et al., 2020). Postpartum hemorrhage (PPH) is the leading cause of maternal death in Cambodia, and the training of Active Management of the Third Stage of Labor (AMTSL) was introduced to reduce PPH. The research showed that only 17 % of public health facilities undertook the correct procedure for AMTSL (Liljestrand & Sambath, 2012). These results may imply poor healthcare infrastructure and poor evidence-based practices for emergency care.

(2) Actionable information systems

Appropriate record-keeping is important to review causes of maternal death and complications, but there was often inconsistent or missing in developing countries (Hulton et al., 2000). In 2010, the Ministry of Health Cambodia introduced the Health Management Information System (HMIS) with web-based reporting. HMIS covers the following components: consultations, immunizations, birth spacing, deliveries, laboratory examinations, referrals, and hospitalizations. HMIS information is used for quarterly and annual reviews (World Health Organization. Regional Office for the Western Pacific, 2015). National surveillance on maternal death audit is conducted routinely, but the health information system in Cambodia still requires service quality improvement.

(3) Functional referral systems

The quality of a county's health referral systems is crucial to prevent maternal mortality (Hulton et al., 2000).

Cambodia has health referral systems from the primary level to district, provincial and national level (**Figure 6**). Operational District (OD) is the most peripheral sub-unit within the health system. The size and coverage of the health system are determined by economic and public health considerations, it does not correspond exactly with the to administrative district Cambodia (Ministry of Health Cambodia, 2008).

Public health service delivery is organized through two levels of services, the Minimum Package of Activity (MPA) provided at the health centers, and the Complementary Package of Activity (CPA) provided at the referral hospitals (Ministry of Health Cambodia, 2012). MPA is a minimum level primary health care service mainly for rural populations. Each Health Center covers around 10,000-20,000 people. Services include initial consultations and primary diagnosis, emergency first aid, chronic disease care, maternal and child care (including normal delivery), birth spacing advice, immunization, health education, and referral. In 2010, only 43% of health centers provided the full minimum package of services. CPA is classified by three levels based on the number of staff, beds, medicines, equipment, and clinical activities:

- CPA1 hospitals have basic obstetric services. In 2011, there were 33 hospitals.
- CPA2 hospitals provide basic and emergency care services and other specialized services. In 2011, there were 31 hospitals at this level.
- CPA3 hospitals provide large-scale surgery and various specialized services. In 2011, there were 26 hospitals at this level.

Experience of care

The “experience” dimension of quality of care reflects components of sensitivity and responsiveness to person-centered maternity care (Ojelade et al., 2017) beyond meeting basic medical needs. In Cambodia, professional attitudes and interpersonal communication were described in the core competency framework for midwives (Ministry of Health

Cambodia, 2013a).

(4) Effective communication

According to the WHO recommendations on intrapartum care for a positive childbirth experience, "effective communication between maternity care providers and women in labor, using simple and culturally acceptable methods, is recommended" (WHO, 2018, p25). "Effective communication" includes the following as a minimum: care provider introducing themselves; calling the user by her name; offering information in an understandable way; respecting and responding to the woman's needs, preferences, and questions with a positive attitude; supporting the woman's emotional needs with empathy and compassion; ensuring the woman's choices; ensuring explanation and informed consent; encouraging the woman to express her needs and preferences; ensuring privacy and confidentiality; and ensuring woman's companion of choice (WHO, 2018, p25). A qualitative study to explore what matters to women during childbirth indicated that women everywhere value the support and reassurance of care providers who are sensitive to their needs (Downe, Finlayson, Oladapo, Bonet, & Gülmezoglu, 2018). Effective communication is one of the key components of Respectful Maternity Care (Shakibazadeh et al., 2018), and the care provider's competency in interpersonal communication and counseling skills need to be ensured (WHO, 2018, p25). To date, there is limited evidence related to effective communication of SBAs in Cambodia.

(5) Care provided with respect and dignity

According to the WHO recommendation on intrapartum care for a positive childbirth experience, "respectful maternity care" refers to "care organized for and provided to all women in a manner that maintains their dignity, privacy, and confidentiality, ensures freedom from harm and mistreatment, and enables informed choice and continuous support during labor and childbirth" (WHO 2018, p19). Respectful maternity care has multiple

components: including being free from harm and mistreatment; having privacy and confidentiality; dignified care; receiving information and being supported in the process of informed consent; continuous access to family and community support; high-quality physical environment and resources; equitable maternity care; effective communication; having choices and the opportunity to make decisions; availability of competent and motivated human resources; and receiving efficient, effective and continuous care (WHO 2018, p21). Women valued respectful care, and the kind and warm attitudes of health providers (Jolly, Aminu, Mgawadere, & van den Broek, 2019; Rosen et al., 2015; Shakibazadeh et al., 2018; Sheferaw et al., 2017; Wassihun, Deribe, Worede, & Gultie, 2018), what matters to women during childbirth is consistent worldwide (Downe et al., 2018).

Respectful maternity care is important because there are increasing reports of women's mistreatment and disrespectful care from many African countries. To date, there are no obvious reports on violence and abuse in Cambodia. However, a qualitative study reported that Cambodian women did not always receive respectful and humane care from SBAs at public health facilities (Ith, Dawson, & Homer, 2013). This is consistent with another study in which women described staff attitudes as unfriendly, rude, or impolite (Matsuoka et al., 2010). Another report suggested that negative attitudes and absence of health staff were the big obstacles for rural women to use health facilities (Ministry of Health Cambodia, 2006), and the Bureau of Nursing and Midwifery Cambodia (2016) were concerned about nurses' providing less compassionate, respectful, and empathic care to their patients. On the other hand, another study suggested that the compensation of low wage midwives brought better attitudes towards the poor (Annear, 2010). Performance-based incentives for midwives contributed to improving health provider's performance, encouraging the midwives to stay at the health center regularly, and improve their behavior (Ir et al., 2010; Ir et al., 2015). Because low salary, poor living conditions, and poor work environment are all potential barriers for midwives to providing respectful care (Ndwiga, Warren, Ritter, Sripad, & Abuya,

2017), ensuring a respectful and dignified working environment for health providers is an important aspect to improve the quality of care.

(6) Emotional support

Physiological childbirth is a transformative experience that empowers women. Emotional support to enhance physiological processes during childbirth generates both short and long-term benefits (Olza et al., 2018). Emotional support is also important because the fear, pain, and anxiety experienced by expectant mothers may diminish the potential physiological process of labor (Striebich, Mattern, & Ayerle, 2018).

According to the WHO recommendation on intrapartum care for a positive childbirth experience, "a companion of choice is recommended for all women throughout labor and childbirth" (WHO, 2018, p29). The evidence from a Cochrane review indicated the benefit of companionship during labor, which was more likely to result in a shorter labor, spontaneous vaginal birth, and higher satisfaction (Bohren, Hofmeyr, Sakala, Fukuzawa, & Cuthbert, 2017).

The lack of emotional support, impolite attitudes of health staff, and discomfort in hospital settings contributed to women's dissatisfaction with health service in rural Cambodia (Matsuoka et al., 2010). While Cambodian women tend to seek emotional support from their family, not from care providers, due to the cultural factors (Sakurai-Doi et al., 2014). For Cambodian care providers, "family-like support" is the key concept to understanding the philosophy of women-centered maternity care in the Cambodian context (Japan International Cooperation Agency, 2019). This is similar to sentiment expressed by women from Southwest Nigeria who valued spiritual support and prayers from family and health providers. This study reported that prayer from health providers was the best experience for many Nigerian women during childbirth (Olza et al., 2018). The need for emotional and spiritual support is highly reflective of the sociocultural context.

Health facility environment

(7) Competent and motivated human resource

Appraisal of human resources involves evaluation of the quality and quantity of health and non-health professionals who provide care to patients (Hulton et al., 2000).

Cambodia faced a severe shortage of health professionals after decades of civil war. Reconstruction of the health system required increasing the number of health personals who could provide basic health services. The Ministry of Health began a one-year primary midwife (PMW) course, but the quality of the PMW's service was not satisfactory. The first Midwifery Forum was held in 2005 and suggested increasing the number of midwives at the health center level, motivating midwives by increasing their salary and incentives and strengthening midwifery education and training (Sheratt et al., 2006). In response to the findings, the Government-funded Midwifery Incentive Schemes (GMIC) was implemented in 2007 as a supply-side financing strategy, because low salary, and poor living conditions, poor work environment contributed to shortage and low retention rate of health personal (Chhea, Warren, & Manderson, 2010). GMIS aimed to promote facility deliveries by paying midwives and other health personnel with cash incentives based on the number of live births assisted in public health facilities. Renumeration of USD15 per live birth in a health center and USD10 per live birth in a referral hospital was paid to midwives. The Health Center is the usual place for a normal delivery, so the government provides stronger incentives to assist normal delivery in health centers. This is commonly known as supply-side result-based financing to motivate midwives to promote facility delivery, thereby contributing to the reduction of MMR.

The "Fast track initiative" was launched in 2008 to prioritize midwifery strengthening (Ministry of Health Cambodia, 2010a). With the slogan "midwives in all health centers", the Ministry of Health Cambodia accelerated their efforts to allocate at least one midwife to each

Health Center. Three years of direct-entry midwifery training was introduced to boost the number of secondary midwives (SMW). All health centers met the goal of having at least one primary midwife (with one year of education) by 2009 and over 50 % of health centers had secondary midwives (with three years education) for each facility (Ministry of Planning Cambodia, 2010). By 2015, approximately 750 new midwives were graduating every year, and 5128 midwives were working in the public sector in Cambodia (Ms. Chea Ath, Director of Cambodian Midwife Association, personal communication, Dec 2015), and all the health centers had at least one primary midwife, while 85% has a secondary midwife. One study reported this increased number of newly recruited midwives and total number of midwives working in the public sector, and suggested the success of Cambodia's efforts in midwifery education, recruitment and retention (Fujita et al., 2013).

For regulating the quality of health professionals, accreditation of education and competency assessment are big concerns (Fujita et al., 2019). While there was an increasing number of private nursing schools, many of them were not under the control of the Ministry of Health Cambodia. In 2008, the accreditation of educational programs and authorization of higher education with nine minimum quality standards began, however, the standards did not cover important elements of clinical education and practices. Core competency framework for midwives was issued in 2013 (Ministry of Health Cambodia, 2013a). National Exit Exams were partially started in 2013 and National Entrance and Exit Exams in all health professional disciplines were started in 2016. Despite these steps forward, examinations are not yet utilized for registration and licensing and several challenges for the quality of health professionals remain.

An important milestone, in the provision of high-quality, best practice-based nursing services to countries of the Association of Southeast Asian Nations (ASEAN) was their signing of Mutual Recognition Arrangements (MRA) in 2006 and establishment of the Joint Coordinating Committee on Nursing (AJCCN) in 2007 (Fujita et al., 2019).

(8) Availability of essential physical resources

Physical resources refer to the grounds, buildings, both medical and non-medical equipment, vehicles, medical and office supplies, pharmaceuticals, and general infrastructure such as water and electricity (Hulton et al., 2000).

From 1995 to 2012, the number of health centers increased from 514 to 1,029, and referral hospitals from 67 to 82, respectively (World Health Organization, 2015b). Health centers typically serve a population of 10,000 people living within a 10 km radius of the facility, while referral hospitals serve a population of 100,000 people living within a 20-30km radius. Although the number of health facilities has increased, the provision of essential drugs, such as oxytocin, misoprostol, magnesium sulfate was limited (Liljestrand & Sambath, 2012). The poor environment at hospitals has also been of concern, which is related to both patient comfort and safety (Cambodian Council of Nursing, 2015).

Affordability

High out-of-pocket health expenditure causes indebtedness and poverty in Cambodia (Damme, Leemput, Por, Hardeman, & Meessen, 2004). The Health Equity Fund (HEF) scheme was implemented in late 2005 as a demand-side health financing mechanism to promote access to public health facilities for the poorest certified as ID poor. The management of HEFs was organized by non-governmental organizations (NGO) acting as a third-party purchaser. HEFs beneficiaries are identified by criteria at the community level or health facilities. HEFs cover user fees, transportation, and food of beneficiaries. A comprehensive review of HEFs showed that, overall, coverage of the poor was extensive but not complete, and targeting of the poor was accurate and cost-effective (Annear, 2010). Available evidence suggested that hospital-based HEFs contributed to reducing financial barriers and out-of-pocket expenditure for the poor of Cambodia (Noirhomme et al., 2007).

The Ministry of Health and Belgian Technical Cooperation started Voucher schemes in 2007 to complement the existing Health Equity Fund scheme in three Cambodian districts. The objective of this scheme was to improve access to safe delivery for poor women. The management of the voucher scheme was sub-contracted to NGOs operating the HEF, Voucher Management Agency. Recipients were poor pregnant women in the catchment area. Poor women were identified by village health volunteers using the same questionnaire of as the HEF. Eligible women could receive a voucher with five detachable coupons, which provide free services at the health center (antenatal care, delivery, and postnatal care) and transportation costs for five round trips from her home to the health center and referral from the health center to a referral hospital in the event of complications. The vouchers were only vailed for the current pregnancy. Available evidence showed the number of facility deliveries increased sharply after the introduction of Voucher and HEF schemes (Ir et al., 2010) and suggested the combination of these two schemes had the potential for reducing financial barriers and improve access to SBA among poor women (Ir et al., 2010; Ir et al., 2015; Van de Poel, Flores, Ir, & Van Doorslaer, 2014).

Chapter summary

Overall, the "provision of care" dimension and "health facility environment" dimension of the WHO Quality of Care Framework were significantly improved in Cambodia since the turn of the 21st Century. The quality of the "experience of care" dimension remained to be addressed, as Cambodian women reported negative experiences on interpersonal care, especially regarding the unfriendly attitudes of health staff. Quality improvement interventions were focused on increasing quantity and expanding coverage of maternal health services, but they did not fully address the barriers for women to access health services (Ensor, 2004). Thus, a comprehensive focus on the quality of care is required with special attention on the "experience of care" dimension. Little is known about the

women's experience of care in Cambodia, and further research is needed. To this end, the PCMC scale seems to be a useful instrument to quantify and visualize the status of person-centered maternity care in the Cambodian context.

CHAPTER III: STUDY DESIGN AND MATERIALS

Study design

This study is a nonexperimental sequential mix-methods design to develop the Cambodian version of the PCMC (Kh-PCMC) scale and assess its psychometric properties. The present study followed the standard procedures of scale development recommended by DeVellis (2016): including translations; expert reviews; cognitive interviewing and pretests; and a field study for psychometric assessment.

The study consisted of two phases. Phase 1 involved cross-cultural translation and adaptation of the Cambodian version of scale using a qualitative approach. The overall procedures were performed following the WHO guideline on translation and adaptation of instruments (https://www.who.int/substance_abuse/research_tools/translation/en/) updated in 2016. Phase 2 was a field study for psychometric assessment using a quantitative approach. The psychometric properties of the Cambodian version of PCMC scale were assessed according to the COnsensus-based Standards for the Selection of health status Measurement Instruments (COSMIN) standards of Risk of Bias checklist (Mokkink et al., 2018b), which substitutes the original COSMIN checklist (Mokkink, et al. 2010) (https://www.cosmin.nl/). The study protocol is shown in **Figure 9**.

Research instrument

The Person-Centered Maternity Care (PCMC) scale was initially developed in Kenya by Dr. Patience A. Afulani, PhD, MD, MPH and her colleagues in the University of California, San Francisco (UCSF) (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). It is one of the most valid and reliable instruments for measuring women's experiences of received care during childbirth at health facilities, and has been validated in India (Afulani et al., 2018) and used in Ghana (Afulani et al., 2019). The original PCMC scale validated in

Kenya includes 30 items on three key subscales that represent the "experience of care" dimension of the WHO Quality of Care framework: dignity and respect, communication and autonomy, and supportive care (Tuncalp et al., 2015). The "dignity and respect" dimension is measured by following the six items: treated with respect, friendly, visual privacy, record confidentiality, verbal abuse, and physical abuse. The "communication and autonomy" dimension is measured by following the nine items: self-introduction, call user by name, involvement in care, consent to procedures, delivery position choice, language, explain examinations/procedures, explain medicines, and able to ask questions. The "supportive care" dimension is measured by following the 15 items: time to care, talk about feeling, support anxiety, labor support, delivery support, attention when need help, control pain, enough staff, received best care, trust, crowded, clean, electricity, water, and safe. These three subscales were strongly correlated with each other, with correlation coefficients (r) ranging from 0.53 to 0.63, and with the main scale (r=0.75, 0.86, and 0.9 for dignity and respect, communication and autonomy, and supportive care, respectively) (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). Items are scored using a four-point frequency response in the form of "0=No, never", "1=Yes, a few times", "2=Yes, most of the time", "3=Yes, all the time". The item ratings are aggregated to scale scores by summing each item. The total possible score ranges from 0 to 90, with higher scores representing better care. In urban and rural Kenya, interviews were conducted by English, Swahili, and Luo.

Through the validation process for the Indian version of the PCMC scale, a 27-item scale was developed. The original PCMC scale was translated into Hindi and all interview were conducted in Hindi, following the standard procedure of scale development. The Indian PCMC scale including one additional item on the "supportive care" domain ("Were you or your family asked to buy anything from outside the health facility for your care?") that was not used on the Kenyan version due to low factor loading; however, according to the literature review, "being asked to pay bribes" was found to be essential item as it is central

to assessing the mistreatment in India. On the other hand, items related to facility environment were dropped from Indian version due to theoretical reasons (Afulani et al., 2018).

In both Kenya and India, the respective PCMC scales have shown high content, construct, and criterion validity and good internal consistency reliability, as described in detail elsewhere (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017; Afulani et al., 2018). Content validity of the PCMC scale was assured through a comprehensive literature review, expert review, and cognitive interviewing. The full scale and subscales of the original version have good internal consistency reliability, with a Cronbach's α value of over 0.8 for the full scale and ranging between 0.61 and 0.75 for the subscales (Afulani, Phillips, Aborigo, & Moyer, 2019). Recently, a 13-item unidimensional short version of PCMC scale was proposed using a data-driven approach, for application across multiple settings (Afulani, Feeser et al., 2019). An international comparison of the PCMC across Kenya, India and Ghana, presented in the Lancet, suggested that the "communication and autonomy" domain was the bottle neck across three settings (Afulani, Phillips et al., 2019). The principal investigator of the present study obtained approval from the original developer of the instrument, Dr. Afulani, to use the PCMC scale for a validation study in Cambodia. The original 30 items plus the one additional item from the Indian version (being asked to pay bribes) was used for validation in Cambodia.

Research team

A research team was organized to conduct this study. The principal investigator was not allowed to travel Cambodia due to the COVID-19 pandemic; thus, the present study was remotely conducted and managed by the principal investigator from Japan, with strong supports and commitments from Cambodian colleagues, local research assistants, Japanese experts familiar with Cambodia, and other collaborators. Every effort was made with the

limited resources available and despite the strict travel restrictions to proceed with the research in a systematic and scientific way.

CHAPTER IV: CULTURAL TRANSLATION AND ADAPTATION (PHASE 1)

Objective

The objective of the present study (Phase 1) was to establish cross-cultural equivalence and content validity of the Cambodian version of the PCMC（Kh-PCMC) scale.

Methods

Research design

A cross-cultural study using a qualitative approach was conducted. The overall procedures were performed according to the WHO guideline on translation and adaptation of instruments （https://www.who.int/substance_abuse/research_tools/translation/en/) updated in 2016. The translation and adaptation process in this study is shown in **Figure 10** included six steps: (1) forward translation, (2) expert review, (3) back-translation, (4) pretesting and cognitive interviewing, (5) final version, and (6) documentation. The iterative process ensured cross-cultural and conceptual equivalence.

Equivalence

In important consideration of cross-cultural research is cross-cultural equivalence. The survey instrument needs to be equally natural, acceptable, and feasible (Smith, 2004). Equivalence refers to "the degree to which survey measures or questions can assess identical phenomena across two or more cultures" (Johnson, 2003, p. 351). A literature review by Johnson (1998) revealed were 52 different types of equivalence that can be classified into two fundamental domains: interpretive equivalence and procedural equivalence. Interpretive equivalence examines the extent to which concepts are interpreted similarly across cultures, and emphasizes the equivalence of meaning (Johnson, 1998). Procedural equivalence, on the

other hand, concerns the measures and procedures used to make cross-cultural comparisons (Johnson, 1998). The focus is to achieve interpretive equivalence rather than procedural equivalence (WHO, 2016).

The most common type of interpretive equivalence is conceptual equivalence, which refers to a "construct that exists in two or more cultures and can be measured using similar or different survey questions" (Johnson, 2003, p. 349). Hui & Triandis (1985), cross-cultural measurement specialists, suggested that conceptual equivalence was a necessary condition for making a cross-cultural comparison. Cognitive interviewing was found to be a useful approach for pretesting conceptual equivalence of survey questionnaires (Napoles-Springer, Santoyo-Olsson, O'Brien, & Stewart, 2006). The strategy to minimize the potential gap to assess conceptual equivalence is to utilize the "etic" and "emic" anthropological model. Etic constructs exist in identical form across cultures, while emic constructs exist in a single culture (Hui & Triandis, 1985). The ideas and concepts represented by survey questions can be classified as "etic", and cultural-specific ideas and concepts can be classified as "emic". The standardized survey questions on etic construct are asked first, followed by contextual specific emic probes. "Emically defined etic constructs" could be useful for as pretesting cross-culturally (Hui & Triandis, 1985). In the present study, conceptual equivalence was assessed by performing literature reviews, expert reviews, cognitive interviewing, and discussions at translators' team meetings.

Semantic equivalence refers to "equivalence in the meaning of words, and achieving it may present problems with vocabulary and grammar" (Guillemin et al., 1993). The common translation method is decentering, which refers to a translation process in which the source language and the target language versions are equally open to modification during the development phase (Brislin, 1973, pp. 37-38). In the present study, semantic equivalence was assessed by performing parallel forward translation, expert reviews, cognitive interviewing, and discussions at translators' team meetings.

Content validity refers to "the degree to which the content of a health-related patients-reported outcomes (HR-PRO) instrument is an adequate reflection of the construct to be measured" (Mokkink et al., 2010), is considered to be the most important measurement property (Mokkink et al., 2018a). There are three aspects of content validity: "(1) relevance (all items in a PROM should be relevant for the construct of interest within a specific population and context of use), (2) comprehensiveness (no key aspects of the construct should be missing), and (3) comprehensibility (the items should be understood by patients as intended)" (Terwee et al., 2018). Content validity is evaluated by subjective judgment from patients and professionals. During Phase 1 of the present study, content validity was assessed by expert review and cognitive interviewing with potential respondents.

Table 2 presents the definition for each criterion and methods used in the study.

Procedures

The following steps were performed iteratively until the Kh-PCMC scale was finalized. We used 31 items as initial item pool: the original 30 item validated in Kenya and one additional item (being asked to pay bribe) that was validated in India.

Step 1: Forward translation using a parallel committee approach

The purpose of cross-cultural translation in this study is to improve equivalence between the instrument in the original language (English) and the target language (Khmer). The committee translation approach was used to achieve transparency and quality of translation (Behling & Law, 2000) as presented in **Figure 11**.

The principal investigator has speaking and listening skills in Khmer for working level with seven years of expatriate work experience in the field of community development and maternal and child health in Cambodia, and 18 years of close relationship with Cambodia and its people since 2003. Due to the limited reading and writing skills to conduct qualitative

research, and limited professional resources for this language (which is not widely-spoken), the team translation approach was employed because it enabled the guarantee of the quality of translation and equivalence.

The 31-item English version of the PCMC scale was first translated to the Khmer language by two independent bilingual translators whose mother tongue is Khmer. The criteria of a forward translator are recommended as (1) bilingual and bicultural (in-depth experience in the English-speaking culture) whose mother language is the target language, (2) knowledgeable about health terminology and the content area, and (3) preferably a health professional. When applying the team translation approach, one should be knowledgeable about health and another should be familiar with colloquial phrases, emotional terms, and idiomatic expressions (Sousa & Rojjanasrirat, 2011; WHO, 2016). In this study, three bilingual or trilingual Cambodian women were hired as translators. Translator A was a registered nurse-midwife in Cambodia with a Master's degree in public health sciences from New Zealand, who has four years of working experience in Khmer-English translation and interpretation in the field of maternal and child health. The translator B was non-clinical Cambodian woman living in Japan, who has experience in Khmer-Japanese translation and interpretation including in the field of nursing. These two translators were provided the necessary information on this instrument including the PCMC Scale Guide created by Dr. Afulani and colleagues (UCSF/UCLA, 2020 5 May). During the translation process, the translators had close contact and discussions with the principal investigator as needed. The translators were instructed to emphasize conceptual equivalence, and use natural and simple languages that would be easily accessible for laywomen. The two independent translations were synthesized into a preliminary initial translated version of the instrument in Khmer by translator C. Translator C was a trilingual native Cambodian linguistic expert, who had previously been an English teacher at a secondary school in Cambodia and was currently working as an assistant professor at University in Japan. The preliminary initial translated

version of the instrument in Khmer was then reviewed by a native Japanese-speaking trilingual linguistic expert who had ten years of experience as a Japanese language teacher in Cambodia (Khmer-Japanese) and nine years of experience in the USA (English-Japanese), and had an experience of giving birth in the USA.

The translation committee member included two Cambodian forward translators, a Japanese linguistic expert, and the principal investigator. The online translation committee was organized several times to discuss ambiguities and discrepancies in Khmer, English and Japanese, and incorporated the suggestions to the 31-item Kh-PCMC scale version 1.

Step 2: Expert review

To enhance the quality of translation, it is recommended an expert panel include translators, content experts (health professional), a methodologist, and a monolingual member whose mother language is the target language (Sousa & Rojjanasrirat, 2011). Monolingual Cambodian members can support ensuring cultural appropriateness, as they have different language abilities from bilingual and bicultural experts (Ferrans, 2010). In this study, four clinical experts in maternal and child health in Cambodia including two monolinguals**,** three content experts in maternal and child health in Cambodia (including two high ranking officials), and an academic expert with experience in instrument development (high ranking official) were included in our expert panel as shown in **Table 3.**

The Kh-PCMC scale version 1 was reviewed by the eight Cambodian experts on our panel to identify unnatural expressions and to review cultural appropriateness for the Cambodian context. The original 30-item PCMC scale, 31-item Kh-PCMC scale version 1, and the PCMC Scale Guide were provided to the experts individually and the principal investigator had individual communication with each expert by email and face-to-face online meetings. The round table discussion method is not appropriate for the Cambodian context, because it is common for Cambodian people to be reluctant to speak out in front of seniors

and high-ranking officials. In addition, the translation committee discussed the issues identified by the experts, and the principal investigator gave feedback to experts, which led to the development of the 31-item Kh-PCMC scale version 2.

Step 3: Back translation

Back translation is a useful process for detecting subtle differences in nuance between target language and the original instrument. The differences detected through back translation need to be examined through cognitive interviewing. The recommended criteria for a back-translator are a as bilingual individual (target language and English), whose mother tongue is English (original language), and knowledgeable of health terminology and the content area (Sousa & Rojjanasrirat, 2011). Unfortunately, no eligible translator could be found for five months; however, because the principal investigator was proficient in the Khmer language, back translation was used for only the purpose of cross-checking the translation in the present study. The revised Khmer translation was, therefore, back-translated to English by a field coordinator and alternative words and phrases in Khmer were suggested by a native Japanese-speaking trilingual linguistic expert. Discrepancies and nuanced translations were discussed and resolved among the translation committee. No translation change was made at this step.

Step 4: Cognitive interview

The cognitive interviewing process is qualitative in nature and is used to improve measurement instruments by gathering information on whether it will function. Cognitive interviewing has been defined as “the administration of draft survey questions while collecting additional verbal information about the survey responses, which is used to evaluate the quality of the response or to help determine whether the question is generating the information that its author intends.” (Beatty & Willis, 2007). The primary objective of

the cognitive interviewing is “to understand the internal mechanisms underlying the survey response process” and to develop “effective practices for writing survey questions that produce low levels of response error” (Willis, 2015). The purpose of cognitive interviewing is to assess the cognitive match between the question’s intent and the respondent’s interpretation; the errors with the wording of questions; whether questions were appropriate; and the length of the tool (Collins, 2003; Jobe & Mingay, 1989). Refining the questionnaire using cognitive interviewing is the foundation for successful quantitative research. Cognitive interviewing using a qualitative approach was conducted to assess the content validity and cultural equivalence of 31-item Kh-PCMC version 2.

Setting

The cognitive interviewing took place at two public health facilities from January to March 2021. Convenience sampling with one urban hospital and one rural health center was applied in the cross-cultural study (Van de Vijver, Fons JR & Leung, 1997).

Of the 25 provinces in Cambodia, the capital Phnom Penh and Kampong Chhnang province were selected as the target study site for this study. Cambodia remains predominantly rural with 80% of the population residing in rural areas. Between 2010 and 2015, Cambodia experienced rapid urban population growth (1.75) driven by rural-urban migration due to the poverty and lack of jobs in the rural areas (Global Green Growth Institute, 2016). Phnom Penh is the most populated province in Cambodia. The total populations of Phnom Penh are estimated to be 1,501,725 as of 2019 (National Institute of Statistics, 2019). National gross domestic product (GDP) per capita increased rapidly from the accelerated economic growth stemming from economic investment in garment manufacturing, construction and tourism from abroad. According to the World Bank (2021), Cambodia’s GDP growth rate was 7.4%. the rural-urban migration of reproductive-aged women increased as they sought employment in the garment factories in Phnom Penh

Special Economic Zone. Phnom Penh has one national hospital, seven Operational Districts (OD), one Provincial hospital (CPA3), seven referral hospitals (CPA1,2) and 43 health centers (MPA) (National Institute of Public Health, 2000). One urban hospital located in the capital city was selected purposively in the study, because the hospital functions as a national top referral hospital receiving a variety of women with any residence, any economical background, any religions, and both normal and high-risk pregnancies. The average number of deliveries at the hospital is about 600 per month with 30 % of those being cesarean deliveries. Postpartum women hospitalize two nights and three days in the maternity ward after normal vaginal delivery and seven days after the cesarean delivery. The hospital also functions as the center of maternal and child health administration, clinical practice, and education. For the present study, it was important to target this hospital, considering the future implications of the instrument in Cambodia.

Kampong Chhnang province is the one of the 25 provinces in Cambodia and located 90 kilometers north of Phnom Penh, the capital city. Kampong Chhnang sits at the foot of the Tonle Sap Lake, a tributary of the Mekong River, and the Khmer Muslim people live along the river. There are 7 districts, 65 communes, 478 villages, and 525,932 total population (Ministry of Planning, 2019). There are three Operational District (OD), one Provincial hospital (CPA3), two referral hospitals (CPA1), and 39 health centers without beds, and three health centers with beds (MPA) (National Institute of Public Health, 2000). Each health center is located in a geographical catchment area and covers a target population of 10,000-20,000 people. Health centers provide the Minimum Package of Activity (MPA) including primary health care services (initial consultations and primary diagnosis, emergency first aid, ANC, normal delivery, PNC, immunization, health education, and referral) for the population within the catchment area. One health center with beds was selected purposively as another study site of this study. The average number of normal delivery cases in this facility was around 10 per month. Those who deliver at the health

center stay two nights and three days after vaginal delivery.

The principal investigator has working experience at these two health facilities and has very close contact with midwives and staff.

Sample

The samples of a qualitative study are generally small and based on the principle of saturation (Strauss, A., & Corbin, J.,1998). The recommended total number of cognitive interviews has been reported in one study to be 10-30 (Willis & Artino Jr, 2013), while another suggested a minimum of 15 interviews (DeMaio & Landreth, 2004), and the size of each round was recommended to be not more than 10 interviews (Willis, 2015, p6).

In this study, two groups of potential participants were obtained from an urban and a rural area using, as Willis suggested, "a variety of recruitment strategies, which are intended to produce variation in the types of individuals recruited" (Willis, 2015, p6), such as age, economical background, educational background, and ethnic groups. This strategy was adopted because a previous study suggested the poor, less educated, younger, and minority women were less likely to receive quality care (Say & Raine, 2007). An international study that investigated the use of the PCMC scale in four settings also suggested that those who had higher education and those who gave birth at lower-level facilities showed the higher PCMC scores (Afulani, Phillips et al., 2019).

Participants

Women who have just delivered were purposively identified and recruited.

Regarding the inclusion criteria, female respondents were eligible for participation if they:

- were of reproductive age (aged 18-49 years);
- were willing to participate in the study;
- had given birth at the target facility;

- had any mode of delivery (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017);
- had a live birth; and
- understood the Khmer language.

With regards the exclusion criteria, respondents were not be eligible if they:

- were not willing to participate in the study;
- had a stillbirth or their baby was hospitalized due to serious complications, such as congenital diseases or cerebral palsy; and
- were admitted for reason other than childbirth.

Recruitment

Because the principal investigator was not allowed to travel overseas due to the COVID-19 pandemic, eligible participants were identified and recruited by field assistants on-site under the remote supervision of the principal investigator.

At the urban hospital, four Cambodian midwifery students were hired to work as field assistants. They identified eligible participants from the hand-written daily report from the hospital's delivery room with support from staff midwives. Two to three candidates were identified based on the above eligibility criteria. However, due to a lack of consistent information between the delivery room and maternity ward, the eligible participants had to be located from their maternity ward injection reports, or through verbal communication with the midwives working on duty at the maternity ward. After checking the room number and the bed number, the field assistants visited the eligible participants at the bedsides, screened for eligibility by using a screening sheet, asked their willingness to participate in the study, and scheduled interviews.

At the rural health center, eligible participants were identified by the chief midwife based on the eligibility criteria. When an eligible participant was identified, the chief midwife contacted the principal investigator to arrange an online interview.

A written explanation of this study was provided to the women, and written informed consent was obtained from all participants. Respondents were also asked whether the interview could be audio-recorded during the consent process. Each respondent was provided with an honorarium of 10,000 riels (USD 2.5, based on the standard of Cambodia) to show appreciation for their participation.

Interviewer training

Three native Khmer-speaking female Cambodian nursing students were hired to conduct the cognitive interviewing. Working with one interviewer is more likely to ensure the consistency and credibility of the qualitative interview data (Twinn, 1997), but in reality, it can be difficult to keep their engagement for several months. Skill-based interviewer training helps to minimize variability between interviewers (Barbosa, Duarte, Bastos, & Andrade, 2018). Before data collection, the principal investigator provided interviewer online training remotely that included an explanation of the purpose of the study, the role and responsibility of the interviewers, data collection procedures, the way to recruit eligible women, the concept of person-centered maternity care, the intended meanings of the 31-item Kh-PCMC scale, practice sessions with the scale, and ethical considerations.

Data collection

The three rounds of cognitive interviewing and tool revision were undertaken from January to March 2021: the Kh-PCMC scale version 2 was revised after 10 interviews in the 1st round; the Kh-PCMC scale version 3 was tested with 5 women in the 2nd round and revised again; the Kh-PCMC scale version 4 was tested with 5 women in the 3rd round and revised to the Kh-PCMC scale version 5. We did not delete any items from 31 items at this stage. The process of cognitive interviewing and tool revisions is shown in **Figure 10.**

The interview schedule was arranged for the convenience of the respondent and the

availability of the principal investigator, native Khmer speaking interviewer, and field assistants in Cambodia. Face-to-face online interviews using video call were conducted in Khmer by two interviewers; one was a native Khmer speaking female Cambodian who asked structured questions in Khmer, and another was principal investigator to ask additional probes and take filed notes. The Cambodian interviewer read aloud each item of the structured questionnaire and the response options and, after the respondent had selected the best fitting option, registered the respondent's answer in an online questionnaire (Google form). The principal investigator then asked additional probes, using the verbal probing approach, for any items that were confusing or took a long time to answer (Willis & Artino Jr, 2013). There are two types of cognitive interview methods: think aloud and verbal probing. One study from India, suggested the use of the verbal probing approach when participants struggle to comprehend the questions during a think aloud session causing an impasse (Scott et al., 2020). Thus, the verbal probing approach is perhaps a useful technique to employ where the respondent's educational level is limited.

The cognitive interview guide was developed by the principal investigator based on the PCMC Scale Guide developed by the research team of the University of California San Francisco (UCSF/UCLA, 2020 5 May). The guide included the frequency of PCMC indicators, and a rating of the importance of the indicators with appropriate qualitative probes. At first, the pre-developed "proactive verbal probes" were used after each question such as: "What happened when [specific key question]?" (Recall probes); "How did you arrive at that answer?" (Process-oriented probe); "Why do you say…?" (Elaborative probes); "What does [a key term from the survey question] mean to you?" (Meaning-oriented probe); "Was this question difficult for you to answer?" (Evaluative probe); "How would you rephrase this question to make it better?" (Paraphrase of a question) (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017; Scott et al., 2020). Then, "reactive verbal probes" were used according to the respondent's reactions. The verbal probing approach was useful to

elicit respondent's experiences behind the frequency response options; alternative keywords and their meanings; and the reason why they choose a given response option. In the end, the comprehensiveness of the questions about their childbirth experiences was asked and confirmed.

Analysis

For quantitative data, socio-demographic information, maternal characteristics, and response options were coded and scored for data entry. Descriptive statistic was used to determine frequency and distribution.

For qualitative data, Audio recorded interviews data were first transcribed verbatim in Khmer and translated to English (some were translated English to Japanese). After each interview, two interviewers had a reflection meeting to discuss the issues. For quality assurance, the principal investigator and the Japanese linguistic expert read transcripts while listening to audio-recording to ensure translation quality. The transcripts and field notes were reviewed by the principal investigator to identify ambiguous or confusing questions, and classified typologies of question failure using the Appraisal system for Cross-National Survey proposed by Lee (2014) and the four stages task analytic model proposed by Tourangeau (1988). The four stages model described the cognitive process as including: (1) comprehension, (2) retrieval, (3) judgment, and (4) response selection (Tourangeau & Rasinski, 1988). Cognitive interviewing should not be focused on how many times a problem is identified, but on how many participants identify the same particular problem. Thus, descriptions of the problem underpinning are important (Beatty & Willis, 2007). Identified problems were discussed among the translation team before consultation with the tool developer.

Step 5: Final version

The revisions of translation were an iterative process. Not only before pretesting but during and after cognitive interviewing, minor modifications were made based on the inputs from the field interviews. The version was finalized through consensus among the committee. The back translated 31-item Kh-PCMC final version (version 5) was confirmed with the tool developer and received approval.

Ethical consideration

This study protocol was conducted with ethical approval from both the Ethical Committee of the Faculty of Medicine, University of Tsukuba (#1605) and the National Ethics Committee for Health Research, Ministry of Health Cambodia (#322 NECHR).

Results

Initial translation among the translation committee

Two independent translators performed a parallel forward translation. Translation A was selected to use for the basis of the synthesis as it was deemed to have good expression by the third translator who was a trilingual and bicultural Cambodian linguistic expert. The synthesized version was reviewed by a trilingual Japanese linguistic expert and three points were suggested throughout the questions. First, some direct dictionary translations were found such as "doctor (*vechchobandet*)" and "nurse (*kileanoubadthayikea*)". People normally used one Khmer term "medical teacher (*kroupet*)" for all the professions. Since it was too long to list up all professions as the original question, we decided to use "medical teacher team (*krom kroupet*)" to summarize all professions. Second, the tense was ambiguous in many questions because there are no differences between the present tense and the past tense in the Khmer language. We decided to add some specific words that specify the tense such as "this delivery" and "for yourself". Third, "did you feel" and "do you feel" in original questions were dropped unintentionally from both forward translations. Because the PCMC scale is designed to measure women's experiences of received care, it is important to measure the subjective experience of what women feel, not the fact that it was done. So, we decided to add "did you feel" and "do you feel" as original questions. The translator committee was organized to discuss ambiguities and discrepancies, such as the absence of the equivalent meaning within the Khmer vocabulary. The initial translation among translation committee incorporated into the 31-item Kh-PCMC scale version 1.

Summary recommendation from the expert review

The 31-item Kh-PCMC scale version 1 was evaluated by eight Cambodian experts. Four experts pointed out following questions were not relevant because it was not commonly

practiced in Cambodia; introduced yourself (#2); called by name (#3); delivery position choice (#10). Based on the suggestions, our translation committee discussed continuously selecting appropriate Khmer words to keep both the intent and cultural equivalence of the original questions. For example, we decided to use “welcome” instead of “introduce self” (#2), “called appropriately” instead of “called by name" (#3). One monolingual expert in the rural area pointed out some formal words were difficult for rural women to understand such as “information (*ptrmean*)” (#7), “delivery position” (#10), “anxieties” (#15), “postnatal ward (*wardsphnek samphop*)” (#27), and “environment (*bristhean*)” (#28). Our process suggested important insights for the development of a questionnaire that could be easily heard and understood even by less educated women living in rural areas, rather than a questionnaire that can be read and understood by experts. We added several term options to the cognitive interview guide to examine which Khmer term would be the most understandable for women. The comments from the expert panel were incorporated into the 31-item Kh-PCMC scale version 2.

The characteristics of sample women

The 20 early postpartum women (average 2.9 days after childbirth) were interviewed in the hospital (**Table 4**). The characteristics of sample of women are shown in **Table 5**. The 20 women represented a variety of socioeconomic backgrounds and maternal characteristics. The mean age of the women was 28.5 years [range: 18-42 years], and mean parity was 1.9 [range: 1-4] births. The cultural and socioeconomic diversity of the 20 women in our sample can represented as by a number of criteria. Regarding religious affiliation, 16 (80%) were Buddhism, three (15%) were Khmer Muslim, and one (5%) was a Christian. In terms of occupation, four (20%) were farmers, seven (35%) were factory workers, six (30%) were housewives, two (10%) were self-employed, and one (5%) was a company employee. In terms of education level, 2 (10%) had no education, eight (40%) had primary education, six

(30%) had secondary education, two (10%) had attended high school, and two (10%) had graduated university. Looking at the insurance held by the women in our sample, four (20%) possessed ID poor cards certified as poor, six (30%) had social security insurance which is provided to factory workers, and half of the women had no insurance. With regards mode of delivery, 12 (60%) had a normal vaginal delivery, while eight (40%) had caesarian surgery, while 15 (75%) delivered their baby at urban hospitals, and the remaining five (25%) at rural health centers.

Issues identified through cognitive interviewing

Among the 31 questions in the Kh-PCMC scale, 14 problems were identified through the cognitive interviewing as shown in **Table 6.** These problems were classified into five types of issues using the Appraisal system for Cross-National Survey (Lee, 2014): (1) translation and adaptation; (2) translation vocabulary; (3) reference points; (4) task performance: nonreachable answers; and (5) response category. Twelve of 14 problems (85%) were in the comprehension stage of the cognitive process and a half of comprehension problems required cultural adaptation to resolve.

Cultural translation and adaptation

The most common issue identified through the cognitive interviewing was the issue of cultural translation and adaptation, for which cultural context needs to be considered. We also found different contexts between urban hospital and rural health center.

Take the example of item #2: “Did the medical staff introduce themselves when they first came to see you?”, the initial Khmer translation used the word “welcome” (*svakom*) instead of “introduce themselves” according to the expert’s suggestions; however, this appeared to be not a semantically and conceptually equivalent translation. At the 1st round, three of the ten respondents both in urban and rural settings answered how they were handled

or guided at the reception at the time of admission. On the other hand, in the rural health center, midwives and women were already acquainted as they were members of the same community, and, therefore, the midwives did not see it as appropriate to introduce themselves when the women came to the health center. Qualitative probes revealed that nine of the 20 respondents wanted to know who would be in charge of their childbirth as those who could rely upon when they have a problem, while they did not care about their names. So, we reverted to translation from "welcome" to "introduce themselves" and added definition of "introduce themselves" as "for example, their name or profession". The response errors were addressed by additional explanations.

Similarly, for item #3 "Did the medical staff call you by name?", we used "call appropriately" instead of "call by name" based on the suggestions by the expert panel. We found that 11 of 20 respondents at the urban hospital were called by name when they had got injections or examinations at the hospital setting, indicating that the usual mode of calling a patient is by name. Surprisingly, two respondents at the urban hospital said they thought it appropriate as they called by their room number and/or bed number, because they could identify medical staff called them (ID2, ID10).

Three of 20 respondents said that "call by name" was an appropriate translation because "there are many patients, there is no mistake (ID6)" and because "I have a name so it is natural to be called by name (ID13)". On the other hand, being called by name was considered impolite in situations where midwives and women were long-time acquaintances in rural community settings. Four of the 20 respondents said that being called by the honorific terms of "*Bong*" (prefix for older woman in Khmer) or "*Oung*" (prefix for younger woman in Khmer) was more appropriate because they were younger than medical staff (ID9, ID15, ID17, ID21). One woman said, "it is ok for older people to call younger people by name, but the other way is not" (ID9). The remaining 13 women said being called either way was ok. Because "being called appropriately" is attributable to individual preference, we

decided to use both the original question (being called by name) and the contextual specific question (called appropriately) in the survey question to examine which was appropriate for the final version.

Item #8 "Did you feel like the doctors, nurses or other staff at the facility involved you in decisions about your care?" was the challenging question for adaptation. We tried to explore what does "involvement in decisions" mean for Cambodian women. There were several translation options such as "participate (*chaulruom*)", "decide (*samrech che*)", and "understand (*yobl*)" that arose from qualitative probing, but we found that it was not simply a vocabulary issue. Many respondents could not make sense of, or were confused by, the question intent. Some respondents reported, "I don't know what to answer. I don't know what I was asked." (ID2, ID 9, ID11, ID12, ID13). Eleven of the 20 women who had vaginal delivery were unfamiliar with the question intent because they have never thought or experience participating in decisions of their care. Some respondents reported "I do not know, I am happy to follow the doctor's decisions" (ID3, ID8); "I just follow the midwives and do as they instruct. Following the midwives was important because it would lead to good results." (ID4). On the other hand, six respondents who had cesarean delivery at the urban hospital stated "I agreed with doctor's explanation, then I decided to have cesarean delivery by myself" (ID10, ID17). They thought it was important to be well informed and decide by themselves. One woman, a university graduate, said the "I wanted to give birth normally but I got surgery. I hoped to receive a good explanation, but I didn't. I decided to have surgery for my own life and my baby's life because no one would take responsibility if any problems happened" (ID7). Those who had cesarean delivery experienced a process of choice and decision-making. Overall, being "involved in decisions" for Cambodian women meant to follow doctor's advice and go through with the treatment if they agreed. Therefore, to reflect this idea, we used the Khmer translation of the phrase "ask your opinion and decision". Further, we decided to add the scenario of whether or not there was an opportunity to make

care decisions during the process of labor, because some women could not understand the question intent. The response errors were addressed by additional explanations.

Regarding the item #10 “During the delivery, did you feel like you were able to be in the position of your choice?”, all respondents at the 1st round could not understand the initial Khmer translation of “be able to be in the position of your choice”. Nowadays, in Cambodia, it is common to give birth in the supine position on the delivery bed. Therefore, we changed the translation from “choice” to phrase closer in meaning to “favorite free position”, which made this item more understandable for women. Qualitative probing revealed that five of the 20 women valued free movement during labor because it could help reduce labor pain and contribute to smooth delivery. One woman at the urban hospital reported that she was introduced to the concept of free delivery position with the aid of a poster in the delivery room. She could move freely during her labor and delivered in the supine position. We decided to use “favorite free position” in the Khmer translation, while asking “Did you deliver in the supine position?” to shed light on the current status in Cambodia. For those who had cesarian delivery, we asked them whether they were able to position themselves freely while waiting for surgery.

Lastly, some respondents had some confusion with the following phrase in item #19 “when you needed help”. Three of 20 women, who were all at the urban hospital, were confused this item as they needed help from their families, not from medical staff. When this issue occurred, as required, we reminded the women of the help they received from medical staff. The response errors were addressed by additional confirmation.

Translation vocabulary

Some vocabulary within the Khmer translation was not familiar to the respondents. The vocabulary issues were further classified into two types: technical terms and words with multiple definitions. None of the respondents at the 1st round understood the meaning of the

initial translation of “delivery position (*iriyeabath*)”. The Khmer translation of “delivery position (*iriyeabath*)” was found to be a technical term that was familiar only among those who were involved in the specific project including one forward translator and the clinical experts in the urban hospital. We replaced the term “delivery position (*iriyeabath)*” with the word “movement (*chalnea*)”, but this still required additional explanation to make it comprehendible for example “delivery position lying on your back”. The response errors were addressed by additional explanations.

When multiple meanings are contained within a single English word, there are also multiple ways of translating it. Regarding item #14, the possible definitions of the word “feeling” includes (1) “the fact of feeling something physical”; (2) “emotion”; and (3) “opinion” (Cambridge Dictionary, 2021). Some of the women interviewed understood the translation of the word “feelings” to carry the connotations of both “physical condition (*sruolokhluon*)” and “emotions (*arommo*)”, while some answered that they were asked about physical condition (*sruolokhluon*) but not emotions (*arommo*). Since we found different responses between “physical condition (*sruolokhluon*)” and “emotions (*arommo*)” in pretesting, we decided to use two question options in the survey to examine which was most appropriate for the final version.

Reference point

There were some instances of temporal and spatial confusion caused by a missing or vague reference point.

Regarding item #1 “How did you feel about the amount of waiting time?”, two of 10 respondents at the 1st round answered about the time it took to give birth, not the time they had to wait to receive care. Although there was a clear instruction, respondents confused about what time they have been waiting for. We added the time flame as “from when you arrived to when you received care”. There was no response error at the 2nd and 3rd rounds.

Item #9 “Did the doctors, nurses or other staff at the facility ask your permission/consent before doing procedures on you?” and #12 “Did the doctors and nurses explain to you why they were doing examinations or procedures on you?” are related to procedure and examination. Responses from four of the 10 women at the 1st round of interviewing referred to non-invasive procedures and care such as measuring blood pressure. Many women found it difficult to imagine specific situations and kinds of examinations or procedures referred to because the details were not specified. Therefore, we decided to add example examinations and procedures, such as pelvic examination and episiotomy to this item, and as a result, there was no response errors at the 2nd and 3rd rounds.

Although the reference point and setting were clearly stated in the instruction and question, understanding of time and the spatial frame was sometimes lost or misunderstood. For example, regarding the item 6 “During examinations in the labor room, were you covered by a cloth or blanket or screened with a curtain so that you did not feel exposed?”, included the instruction of “during examinations in the labor room”; however, at the 1st round of interviewing, two of 10 respondents, who had both had cesarian delivery, answered this question in reference to their experience in the operation room and Intensive Care Unit (ICU). Some respondents answered about their experience in general, although the question was intended to extract the woman’s personal experience of received care specifically. It is likely that these temporal and spatial confusions arose from the women’s understanding and the ambiguous grammatical tense in Khmer language; thus, additional explanations and examples were given to respondents during cognitive interviewing as required.

Task performance and response category

Item #7 “Do you feel like your health information was or will be kept confidential at this facility?”, is related to record confidentiality was non reachable answers. Thirteen of 20 the respondents (65%) answered that they did not know whether it was kept confidential.

While some answered that their records were kept confidential because the medical staff did not tell their information to others. Interestingly, five of 20 respondents answered no information would be kept confidential including the ID poor holders that indicated those who were the poorest and HIV positive patients. All 20 respondents reported they wanted to share their health information with their family. Based on the results, we added another response category “Don't know if it was kept secret” as the highest response category.

Context-specific issues

Respondents tended to fail to answer frequent responses. Although interviewers read aloud to provide answer options, respondents often answered just “yes”, “ok (*atei te*)”, “normal (*thommotea*)” and by doing so did not engage properly with answer options available. When a woman answered “yes”, it often meant that they were just making agreeable responses, perhaps because they did not understand the question intent or they had interpreted in a different way. During the interviews, the women’s first responses often needed to be reconfirmed by further qualitative questions. For example, one woman answered “yes” as a first response when asked about record confidentiality; however, additional qualitative probing questions, used to elicit more detail, revealed that she did not know whether her records were kept be confidential or not. The probing also revealed that she did not understand the meaning of the term “health information”. Additional explanations and examples were often required in such cases.

Our respondents were asked to select responses on a frequency Likert scale, however, they tended to choose the same answer option from the importance Likert scale. Some women could not tell the differences between the negative questions (Do you think the experience of physical abuse is important?) and its reverse questions (Do you think the experience of physical abuse is NOT important?).

In addition, regarding the item #4, “Did the medical staff at the facility treat you with

respect?", when we tried to explore what respect means to Cambodian women, we found many respondents had difficulty understanding abstract questions. Many women reported being satisfied when the medical staff came to see them on time. Some reported that respect means using good words. The notion of "good" medical services for Cambodian women seems to involve receiving injections and intravenous drips despite being unnecessary or a lack of medical indications.

Feasibility of the PCMC scale in Cambodia

The average time for the interview was 65 minutes (range: 40-90 minutes). It was acceptable for the respondents but some their families complained to that it was too long. All respondents preferred face-to-face interviews although it was time-consuming. Some said "because it is difficult for me to read" and others said "because I had no experience to answer [questionnaires]". Those who were not educated at all took more time than those who had been educated. Choosing one of four answer options was not a familiar exercise for uneducated women. One uneducated woman, for example, repeated "thank you" without responding to the questions because she was happy to experience being interviewed for the first time. During the face-to-face interviews, the women and the interviewer could communicate using a very simple and gentle Khmer language, however, additional explanations were often required to make the question fully comprehensible, including rephrasing with easier words, giving specific examples, and repeating the questions. Thus, face-to-face interviews were a feasible way for Cambodian postpartum women to participate in the research.

Final version

The revision process and reasons for the revisions is presented in Supplementary Table1. We spent a substantial amount of time attempting to accurately capture the cultural

context of Cambodia and select appropriate words and phrases. When there were any unclear points and nuanced problems, the principal investigator consulted with the Japanese trilingual linguistic expert. For unsolved issues, the principal investigator consulted with the tool developer, Dr. Afulani, and received feedback and approval for any changes. The translation committee and tool developer, all approved the retention of the 31 items for use in a field survey.

Discussion

Summary result

The present study documented the process of cultural translation and adaptation of the PCMC scale to the Cambodian context. The team translation approach contributed to a balanced translation by gathering a research team of mixed skills and viewpoints (Harkness, Van de Vijver, & Johnson, 2003) despite the limited resources working with a relatively of rare language. A monolingual clinical expert in a rural area played an important role to represent the reality of rural settings. Unsurprisingly, subsequent cognitive interviewing with potential respondents revealed the significant question response errors that proved the limitation of using only the forward and back translation approach. The most common type of issue that occurred with the translation was cultural adaptation while some issues could not be classified into existing coding models of the Appraisal system for Cross-National Survey (Lee, 2014). This result suggested the limitation of using pre-defined framework.

Discussion

Our study had three novel findings: (1) discrepancies between global importance and the local reality; (2) discrepancies between understanding of experts and the reality of women; and (3) the challenge of collection and interpretation of disadvantaged women's voices. These were methodological challenges to conducting a cross-cultural study among women in Cambodia. To address these challenges, we considered how ideas from anthropology could be used to reframe and unpack the perspectives and methodology in our cross-cultural adaptation study.

First, the discrepancies between global importance and the local reality warrants consideration with regards the culturally specific context of Cambodia. For instrument translation, it is of vital importance to ascertain the linguistic meaning and logic of the target

population to ensure that the solutions to translational problems are based on a thorough understanding of local issues and needs (Robyn, 2017, chapter3)

Take the concept of "self", for example. The original question intent of "being called by name" is based on individualistic Western values; however, it cannot fully capture the Eastern construct of "self", which is based on a more collectivistic culture (Behling & Law, 2000). Cambodia has a unique culture concerning the name. Our respondents answered that not being mistaken for others was important even they were called by their room and bed number, suggesting being called "by name" was not so important for them. This may however be simply due to the high patient volume at the urban hospital compared to the rural health center, and not allied with the concept of respecting an individual. This result is in better accordance with anthropological research, which revealed that Cambodian people believe human being consists of an inseparable physical body and name (ego) (Ang, 2007). The body is a container and a name is given to the body, to identify a self (ego) and distinguish it from others. This name can be changed due to special circumstances (Ang, 2007). One of the key foundations to interpret the Cambodian context is Buddhist values and teachings such as "reincarnation" and "karma". For Cambodian people, there are traditionally eight rites of passage from birth to death, that involve a process of birth, rebirth, and moving to the next stage (Ang, 2007). Childbirth is one of eight rites of passage for women. Given that the body and its name is reborn through childbirth, it might be reasonable to interpret that Cambodian woman do not care so much for the name given to the body at a previous stage. Further, this finding is closely allied with personal reports that Cambodian people often change their name due to the result of fortune-telling; some people use a different name for official and private use; some children are even given "a school name" by a teacher because the family did not care about their child's name (Komi, personal communication, 25 March 2021).

Another potential explanation is that, rather than using a person's name, Cambodian

often show respect to older people by using the term "*Bong*" for those who are senior to them and "*Oung*" to those junior. A polite way of calling others is important for Cambodian people. This finding is consistent with the study from Kenya, which revealed that Kenyan women wanted to be called in a polite manner (Afulani, Kirumbi & Lyndon, 2017). The idea of respecting seniors was more familiar among rural women wherein community-based interpersonal relationships exist, as they felt that being called by name was emotionally distant. This example offers insight into the importance of considering differences across context.

Decision-making can be made only where there are choices available. Our respondents who had cesarean delivery understood the intent of the question that asked them about involvement in the decision-making process, while those who had normal delivery could not comprehend the meaning of this item. According to the results of the cognitive interviewing, what decision-making means to Cambodian women seemed to be close to the idea of "informed consent" or "unquestioned adherence" rather than joint decision-making with health providers. Cambodian women rarely put forward alternative opinions independently or have the expectation to engage in clinical dialogues. This could potentially be related to the Buddhist concept of "karma", a form of fatalism in which people accept their situation no matter how irrational and minimize friction with surroundings to avoid any collision (Nakajima, 2012; Takahashi & Randeep, 2021). Our result could be also explained by the traditional Cambodian gender norms, which is consistent with another study form India that also has strong gender norms (Scott et al., 2020). In the recruitment of participants for our study, we often experienced the husband' refusing his wife's participation during the informed consent process. In the Cambodian context, it seems that a woman's inability to participate in decision making is normalized among the women themselves and among other family members and health providers, too. Asking for approval and suggestions from their husband, mother, and family is a cultural practice among Cambodian women, and they

sometimes use that norm strategically. This was one example of where the Cambodian cultural context showed a significant difference from the more global emphasis on the importance of protecting women's autonomy and self-determination.

Decision making is also related to sense of control. One of our respondents (a university graduate) reported that she was not satisfactory with having cesarean delivery due to lack of information from health providers and the limited time with which to make decision. But she independently decided to go ahead with the cesarean delivery because she reasoned that no one else could be responsible for her life. The evidence from a study that used the MORi index to measure women's sense of control suggested that time pressure may be a barrier for women to engage in shared decision-making (Vedam et al., 2017). This is consistent with the empirical report from a Japanese senior midwife who stated that "if a woman has enough time, she can decide by herself. Sense of control in childbearing will contribute to a positive sense of control in childcaring" (Matsuura, personal communication, 25 Oct 2019). Therefore, it is important for a woman to have a sense of control and satisfaction with the decision-making.

Delivery position choice is related to decision-making. Cambodian women were unaware that they had alternative choices to the supine position so that they did not question giving birth in the supine position. This finding is consistent with previous studies across the world. In Cambodia, women had no choice to deliver in a supine position (Sandin-Bojo, Hashimoto, Kanal, & Sugiura, 2012). In rural Kenya and Ghana 70% and 59% of women, respectively, had no choice of delivery position (Afulani, Phillips et al., 2019). In Malawi, less than 5% of women were aware of other possible birth positions (Zileni et al., 2017). The latest WHO guideline (2018) recommended free delivery positions during the second stage of labor. The evidence suggests that upright birth positions during the second stage of labor might reduce episiotomy and instrumental vaginal births (WHO, 2018). A Cochran review suggested the benefits of non-supine positions to reduce the duration of the second stage of

labor and labor pain (Gupta et al., 2017). To date, the supine position is still dominant in many low- and middle-income countries; therefore, evidence-based local implementation needs to be accelerated in each context and exiting health system.

Another unique cultural feature of the Cambodian context is nursing task sharing. Some women confused about the question that address receiving the help needed, thinking that it meant help from family rather than medical staff. This can be explained by the large extent of nursing task sharing and skill mixing among doctors, nurses, and patient families due to a shortage of health professionals with 1.1 health service providers per 1,000 people in Cambodia (World Health Organization, 2006b). Much of the non-invasive nursing care is provided by the patient's family in Cambodia, including bedside hygiene, bathing, and changing sanitary napkins (Sakurai-Doi et al., 2014). The misunderstanding of the question intent on "when you needed help" may be due to this particular context.

The item that referred to medical record confidentiality, was difficult to answer for some of our respondents. Of the 20 respondents, 25% answered that no information would be kept confidential, including those who were the ID poor holders which indicate the poorest and/or HIV positive patients. This is contrary to other studies from some high HIV prevalent African countries in which personal information, such as HIV test results, were known to be treated confidentially (Jolly et al., 2019; Ouedraogo et al., 2014; Shakibazadeh et al., 2018). This confusion may be due to differences in what "confidentiality" means to women across differing cultural or economic settings; further research is required, therefore, to understand the meaning of confidentiality for Cambodian women.

Overall, our results are in good accordance with the findings from an Indian study, which showed that the global PCMC concepts did not resonate among respondents in a society there was where unquestioned adherence to expert knowledge, implicit consent, women's low awareness of alternative options, and distinct gender norms and social hierarchy between care providers and care receivers (Scott et al., 2020). The questions based

on global importance needed to be reframed to the context. One of the useful strategies for achieving semantic equivalence is to use a higher degree of abstraction, but it did not work well in Cambodia. Our anthropological approach: etic/emic mix emerge (Hui & Triandis, 1985) using emic constructs elicited from qualitative probes succeeded to get closer to the reality of Cambodian women, suggesting good reframing to the context.

Second, we found clear discrepancies between the expert's views and the women's reality. Cognitive interviewing revealed that what matters to Cambodian women during childbirth was different from what was understood by the experts. Translated items that reflected expert knowledge sometimes appeared conceptually and semantically different from the original. This translation problem is consistent with other studies (Balqis-Ali et al., 2021; Bing-Jonsson, Slater, McCormack, & Fagerstrom, 2018). This may be because the experts come at the problems from different cultural perspectives, knowledge, and logical responses (Robyn, 2017, chapter3). In this sense, Patient Reported Measurement Outcomes (PRMOs) measures such as the PCMC scale should be evaluated by potential respondents (de Figueiredo Ferreira et al., 2020). The tool developer, Dr. Aflulani, mentioned that "the fact that something is not normally done does not mean women do not want it. The PCMC questions should be aspirational to what women want and not just what is normally done." (Afulani, personal communication, 7 Jan 2021). Our experts evaluated some items as "not relevant" because it was not practiced in Cambodia; however, "relevance" should be aspirational to what women want and not just what is normally done. For professionals, taking on board non-professional knowledge can be one of the most challenging and most rewarding parts of an anthropological approach (Robyn, 2017, chapter3). To do so, it was necessary for us doing some qualitative work to understand the values and preferences of women in Cambodia. In the present study, we asked the frequency of PCMC indicators, followed by a rating of the importance of indicators with qualitative probes to understand the reasoning and explore the meaning. The qualitative probes provided insightful

understandings of what Cambodian women matter during childbirth.

In this regard, the present study weighted heavily the role of cognitive interviewing with potential respondents rather than expert review. The cognitive interviewing was optimized to minimize the response errors, improve equivalence and validity, and contribute to accurate and less biased results. Several recent nursing research articles have also suggested the contribution of cognitive interviewing in instrument development (Beck et al., 2017; Lee, Lee, & Aranda, 2018; Park, Park, McCreary, & Norr, 2017) and described it as an essential aspect of cross-cultural instrument development (Jang et al., 2020). Well-developed patient-reported measurement tool are useful for improving health care; however, the generalizability of such instruments remains difficult due to subjectivity and differences in cultural context.

Third, the interpretation and incorporation of the voices of disadvantaged women requires some ingenuity. Issues identified from cognitive interviewing in the present study, were more related to women's cognitive process than question failures and analytical coding. Because the disadvantaged women were not accustomed to doing surveys, it was sometimes hard to understand their answers and reasoning only from their immediate response to the survey questions. For example, some respondents always answered "two times" but could not explain why and how. This may be attributed to acquiescence bias whereby respondents show a propensity agrees with the structured questions. Subsequent qualitative probing questions often provided "their logic" as to why they arrived at that answer. This is consistent with another study in which the respondents were more comfortable reporting their experiences narratively than framing answers to the survey questions; moreover, subsequent qualitative descriptions were contradictory to what the initial response suggested (Scott et al., 2020). And similar to other studies (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017; Scott et al., 2020; Zongrone et al., 2018), the frequency Likert scale was found to be more successful than the Likert scale of agreement and disagreement and rating of the

importance.

It was challenging to elicit rich qualitative data from disadvantaged women. We failed to elicit deeper meetings of the word “respect” despite using several qualitative probes, as many respondents had difficulty understanding abstract questions. Our finding is in accord with a previous study from Cambodia, which reported that it was not adequate to evaluate the quality of care by the satisfaction with the provider’s attitude and health outcome from poorly educated women (Ith, Dawson, & Homer, 2013). A similar challenge was reported from the study from Côte d'Ivoire that less-educated women were not used to be questioned on patient-reported outcome (Lambert et al., 2020). This can be explained by the fact that women’s expectations of care were not high to begin with, grounded by the normalization of low quality of care (Bowser & Hill, 2010). It may also be explained as a limitation of online interviews because women’s initial responses changed drastically after further probing and rapport building (McMahon et al., 2014).

Therefore, what women know about their lived experience is important, and recognizing this knowledge is the first step to ensure solutions based on a real understanding of issues and their needs (Robyn, 2017, chapter3). Taking an anthropological approach, putting the women at the center of the care practice requires nothing short of reframing. Significant reframing involves taking account cultural context rather than just focusing on problems (Robyn, 2017, chapter3). In this regard, a low level of education may be a “problem” for the researcher but may not for the women.

To fully take into account Cambodian women’s reality, rather than relying on only verbal data from women, one alternative should be the triangulation of non-verbal data and description of the cultural context. Research design and methods could take a multi-methodological incorporated anthropological approach: including direct observation of delivery, fieldwork, non-verbal data collection such as drawing and mapping, known as “Participatory Rural Appraisal (PRA)” and “Participatory Learning and Action (PLA)”

(Chambers, 1983), and interviews with other individuals such as family and companions. This novel idea is consistent with other studies that suggested women's childbirth experience needed to be assessed using a range of data inputs (Bazant & Huang, 2013). The evidence showed that there was a huge disparity between self-report and direct observation of disrespect and abuse during childbirth, because it was internalized and normalized for both care provider and care receiver (Freedman et al., 2018). Researchers need to realize the existence of invisible normalization and internalization in the target society. This has been highlighted by other mix-methods studies that have, by their approaches, been able uncover insights that might have gone unnoticed. For example, quantitative and qualitative investigations into the situation of disrespect and abuse had significant differences (Kambala et al., 2017).

Quality of care is multidimensional in nature. Healthcare quality is more complex and difficult to measure due to subjectivity, intangibility, and heterogeneity (Mosadeghrad, 2012). The present study, therefore, highlighted the significance of contextual understandings of what might be termed "invisible culture" using a multi-method incorporated anthropological approach.

Strengths and limitations

Two main strengths of this study were identified. First, the present study addressed the exploration of cultural contexts for the cross-cultural adaptation process. It contributed to achieving cultural equivalence and content validity of the instrument. Second, we successfully carried out this study and pioneered online data collection under severe travel restrictions due to the COVID-19 pandemic. Although internet disruption and audio interruption due to technical problems could not be avoided due to the influence of the weather and power outages in Cambodia, advances in internet communications technology and the strong commitment from our dedicated collaborators enabled the conducting of

online interviews even in rural Cambodia.

There are several limitations of our study. First, the pandemic-related travel restrictions led to a slight lack of data from verbal interviews, which limited the exploration of the larger landscape of contextual understandings. The "cultural context" was presented only as classic concepts of Buddhism values and teachings such as "reincarnation" and "karma"; however, it was somewhat weak in terms of presenting as "lived data" in current Cambodian society. The principal investigator should have made more use of own *emic* perspective that has acquired through 18 years relationship with the Cambodian people, and own empirical data that has accumulated in moving between *emic* and *ethic*. Further research is required to make use of ethnography based on fieldwork to capture "lived cultural context" and take into account the women's reality of childbirth in Cambodia.

Second, due to convenience sampling, the degree to which these results could be generalized to the whole Cambodian nation is unclear but warrants examination. Future studies should include all levels of public health facilities from all provinces, and private clinics.

Third, limitations of translation are of some concern. Nuances in the Khmer language can influence the meaning of the question and some English words may not have Khmer equivalents. Implicit and explicit cultural differences between written and oral languages were too complex to be properly addressed during interviews. Although the principal investigator is not a native Khmer nor native English speaker and the translation team were not professionally trained translators, we made every effort to utilize the available limited resources for this relatively rare language to create our translation.

Fourth, it was difficult to conduct cognitive interviewing with women in private spaces, because all respondents wanted to share their health information with their family members. Due to the unique perception of confidentiality, the Cambodian research assistant suggested that it was not culturally appropriate to separate the women from their families during the

early postpartum period. This was also observed in another study from India (Scott et al., 2020). Thus, the women's answers may be biased by social desirability because the family members were present.

Fifth, online interviewer bias needed to be addressed because the relationship between respondent and interviewer can affect the quality of data. Because Cambodian women preferred face-to-face interviews on-site, remote online interviews may have been a barrier to elicit rich qualitative data.

Chapter summary

In conclusion, understanding of cultural context contributed to reframe and unpack our perspectives and methodological issues in our cross-cultural instrument development study. The present study highlighted the importance of cross-cultural translation and adaptation before conducting a questionnaire survey to obtain accurate data from the target setting. The translation and adaptation process requires skills, experiences, and considerable time investment to maximize cross-cultural equivalence between the source and target instruments, but it was a rewarding and worthwhile process. Further research is required to assess the larger landscape including the social and health systems, and triangulate a variety of data to fully take into account the lived reality for Cambodian women.

CHAPTER V: A FIELD STUDY AND PSYCHOMETRIC ANALYSIS (PHASE 2)

Objective

The objective of the present study (phase 2) was to administrate a field survey using the Cambodian version of PCMC (Kh-PCMC) scale developed in phase 1 and test its psychometric properties.

Method

Research design

A cross-sectional, cross-cultural validation study was conducted.

Study period

The data collection was conducted from April to August 2021.

Study population

The target study population was postpartum Cambodian women who have just delivered at target public health facilities.

Sample size

For fine-tuning of the assessment tool in scale development studies using exploratory factor analysis, the ratio of minimum sample size (N) for a particular analysis to the number of variables (p) is recommended (MacCallum, Widaman, Zhang, & Hong, 1999; Worthington & Whittaker, 2006). According to a review of the sample size used to validate a scale, the recommendations range from 2 to 20 subjects per item (Anthoine, Moret,

Regnault, Sébille, & Hardouin, 2014). Tinsley and Tinsley (1987), cited by DeVellis, suggested that five to ten subjects to one item are sufficient (DeVellis, 2016). Another way of sample size determination for scale development is to use the absolute minimum sample size ranging from 100 to over 1000 (Mundfrom, Shaw, & Ke, 2005). The other approach is to consider performing statistical factor analysis. Comrey and Lee (1992), cited by Gungor & Beji, suggested the following guidance: 50=very poor, 100=poor, 200= fair, 300=good, 500=very good, and 1,000 or more=excellent (Gungor & Beji, 2012). When conducting confirmatory factor analysis, recommended sample size varies from 150 to 1000 subjects according to the normality of data and parameter estimation methods (Boomsma & Hoogland, 2001; Muthén & Muthén, 2002).

In this study, as the number of variables (p) is 31 items (30 items in original and one item from the Indian validation), when using a ratio five subjects per item (DeVellis, 2016), the required sample size is 155. Considering the 10% of expected refusal and incomplete data, the expected required sample size was 155+15=170. When using a ratio of the ten subjects per item (DeVellis, 2016), the required sample size would be 341. With the limitation of the duration of data collection and budget, the required sample size of this study was set a minimum of 170 to a maximum of 300.

Sample and recruitment

The study was conducted at the same two public health facilities used in phase 1: one urban hospital in Phnom Penh and one health center in Kampong Chhnang province. These facilities were selected for convenience based on a personal relationship with the principal investigator, both agreed to participate in this study. The early postpartum women who delivered at the two facilities were recruited at the maternity ward before discharge. The inclusion criteria and exclusion criteria were the same as phase 1. Women who were eligible for inclusion in this study were those: (1) aged 18-49 years old; (2) willing to participate; (3)

delivered at the target facility; (4) had a live birth; (5) able to understand the Khmer language. Women who were excluded from the study those: (1) not willing to participate in the study; (2) had a stillbirth or whose baby was hospitalized due to serious complications, such as congenital diseases and cerebral palsy; and (3) admitted for reasons other than childbirth. Convenience sampling has been previously applied in cross-cultural studies (Van de Vijver, Fons JR & Leung, 1997).

In Phnom Penh, the capital city in Cambodia, the total number of deliveries was 1625 in January 2020 (National Institute of Public Health, 2000) and the average number of delivery cases at the target urban hospital was 600 per month, which had increased to 900 per month under COVID-19 due to the closure of private clinic (personal communication with Ms. Oung Lida, 10 July 2021). The sample was postpartum women who had vaginal delivery within three days and who had cesarean delivery within seven days before discharge. Eligible women were identified by four enumerators from the records at the maternity ward and recruited for convenience once every three days for each enumerator. There are two maternity ward floors, each floor was under the charge of two enumerators.

In Kampong Chhnang province, a predominantly rural province located 90 kilometers north of Phnom Penh, the average number of delivery cases at the health center was 10 per month (National Institute of Public Health, 2000). The sample was postpartum women who had vaginal delivery within three days before discharge. All eligible women were recruited at the health center supported by the center's c chief midwife.

The eligibility screening criteria were set up at the beginning of the online questionnaire to prevent mistakes in recruitment by enumerators. Verbal informed consent was obtained after explanation using a flyer and instructions stated in the online questionnaire, including explanations that the participation would be voluntary, and the submission of online questionnaire would be considered to indicate agreement to participate in this study, and that consent cannot be withdrawn after submission. Enumerators input the

agreement for participation into the online questionnaire platform. Each respondent was provided with gifts worth 10,000 riels (USD 2.5, based on the standard of Cambodia) such as baby soup and baby power to show gratitude for their participation in this study.

Enumerator recruitment and training

To avoid professional bias, non-health professionals are preferable as enumerators (Bohren et al., 2019), because non-clinical enumerators might reduce underreporting due to normalization (Freedman et al., 2018). Four Cambodian midwifery students were recruited and trained in March 2021, but ultimately refused to go to the hospital for data collection due to the outbreak of COVID-19 in Phnom Penh in April 2021. According to the discussion with the chief midwife in the urban hospital, the only possible way at the time was to recruit hospital staff as enumerators considering infection control, policies and accessibility to patient records and eligible women inside the hospital. Four midwives who worked at gynecology wards and infection control division, and were not involved in the care of the mothers and babies were assigned by the chief midwife as enumerators. Because there were restrictions on the entry of outsiders into the hospital under COVID-19 restrictions. At the health center in Kampong Chhnang, one local non-clinical student was recruited as an enumerator.

Online enumerator training sessions were conducted several times by the principal investigator including how to use the online questionnaire, explanation of each question intent and how to select answer options, interview practice, and peer reviews. The principal investigator emphasized two important tips: do not guide and always confirm the woman's personal experience.

Data collection

The 31-items Kh-PCMC scale was administrated online along with questions to gather

data on socio-demographics, maternal characteristics, and outcome measures (satisfaction, future intention to deliver the same hospital) through the Google form online platform. Face-to-face interviews were conducted in Khmer in private space at the facility grounds from April to August 2021. Data collection was interrupted during certain periods of suspected close contact with COVID-19 positive patients. The enumerators read aloud each item and answer options, giving explanations and rephrasing when necessary, and let the women select the response that fits best from the answer options. The enumerators inputted the respondent's answers to the online questionnaire using a smartphone or tablet computer, and data were uploaded directly to the cloud. To prevent missing data, we have set up the online questionnaire so that it was only possible to proceed to the next section when all answers entered. For the enumerators' quality assurance, the principal investigator joined online for the first ten interviews for each enumerator in the urban hospital and all interviews in the rural health center. When enumerators faced unclear points during data collection, the principal investigator explained and addressed the issues each time.

A total of 278 women at the urban hospital and 22 women at the health center were interviewed with a response rate of 100% and no missing data.

Psychometric analysis

The psychometric properties of the Kh-PCMC scale were assessed according to the COnsensus-based Standards for the Selection of health status Measurement Instruments (COSMIN) standards of Risk of bias checklist (Mokkink et al., 2018b) which substitutes the original COSMIN checklist (Mokkink, et al. 2010) (https://www.cosmin.nl/). In this study, the five measurement properties of content validity, structural validity, internal consistency, hypotheses testing for construct validity, and cross-cultural validity, for of the Kh-PCMC scale were assessed. Criterion-related validity could not be assessed due to the lack of a "gold standard" to measure PCMC. Inter-rater reliability could not be assessed because the

questionnaire s purpose was to collect data on women's individual experience, not agreement between different raters. Test-retest method and Measurement error could not be assessed due to the limited duration. Responsiveness is planned to be evaluated in future studies. **Table 7** presents the definition of measurement properties and methods used in our study. Statistical analysis was performed using IBM SPSS version 27 and IBM Amos version 27.

Data quality

Firstly, the normality of data distribution was determined using a one-sample Kolmogorov-Smirnov test (significance<0.05) for descriptive variables. Univariate analysis was performed to determine the distribution of all the items. Where questions had a response option in the "not applicable" category, "not applicable" was recoded to the highest response category to obtain a uniform scale for the psychometric properties as described elsewhere (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). This approach is conservative as it assumes the highest quality rating for each "not applicable" response (Afulani et al., 2018). Negative items were reverse coded to reflect a scale of 0 as the lowest level to 3 as the highest level.

The mean and standard deviation of each item were examined to assess floor and ceiling effects. Theoretically, floor and ceiling effects, which indicate restrictions at the lower and upper ends of a measure, are considered if more than 15% of respondents achieved the lowest or highest possible score, respectively（McHorney & Tarlov, 1995). Items with high floor or ceiling effects were considered for removal (Polit & Beck, 2013). As an initial examination of item performance, a correlation matrix was constructed. The standard recommendation to eliminate items is item-total correlation of less than 0.30 or above 0.80 (Polit & Beck, 2013). For two items (#2, #14) which asked the same question in two different ways, we considered which item to retain for factor analysis by floor or ceiling effects, the histogram, and correlation matrix.

(1) Content validity

Content validity refers to "the degree to which the content of a health-related patients-reported outcomes (HR-PRO) instrument is an adequate reflection of the construct to be measured" (Mokkink et al., 2010), is considered to be the most important measurement property (Mokkink et al., 2018a). There are three aspects of content validity: "(1) relevance (all items in a PROM [patient reported outcome measure] should be relevant for the construct of interest within a specific population and context of use), (2) comprehensiveness (no key aspects of the construct should be missing), and (3) comprehensibility (the items should be understood by patients as intended)" (Terwee et al., 2018). Content validity is evaluated by subjective judgment from patients and professionals. The preliminary work including cognitive interviewing and expert review ensured good content validity. In phase 2, the content validity index (CVI) (Polit & Beck, 2006; Polit, Beck, & Owen, 2007) of the 31-items Kh-PCMC scale was assessed by eight Cambodian experts. The experts included a medical doctor, four senior midwives including two monolinguals, an academic expert with experience in instrument development, a WHO officer, and a government official. CVI is a 4-point ordinal rating scale scored as follows: l= not relevant, 2= unable to assess relevant, 3= relevant with need of minor revisions, 4= very relevant. Content experts were asked to rate each item on a 4-point ordinal rating scale and add open-ended comments and suggestions.

Regarding the number of experts, Lynn (1986) suggested that "a minimum of five experts would provide a sufficient level of control for chance agreement; however, in some content areas it may be difficult to locate this many content/domain experts and to obtain their cooperation". Content experts were asked to evaluate each item on a 4-points scale for the applicability to the Cambodian context. The CVI of each item (I-CVI) was calculated as the ratio of the number of "3=relevant with needs minor revisions" and "4=very relevant"

responses to the number of experts with 0.78 or above being preferred (Polit & Beck, 2006). The overall CVI of the scale was calculated as the averaging calculation (S-CVA/Ave) method with 0.9 or above as the preferred outcome (Polit & Beck, 2006).

Overall, the quality of content validity was evaluated with three steps recommended by the COSMIN methodology: (1) standards for evaluating quality of the PROM development, (2) standards for evaluating the quality of content validity studies of PROMs, and (3) criteria for content validity using the scoring system (Terwee et al., 2018).

Internal structure

(2) Structural validity

Structural validity refers to "the degree to which the scores of an HR-PRO instrument are an adequate reflection of the dimensionality of the construct to be measured" (Mokkink et al., 2010). Dimensionality was assessed by performing iterative exploratory factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was examined to check the suitability of data for factor analysis. A KMO value of 0.5 or above is considered satisfactory as the criterion for sampling adequacy (Shirkey & Dziuban, 1976; Hinkin, Tracey, & Enz, 1997).

Factor analysis was used to assess construct validity. The initial exploratory factor analysis was performed to examine a scree plot of eigenvalues using all 31 items to determine the number of factors to retain. Both the Kaiser's rule with eigenvalues greater than one (Hair, Anderson, Mehta, & Babin, 2008) and the "break" in the scree plot (Hinkin et al., 1997; DeVellis, 2016) was used to determine the number of factors to extract, along with theoretical considerations.

Multiple rounds of subsequent exploratory factor analysis were performed to examine the item loadings to determine which items to retain or delete. The acceptable factor loading was set to greater than 0.3 (Tinsley & Brown, 2000), while a lenient cut-off points of 0.1

was used to retain items in the India validation (Afulani et al., 2018) because all of the items have been vetted in the validation from Kenya and item reduction was not the main objective at this stage (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017).

Factor rotations were applied to simplify the interoperability of factor solutions (Costello & Osborne, 2005) and to facilitate the interpretation of the results (Katchova A, 2021 August 15). In the present study, Promax rotation was used to allow for correlations between the rotated factors. The use of Promax rotation was justified because the PCMC domains are theoretically correlated. We compared our factor structures to that obtained in Kenya validation and tested with confirmatory factor analysis.

(3) Internal consistency

The internal consistency reliability (homogeneity), which refers to "the degree of the interrelatedness among the items" (Mokkink et al., 2010), was assessed using Cronbach's coefficient alpha. Cronbach's alphas of 0.7 or higher are generally considered sufficient evidence of reliability for a new scale (Terwee et al., 2007), or 0.8 or higher for a mature scale (DeVellis, 2016).

Remaining measurement properties

(4) Hypotheses testing for construct validity

Convergent validity is "the degree to which the scale can predict health outcome" (DeVellis, 2016), which is assessed with Pearson correlation coefficients using P values (r,p). According to previous studies, we set ten hypotheses about the expected magnitude and direction of relationships between the Kh-PCMC scale and reference measures: satisfaction with care (Kruk et al., 2016; Larson et al., 2014; Larson et al., 2017; Srivastava et al., 2015), quality of care rating (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017), and the future intention to seek delivery care in the same facility if she were to be pregnant again

(Kujawski et al., 2015; Larson et al., 2014). The hypothesis was that the Kh-PCMC full scale or subscales would be positively correlated with satisfaction with care, quality of care rating, and the future intention to seek delivery care in the same facility if she were to be pregnant again, according to the findings from available studies (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017; Afulani et al., 2018; Afulani, Phillips, Aborigo, & Moyer, 2019). In addition, it is expected that poor women and illiterate women would have a lower PCMC score, according to the previous study which found that the disadvantaged women were less likely to receive good quality of person-centered maternity care (Afulani, Sayi, & Montagu, 2018). Ideally, factors associated with PCMC should be included in the hypotheses based on the results of systematic reviews, but since there are no systematic reviews in this area yet, the hypotheses were formulated based on available previous studies. Correlation coefficients under 0.3, between 0.3 and 0.6 and over 0.6, were considered low, moderate and high, respectively (Andresen, 2000). When at least 75% of the result are in correspondence with hypothesis, this suggests good construct validity.

(5) Cross-cultural validity

Cross-cultural validity refers to “the degree to which the performance of the items on a translated or culturally adapted HR-PRO instrument are an adequate reflection of the performance of the items of the original version of the HR-PRO instrument” (Mokkink et al., 2010). In this study, cross-cultural validity is assessed according to cultural translation and adaptation process using team translation, expert reviews, and cognitive interviewing in phase 1.

Result

A total of 300 postpartum Cambodian women were interviewed from April to August 2021. **Table 8** shows the demographic characteristics of respondents. The mean age of the women was about 29 years (range of 18 to 46) with the mean parity of 2.26 (range of 1 to 8 children). Almost all of the women were married (99.3%) and Buddhist (97.3%). About half (48.5%) of women had less than primary education, and 69.1% had some difficulty in reading the Khmer language or were illiterate; 6.6% were certified as the poorest to be exempt from paying medical expenses; and 41.5% of the sample resided in provinces, indicating that the rural population also utilized the urban hospital in Phnom Penh. The postpartum length for women interviewed was between one and seven days. **Table 9** shows the original three domains and 31 questions of PCMC scale, and comparison of disposition in Cambodia, Kenya, India and short version.

Data quality

All data were normally distributed. There was no missing data. While seven items (#7,21,22,23,29,30,31) were of a particularly high mean (+1SD) of greater than 2.9 in upper limit of 3, we retained all items at this stage. Considering item distribution and theoretical importance, the translation of “call you by your name (#3)” and “feeling (psychological) (#14)” were retained to factor analysis.

Score distribution

The mean Kh-PCMC scores on the full scale and subscales are shown in **Table 10**. The mean Kh-PCMC full score for the sample based on the sum of the original 30 items was 69.52 (SD=9.47) with a range of 48 to 89 (where 0 is the worst score and 90 is the best score). The means Kh-PCMC sub-scale scores for the sample were 16.01 (SD=1.53) with a range

of 8 to 18, 15.43 (SD=3.92) with a range of 6 to 24, and 36.26 (SD=4.38) with a range of 24 to 44, dignity and respect, communication and autonomy, and supportive care, respectively. The distributions of items are shown in **Supplementary Table 2**.

Psychometric properties

(1) Content validity

Content Validity Index (CVI) evaluation of the 31 items by eight content experts is presented in **Table 11**. From the expert review, the S-CVI/Avg (scale-level content validity index, average) was 0.96 and the S-CVI/UA (scale-level content validity index, universal agreement) was 0.74 with a total item agreement of 23 of 31 items (7 items at 0.87, and 1 item at 0.75). Overall evaluation for the quality of content validity is presented in **Table 12-14**, suggesting good content validity.

(2) Structural validity

Kaiser–Meyer–Oklin values of 0.83 and the Bartlett's test of sphericity (Chi-squared value = 3484.092 and df 465, $p < 0.001$) indicated that the overall variables were satisfactory for factor analysis.

The initial exploratory factor analysis using principal factor with 31 items yielded ten factors with one dominant factor with eigenvalues of greater than one, (7.22, 2.284, 2.077, 1.75, 1.624,) respectively, accounting for 66.83% of the total variance. Because the original PCMC scale has a three-factor structure, the second exploratory factor analysis was performed using principal factor and Promax rotation assuming a three-factor structure. The second exploratory factor analysis with 31 items yielded three factors including one dominant factor, 17 items loaded on the first factor, 11 on the second factor, and three on the third factor. If we used a cut-off of 0.3, 11 items would be eliminated, leaving 20 items. While if we used a cut-off of 0.1, two items would be eliminated, leaving 29 items (**Table**

15).

Another round of exploratory factor analysis using principal factor and Promax rotation with both 20 items and 29 items were performed. The comparison of rotated factor loading between 20 items and 29 items are presented in **Table 16 and 17**, respectively, and as a scree plot in **Figure 12**. There was significant positive correlation between the first factor and the second factor for both 20 items (r=0.56) and 29 items (r=0.58). There was no significant correlation between the first factor and the third factor, and the second factor and the third factor. When we compare the scree plot, the "break" in the scree plot for 20 items after exploratory factor analysis showed more steeper between the third factor and the fourth factor (**Figure 12**), indicating that a three-factor structure would be an appropriate and data-driven solution. The scree plot for the 29 items after exploratory factor analysis yielded one dominant domain and did not show a clear three-factor solution.

The items and data were carefully analyzed, and the decision was made to eliminate 11 items with cut-off of 0.3 using a data-driven approach (**Table 18**). These were "2. introduce themselves", "7. record confidentiality", "9. consent to procedures", "21. verbal abuse", "22. physical abuse", "23. bribes", "26. trust", "28. clean", "29. water", "30. electricity", and "31. safe". The decision was made based on the following reasons: (1) all items had low factor loadings of less than 0.3; (2) item #7, 21, 22, 23, 29, 30, and 31 had particularly high mean (+1SD) greater than 2.9 in an upper limit of 3; (3) item #2 had low I-CVI (0.75); (4) items #28, 29, 30, and 31 are theoretically classified into health facility environmental dimension of quality of care, not experience of care dimension.

Exploratory factor analysis of 20 items yielded three factors, 12 items loaded on the first factor, six items on the second factor, and two items on the third factor (**Table 16**). The three factors were named in line with the original domains: dignity and respect, communication and autonomy, and supportive care, respectively. However, the items loading on each of the three factors did not represent clear conceptual domains, because the factors

extracted included a mix of items from each of the original domains. For example, the first factor included “11. language”, “13. call by name”, “16. able to ask questions”, which conceptually should have loaded on the second factor, and “14. talk about feeling”, “19. attention when needed help”, “20. control pain”, which conceptually should have loaded on the third factor.

We, therefore, regrouped the retained items into three conceptual domains drawn from the “experience of care” dimension of the WHO Quality of Care Framework. However, some items loaded negatively on the theoretically derived domain and positively on the data-driven domain. The original three-factor structure was not reproduced from Cambodian data. Instead, the distribution of the items, cultural rationale, and the judgment from the tool developer was considered. We consulted with Dr. Afulani, the tool developer, about our results and received approval to use data-driven 20 items for the Cambodia validation.

We also tested our final factor structure of four patterns of 20 and 29 items derived from data after exploratory factor analysis and theory to that obtained in the Kenyan validation with confirmatory factor analysis. However, all four patterns did not meet the criteria for accepted goodness fit index (**Table 19**).

(3) Internal consistency

The 20-item Kh-PCMC scale has a Cronbach’s alpha of 0.86, suggesting good internal consistency. Cronbach’s alphas of the three subscales: dignity and respect, communication and autonomy, and supportive care were 0.85, 0.76, and 0.91, respectively (**Table 20**).

(4) Hypotheses testing for construct validity

Eight of ten predefined hypotheses were confirmed (80%) by the positive correlations between the 20-item Kh-PCMC scale score and available reference scales and selected characteristics, suggesting good construct validity. The 20-item Kh-PCMC full scale score

was significantly related to satisfaction with care and quality of care rating ($p < .001$). The association trend showed little positive correlation (r = 0.249), and moderate positive correlation (r = 0.593), respectively, in the total sample of 300 participants (**Table 21**).

(5) Cross-cultural validity

The preliminary work for cultural translation and adaptation supported acceptable cross-cultural validity.

The overall measurement properties of the 20-item Kh-PCMC scale were evaluated based on updated COSMIN criteria for good measurement properties (Mokkink et al., 2018a). The summary results are shown in **Table 22**. Lists of Reliability and Validity assessed in Phase 2 are presented in **Table 23**. The summary of the 20-item Kh-PCMC is presented in **Table 24**.

Discussion

Summary result

The present study provided evidence that the 20-item Kh-PCMC scale is a valid and reliable instrument to measure women's experience of received maternity care among Cambodian postpartum women in facility settings.

The preliminary work towards the development of this scale including cognitive interviewing and expert review ensured good content validity and acceptable cross-cultural validity. The S-CVI/Avg of 0.96 also showed high content validity.

The psychometric analysis yielded a 20-item scale in Cambodia, derived from the validated instrument in Kenya (30-item) and India (27-item). The three-factor solution that emerged from exploratory factor analysis is consistent with the Kenyan version (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017) and Indian version (Afulani et al., 2018), and represent the WHO Quality of Care Framework as subscales of: "dignity and respect," "communication and autonomy," and "supportive care", which support the structural validity of the 20-item Kh-PCMC scale.

The 20-item Kh-PCMC scale has high internal consistency reliability with a Cronbach's alpha of 0.86 for the full scale and 0.76-0.91 for the subscales. Similar results were found with the Kenyan version, namely, high internal consistency reliability with a Cronbach's alpha of 0.88 for a rural sample, 0.83 for an urban sample, and 0.86 for a combined sample (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017), and in Indian version which had a Cronbach's alpha of 0.85 (Afulani et al., 2018).

In turn, hypothesis testing for construct validity found correlations between the 20-item Kh-PCMC scale and reference measures, showed acceptable construct validity within this field where gold standards are not available. This is consistent with the Kenyan version which showed that a higher PCMC score was associated with increasing satisfaction with

care and rating of quality of care (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017).

The 20-item Kh-PCMC scale with a four-point frequency response ranging from 0 to 4 ("0 = No, never", "1 = Yes, a few times", "2 = Yes, most of the time", "3 = Yes, all the time") was proposed to measure three domains of the "experience of care" dimension of the WHO Quality of Care framework: dignity and respect (12 items), communication and autonomy (6 items), and supportive care (2 items). The item ratings were aggregated to scale scores by summing each item. The total possible score ranged from 0 to 60, with higher scores representing better person-centered maternity care.

Overall, according to COSMIN standards and criteria of quality of measurement properties, the 20-item Kh-PCMC scale was supported to be a valid and reliable measure Cambodian women's experiences of received care during childbirth in facility settings.

Factor interpretation

Due to the potential cultural and social differences, it is necessary to validate the PCMC scale in a different context. Nineteen of 30 items were common across Kenya (Africa), India (South Asia), and Cambodia (Southeast Asia), which enable meaningful international comparisons among very different settings. Our exploration found the items loaded on each subscale differed from the original version, while the overall PCMC concept remained similar. For example, the first factor (dignity and respect) included "3. call by name", "10. delivery position choice", "11. language", and "16. able to ask questions", which conceptually should have loaded on the second factor (communication and autonomy), and "14. talk about feelings", "19. attention when needed help", and "20. control pain", which conceptually should have loaded on the third factor (supportive care). Our finding suggested that differing local contexts and cultures influenced the women's experience of received care, hence influencing item loading.

There are four potential explanations for the difference in item location.

First, it is probably attributable to the overarching themes of the PCMC that produce meaningful interactions between the subscales. Our finding showed a significant positive correlation between the subscales of "dignity and respect" and "communication and autonomy" (r=0.51). This is consistent with the original version in which the subscales were shown to be strongly correlated with each other, with correlation coefficients (r) ranging from 0.53 to 0.63, and with the main scale (r=0.75, 0.86, and 0.9 for dignity and respect, communication and autonomy, and supportive care, respectively) (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). The original PCMC scale was developed as a theory-based practical tool that can be easily administered in various contexts (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). A recent study proposed a unidimensional 13-items PCMC short scale using a data-driven approach that could be applied to multiple settings (Afulani, Feeser et al., 2019). Thus, there may be flexibility of which items fits which subscales according to the context.

Second, the difference in item location could be explained by contextual difference. This is supported by the previous validation studies which showed that the factor loading was different between urban and rural populations within Kenya (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017), and the factor loading from Indian data was also different from the conceptual domains (Afulani et al., 2018). Because the total number of participants were 1,407 in Kenya (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017), and 2,018 in India (Afulani et al., 2018), the difference was not due to sampling issues. Rather, the factor structure may differ across different contexts and different sub-populations. In that sense, our findings reflected local reality where the concept of person-centered maternity care was not yet familiar and not commonly practiced (Matsumoto, Fukushima, Takahashi, Oishi & Egami, 2015; Oung, personal communication, 3 Mar 2021). The original PCMC scale consists of three conceptual domains, however, there may not have clear differences among "dignity and respect," "community and autonomy," and "supportive care" for our

respondents under the current situation in Cambodia. Out result suggested that the types of care offered in Cambodia differ from those offered in other settings. For example, for item "#14. talk about feeling", our result showed only 26.2% of women were always asked about emotional feelings while 76.4 % of women were always asked about physical condition, suggesting poor emotional care from medical staff. As the progress of labor is well known to be influenced by psychological aspects (Olza et al., 2018; Striebich, Mattern, & Ayerle, 2018), Cambodian women may seek emotional care from their families rather than medical staff. For item "#3. call by name", our result found that 42.2% of women felt they were called appropriately while 75.7 % were not always called by their name, suggesting a culturally appropriate way of calling is important. For item "#10 delivery position choice", our results found 47.5% of women felt they were able to assume their favorite free position while 96% of women had vaginal delivery in the supine position, suggesting that they had no question about giving birth in the supine position. These differences in local or cultural context could influence the shifting of items across the subscales.

Third, another potential reason lies in the language issue related to the equivalence of translation. The PCMC scale was validated in Kenya and India, where English is one of the official languages and the interviews were conducted in English, Swahili, and Luo in Kenya, in Hindi in India, respectively. On the other hand, in Cambodia, the official language and interview language were in Khmer. The limited vocabulary of the Khmer language and the issue that English is not commonly used in the country may have influenced the limited nuanced translation from English into Khmer. This is consistent with a recent study from Cambodia in which the translation from English to Khmer was a big challenge due to unfamiliarity with nuanced technical jargon in the cultural and linguistic settings (Matsuoka, Fujita, Koto-Shimada, & Zwi, 2021). This is also consistent with other studies that have shown how terms can be influenced by culture and render translations conceptually different (Balqis-Ali et al., 2021; Bing-Jonsson et al., 2018). The language barrier is one of the

limitations of any cross-cultural study.

Fourth, as we have already discussed in the methodological challenge in phase 1, comprehension errors among Cambodian postpartum women may have affected the quality of data. Thus, the obtained data from the respondents may have influenced the results of factor analysis.

Another justification is needed whether the third factor (supportive care) holds as a factor, because there were only two items that consist of the third factor. This can be justified by cultural importance. In Cambodia, the cultural values based on the mixture of Animism, Hinduism, and Buddhism are strongly reflected in the perspectives and behaviors of women during maternity (Yamazaki, 2018). Cambodian people normally believe in "karma", defined as "the force generated by a person's actions held in Hinduism and Buddhism to perpetuate transmigration and in its ethical consequences to determine the nature of the person's next existence" (retrieved from Merriam-Webster dictionary). The items included in the first-factor (dignity and respect) may reflect items in which women felt the medical staff did something good to/for them. In the Cambodian context, this was probably attributed to karma, as it is also considered as good karma to let the others do good deeds. This is empirically supported by the JICA project (2010-2015) when introducing the new concept of midwifery care, Cambodian medical staff incorporated the concept in connection with the heart of mercy (Matsumoto et al., 2015). Two items of labor companion and delivery companion that loaded on the third factor (supportive care) were both related to family presence. Our result agrees with a previous report which found that family-like care was a reasonable way for Cambodian medical staff to understand the concept of person-centered maternity care (Japan International Cooperation Agency, 2019). Cambodian people attach great importance to the family which is reflective of its collectivistic culture (Ang, 2007). This is consistent with the evidence from Nigeria and Uganda where women "desired midwives who acted as "mums" to them, who warmly received them, and who provided

reassurance and encouragement to give birth well" (Bohren et al., 2017). Further, our result is consistent with a unique Cambodian contextual feature that nursing tasks are shared among doctors, nurses, and patient families. Many non-invasive nursing cares including bedside hygiene, bathing, and changing sanitary napkins, were normally provided by the patient family (Sakurai-Doi et al., 2014). Cambodian women are more likely to seek emotional support and reassurance to their family. Therefore, even though it only consisted of two items, the third factor was retained as a factor that reflects a context where family support is important.

Item interpretation

Health facility environment

The four items related to the health facility environment (clean, water, electricity, and safe) did not load well and were eliminated from the 20-item Kh-PCMC scale, which was included in the "supportive care" sub-scale in the Kenyan validation. This is consistent with previous PCMC validation studies in which three items related to the health facility environment (water, electricity, and crowding) were removed from the version in India (Afulani et al., 2018) and also from the 13-item short scale due to poor factor loading (Afulani, Feeser et al., 2019). In the original PCMC scale, items related to the health facility environment were retained because they are conceptually and empirically important aspects of person-centered care (Benova, Cumming, & Campbell, 2014; Shakibazadeh et al., 2018), and because the independent health facility environment subscale had low reliability (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). On the contrary, the health facility environment is theoretically an independent dimension besides the "experience of care" within the WHO Quality of Care Framework (Tuncalp et al., 2015). Thus, the poor loading of items related to the health facility environment may be attributable to the theoretical background. The facility environment is a foundational requirement in care settings.

Abuse

Two items related to disrespect and abuse (verbal abuse and physical abuse) did not load well and were eliminated from the 20-item Kh-PCMC scale, which were included in "dignity and respect" sub-scale in the Kenyan validation. In Kenya, the item physical abuse had poor loading but was retained due to conceptual and empirical significance (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). The poor loadings of items related to abuse were likely due to the low prevalence of verbal and physical abuse in Cambodia. Comparing to other available studies, the percentage of verbal abuse was 4% and that of physical abuse was 3% in Cambodia, 10 % and 4% in rural Kenya, 18 % and 1% in urban Kenya, 13 % and 4% in Ghana, and 19 % and 3% in India, respectively (Afulani, Phillips et al., 2019).

Worldwide, there have been rising reports of disrespect and abuse in maternity care in institutional settings (Bowser & Hill, 2010; Bohren et al., 2014; Bohren, 2015), hence eliminating disrespect and abuse during the childbirth is an urgent problem (World Health Organization, 2014). Previous research has shown that self-reported measures were likely to underreport instances of disrespect and abuse during childbirth compared to direct observation, because it becomes internalized and normalized for both care provider and care receiver (Freedman et al., 2018). Thus, direct observation may be a more effective way to investigate the reality of disrespect and abuse.

Another explanation may be due to Cambodian people's religious praxis where abuse is considered as being bad karma which should avoided in order to achieve good luck in the next life. The 20-item Kh- PCMC scale does not capture extreme forms of the poor PCMC (verbal and physical abuse) but it is culturally appropriate for use in Cambodia. This is in good harmony with the 13-item short PCMC scale that captures the positive dimension of PCMC and can be applied across multiple settings (Afulani, Feeser et al., 2019).

Limitations and strengths

There are several limitations in the present study.

First, the sample was not, perhaps, generalizable to all Cambodia, though our study included samples from 11 residence provinces of the 25 provinces in Cambodia. Future studies should aim to include samples from all regions and all levels of health facilities and private clinics.

Second, limited resources may have influenced quality of data. Although our translators, expert panels, and enumerators were not experienced professionals, we did our utmost to proceed with the study within the limited available resources and under COVID-19 restrictions.

Third, social desirability bias is a concern as the interviews were conducted in the maternity ward before discharge by the hospital staff at the urban hospital. Previous studies suggested that women were less likely to report negative experiences inside health facilities (Kruk et al., 2018; Wassihun et al., 2018). In addition, other research suggested that women were more likely to report their experiences positively when interviewed earlier postpartum with the joy of having just delivered a baby (Sando et al., 2017; Savage & Castro, 2017). The mean postpartum length of our respondents was 2.5 days, which is similar to within 48 hours in the study from India, but shorter than the within nine weeks period used in the study from rural Kenya, within one week in urban Kenya, and within eight weeks in the Ghanaian study (Afulani, Phillips et al., 2019). On the contrary, another study suggests that two to seven days of health facility stay were associated with a significantly decreased PCMC score, due to increasing the probability of experiencing poor person-centered care during the stay (Dagnaw, Tiruneh, Azanaw, Desale, & Engdaw, 2020). In this sense, the PCMC score found in this study is likely to overestimate actual levels.

Fourth, similar to previous studies (Guillemin et al., 1993; Beaton, Bombardier, Guillemin, & Ferraz, 2000), balancing content validity and maintaining linguistic and

statistical accuracy was a big challenge. The content validity is the single most important psychometric property of the questionnaire (Mokkink et al., 2018a). Only when there is good content validity, can the questionnaire can be considered successful, and the rest of the psychometric properties become useful (Terwee et al., 2007). In the present study, the content validity of the Kh-PCMC scale was assured by literature review, expert review, cognitive interviewing, and CVI. However, we were concerned about eliminating items that matter to Cambodian women during childbirth. The present study used a cut-off of 0.3 (Tinsley & Brown, 2000) for a more data-driven approach, while the validation in Kenya and India used conservative and inclusive decisions, and a relaxed cut-off of 0.1 to retain items (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017; Afulani, 2018). In addition, without qualitative research for an item generation stage, it is possible that we have neglected some aspects of what matters to Cambodian women during childbirth. Future qualitative research will be meaningful to capture comprehensive PCMC for the Cambodian population.

Despite these limitations, there are notable strengths of the present study. First of all, to the best of our knowledge, this is the first reliable and valid instrument to quantitatively measure women's experience of received care during childbirth in Cambodia. Since we have an assumption that potential cultural and social differences may influence the conceptualization of person-centered maternity care, the notable strength of the present study is to emphasize cultural context, language, and local practices for use in Cambodia.

Second, the recent qualitative evidence synthesis suggested that what matters to women during childbirth were consistent across many settings, albeit that the evidence to support this claim thus far has come from only one continent of the world (Africa) (Downe et al., 2018). The previous validation studies of the PCMC scale also called for further validation in additional settings including Southeast Asian populations with a data-driven approach (Afulani, Feeser et al., 2019). Therefore, we believe this is the first significant response from Cambodia using such a data-driven approach.

Third, developing the global standard to measure person-centered maternity care is an urgent priority in this area (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017) and, the present study contributed to additional validation of the PCMC scale in the Asian context to facilitate meaningful international comparison.

Finally, the present study made a very important contribution to the pioneering online methodology of cross-cultural nursing research in low and middle-income countries. This study opened the possibility of online data collection, as we made it possible to conduct online interviews even in rural Cambodia. Considering our experience of the COVID-19 pandemic, it is highly likely that data collection using online technology will be more and more mainstream in the future. The findings and experiences of the online interview are summarized in the Appendix 9. Although we cannot compare our findings to previous studies (because there is no available data from before COVID-19 pandemic), it seemed there was no significant impact on the outcomes of the present study because the family were allowed to stay with the respondents, which was the same as before the pandemic. However, without direct observation and field study, the actual situation of the data collection cannot be fully understood.

Chapter summary

In conclusion, in the present study, the 20-item Kh-PCMC scale was developed and psychometric validation was conducted. The findings from psychometric analysis supported acceptable content validity, acceptable construct validity and high internal consistency reliability of the 20-item Kh-PCMC scale to measure women's experience of receiving maternity care among Cambodian postpartum women in facility settings. Our study validated an existing PCMC scale in a new context and found significant overlap in item level across three very different contexts. The differences across settings highlighted the need for careful consideration of cultural context as well as attention to cross-cultural

translation and adaptation. The original 30-items PCMC scale included all theoretically related items that cover comprehensive constructs, while the 20-item Kh-PCMC scale presented a more practical and locally validated alternative in good accord with the 13-item short PCMC scale. Our result suggests a significant implication for further validation studies in other countries that the short PCMC scale may be more feasible to use multiple settings.

CHAPTER VI: OVERALL CONCLUSION

In summary, in the present study, the 20-item Kh-PCMC scale was developed and validated. The translation and pretesting process in Phase 1 was optimized to achieve acceptable conceptual and semantic equivalence between the original PCMC scale and the 20-item Kh-PCMC scale. In addition, by conducting qualitative research using the cognitive interviewing method, we were able to gain a deeper understanding of the underlying Cambodian cultural context of why measurement errors occur in structured questionnaire surveys and why postpartum women respond as they do to questions. The cultural adaptation process in Phase 1 made it possible to interpret the quantitative data in Phase 2 from the cultural context and ensure the cross-cultural validity of the 20-item Kh-PCMC scale. The findings from the psychometric analysis in Phase 2 supported acceptable content validity, acceptable construct validity, and high internal consistency reliability of the 20-item Kh-PCMC scale.

Recommendation

There are two potential limitations and future recommendations of the present study.

Firstly, our result in Phase 1 showed a significant gap between Western-based notions of global importance and Asian local reality and the discordance between expert perspectives and respondents' cognitions. We described the difficulties of conducting structured questionnaire surveys with postpartum women in Cambodia at present. This is one of the limitations of the present study; however, it does provide a significant insight that it is important to look at quantitative data in Phase 2 with recognition of these gaps. We believe patient-reported measures are crucial for the reliable measurement of patient-centered care because only the patient knows whether they received the level of information desired, communication was appropriate and understandable, and care was responsive to their values

and needs (Tzelepis et al., 2015). To ensure the quality of data, it is important to not be fully dependent on women's self-reports, but to triangulate the data with combined direct observation and fieldwork. This will help us to understand how Cambodian women experience maternity care during childbirth, especially in situations where the women have limitations to answering the structured questionnaires. The findings from the present study will be important baseline data for Cambodia because numeric indicators are mainstream in the area of global health.

Second, since the exploratory qualitative study is out of the scope of the present study, a potential limitation of this study is that we did not extract and add what PCMC is specific to Cambodia but deducted from the existing 31-item pool. Further exploratory qualitative study is required to understand what PCMC means to Cambodian women and develop a Cambodian specific PCMC scale in the future. To our knowledge, Cambodian people attach great importance to the family as part of its collectivistic culture (Ang, 2007). The value of family is not only the physical presence but warmth, intimacy, and emotional interpersonal interaction that family can bring. Because item #4 "Did the medical staff at the facility treat you with respect?", was difficult for our respondents, family-based language rather than focusing on the concept of "respect" might be better suited for the in Cambodian context; for example, "Did you feel the medical staff treated you as if they were your mother?" or "Did you feel the medical staff talk to you as if they were your family?" could be alternative translations for the Kh-PCMC scale based on the cultural context specific to Cambodian. In addition, though we named the third factor "supportive care" in line with the original theoretical domain, "family-like care" might be more appropriate in the Cambodian cultural context.

The latest WHO guideline on intrapartum care was based on evidence mainly gathered from African counties (Downe et al., 2018). This suggests that what is touted as "global importance" is in fact not really representative of the whole world. Since there is limited

intrapartum care research from South-East Asian countries, evidence from Cambodia, which reflects Buddhist values, will contribute to deepening our understanding and the potential modification of global importance and framework. What we call “global importance” should be based on scientific evidence from all over the world.

Implications for Nursing

There are three significant clinical implications from this study for nursing in Cambodia.

Firstly, comprehensive care provision is important to improve the quality of care in Cambodia. Our finding showed a significant positive correlation between the subscales of “dignity and respect” and “communication and autonomy” (r=0.51), suggesting these two constructs were overlapping. This is consistent with the original PCMC scale in which the subscales were strongly correlated with each other, with correlation coefficients (r) ranging from 0.53 to 0.63, and with the main scale (r=0.75, 0.86, and 0.9 for dignity and respect, communication and autonomy, and supportive care, respectively) (Afulani, Diamond-Smith, Golub, & Sudhinaraset, 2017). A recent study proposed a unidimensional 13-items PCMC short-scale using a data-driven approach that could be applied to multiple settings (Afulani, Feeser, et al., 2019). These results suggest that provision of specific items (maternity care) may not ensure quality improvement but comprehensive care provision is required due to the diversity and individuality of the subjects.

Secondly, the 20-item Kh-PCMC scale, which is compatible with the 13-item short version, is considered more feasible in terms of cost-effectiveness and burden to respondents for use in Cambodia and other low- and middle-income countries. Considering the low literacy rate of the study participants, we needed to conduct face-to-face interviews with additional explanations when we used the Kh-PCMC scale. Our respondents were cooperative with the interview, but some families complained that it was too long for early

postpartum women. Cost-effectiveness and low burden for the respondents need to be considered in conducting research using scales (Behling & Law, 2000).

Thirdly, nursing education needs to be strengthened by incorporating the PCMC concept and practice. This is consistent with the research implication from Ghana that the components of PCMC should be incorporated into pre-service and in-service medical education (Afulani et al., 2019). Also, the recent mixed-method study from Kenya suggested the need for care provider training on person-centered care approaches focused on patient-provider interpersonal relationships because there is high discordance between women and providers' perspectives in regards to person-centered maternity care experience (Sudhinaraset, Giessler, Golub, & Afulani, 2019).

In Cambodia, understanding the concept of person-centered maternity care may have been difficult for disadvantaged women and even for some medical staff. Where nurses and midwives themselves have never experienced being cared for (i.e., personal experience of person-centered maternity care) and where there was no role model, they might not know how to provide good care because they have not experienced or seen it practiced properly. Because the concept of person-centered maternity care is not included in the current curriculum of formal pre-service and in-service nursing education in Cambodia, the first step is for nurses and midwives to become familiar with the concept of person-centered maternity care. To achieve this, it is important that person-centered maternity care is incorporated into nursing education as a concept that is compatible with the Buddhist values that exist in the daily lives of Cambodian people, rather than it being touted as a Western concept of care brought from the outside. This is empirically supported by the JICA project (2010-2015) where introducing the new concept of midwifery care, Cambodian medical staff incorporated the concept in connection with the Buddhist teaching of the heart of mercy (Matsumoto et al., 2015). In addition, family-like care was a reasonable way for Cambodian medical staff to understand the concept of person-centered maternity care (Japan

International Cooperation Agency, 2019). Participatory training including role-playing, the direct observation of good practices and role models, and hands-on training made providers' behavior and attitude experience a "good change" in Cambodia, Brazil, and other countries (Japan International Cooperation Agency, 2019). This is consistent with a previous study that showed the effectiveness of PCMC simulation training for health providers in Ghana (Afulani et al., 2019). Midwives could gain a deeper understanding of what PCMC is and put it into actual care practice for clients, through actual experiences of being cared for as a childbearing woman, or mock experiences such as role-playing and simulation training, or observation experiences of person-centered maternity care. Good person-centered maternity care practice by midwives should lead to a positive influence for Cambodian mothers.

In addition, the biggest success factor that made it possible to carry out this study was the presence of core trainers who deeply understood the value of person-centered maternity care through the previous JICA project (2010-2015). They have promoted person-centered maternity care to other midwives in the hospital and taught it to midwifery students as a role-model after the JICA project. They also valued the significance of the present study and had strong commitment and kindly supported proceeding with the data collection from the Cambodian side despite the restrictions of the COVID-19 pandemic. Fostering such prominent health personnel is important both for promoting nursing research in this area and for improving the quality of clinical nursing care in Cambodia.

Future use of Kh-PCMC scales

The present study provides an effective tool, the 20-item Kh-PCMC scale, to quantitatively measure women's childbirth experiences to understand an overview of the quality of intrapartum care, and to identify the needs from women's perspective for quality improvement in Cambodia. In addition, the 20-item Kh-PCMC scale will facilitate further research in Cambodia to allow comparisons across settings and time, statistical analysis to

examine the determinants and health outcomes of care during childbirth, and routine monitoring and evaluation of interventions and projects based on the WHO recommendation on intrapartum care for a positive childbirth experience (WHO, 2018). It could provide visible and variable data for policymakers and practitioners to take action for quality improvement.

The present study makes an important contribution to taking into account Cambodian women's voices, preferences, and values, which is fundamental to enhancing person-centered maternity care in Cambodia. However, because culture is not static or identical across regions, but changes over time and place, further study is needed to refine the 20-item PCMC scale to reflect the changes and perhaps formulate additional items specific to the Cambodian cultural context. Continuous effort should be taken to finetune the instrument over time to meet the changing need of Cambodian women.

ACKNOWLEDGEMENTS

First of all, I would like to express my gratitude to Prof. Asako Katsumata Takekuma, my academic advisor in the Graduate School of Comprehensive Human Sciences at University of Tsukuba, for guiding and encouraging me in essential points. I would like to express my gratitude to Dr. Togoobaatar Ganchimeg, my assistant academic advisor, to supervise and critique especially on method of quantitative study. I would like to express my special gratitude to Dr. Rieko Fukuzawa, my assistant academic advisor. She opened me to join this academic journey in Tsukuba and guided me entire process from conceptualization to writing thesis. Her kind, patient and generous supports and insightful academic knowledge always inspired me.

I would like to express my appreciation to my committee members, Prof. Tokie Anme, my committee chair, and Dr. Tomoko Omiya and Dr. Yuki Kanazawa, committee members, for sharing time to my examination and giving supportive and precious comments for improvement. I am very grateful that Prof. Hisao Sekine, who was my academic advisor when I was an undergraduate and has witnessed my progress for 20 years, could join the final thesis defense. The perspective of anthropology that I learned from Prof. Sekine has become the foundation of my basic attitude toward developing countries. I will continue to work on the insightful comments I received on my doctoral thesis.

I am very grateful to Dr. Patience A. Afulani, the tool developer in University of California San Francisco, to allow me to develop the Cambodian version of PCMC scale and provided me the PCMC scale guide, important suggestions and feedbacks to work on validation in Cambodia.

I would like to acknowledge Mr. Yoshiki Abe, an assistant professor in Faculty of Medicine at University of Tsukuba, and Mr. Masataka Tano, a doctoral fellow, for their consultation on factor analysis.

This study could not be achieved without strong support by Cambodian colleagues, friends, and assistants in Cambodia. Especially, I would like to send sincere appreciation to Cambodian postpartum women participated in this study. Warm thanks to them as they kindly accepted me and share their important childbirth experiences during a hard time just after delivery.

I would like to express my appreciation to Dr. Kim Rattana, Director of National Maternal and Child Health Center (NMCHC), to accept me to conduct my doctoral dissertation study at NMCHC and issue supporting letters; Ms.Chea Ath, director of midwife at NMCHC, and Ms.Oung Lida, chief midwife of outpatient department at NMCHC, to coordinate necessary arrangements and provided me important advice. Special thanks to Ms. Chan Rattana, chief midwife at Ta Ches Health center in Kampong Chhnang province, to all her arrangements to kind supports. She is my role model and led me to be a midwife a decade ago. I was so happy to work with her in this project.

I acknowledge Dr. Cheang Kannitha, representative of maternal and child health WHO Cambodia office for sharing updated information in maternal and child health in Cambodia; Dr. Virya Koy, Vice director of Hospital Service Department of Ministry of Health Cambodia, for providing academic advice and sharing his dissertation data; Mr. Narin Choun for sharing updated statistical data in Cambodia.

I gratefully acknowledge my friends who supported translation, Ms. Komi Kaoru, Ms. Neang Munin, Ms. Pin Chankea, Ms. Lak Chankunthy, and Mr. Yoshino Minoru. I was very much supported by their insightful knowledge and experiences in Cambodia. I am thankful to enumerators (DM, LL, SS, UP) and midwifery students to support interviews at health facilities during COVID-19. I was supported by their hard works and commitments.

Special thanks to Mr. Long Bunthoeurn, a previous colleague and my special coordinator, to coordinate all the difficult things on site and responsible all the administrative work in Cambodia.

This work was supported by a grant-in-aid of the “YAMAJI FUMIKO NURSING RESEARCH FUND” and Ogura Kazuharu scholarship from Japanese Nursing Association.

Finally, my deepest appreciation is to Mr. Takeshi Naito, my husband, for all his help and love. I also thank to our baby in my belly for working so hard with me. Our new journey will start.

Cited Literature

Afulani, P. A., Aborigo, R. A., Walker, D., Moyer, C. A., Cohen, S., & Williams, J. (2019). Can an integrated obstetric emergency simulation training improve respectful maternity care? results from a pilot study in Ghana. Birth (Berkeley, Calif.), 46(3), 523-532. doi:10.1111/birt.12418 [doi]

Afulani, P. A., Buback, L., McNally, B., Mbuyita, S., Mwanyika-Sando, M., & Peca, E. (2020). A rapid review of available evidence to inform indicators for routine monitoring and evaluation of respectful maternity care. Global Health, Science and Practice, 8(1), 125-135. doi:10.9745/GHSP-D-19-00323 [doi]

Afulani, P. A., Diamond-Smith, N., Golub, G., & Sudhinaraset, M. (2017). Development of a tool to measure person-centered maternity care in developing settings: Validation in a rural and urban kenyan population. *Reproductive Health, 14*(1), 118-017-0381-7. doi:10.1186/s12978-017-0381-7 [doi]

Afulani, P. A., Diamond-Smith, N., Phillips, B., Singhal, S., & Sudhinaraset, M. (2018). Validation of the person-centered maternity care scale in india. *Reproductive Health, 15*(1), 147-018-0591-7. doi:10.1186/s12978-018-0591-7 [doi]

Afulani, P. A., Feeser, K., Sudhinaraset, M., Aborigo, R., Montagu, D., & Chakraborty, N. (2019). Toward the development of a short multi-country person-centered maternity care scale. *International Journal of Gynecology and Obstetrics: The Official Organ of the International Federation of Gynecology and Obstetrics,* doi:10.1002/ijgo.12827 [doi]

Afulani, P.A., Kirumbi, L. & Lyndon, A. (2017). What makes or mars the facility-based childbirth experience: thematic analysis of women's childbirth experiences in western Kenya.

Reproductive health, 14 (1), 1-13.

Afulani, P. A., Phillips, B., Aborigo, R. A., & Moyer, C. A. (2019). Person-centered maternity care in low-income and middle-income countries: Analysis of data from Kenya, Ghana, and India. *The Lancet. Global Health, 7*(1), e96-e109. doi: S2214-109X (18)30403-0 [pii]

Afulani, P. A., Sayi, T. S., & Montagu, D. (2018). Predictors of person-centered maternity care: The role of socioeconomic status, empowerment, and facility type. *BMC Health Services Research, 18*(1), 360-018-3183-x. doi:10.1186/s12913-018-3183-x [doi]

Alkema, L., Chou, D., Hogan, D., Zhang, S., Moller, A. B., Gemmill, A., . . . United Nations Maternal Mortality Estimation Inter-Agency Group collaborators and technical advisory group. (2016). Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: A systematic analysis by the UN maternal mortality estimation inter-agency group. *Lancet (London, England), 387*(10017), 462-474. doi:10.1016/S0140-6736(15)00838-7 [doi]

Andresen, E. M. (2000). Criteria for assessing the tools of disability outcomes research. Archives of Physical Medicine and Rehabilitation, 81(12 Suppl 2), S15-20. doi:S0003-9993(00)22632-4 [pii]

Ang Choulean. (2007). *Cambodian rite of passage [អាំង ជូលាន ព្រាប ចាន់ម៉ារ៉ា ស៊ុន ចាន់ដឹប] (original in Khmer)*. Phnom Penh: (アング・チュリアン.吉野實訳. (2019).カンボジア人の通過儀礼.めこん.)

Annear, P. (2010). A comprehensive review of the literature on health equity funds in Cambodia 2001-2010 and annotated bibliography. *Health Policy and Health Finance Knowledge Hub Working Paper, 9*

Anthoine, E., Moret, L., Regnault, A., Sébille, V., & Hardouin, J. (2014). Sample size used to

validate a scale: A review of publications on newly-developed patient reported outcomes measures. *Health and Quality of Life Outcomes, 12*(1), 1-10.

Ayoubi, S., Pazandeh, F., Simbar, M., Moridi, M., Zare, E., & Potrata, B. (2020). A questionnaire to assess women's perception of respectful maternity care (WP-RMC): Development and psychometric properties. *Midwifery, 80*, 102573. doi: S0266-6138(19)30264-5 [pii]

Balqis-Ali, N. Z., Saw, P. S., Jailani, A. S., Fun, W. H., Mohd Saleh, N., Tengku Bahanuddin, T. P. Z., . . . Lee, S. W. H. (2021). Cross-cultural adaptation and exploratory factor analysis of the person-centred practice inventory - staff (PCPI-S) questionnaire among Malaysian primary healthcare providers. *BMC Health Services Research, 21*(1), 32-020-06012-9. doi:10.1186/s12913-020-06012-9 [doi]

Barbosa, M. D. S. R., Duarte, M. D. C. M. B., Bastos, V. C. S., & Andrade, L. B. (2018). Translation and cross-cultural adaptation of the cornell assessment of pediatric delirium scale for the Portuguese language. [Traducao e adaptacao transcultural da escala Cornell Assessment of Pediatric Delirium para lingua portuguesa] *Revista Brasileira De Terapia Intensiva, 30*(2), 195-200. doi: S0103-507X2018000200195 [pii]

Bazant, E. and Huang, J. (2013). Respectful Maternity Care: What to Measure and How to Measure It. Addis Ababa, Ethiopia. Retrieved from https://toolkits.knowledgesuccess.org/sites/default/files/figo_africa_rmc_measurement.pdf, accessed on 21 June 2021.

Beatty, P. C., & Willis, G. B. (2007). Research synthesis: The practice of cognitive interviewing. Public Opinion Quarterly, 71(2), 287-311.

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of

cross-cultural adaptation of self-report measures. *Spine, 25*(24), 3186-3191. doi:10.1097/00007632-200012150-00014 [doi]

Beck, I., Olsson Moller, U., Malmstrom, M., Klarare, A., Samuelsson, H., Lundh Hagelin, C., . . . Furst, C. J. (2017). Translation and cultural adaptation of the integrated palliative care outcome scale including cognitive interviewing with patients and staff. *BMC Palliative Care, 16*(1), 49-017-0232-x. doi:10.1186/s12904-017-0232-x [doi]

Begley, C., Sedlicka, N., & Daly, D. (2018). Respectful and disrespectful care in the czech republic: An online survey. *Reproductive Health, 15*(1), 198-018-0648-7. doi:10.1186/s12978-018-0648-7 [doi]

Behling, O., & Law, K. S. (2000). Translating questionnaires and other research instruments: Problems and solutions. Thousand Oaks, CA: Sage.

Benova, L., Cumming, O., & Campbell, O. M. (2014). Systematic review and meta-analysis: Association between water and sanitation environment and maternal mortality. *Tropical Medicine & International Health: TM & IH, 19*(4), 368-387. doi:10.1111/tmi.12275 [doi]

Bing-Jonsson, P. C., Slater, P., McCormack, B., & Fagerstrom, L. (2018). Norwegian translation, cultural adaption and testing of the person-centred practice inventory - staff (PCPI-S). *BMC Health Services Research, 18*(1), 555-018-3374-5. doi:10.1186/s12913-018-3374-5 [doi]

Bohren, M. A., Hofmeyr, G. J., Sakala, C., Fukuzawa, R. K., & Cuthbert, A. (2017). Continuous support for women during childbirth. The Cochrane Database of Systematic Reviews, 7, CD003766. doi:10.1002/14651858.CD003766.pub6 [doi]

Bohren, M. A., Hunter, E. C., Munthe-Kaas, H. M., Souza, J. P., Vogel, J. P., & Gulmezoglu, A. M. (2014). Facilitators and barriers to facility-based delivery in low- and middle-income

countries: A qualitative evidence synthesis. *Reproductive Health, 11*(1), 71-4755-11-71. doi:10.1186/1742-4755-11-71 [doi]

Bohren, M. A., Mehrtash, H., Fawole, B., Maung, T. M., Balde, M. D., Maya, E., . . . Tuncalp, O. (2019). How women are treated during facility-based childbirth in four countries: A cross-sectional study with labour observations and community-based surveys. *Lancet (London, England), 394*(10210), 1750-1763. doi: S0140-6736(19)31992-0 [pii]

Bohren, M. A., Titiloye, M. A., Kyaddondo, D., Hunter, E. C., Oladapo, O. T., Tuncalp, O., . . . Mugerwa, K. (2017). Defining quality of care during childbirth from the perspectives of Nigerian and Ugandan women: A qualitative study. *International Journal of Gynecology and Obstetrics: The Official Organ of the International Federation of Gynecology and Obstetrics, 139 Suppl 1*, 4-16. doi:10.1002/ijgo.12378 [doi]

Bohren MA, Vogel JP, Hunter EC, Lutsiv O, Makh SK, et al. (2015) The Mistreatment of Women during Childbirth in Health Facilities Globally: A Mixed-Methods Systematic Review. PLOS Medicine 12(6): e1001847. https://doi.org/10.1371/journal.pmed.1001847

Boomsma, A., & Hoogland, J. J. (2001). The robustness of LISREL modeling revisited. *Structural Equation Models: Present and Future.A Festschrift in Honor of Karl Jöreskog, 2*(3), 139-168.

Bowser, D., & Hill, K. (2010). Exploring evidence for disrespect and abuse in facility-based childbirth. *Boston: USAID-TRAction Project, Harvard School of Public Health,*

Brislin, R.W. (1973). Questionnaire wording and translation. In R.W.Brislin, W.J.Lonner, & R.M. Thorndike (Eds.), Cross-cultural research methods (pp.32-58).New York: John Wiley.

Brook, R. H., McGlynn, E. A., & Cleary, P. D. (1996). *Measuring Quality of Care,*

Cambridge Dictionary. (2021). Meaning of “feeling”. Retrieved from

https://dictionary.cambridge.org/ja/dictionary/english/feeling. Accessed on 20 May 2021.

Campbell, S. M., Roland, M. O., & Buetow, S. A. (2000). Defining quality of care. *Social Science & Medicine, 51*(11), 1611-1625.

Chhea, C., Warren, N., & Manderson, L. (2010). Health worker effectiveness and retention in rural Cambodia. Rural Remote Health. 10(3):1391.

Cohen, J. (2013). *Statistical power analysis for the behavioral sciences* Academic press.

Collins, D. (2003). Pretesting survey instruments: An overview of cognitive methods. *Quality of Life Research, 12*(3), 229-238.

COSMIN. (2021). COnsensus-based standards for the selection of health measurement INstruments− COSMIN [Internet]. Amsterdam. Retrieved from http://www.cosmin.nl. Accessed on 6 September 2021.

Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation, 10*(1), 7.

Damme, W. V., Leemput, L. V., Por, I., Hardeman, W., & Meessen, B. (2004). Out-of-pocket health expenditure and debt in poor households: Evidence from cambodia. Tropical Medicine & International Health, 9(2), 273-280.

Dagnaw, F. T., Tiruneh, S. A., Azanaw, M. M., Desale, A. T., & Engdaw, M. T. (2020). Determinants of person-centered maternity care at the selected health facilities of dessie town, northeastern, Ethiopia: Community-based cross-sectional study. *BMC Pregnancy and Childbirth, 20*(1), 524-020-03221-2. doi:10.1186/s12884-020-03221-2 [doi]

de Figueiredo Ferreira, M., de Souza Mezzavilla, R., Vasconcellos de Barros Vianna, G., Quaresma

Paolino, L., Serrao Lanzillotti, H., Lindsay, A. C., & Hasselmann, M. H. (2020). Cross-cultural adaptation of the brazilian portuguese version of the caregiver's feeding styles questionnaire. *International Journal of Environmental Research and Public Health, 17*(16), 10.3390/ijerph17165814. doi: E5814 [pii]

Dencker, A., Taft, C., Bergqvist, L., Lilja, H., & Berg, M. (2010). Childbirth experience questionnaire (CEQ): Development and evaluation of a multidimensional instrument. *BMC Pregnancy and Childbirth, 10*(1), 81.

DeVellis, R. F. (2016). *Scale development: Theory and applications* Sage publications.

Donabedian, A. (1966). Evaluating the quality of medical care. The Milbank Memorial Fund Quarterly, 44(3), 166-206.

Donabedian, A. (1988). The quality of care: How can it be assessed? Jama, 260(12), 1743-1748.

Downe, S., Finlayson, K., Oladapo, O., Bonet, M., & Gülmezoglu, A. M. (2018). What matters to women during childbirth: A systematic qualitative review. *PloS One, 13*(4), e0194906.

Ferrans, C. E. (2010). Advances in measuring quality-of-life outcomes in cancer care. *Seminars in Oncology Nursing, 26*(1), 2-11. doi: 10.1016/j.soncn.2009.11.002 [doi]

Freedman, L. P., Kujawski, S. A., Mbuyita, S., Kuwawenaruwa, A., Kruk, M. E., Ramsey, K., & Mbaruku, G. (2018). Eye of the beholder? observation versus self-report in the measurement of disrespect and abuse during facility-based childbirth. *Reproductive Health Matters, 26*(53), 107-122.

Fujita, N., Abe, K., Rotem, A., Tung, R., Keat, P., Robins, A., & Zwi, A. B. (2013). Addressing the human resources crisis: A case study of cambodia's efforts to reduce maternal mortality (1980-2012). *BMJ Open, 3*(5), 10.1136/bmjopen-2013-002685. doi:10.1136/bmjopen-2013-002685

[doi]

Fujita, N., Matsuoka, S., Koto-Shimada, K., Ikarashi, M., Hazarika, I., & Zwi, A. B. (2019). Regulation of nursing professionals in cambodia and vietnam: A review of the evolution and key influences. *Human Resources for Health, 17*(1), 48-019-0388-y. doi:10.1186/s12960-019-0388-y [doi]

Global Green Growth Institute. (2016). *Cambodia green urban development program Phase1*. (). Hanoi: International Center for Environmental Management.

Graham, W. J., & Varghese, B. (2012). Quality, quality, quality: Gaps in the continuum of care. *Lancet (London, England), 379*(9811), e5-6. doi:10.1016/S0140-6736(10)62267-2 [doi]

Guillemin, F., Bombardier, C., & Beaton, D. (1993). Cross-cultural adaptation of health-related quality of life measures: Literature review and proposed guidelines. *Journal of Clinical Epidemiology, 46*(12), 1417-1432. doi:0895-4356(93)90142-N [pii]

Gungor, I., & Beji, N. K. (2012). Development and psychometric testing of the scales for measuring maternal satisfaction in normal and caesarean birth. *Midwifery, 28*(3), 348-357.

Gupta, J. K., Sood, A., Hofmeyr, G. J., & Vogel, J. P. (2017). Position in the second stage of labour for women without epidural anaesthesia. *Cochrane Database of Systematic Reviews,* (5)

Hair, J., Anderson, R., Mehta, R., & Babin, B. (2008). *Sales management: Building customer relationships and partnerships* Nelson Education.

Harkness, J. A., Van de Vijver, F. J. R., & Johnson, T. P. (2003). Questionnaire design in comparative research. In J. A. Harkness, F. J. R. Van de Vijver, & P. Mohler (Eds.), Cross-cultural survey methods (pp. 19–34). Hoboken, NJ: Wiley.

Hinkin, T. R., Tracey, J. B., & Enz, C. A. (1997). Scale construction: Developing reliable and valid

measurement instruments. *Journal of Hospitality & Tourism Research, 21*(1), 100-120.

Huckle, J., & Wals, A. E. (2015). The UN decade of education for sustainable development: Business as usual in the end. *Environmental Education Research, 21*(3), 491-505.

Hui, C. H., & Triandis, H. C. (1985). Measurement in cross-cultural psychology: A review and comparison of strategies. *Journal of Cross-Cultural Psychology, 16*(2), 131-152.

Hulton, L., Matthews, Z., & Stones, R. W. (2000). A framework for the evaluation of quality of care in maternity services.

Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century.* (). Washington, DC: National Academy Press.

Ir, P., Horemans, D., Souk, N., & Van Damme, W. (2010). Using targeted vouchers and health equity funds to improve access to skilled birth attendants for poor women: A case study in three rural health districts in cambodia. *BMC Pregnancy and Childbirth, 10*(1), 1-11.

Ir, P., Korachais, C., Chheng, K., Horemans, D., Van Damme, W., & Meessen, B. (2015). Boosting facility deliveries with results-based financing: A mixed-methods evaluation of the government midwifery incentive scheme in cambodia. *BMC Pregnancy and Childbirth, 15*(1), 170.

Ith, P., Dawson, A., & Homer, C. (2012). Quality of maternity care practices of skilled birth attendants in Cambodia. *International Journal of Evidence Based Healthcare, 10*(1), 60-67.

Ith, P., Dawson, A., & Homer, C. S. (2013). Women's perspective of maternity care in Cambodia. *Women and Birth, 26*(1), 71-75.

Ith, P., Dawson, A., Homer, C. S., & Whelan, A. K. (2013). Practices of skilled birth attendants during labour, birth and the immediate postpartum period in Cambodia. *Midwifery, 29*(4), 300-

307.

Jang, M. K., Kim, S., Collins, E. G., Quinn, L. T., Park, C. G., & Ferrans, C. E. (2020). Enriching the quality of cross-cultural instrument development through cognitive interviewing: Implications for nursing research. *Japan Journal of Nursing Science: JJNS, 17*(2), e12301. doi:10.1111/jjns.12301 [doi]

Japan International Cooperation Agency. (2019). *For safe and happy childbirth: JICA's approach to humanized maternity care.* [Video/DVD] Retrieved from https://jica-net-library.jica.go.jp/jica-net/user/lib/contentDetail.php?item_id=10082

Japan International Cooperation Agency, Human Development Department. (2014 September). *The final evaluation report the project for improving maternal and newborn care through midwifery capacity development in Cambodia.* JICA.

Jobe, J. B., & Mingay, D. J. (1989). Cognitive research improves questionnaires. *American Journal of Public Health, 79*(8), 1053-1055. doi:10.2105/ajph.79.8.1053 [doi]

Johnson, T. P. (1998). Approaches to equivalence in cross cultural and cross-national survey research. ZUMANachrichten Spezial, 3, 1–40.

Johnson, T. P. (2003). Glossary. In J. A. Harkness, F. J. R. Van de Vijver, & P. Mohler (Eds.), Cross-cultural survey methods (pp. 347–357). Hoboken, NJ: Wiley.

Jolly, Y., Aminu, M., Mgawadere, F., & van den Broek, N. (2019). "We are the ones who should make the decision" - knowledge and understanding of the rights-based approach to maternity care among women and healthcare providers. *BMC Pregnancy and Childbirth, 19*(1), 42-019-2189-7. doi:10.1186/s12884-019-2189-7 [doi]

Kambala, C., Lohmann, J., Mazalale, J., Brenner, S., Sarker, M., Muula, A. S., & De Allegri, M.

(2017). Perceptions of quality across the maternal care continuum in the context of a health financing intervention: Evidence from a mixed methods study in rural malawi. *BMC Health Services Research, 17*(1), 392-017-2329-6. doi:10.1186/s12913-017-2329-6 [doi]

Katchova A. (2021 Augest 15). Principal component analysis. econom acadmey. Retrieved from https://sites.google.com/site/econometricsacademy/econometrics-models/principal-component-analysis

Kelley, B. R. (1996). Cultural considerations in cambodian childrearing. *Journal of Pediatric Health Care, 10*(1), 2-9.

Khun, S., & Manderson, L. (2007). Health seeking and access to care for children with suspected dengue in cambodia: An ethnographic study. *BMC Public Health, 7*, 262-2458-7-262. doi:1471-2458-7-262 [pii]

Koblinsky, M., Moyer, C. A., Calvert, C., Campbell, J., Campbell, O. M., Feigl, A. B., . . . Matthews, Z. (2016). Quality maternity care for every woman, everywhere: A call to action. *The Lancet, 388*(10057), 2307-2320.

Kruk, M. E., Leslie, H. H., Verguet, S., Mbaruku, G. M., Adanu, R. M., & Langer, A. (2016). Quality of basic maternal care functions in health facilities of five african countries: An analysis of national health system surveys. *The Lancet Global Health, 4*(11), e845-e855.

Kruk, M. E., Mbaruku, G., McCord, C. W., Moran, M., Rockers, P. C., & Galea, S. (2009). Bypassing primary care facilities for childbirth: A population-based study in rural tanzania. *Health Policy and Planning, 24*(4), 279-288.

Kruk, M. E., Gage, A. D., Arsenault, C., Jordan, K., Leslie, H. H., Roder-DeWan, S., . . . Pate, M. (2018). High-quality health systems in the sustainable development goals era: Time for a

revolution. *The Lancet.Global Health, 6*(11), e1196-e1252. doi: S2214-109X (18)30386-3 [pii]

Kruk, M. E., Kujawski, S., Mbaruku, G., Ramsey, K., Moyo, W., & Freedman, L. P. (2018). Disrespectful and abusive treatment during facility delivery in tanzania: A facility and community survey. *Health Policy and Planning, 33*(1), e26-e33. doi:10.1093/heapol/czu079 [doi]

Kujawski, S., Mbaruku, G., Freedman, L. P., Ramsey, K., Moyo, W., & Kruk, M. E. (2015). Association between disrespect and abuse during childbirth and women's confidence in health facilities in tanzania. *Maternal and Child Health Journal, 19*(10), 2243-2250.

Kyomuhendo, G. B. (2003). Low use of rural maternity services in uganda: Impact of women's status, traditional beliefs and limited resources. *Reproductive Health Matters, 11*(21), 16-26.

Larson, E., Hermosilla, S., Kimweri, A., Mbaruku, G. M., & Kruk, M. E. (2014). Determinants of perceived quality of obstetric care in rural tanzania: A cross-sectional study. *BMC Health Services Research, 14*(1), 483.

Larson, E., Sharma, J., Bohren, M. A., & Tunçalp, Ö. (2019). When the patient is the expert: Measuring patient experience and satisfaction with care. *Bulletin of the World Health Organization, 97*(8), 563.

Larson, E., Vail, D., Mbaruku, G. M., Kimweri, A., Freedman, L. P., & Kruk, M. E. (2015). Moving toward patient-centered care in africa: A discrete choice experiment of preferences for delivery care among 3,003 tanzanian women. *PloS One, 10*(8), e0135621.

Larson, E., Leslie, H. H., & Kruk, M. E. (2017). The determinants and outcomes of good provider communication: A cross-sectional study in seven african countries. *BMJ Open, 7*(6), e014888-

2016-014888. doi:10.1136/bmjopen-2016-014888 [doi]

Lee, J. (2014). Conducting cognitive interviews in cross-national settings. Assessment, 21 (2), 227-240.

Lee, S. Y., Lee, E. E., & Aranda, F. (2018). Instrument adaptation, modification, and validation for cultural beliefs about colorectal cancer screening among korean americans. *Cancer Nursing, 41*(3), E38-E48. doi:10.1097/NCC.0000000000000523 [doi]

Liambila, W. N., & Kuria, S. N. (2014). Birth attendance and magnitude of obstetric complications in western kenya: A retrospective case control study. *BMC Pregnancy and Childbirth, 14*(1), 311.

Liljestrand, J., & Sambath, M. R. (2012). Socio-economic improvements and health system strengthening of maternity care are contributing to maternal mortality reduction in Cambodia. *Reproductive Health Matters, 20*(39), 62-72.

Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research, 35*(6), 382-385. doi:10.1097/00006199-198611000-00017

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods, 4*(1), 84.

Maine, D., & Rosenfield, A. (2001). The AMDD program: History, focus and structure. *International Journal of Gynecology & Obstetrics, 74*(2), 99-103.

Matsumoto Yasuyo, Fukushima Kanako, Takahashi Yuko, Oishi Hiroko, & Egami Yuriko. (2015). Cambodia ni okeru konkyonimotoduita jyosankea no dounyu wo tsuujita jyosankea kaizen no torikumi. [カンボジアにおける『根拠に基づいた助産ケア』の導入を通じた助産ケア改善の取り組み] *Journal of International Health, 30*(4), 279-286.

Matsuoka, S., Aiga, H., Rasmey, L. C., Rathavy, T., & Okitsu, A. (2010). Perceived barriers to utilization of maternal health services in rural cambodia. *Health Policy, 95*(2-3), 255-263.

Matsuoka, S., Fujita, N., Koto-Shimada, K., & Zwi, A. B. (2021). Regulation of nursing professionals in cambodia: Strategies to overcome underpinning challenges. *International Nursing Review,* doi:10.1111/inr.12658 [doi]

McHorney, C. A., & Tarlov, A. R. (1995). Individual-patient monitoring in clinical practice: Are available health status surveys adequate? Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation, 4(4), 293-307. doi:10.1007/BF01593882 [doi]

McLachlan, H. L., Forster, D. A., Davey, M. A., Farrell, T., Flood, M., Shafiei, T., & Waldenstrom, U. (2016). The effect of primary midwife-led care on women's experience of childbirth: Results from the COSMOS randomized controlled trial. *BJOG: An International Journal of Obstetrics and Gynecology, 123*(3), 465-474. doi:10.1111/1471-0528.13713 [doi]

McMahon, S. A., George, A. S., Chebet, J. J., Mosha, I. H., Mpembeni, R. N., & Winch, P. J. (2014). Experiences of and responses to disrespectful maternity care and abuse during childbirth; a qualitative study with women and men in morogoro region, Tanzania. *BMC Pregnancy and Childbirth, 14*, 268-2393-14-268. doi:10.1186/1471-2393-14-268 [doi]

Miller, S., Cordero, M., Coleman, A., Figueroa, J., Britoâe Anderson, S., Dabagh, R., . . . Nunez, M. (2003). Quality of care in institutionalized deliveries: The paradox of the Dominican republic. *International Journal of Gynecology & Obstetrics, 82*(1), 89-103.

Miller, S., Abalos, E., Chamillard, M., Ciapponi, A., Colaci, D., Comande, D., . . . Althabe, F. (2016). Beyond too little, too late and too much, too soon: A pathway towards evidence-based,

respectful maternity care worldwide. *Lancet (London, England), 388*(10056), 2176-2192. doi: S0140-6736(16)31472-6 [pii]

Ministry of Foreign Affairs of Japan. (2021, July 2). Country profile Kingdom of Cambodia. Retrieved from https://www.mofa.go.jp/mofaj/area/cambodia/data.html#section1

Ministry of Health Cambodia. (2006). *Obstacles to deliveries trained health providers Cambodian rural women*. Ministry of Health Cambodia.

Ministry of Health Cambodia. (2008). *Health sector strategic plan 2008-2015 Accountability efficiency quality equity.* Ministry of Health Cambodia.

Ministry of Health Cambodia. (2010a). *Fast track initiative road map for reducing maternal & newborn mortality*. Phnom Penh: Ministry of Health Cambodia.

Ministry of Health Cambodia. (2010b). *Safe motherhood clinical management protocols for health center.* Ministry of Health Cambodia.

Ministry of Health Cambodia. (2012). *Health service delivery profile Cambodia 2012.* Ministry of Health Cambodia.

Ministry of Health Cambodia. (2013a). *Prakas on core competency framework for midwifes in the kingdom of Cambodia.* Ministry of Health Cambodia.

Ministry of Health Cambodia. (2013b). *Safe motherhood clinical management protocols for referral hospital.* Ministry of Health Cambodia.

Ministry of Health Cambodia. (2015). *Review of the Cambodian emergency obstetric and newborn care improvement plan 2010-2015.* Ministry of Health Cambodia.

Ministry of Planning Cambodia. (2010). *National strategic development plan updates 2009-2013 for growth, employment, equity and efficiency.* (). Phnom Penh: The Royal Government of

Cambodia.

Mocumbi, S., Hogberg, U., Lampa, E., Sacoor, C., Vala, A., Bergstrom, A., . . . CLIP working group. (2019). Mothers' satisfaction with care during facility-based childbirth: A cross-sectional survey in southern Mozambique. *BMC Pregnancy and Childbirth, 19*(1), 303-019-2449-6. doi:10.1186/s12884-019-2449-6 [doi]

Mokkink, L. B., Prinsen, C. A., Bouter, L. M., Vet, H. C., & Terwee, C. B. (2016). The COnsensus-based standards for the selection of health measurement INstruments (COSMIN) and how to select an outcome measurement instrument. *Brazilian Journal of Physical Therapy, 20*(2), 105-113. doi:10.1590/bjpt-rbf.2014.0143 [doi]

Mokkink, L. B., Terwee, C. B., Patrick, D. L., Alonso, J., Stratford, P. W., Knol, D. L., . . . de Vet, H. C. (2010). The COSMIN study reached international consensus on taxonomy, terminology, and definitions of measurement properties for health-related patient-reported outcomes. *Journal of Clinical Epidemiology, 63*(7), 737-745. doi: 10.1016/j.jclinepi.2010.02.006 [doi]

Mokkink, L. B., Prinsen, C., Patrick, D. L., Alonso, J., Bouter, L. M., De Vet, H., . . . Mokkink, L. (2018a). COSMIN methodology for systematic reviews of patient-reported outcome measures (PROMs). User Manual, 78(1)

Mokkink, L. B., de Vet, H. C. W., Prinsen, C. A. C., Patrick, D. L., Alonso, J., Bouter, L. M., & Terwee, C. B. (2018b). COSMIN risk of bias checklist for systematic reviews of patient-reported outcome measures. Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation, 27(5), 1171-1179. doi:10.1007/s11136-017-1765-4 [doi]

Montagu, D., Giessler, K., Nakphong, M. K., Roy, K. P., Sahu, A. B., Sharma, K., . . . Sudhinaraset,

M. (2020). Results of a person-centered maternal health quality improvement intervention in uttar pradesh, india. PloS One, 15(12), e0242909. doi:10.1371/journal.pone.0242909 [doi]

Mosadeghrad, A. M. (2012). A conceptual framework for quality of care. *Materia Socio-Medica, 24*(4), 251-261. doi:10.5455/msm.2012.24.251-261 [doi]

Mundfrom, D. J., Shaw, D. G., & Ke, T. L. (2005). Minimum sample size recommendations for conducting factor analyses. *International Journal of Testing, 5*(2), 159-168.

Muthén, L. K., & Muthén, B. O. (2002). How to use a monte carlo study to decide on sample size and determine power. *Structural Equation Modeling, 9*(4), 599-620.

Nakajima Marin. (2012). *Thai no shikitari* [タイのしきたり] Mekong.

Napoles-Springer, A. M., Santoyo-Olsson, J., O'Brien, H., & Stewart, A. L. (2006). Using cognitive interviews to develop surveys in diverse populations. *Medical Care, 44*(11 Suppl 3), S21-30. doi:10.1097/01.mlr.0000245425.65905.1d [doi]

National Institute of Public Health. (2000). *Indicator report.* Unpublished manuscript. Retrieved 2020 March 9,

National Institute of Statistics. (2000). Cambodia Demographic and Health Survey 2000. Ministry of Planning, The Royal Government of Cambodia.

National Institute of Statistics. (2005). Cambodia Demographic and Health Survey 2005. Ministry of Planning, The Royal Government of Cambodia.

National Institute of Statistics. (2010). Cambodia Demographic and Health Survey 2010. Ministry of Planning, The Royal Government of Cambodia.

National Institute of Statistics. (2015). Cambodia demographic and health survey 2014. Ministry of Planning, The Royal Government of Cambodia.

National Institute of Statistics. (2019). *General population census of the kingdom of cambodia 2019.* Ministry of Planning Cambodia. Retrieved from Retrieved from https://www.slideshare.net/noumfone/general-population-census-of-the-kingdom-of-cambodia-2019. Accessed on 12 August 2019

National Institute of Statistics. (2020). *The General Population Census of Cambodia 2019.* Ministry of Planning Cambodia.

Ndwiga, C., Warren, C. E., Ritter, J., Sripad, P., & Abuya, T. (2017). Exploring provider perspectives on respectful maternity care in kenya: "work with what you have". *Reproductive Health, 14*(1), 99-017-0364-8. doi:10.1186/s12978-017-0364-8 [doi]

Nilvér, H., Begley, C., & Berg, M. (2017). Measuring women's childbirth experiences: A systematic review for identification and analysis of validated instruments. *BMC Pregnancy and Childbirth, 17*(1), 203.

Noirhomme, M., Meessen, B., Griffiths, F., Ir, P., Jacobs, B., Thor, R., . . . Van Damme, W. (2007). Improving access to hospital care for the poor: Comparative analysis of four health equity funds in cambodia. *Health Policy and Planning, 22*(4), 246-262.

Ojelade, O. A., Titiloye, M. A., Bohren, M. A., Olutayo, A. O., Olalere, A. A., Akintan, A., . . . Fawole, B. (2017). The communication and emotional support needs to improve women's experience of childbirth care in health facilities in southwest Nigeria: A qualitative study. *International Journal of Gynecology and Obstetrics: The Official Organ of the International Federation of Gynecology and Obstetrics, 139 Suppl 1*, 27-37. doi:10.1002/ijgo.12380 [doi]

Olza, I., Leahy-Warren, P., Benyamini, Y., Kazmierczak, M., Karlsdottir, S. I., Spyridou, A., . . . Nieuwenhuijze, M. J. (2018). Women's psychological experiences of physiological childbirth:

A meta-synthesis. *BMJ Open, 8*(10), e020347-2017-020347. doi:10.1136/bmjopen-2017-020347 [doi]

Ouedraogo, A., Kiemtore, S., Zamane, H., Bonane, B. T., Akotionga, M., & Lankoande, J. (2014). Respectful maternity care in three health facilities in Burkina faso: The experience of the society of gynecologists and obstetricians of Burkina faso. *International Journal of Gynecology and Obstetrics: The Official Organ of the International Federation of Gynecology and Obstetrics, 127 Suppl 1*, S40-2. doi: 10.1016/j.ijgo.2014.07.009 [doi]

Park, S. H., Park, C. G., McCreary, L., & Norr, K. F. (2017). Cognitive interviews for validating the family nutrition physical activity instrument for Korean American families with young children. *Journal of Pediatric Nursing, 36*, 1-6. doi:S0882-5963(16)30305-0 [pii]

Polit, D. F., & Beck, C. T. (2006). The content validity index: Are you sure you know what's being reported? critique and recommendations. *Research in Nursing & Health, 29*(5), 489-497.

Polit, D. F., & Beck, C. T. (2013). *Study guide for essentials of nursing research: Appraising evidence for nursing practice* Lippincott Williams & Wilkins.

Polit, D. F., Beck, C. T., & Owen, S. V. (2007). Is the CVI an acceptable indicator of content validity? appraisal and recommendations. *Research in Nursing & Health, 30*(4), 459-467.

Ramlakhan, J. U., Foster, A. M., Grace, S. L., Green, C. R., Stewart, D. E., & Gagliardi, A. R. (2019). What constitutes patient-centred care for women: A theoretical rapid review. *International Journal for Equity in Health, 18*(1), 182.

Robert Chambers. (1983). Rural Development putting the last first. Routledge.

Robyn Eversole. (2017). Anthropology for Development from theory to practice. Routledge.

Rosen, H. E., Lynam, P. F., Carr, C., Reis, V., Ricca, J., Bazant, E. S., . . . Quality of Maternal and

Newborn Care Study Group of the Maternal and Child Health Integrated Program. (2015). Direct observation of respectful maternity care in five countries: A cross-sectional study of health facilities in east and southern Africa. *BMC Pregnancy and Childbirth, 15*, 306-015-0728-4. doi:10.1186/s12884-015-0728-4 [doi]

Rubashkin, N., & Minckas, N. (2018). How should trainees respond in situations of obstetric violence? *AMA Journal of Ethics, 20*(1), 238-246. doi: journalofethics.2018.20.3. ecas2-1803 [pii]

Sakurai-Doi, Y., Mochizuki, N., Phuong, K., Sung, C., Visoth, P., Sriv, B., . . . Fujita, N. (2014). Who provides nursing services in Cambodian hospitals? *International Journal of Nursing Practice, 20 Suppl 1*, 39-46. doi:10.1111/ijn.12249 [doi]

Sandin-Bojö, A., Hashimoto, M., Kanal, K., & Sugiura, Y. (2012). Intrapartum care at a tertiary hospital in cambodia: A survey using the bologna score. *Midwifery, 28*(6), e880-e885.

Sandin-Bojo, A. K., Hashimoto, M., Kanal, K., & Sugiura, Y. (2012). Intrapartum care at a tertiary hospital in Cambodia: A survey using the bologna score. *Midwifery, 28*(6), e880-5. doi: 10.1016/j.midw.2011.10.014 [doi]

Sando, D., Abuya, T., Asefa, A., Banks, K. P., Freedman, L. P., Kujawski, S., . . . Ratcliffe, H. (2017). Methods used in prevalence studies of disrespect and abuse during facility-based childbirth: Lessons learned. *Reproductive Health, 14*(1), 1-18.

Savage, V., & Castro, A. (2017). Measuring mistreatment of women during childbirth: A review of terminology and methodological approaches. *Reproductive Health, 14*(1), 138-017-0403-5. doi:10.1186/s12978-017-0403-5 [doi]

Say, L., & Raine, R. (2007). A systematic review of inequalities in the use of maternal health care

in developing countries: Examining the scale of the problem and the importance of context. *Bulletin of the World Health Organization, 85*, 812-819.

Scott, K., Gharai, D., Sharma, M., Choudhury, N., Mishra, B., Chamberlain, S., & LeFevre, A. (2020). Yes, no, maybe so: The importance of cognitive interviewing to enhance structured surveys on respectful maternity care in northern india. *Health Policy and Planning, 35*(1), 67-77.

Sethi, R., Gupta, S., Oseni, L., Mtimuni, A., Rashidi, T., & Kachale, F. (2017). The prevalence of disrespect and abuse during facility-based maternity care in Malawi: Evidence from direct observations of labor and delivery. *Reproductive Health, 14*(1), 111-017-0370-x. doi:10.1186/s12978-017-0370-x [doi]

Shakibazadeh, E., Namadian, M., Bohren, M. A., Vogel, J. P., Rashidian, A., Nogueira Pileggi, V., . . . Gulmezoglu, A. M. (2018). Respectful care during childbirth in health facilities globally: A qualitative evidence synthesis. *BJOG: An International Journal of Obstetrics and Gynecology, 125*(8), 932-942. doi:10.1111/1471-0528.15015 [doi]

Sharma, G., Penn-Kekana, L., Halder, K., & Filippi, V. (2019). An investigation into mistreatment of women during labour and childbirth in maternity care facilities in uttar pradesh, india: A mixed methods study. *Reproductive Health, 16*(1), 7-019-0668-y. doi:10.1186/s12978-019-0668-y [doi]

Sheferaw, E. D., Mengesha, T. Z., & Wase, S. B. (2016). Development of a tool to measure women's perception of respectful maternity care in public health facilities. *BMC Pregnancy and Childbirth, 16*(1), 67.

Sheferaw, E. D., Bazant, E., Gibson, H., Fenta, H. B., Ayalew, F., Belay, T. B., . . . Stekelenburg, J.

(2017). Respectful maternity care in ethiopian public health facilities. *Reproductive Health, 14*(1), 60-017-0323-4. doi:10.1186/s12978-017-0323-4 [doi]

Sheferaw, E. D., Mengesha, T. Z., & Wase, S. B. (2016). Development of a tool to measure women's perception of respectful maternity care in public health facilities. *BMC Pregnancy and Childbirth, 16*, 67-016-0848-5. doi:10.1186/s12884-016-0848-5 [doi]

Sheratt, D., White, P., & Chhuong, C. (2006). Report of comprehensive midwifery review. *Final Report: Ministry of Health of Cambodia,*

Shirkey, E. C., & Dziuban, C. D. (1976). A note on some sampling characteristics of the measure of sampling adequacy (MSA). *Multivariate Behavioral Research, 11*(1), 125-128.

Smith, T. W. (2004). Developing and evaluating cross-national survey instruments. In S. Presser, J. M. Rothgeb, M. P. Couper, J. T. Lessler, E. Martin, J. Martin, et al. (Eds.), Methods for testing and evaluating survey questionnaires (pp. 431–452). Hoboken, NJ: Wiley.

Sousa, V. D., & Rojjanasrirat, W. (2011). Translation, adaptation and validation of instruments or scales for use in cross cultural health care research: A clear and user friendly guideline. *Journal of Evaluation in Clinical Practice, 17*(2), 268-274.

Souza, J. P., Gülmezoglu, A. M., Vogel, J., Carroli, G., Lumbiganon, P., Qureshi, Z., . . . Nafiou, I. (2013). Moving beyond essential interventions for reduction of maternal mortality (the WHO multicountry survey on maternal and newborn health): A cross-sectional study. *The Lancet, 381*(9879), 1747-1755.

Squires, A., Aiken, L. H., van den Heede, K., Sermeus, W., Bruyneel, L., Lindqvist, R., . . . Matthews, A. (2013). A systematic survey instrument translation process for multi-country, comparative health workforce studies. *International Journal of Nursing Studies, 50*(2), 264-

273. doi: 10.1016/j.ijnurstu.2012.02.015 [doi]

Srivastava, A., Avan, B. I., Rajbangshi, P., & Bhattacharyya, S. (2015). Determinants of women's satisfaction with maternal health care: A review of literature from developing countries. *BMC Pregnancy and Childbirth, 15*(1), 97.

Striebich, S., Mattern, E., & Ayerle, G. M. (2018). Support for pregnant women identified with fear of childbirth (FOC)/tokophobia - A systematic review of approaches and interventions. *Midwifery, 61*, 97-115. doi: S0266-6138(18)30052-4 [pii]

Sudhinaraset, M., Giessler, K., Golub, G., & Afulani, P. (2019). Providers and women's perspectives on person-centered maternity care: A mixed methods study in Kenya. International Journal for Equity in Health, 18(1), 83-019-0980-8. doi:10.1186/s12939-019-0980-8 [doi]

Takahashi Genboku, & Randeep, R. (2021). *The basic principle of yoga.* University of Tsukuba/UT.

Takahashi Yuko., & Chuemchit Montakarn. (2016). Knowledge, Attitudes and Practices of Birth Preparedness and Complication Readiness in relation to Skilled Birth Attendant among Delivered Women in Svay Rieng Province, Cambodia. Journal of Health Research, vol.30, Supplement1, 35-44.

Takahashi Yuko. (June 2021). *Effectiveness of respectful maternity care policies: Case of JICA's humanized maternity care initiative. poster presented at the 32nd international confederation of midwives (ICM) virtual triennial congress. Bali.* Unpublished manuscript.

Technical Working Group, World Health Organization. (1997). Care in normal birth: A practical guide. *Birth, 24*(2), 121-123.

ten Hoope-Bender, P., de Bernis, L., Campbell, J., Downe, S., Fauveau, V., Fogstad, H., . . . McFadden, A. (2014). Improvement of maternal and newborn health through midwifery. *The Lancet, 384*(9949), 1226-1235.

Terwee, C. B., Mokkink, L. B., Knol, D. L., Ostelo, R. W., Bouter, L. M., & de Vet, H. C. (2012). Rating the methodological quality in systematic reviews of studies on measurement properties: A scoring system for the COSMIN checklist. *Quality of Life Research, 21*(4), 651-657.

Terwee, C. B., Bot, S. D., de Boer, M. R., van der Windt, D. A., Knol, D. L., Dekker, J., . . . de Vet, H. C. (2007). Quality criteria were proposed for measurement properties of health status questionnaires. *Journal of Clinical Epidemiology, 60*(1), 34-42. doi: S0895-4356(06)00174-0 [pii]

Thaddeus, S., & Maine, D. (1994). Too far to walk: Maternal mortality in context. *Social Science & Medicine, 38*(8), 1091-1110.

Thrasher, J., Quah, A. C. K., Dominick, G., Borland, R., Driezen, P., Awang, R., . . . Miller, K. (2011). Using cognitive interviewing and behavioral coding to determine measurement equivalence across linguistic and cultural groups: An example from the international tobacco control policy evaluation project. *Field Methods, 23*(4), 439-460. doi:10.1177/1525822X11418176 [doi]

Tinsley, H. E., & Brown, S. D. (2000). *Handbook of applied multivariate statistics and mathematical modeling* Academic press.

Tourangeau, R., & Rasinski, K. A. (1988). Cognitive processes underlying context effects in attitude measurement. *Psychological Bulletin, 103*(3), 299.

Tuncalp, Were, W. M., MacLennan, C., Oladapo, O. T., Gulmezoglu, A. M., Bahl, R., . . . Bustreo,

F. (2015). Quality of care for pregnant women and newborns-the WHO vision. *BJOG: An International Journal of Obstetrics and Gynecology, 122*(8), 1045-1049. doi:10.1111/1471-0528.13451 [doi]

Twinn, S. (1997). An exploratory study examining the influence of translation on the validity and reliability of qualitative data in nursing research. *Journal of Advanced Nursing, 26*(2), 418-423. doi:10.1046/j.1365-2648.1997. 1997026418.x [doi]

Tzelepis, F., Sanson-Fisher, R. W., Zucca, A. C., & Fradgley, E. A. (2015). Measuring the quality of patient-centered care: Why patient-reported measures are critical to reliable assessment. *Patient Preference and Adherence, 9*, 831-835. doi:10.2147/PPA.S81975 [doi]

UCSF/UCLA. (2020 5 May). *Person-centered maternity care scale guide.* Unpublished manuscript. Retrieved 5 May 2020 shared from Dr.Afulani,

UN Committee on Economic, Social, and Cultural Rights. (2000). *General comment no. 14: The right to the highest attainable standard of health (art. 12 of the covenant).* (No. E/C.12/2000/4). Retrieved from http://www.refworld.org/docid/4538838d0.html. accessed on 21 June 2021.

United Nations Inter-agency and Expert Group on MDG Indicators. (2015). *The millennium development goals report 2015*. (No. ISBN 978-92-1-101320-7). New York: United Nations.

United Nations. (2004). Cambodia Map No. 3860 Rev. 4. Retrieved from https://www.un.org/Depts/Cartographic/map/profile/cambodia.pdf

Van de Poel, E., Flores, G., Ir, P., & Van Doorslaer, E. (2014). Can vouchers deliver? an evaluation of subsidies for maternal health care in cambodia. *Bulletin of the World Health Organization, 9*2, 331-339.

Van de Vijver, Fons JR, & Leung, K. (1997). *Methods and data analysis for cross-cultural researc*h Cambridge University Press.

van den Broek, N. R., & Graham, W. J. (2009). Quality of care for maternal and newborn health: The neglected agenda. *BJOG: An International Journal of Obstetrics and Gynaecology, 116 Suppl* 1, 18-21. doi:10.1111/j.1471-0528.2009. 02333.x [doi]

Vedam, S., Stoll, K., Rubashkin, N., Martin, K., Miller-Vedam, Z., Hayes-Klein, H., . . . CCinBC Steering Council. (2017). The mothers on respect (MOR) index: Measuring quality, safety, and human rights in childbirth. *SSM - Population Health,* 3, 201-210. doi: 10.1016/j.ssmph.2017.01.005 [doi]

Verma, V., Vishwakarma, R. K., Nath, D. C., Khan, H. T. A., Prakash, R., & Abid, O. (2020). Prevalence and determinants of caesarean section in south and south-east asian women. *PloS One, 1*5(3), e0229906. doi: 10.1371/journal.pone.0229906 [doi]

Wassihun, B., Deribe, L., Worede, N., & Gultie, T. (2018). Prevalence of disrespect and abuse of women during child birth and associated factors in bahir dar town, ethiopia. *Epidemiology and Health, 4*0, e2018029. doi:10.4178/epih. e2018029 [doi]

White Ribbon Alliance. (2011). *Maternity care: The universal rights of childbearing women*. Washington, DC:

Willis, G. B. (2015). *Analysis of the cognitive interview in questionnaire desig*n Oxford University Press.

Willis, G. B., & Artino Jr, A. R. (2013). What do our respondents think we're asking? using cognitive interviewing to improve medical education surveys. *Journal of Graduate Medical Education,* 5(3), 353-356.

World Bank. (2021). GDP growth Cambodia. Retrieved from https://data.worldbank.org/country/KH accessed on 16 July 2021.

World Health Organization. (2006a). *Quality of care: A process for making strategic choices in health systems*. (No. ISBN 9241563249). Geneva:

World Health Organization. (2006b). *The world health report 2006. working together for health*. (No. ISBN9241563176). Geneva: World Health Organization. Retrieved from Retrieved from URL: http://www.who.int/whr/2006/en/.

World Health Organization. (2014). *The Prevention and Elimination of Disrespect and Abuse during Facility-Based Childbirth: WHO Statement,*

World Health Organization. (2015a). *Strategies towards ending preventable maternal mortality (EPMM)*. (No. WHO/RHR/15.03). World Health Organization. Retrieved from https://apps.who.int/iris/handle/10665/1535

World Health Organization. (2015b). *Success factors for women's and children's health Cambodia*. World Health Organization.

World Health Organization. (2015c). *Trends in maternal mortality: 1990-2015: Estimates from WHO, UNICEF, UNFPA, world bank group and the United Nations population divisio*n World Health Organization.

World Health Organization. (2015d). *WHO global strategy on people-centred and integrated health services: Interim report.* (No. WHO/HIS/SDS/2015.6) World Health Organization. Retrieved from https://apps.who.int/iris/handle/10665/155002

World Health Organization. (2015e). *WHO statement on caesarean section rates*. (No. WHO/RHR/15.02). Geneva: World Health Organization. Retrieved from

https://file.vibwife.com/WHO_RHR_15.02_eng.pdf accessed on 1 May 2021.

World Health Organization. (2016) Process of translation and adaptation of instruments. Geneva: WHO. Retrieved from https://www.who.int/substance_abuse/research_tools/translation/en/ accessed on 15 January 2021.

World Health Organization. (2019a). Maternal mortality fact sheet N°348. Retrieved from http://www.who.int/mediacentre/factsheets/fs348/en/ accessed on 25 July 2021.

World Health Organization. (2019b). *Trends in maternal mortality 2000 to 2017: Estimates by WHO, UNICEF, UNFPA, world bank group and the United Nations population division.* (No. WHO/RHR/19.23). World Health Organization. Retrieved from. https://www.who.int/reproductivehealth/publications/maternal-mortality-2000-2017/en/.

World Health Organization, United Nations Population Fund, World Bank & United Nations Children's Fund (UNICEF). (2015). *Pregnancy, childbirth, postpartum and newborn care: A guide for essential practice, 3rd ed.* (No. ISBN 9789241549356). World Health Organization. Retrieved from https://apps.who.int/iris/handle/10665/249580

World Health Organization, Department of Reproductive Health and Research. (2004). *Making pregnancy safer: The critical role of the skilled attendant.* (No. ISBN: 92 4 159169 2). Geneva: Retrieved from https://www.who.int/reproductivehealth/publications/maternal_perinatal_health/9241591692/en/

World Health Organization. Regional Office for the Western Pacific. (2015). *The kingdom of Cambodia health system review.* (No. ISBN 9789290616917). Manila: WHO Regional Office for the Western Pacific. Retrieved from https://apps.who.int/iris/handle/10665/208213

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist, 34*(6), 806-838.

Yamazaki Sumiko. (2018). *Cambodia hokuseibu no lao sonraku ni okeru taijinkankei no minzokushi* [カンボジア北東部のラオ村落における対人関係の民族誌－もめごとへの間接的な対処法] Mekong. Retrieved from https://ci.nii.ac.jp/naid/500000581176

Zileni, B. D., Glover, P., Jones, M., Teoh, K. K., Zileni, C. W., & Muller, A. (2017). Malawi women's knowledge and use of labour and birthing positions: A cross-sectional descriptive survey. *Women and Birth: Journal of the Australian College of Midwives, 30*(1), e1-e8. doi: S1871-5192(16)30061-0 [pii]

Zongrone, A. A., Menon, P., Pelto, G. H., Habicht, J. P., Rasmussen, K. M., Constas, M. A., . . . Stoltzfus, R. J. (2018). The pathways from a behavior change communication intervention to infant and young child feeding in bangladesh are mediated and potentiated by maternal self-efficacy. *The Journal of Nutrition, 148*(2), 259-266. doi:10.1093/jn/nxx048 [doi]

FIGURES

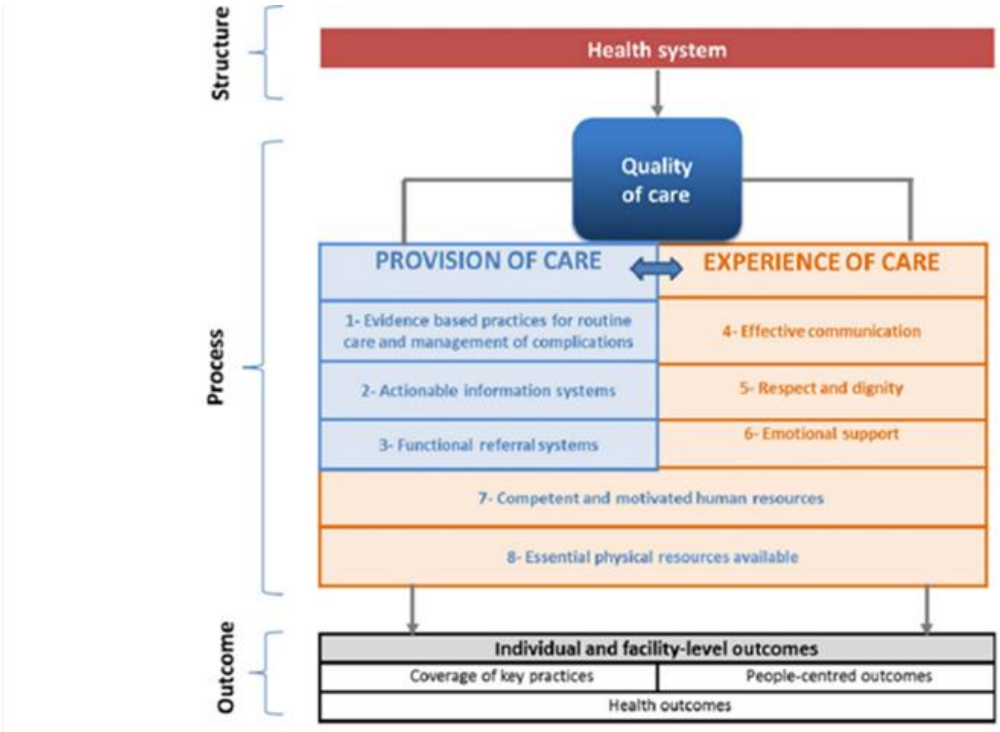


Figure 1 WHO Quality of Care Framework for maternal and newborn health within facility

(Tuncalp et al., 2015)

Figure 2 Map of Cambodia (United Nations, 2004)

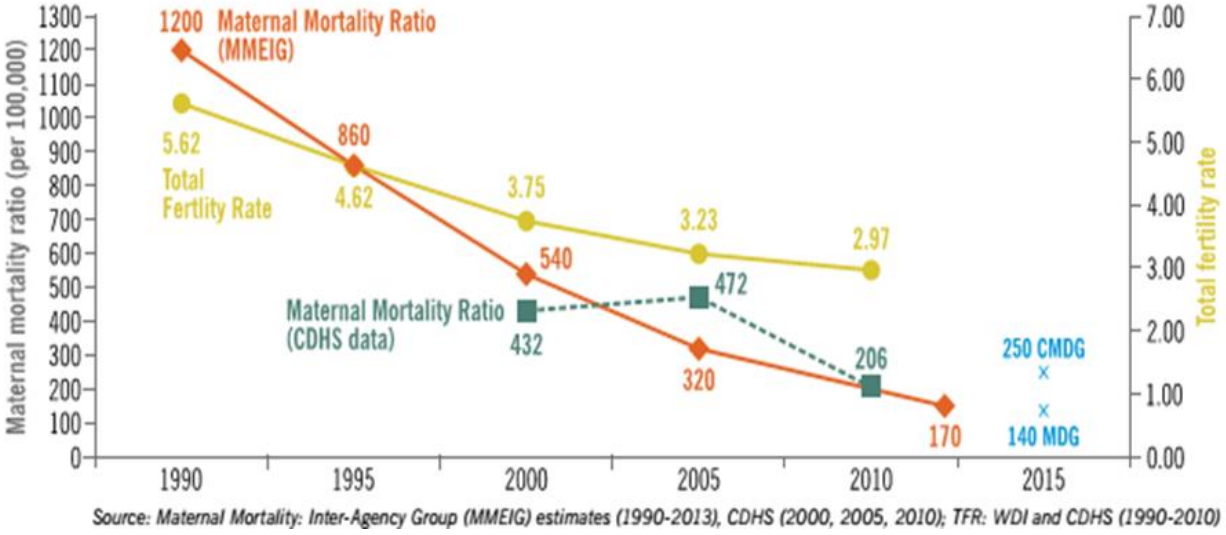


Figure 3 Trends in Maternal Mortality Ratio, Cambodia

(World Health Organization, 2015c)

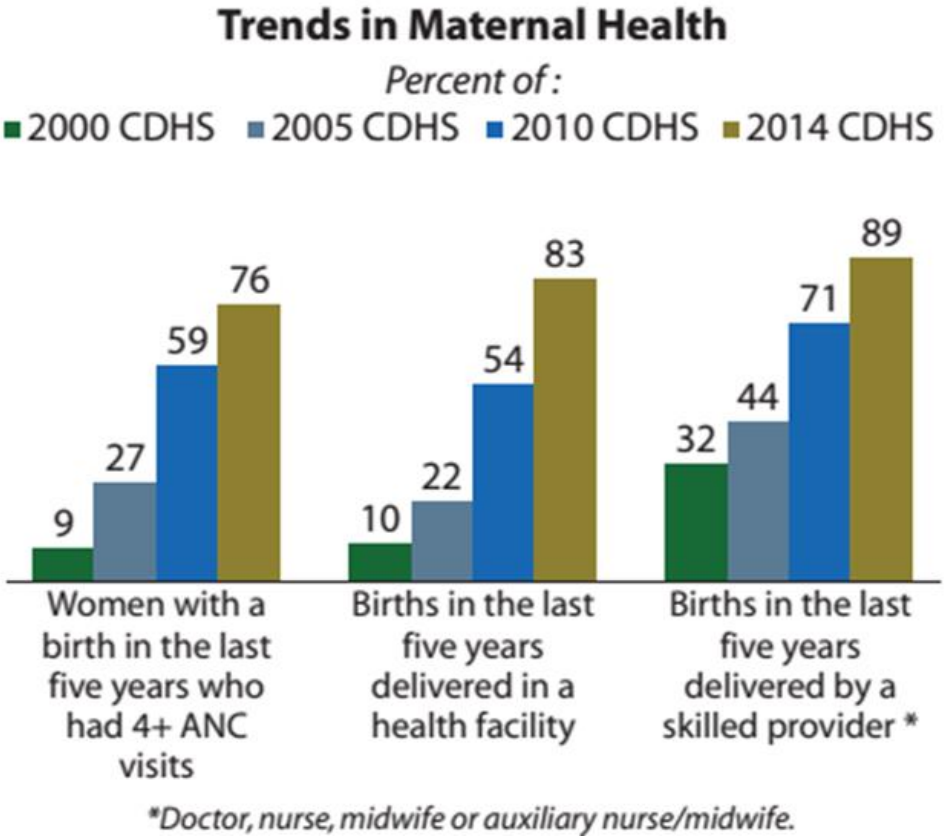


Figure 4 Trends in maternal health services coverage, Cambodia

(National Institute of Statistics, 2014)

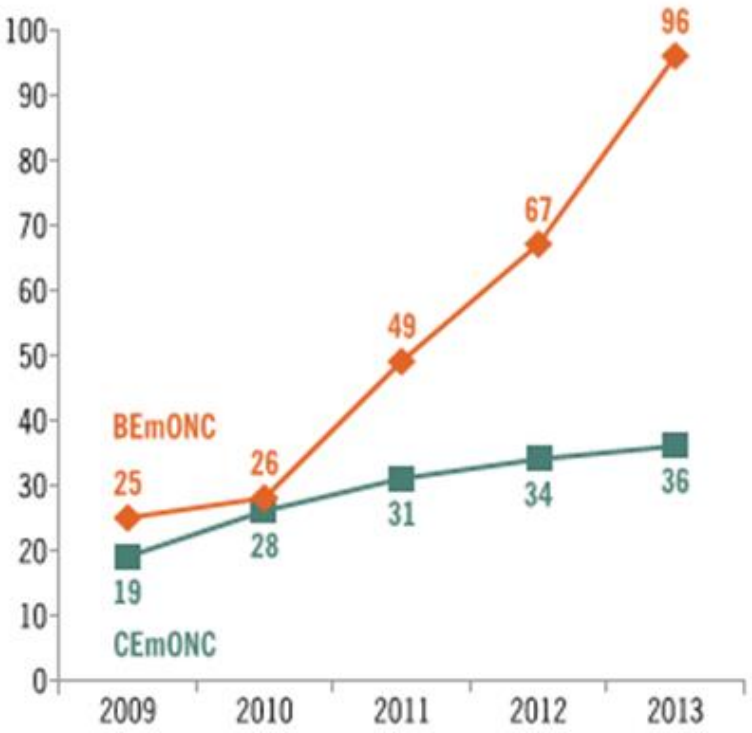


Figure 5 The number of EmONC facilities in Cambodia

(Ministry of Health Cambodia, 2015)

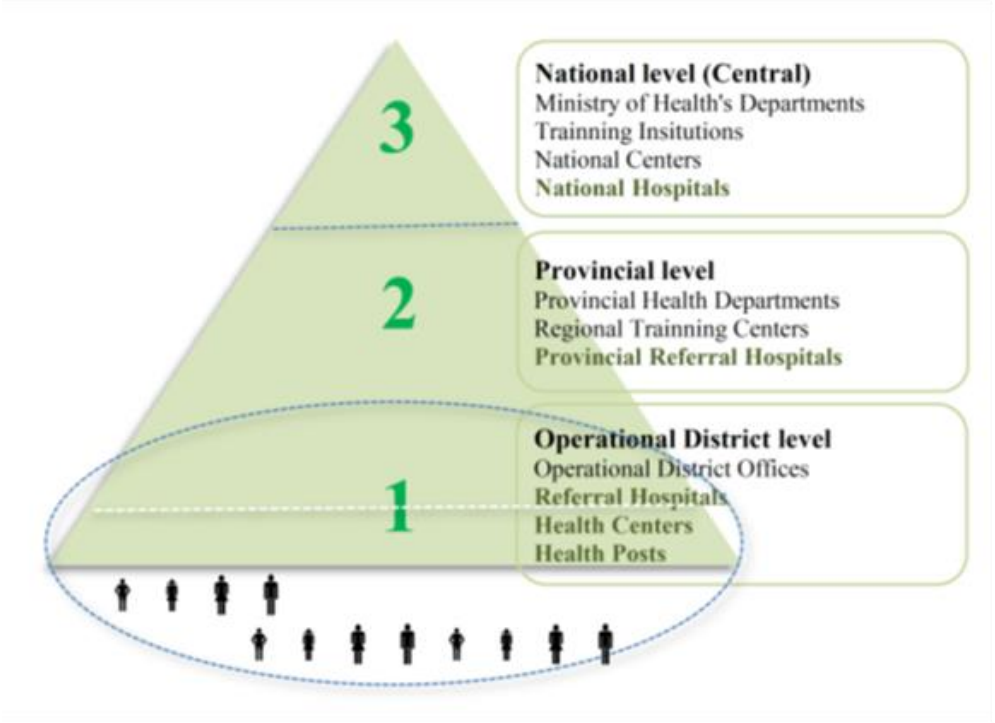


Figure 6 Health system organization in Cambodia

(Ministry of Health Cambodia, 2008)

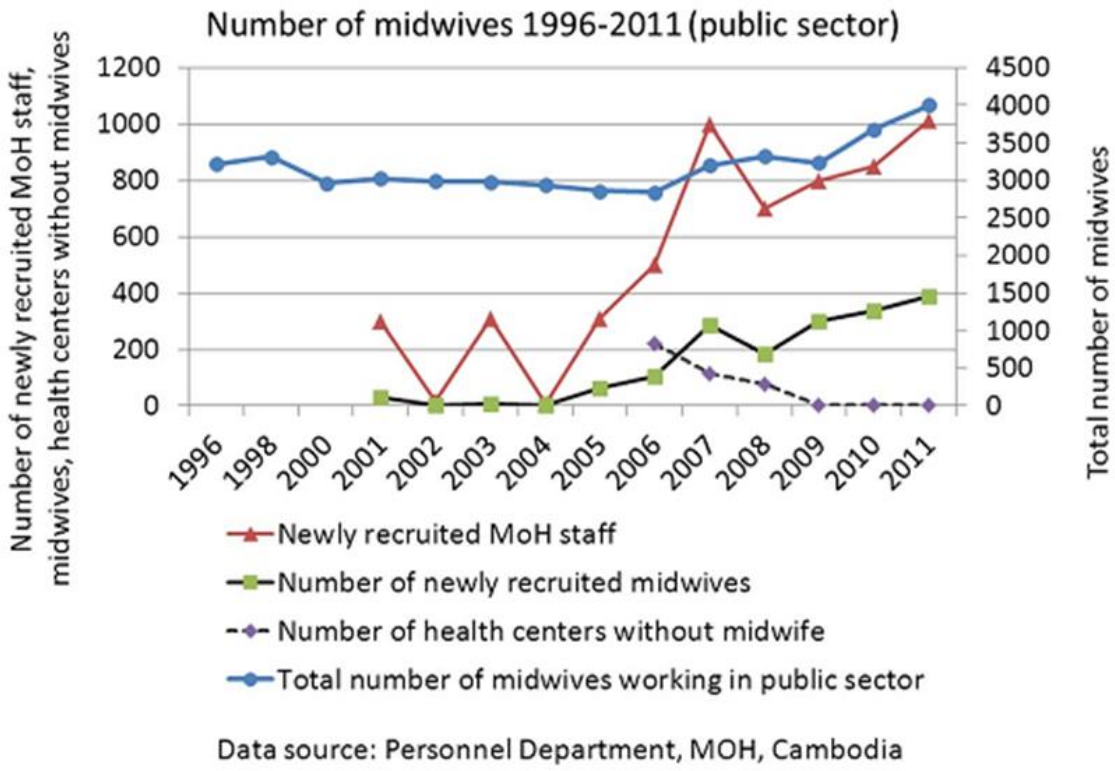


Figure 7 Trends in number of midwives (public sector)

(Fujita et al., 2013)

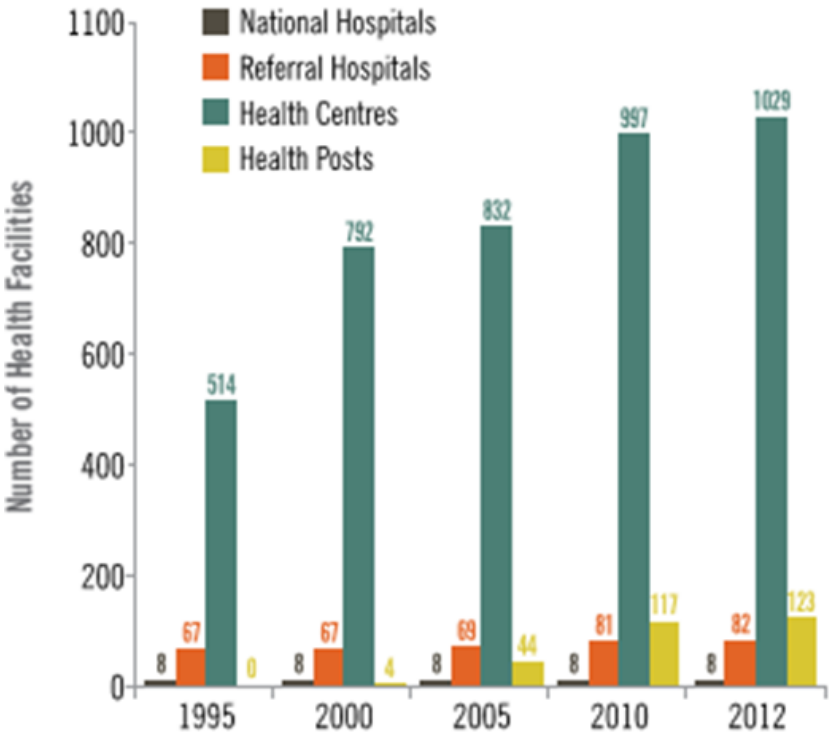


Figure 8 Trends in number of health facilities, Cambodia

(World Health Organization, 2015b)

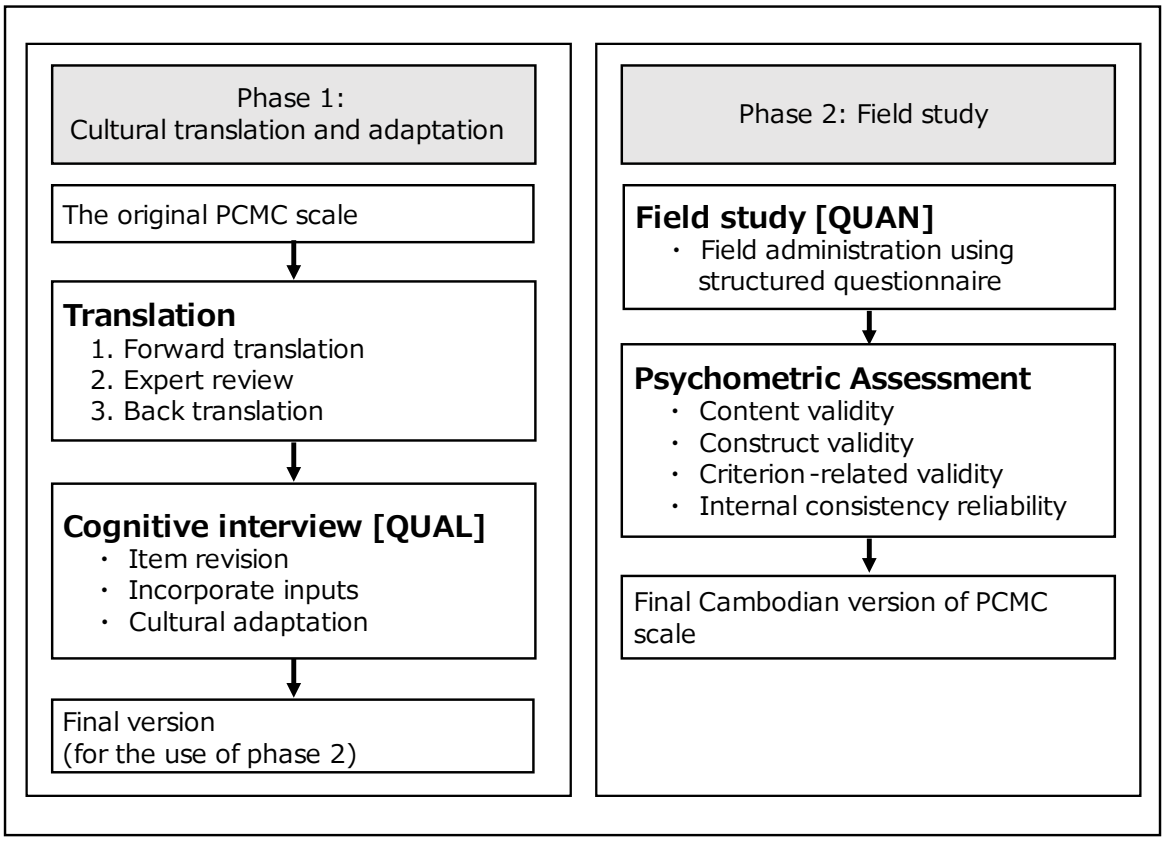


Figure 9 The protocol of the present study

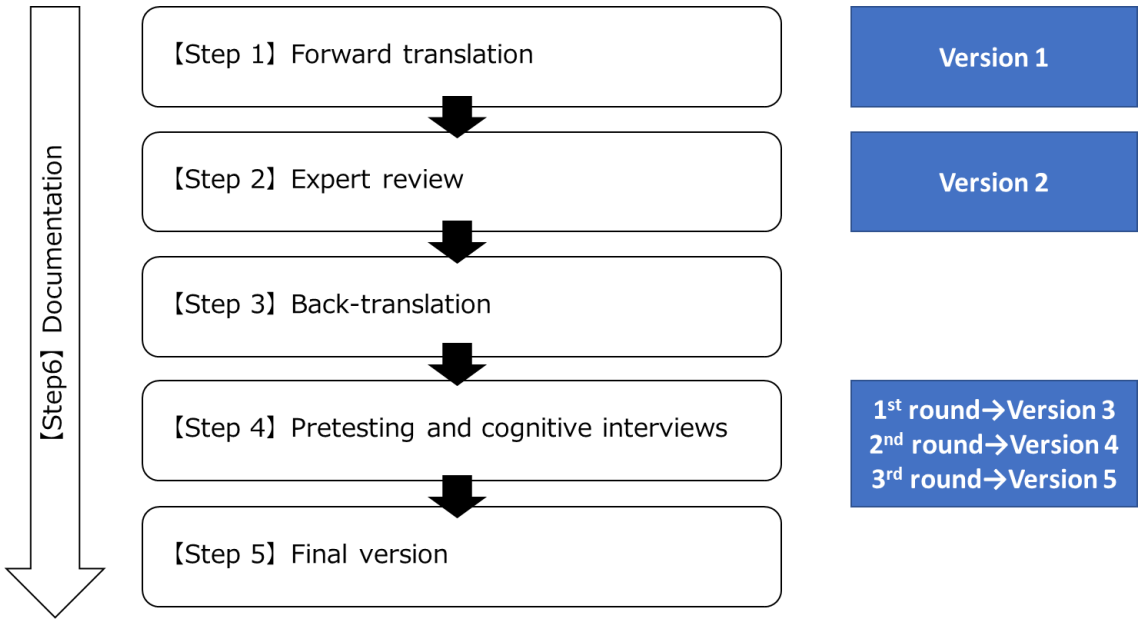


Figure 10 Process of translation and adaptation of instrument

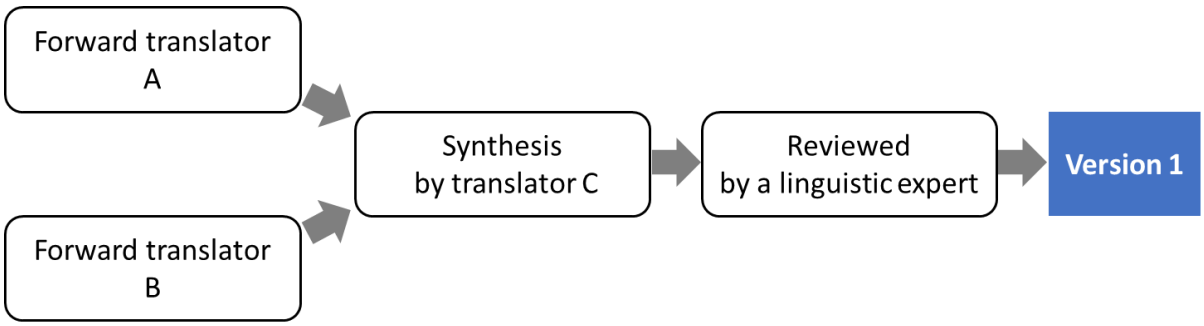
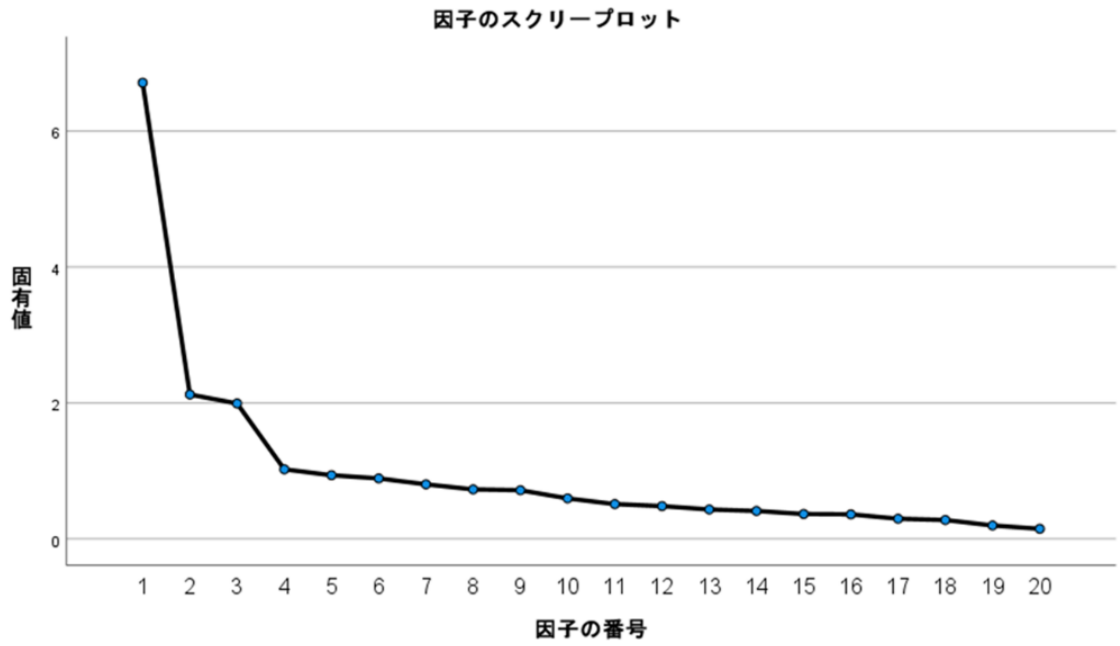
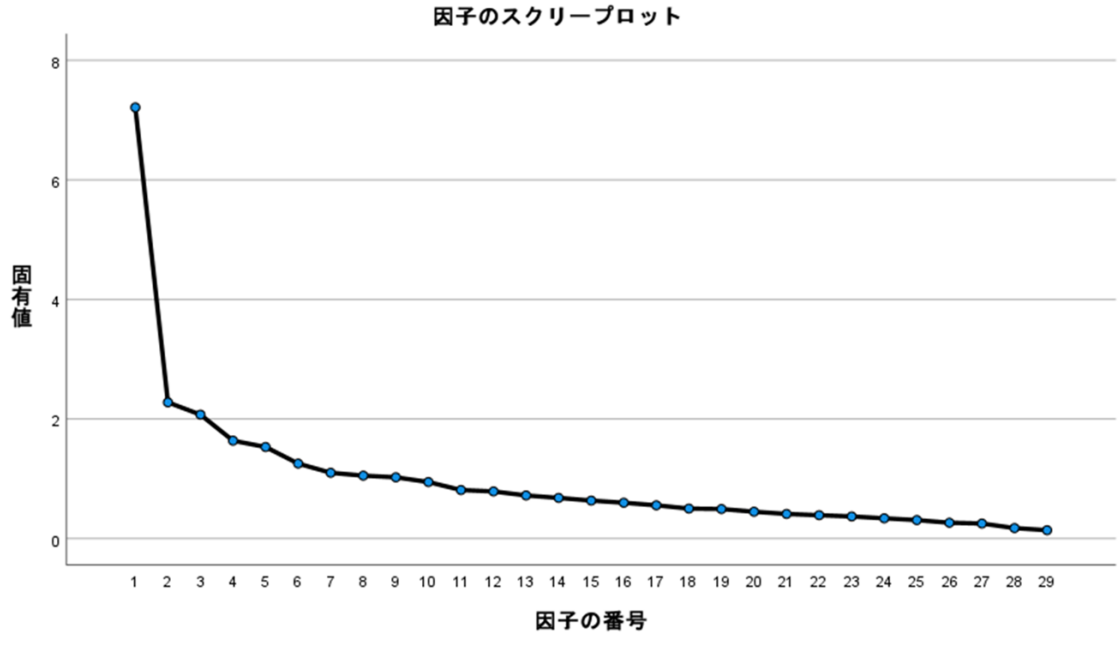


Figure 11 Process of committee translation approach



(a) Scree plot for 20 items after exploratory factor analysis



(b) Scree plot for 29 items after exploratory factor analysis

Figure 12 Comparison of Scree plot after exploratory factor analysis

TABLES

Table 1 Quality of psychometric properties of selected instruments

Instrument	Author (year)	items	Domains	Response	Timeframe to answer	Cognitive interview	Content validity	Contract validity	Criterion-related validity	Internal consistency
The Childbirth experience questionnaire (CEQ)	Dencker et al. (2010)	22	4 dimensions; Own capacity, Professional support, Perceived safety, Participant	4 point Likert scale and VAS	1 month postpartum	-	+	+	-	+
Respectful Maternity Care scale	Sheferaw et al. (2016)	15	4 domains; Friendly care, Abuse-free care, Timely care, Discrimination-free care	5 points Likert scale	6 h to7 weeks postpartum	In-depth interview	+	+	+	+
The Mothers on Respect Index (MORi)	Vedam et al. (2017)	14	3 domains; Sense of comfort, Behavior, Perception of racism and discrimination	3 or 4 point Likert scale	N.A.	-	+	+	-	+
Person Centered Maternity Care (PCMC) Scale	Afulani et al. (2019)	30	3 domains; Dignity and respect, Communication and autonomy, Supportive care	4 point Likert scale	Within 9 weeks postpartum	Cognitive interviewing	+	+	+	+
Women's perception of respectful maternity care (WP-RMC)	Ayoubi et al. (2020)	19	3 domains; Providing comfort, Participatory care, Mistreatment	5 point Likert scale	N.A.	-	+	+	-	+

Table 2 Definition of equivalence criteria for cross-cultural translation and adaptation

Criteria	Difinition	Process
Conceptual equivalence	Construct exist in two or more cultures and can be measured using similar or different survey questions	・Committee translation ・Expert reviews ・Cognitive interviews
Semantic equivalence	Equivalence in the meaning of words, and achieving it may present problems with vocabulary and grammar	・Committee translation ・Expert reviews ・Cognitive interviews
Content validity	The content of each item of the instrument is relevant to the phenomena of each culture being studied	・Literature review ・Content expert reviews ・Cognitive interviews

Table 3 List of Cambodian experts

#	Area	Language skill	Affiliation and Background
1	Content experts	Bilingual	WHO, MD
2	Content experts	Bilingual	Urban hospital, MD, MPH
3	Content experts	Bilingual	Ministry of Health, MW
4	Clinical expert	Bilingual	Urban hospital, MW
5	Clinical expert	Bilingual	Urban hospital, MW
6	Clinical expert	Monolingual	Urban hospital, MW
7	Clinical expert	Monolingual	Rural health center, MW
8	Academic expert	Bilingual	Ministry of Health, RN., PhD

Table 4 Respondent sample of cognitive interviewing

	1st round	2nd round	3rd round	Total
Urban hospital	7	4	4	15
Rural health center	3	1	1	5
Total	10	5	5	20

Table 5 The characteristics of 20 women involved in the cognitive interviewing

Characteristics	Number	Percent
Age (years)		
Mean[range]	28.5 [18-42]	
<20	2	10.0
20-24	3	15.0
25-29	7	35.0
30-34	4	20.0
>35	4	20.0
Parity		
Mean[range]	1.9 [1-4]	
1	9	45.0
2	5	25.0
3	4	20.0
4	2	10.0
Marital status		
Married	20	100.0
Religion		
Khmer	16	80.0
Khmer Muslim	3	15.0
Cristian	1	5.0
Occupation		
Farmer	4	20.0
Factory worker	7	35.0
Housewife	6	30.0
Self-employed retail	2	10.0
Company employee	1	5.0

Table 5 The characteristics of 20 women involved in the cognitive interviewing (cont.)

Characteristics	Number	Percent
Education		
No	2	10.0
primary	8	40.0
Secondary	6	30.0
High	2	10.0
University	2	10.0
Economic background		
Non-ID poor	16	80.0
ID poor holder*	4	20.0
Mode of delivery**		
Normal	12	60.0
C/S	8	40.0

*Indicating the poorest
** One vacuum delivery was excluded due to neonatal outcome. Forceps is not practiced in Cambodia.

Table 6 Issues identified from cognitive interviewing

Cognitive process*	Feature	Potential problem**	#	Original Question	Reason of Revision	Revised questions	Action taken
Comprehension	Translation/ adaptation	Words requiring adaptation	2	During your time in the health facility did the doctors, nurses, or other health care providers **introduce themselves** to you when they first came to see you?	We used "welcome" as the initial translation as experts suggested Cambodian people normally did not introduce themselves. But it found a lack of semantic equivalence because 3 of 10 respondents (1st round) answered how she handled at the reception at the time of admission. 9 of 20 respondents answered they wanted to know who would support her birth, but not necessarary to know thier name. We decided to add explanation.	During your time in the health facility did the medical staffs **introduce themselves** to you when they first came to see you? **For example, their name or profession.**	Definition added
			3	Did the doctors, nurses, or other health care providers **call you by your name**?	We used "call appropriately" as the initial Khmer translation as experts suggested Cambodian people normally do not call by name but by bong/oung. But we found 11 of 20 respondents were called by name when injection and examination at the hospital setting. 2 of 20 respondents reported being called by room and bed number was also appropriate because they could identify themselves. 3 women preferred being called by name, 4 women preferred by bong /oung, and 10 women answered either was ok. It means being called appropriately for the person is important. We decided to use both original question with explanation and contextual specific question.	*Etic:* Did the medical staffs **call you by your name**? *Emic:* Did the medical staffs **call you appropriately**?	Etic/emic mix emerge
			8	Did you feel like the doctors, nurses or other staff at the facility **involved you in decisions** about your care?	11 women who had normal delivery were unfamiliar with this question intent, because it is natural to follow doctors in Cambodia. 6 women who had C/S stated that "being well informed, I decided to have C/S". We decided to add explanations as to whetherthere was an opportunity to make decisions during the process of labor, if neccesary.	Did you feel like the medical staffs at the facility **ask your opinion and decision** about your care? (**For example, can you decide for yourself whether you want to have a natural or caesarean section?**)	Scenario added
			10	During the delivery, do you feel like you were able to **be in the position of your choice**?	All respondents (1st round) did not make sense with this question intent, because there was no choice but supine position in Cambodia. "favorite free position" was more understandable, and 5 women valued due to reduce pain.	During the delivery, do you feel like you were able to be in your **favorite free position**?	Terminology replaced
		cultural confusion	19	**When you needed help**, did you feel the doctors, nurses or other staff at the facility **paid attention**?	3 of 20 confused needed help from her family not medical staff. This may be because women normally ask needed help to her family. We added explanation when there was confusion.	When you needed help, did you feel the medical staffs at the facility **responded to what you need**?	Explanation and confirmation added
Comprehension	Vocabulary	techinical term	10	During the delivery, do you feel like you were able to be in the **position** of your choice?	No one understood the initial translation of delivery position「(iriyeabath) ឥរិយាបថ」 We changed favorite free position 「(chalnea) ចលនា」 instead of choice.	During the delivery, do you feel like you were able to be **in your favorite free position**?	Terminology replaced Explanation added
		Multiple definitions	14	Did the doctors and nurses at the facility talk to you about how you were **feeling**?	Feeling includes both physical and emotional condition. 5 of 10 respondents (1st round) reported to be asked physical condition, while only one respondents was asked emotional condition. Since psychological aspect affect the progress of childbirth, we decided to ask both the psychological aspect (arommo) អារម្មណ៍ and the physical condition (sruolokhluon) ស្រួលខ្លួន.	Did the medical staffs at the facility talk to you about how you were **feeling (Physical /Psychological)** ?	Two questions asked

Table 6 Issues identified from cognitive interviewing (cont.)

Cognitive process*	Feature	Potential problem**	#	Original Question	Reason of Revision	Revised questions	Action taken
Comprehension	Reference points	missing	1	How did you feel about the amount of **time you waited**? Would you say it was very short, somewhat short, somewhat long, or very long?	Temporal confusion. 2 of 10 respondents (1st round) answered time to take giving birth, not the waited time for care. Although there is a clear instruction before the questions, it was difficult to tell what time you've been waiting for. We added the time flame as "from when you arrived to when you received care". There was no response error in 2nd and 3rd round.	Did you feel to **wait long or short from when you arrived to when you received care**?	Definition added
		Lack of understanding of respondents	6	During examinations in the labor room, were you covered up with a cloth or blanket or screened with a curtain so that you did not feel exposed?	Spatial confusion. 2 of 10 respondents (1st round) answered when she was in operation room(1) and ICU(1). Although there is a clear setting in the question. We added the example of examination to make women visualize the situation.	During examinations in the labor room (**for example, pelvic examination**), were you covered up with a cloth or blanket or screened with a curtain ?	Explanation added
		Vague	9	Did the doctors, nurses or other staff at the facility ask your permission/consent before **doing procedures on you**?	4 of 10 respondents (1st round) answered doing procedure as non-invasive care such as measuring blood pressure. This question is consent matter, we added explanation doing procedure as invasive care such as pelvic examination and episiotomy. There was no response error in 2nd and 3rd round.	Did the medical staffs at the facility ask your permission/consent before doing procedures on you? **For example, pelvic examination and episiotomy**	Explanation added
			12	Did the doctors and nurses explain to you why they were **doing examinations or procedures on you**?	8 of 10 respondents (1st round) were not clear about what kind of examination. We added explanation doing procedure as pelvic examination or fetal heart rate monitering. Also, all respondents (1st round) failed to answer why. We added explanation as the objectives or reasons why.	Did the medical staffs explain to you the objectives or reasons why they were doing examinations or procedures on you? **For example, pelvic examination or fetal heart rate monitering**	Explanation added
Comprehension	Translation/ adaptation	Uncommon expression	7	Do you feel like your health **information** was or will be kept confidential at this facility?	8 of 10 respondents (1st round) were not clear about what kind of information. We added example such as the information on the medical record.	Do you feel like your health information was kept confidential at this facility? **For example, the information on the medical record.**	Explanation added
Retrieval	Task performance	Non reachable answers			13 of 20 respondents answered do not know whether it was kept confidential. This is non reachable answers. 5 of 20 respondents answered no information to be kept confidential. All 20 respondents want to share her health information to her family. Since there is no answer option, we added another response category "don't know" (non reachable answers).		Eesponse category added
Response	Response category	Nonexhaustive					

* Four stages task analytic model (Tourangeau, 1988)

**The Appraisal system for Cross-National Survey (Lee, 2014)

Table 7 Property evaluated and methods

Domain	Measurement property	Aspect	Definition (DeVellis, 2016; Mokkink et. al, 2010)	Methods used in Phase 1	Methods used in Phase 2
Validity			The degree to which an HR-PRO instrument measures the construct(s) it purports to measure		
	Content validity	Content validity	The degree to which the content of an HR-PRO instrument is an adequate reflection of the construct to be measured	・Literature review ・Content expert reviews ・Cognitive interviews	・Content validity index
		Face validity	The degree to which (the items of) an HR-PRO instrument indeed looks as though they are an adequate reflection of the construct to be measured	・Cognitive interviews	
	Construct validity		The degree to which the scores of an HR-PRO instrument are consistent with hypotheses based on the assumption that the HR-PRO instrument validly measures the construct to be measured		
		Structural validity	The degree to which the scores of an HR-PRO instrument are an adequate reflection of the dimensionality of the construct to be measured		・Exploratory factor analysis
		Hypothesis testing	the degree to which the scale can predict health outcome		・Pearson correlation
		Cross-cultural validity	The degree to which the performance of the items on a translated or culturally adapted HR-PRO instrument are an adequate reflection of the performance of the items of the original version of the HR-PRO instrument	・Committee translation ・Expert reviews ・Cognitive interviews	
Reliability			The degree to which the measurement is free from measurement error		
		Internal consistency reliability	The degree of the interrelatedness among the items		・Cronbach's alpha

■Property not evaluated and reason for exclusion

Domain	Measurement property	Aspect	Definition	Reason for exclusion
Validity	Criterion-related validity		The degree to which the scores of an HR-PRO instrument are an adequate reflection of a "gold standard"	Cannot be assessed due to the lack of "gold standard" to measere PCMC
Reliability		Inter-rather reliability	The degree of agreement among different raters	Agreement between different raters was not aimed. The questionnaire aimed to collect women's individual
		Test-retest method		Cannot be assessed due to the limited duration
		Measurement error	The systematic and random error of a patient's score that is not attributed to true changes in the construct to be measured	
Responsiveness			The ability of a questionnaire to detect clinically imprtant changes over time	Will be evaluated in future studies
Interpretability *		Acceptability	The degree to which one can assign qualitative meaningdthat is, clinical or commonly understood connotationsdto an instrument's quantitative scores	Will be evaluated in future studies

Abbreviations: HR-PROs, health-related patient-reported outcomes

*Interpretability is not considered a measurement property but an important characteristic of a measurement instrument.

Table 8 Characteristics of 300 women involved in the field survey

Characteristics	Number	Percent
Age (years)		
Mean (SD)	29.32	5.94
<20	13	4.3
20-24	50	16.7
25-29	94	31.3
30-34	77	25.6
35-39	53	17.7
40<	13	4.2
Parity		
Mean (SD)	2.26	1.20
1	89	29.6
2	112	37.2
3	54	17.9
4	28	9.3
5	15	5
7	1	0.3
8	1	0.3
Marital status		
Married	299	99.3
Widowed	1	0.3
Religion		
Buddhism	293	97.3
Khmer Muslim	6	2
Cristian	1	0.3
Occupation		
Housewife	125	41.5
Factory worker	98	32.6
Self-employed retail	36	12
Company employee	18	6
Farmer	15	5
Government official	4	1.3
Scavenger	4	1.3

Table 8 Characteristics of 300 women involved in the field survey (cont.)

Characteristics	Number	Percent
Education (*enrollment)		
No	26	8.6
Primary school	120	39.9
Secondary school	95	31.6
High school	48	15.9
University	11	3.7
Literacy		
Illiterate	55	18.3
With some difficulty	153	50.8
Very well	92	30.6
Economical background		
Non-ID poor	280	93.4
ID poor holder (the poorest)	20	6.6
Postpartum day		
Mean (SD)	2.52	1.42
Mode of delivery		
Vaginal delivery (normal)	196	65.1
Vaginal delivery (episiotomy)	42	14
CS	62	20.6
Residence		
Phnom Penh	176	58.5
Kampong Chhnang	34	11.3
Kandal	48	15.9
Kampong Speu	18	6
Kampong Cham	5	1.7
Prey veng	9	3
Takeo	5	1.7
Kampong Thom	2	0.7
Tbong Khmun	1	0.3
Pursat	1	0.3
Kratie	1	0.3

Table 9 Items for person-centered maternity care scale

Domain	Scale item	Disposition			
		Cambodia (20items)	Kenya (30 items)	India (27 items)	short scale (13 items)
Dignity and respect	#4: Did the doctors, nurses, or other staff at the facility treat you with respect?	Retained	Yes	Yes	Yes
	#5: Did the doctors, nurses, and other staff at the facility treat you in a friendly manner?	Retained	Yes	Yes	Yes
	#6: During examinations in the labor room, were you covered up with a cloth or blanket or screened with a curtain so that you did not feel exposed?	Retained	Yes	Yes	Yes
	#7: Do you feel like your health information was or will be kept confidential at this facility?	Deleted: low loading	Yes	Yes	No
	#21: Did you feel the doctors, nurses, or other health providers shouted at you, scolded, insulted, threatened, or talked to you rudely?	Deleted: low loading	Yes	Yes	No
	#22: Did you feel like you were treated roughly like pushed, beaten, slapped, pinched, physically restrained, or gagged?	Deleted: low loading	Yes	Yes	No
Communication and autonomy	#2: During your time in the health facility did the doctors, nurses, or other health care providers introduce themselves to you when they first came to see you?	Deleted: low loading	Yes	Yes	No
	#3: Did the doctors, nurses, or other health care providers call you by your name?	Retained	Yes	Yes	Yes
	#8: Did you feel like the doctors, nurses or other staff at the facility involved you in decisions about your care?	Retained	Yes	Yes	Yes
	#9: Did the doctors, nurses or other staff at the facility ask your permission/consent before doing procedures on you?	Deleted: low loading	Yes	Yes	Yes
	#10: During the delivery, do you feel like you were able to be in the position of your choice?	Retained	Yes	Yes	Yes
	#11: Did the doctors, nurses or other staff at the facility speak to you in a language you could understand?	Retained	Yes	Yes	No
	#12: Did the doctors and nurses explain to you why they were doing examinations or procedures on you?	Retained	Yes	Yes	Yes
	#13: Did the doctors and nurses explain to you why they were giving you any medicine?	Retained	Yes	Yes	Yes
	#16: Did you feel you could ask the doctors, nurses or other staff at the facility any questions you had?	Retained	Yes	Yes	Yes
Supportive care	#1: How did you feel about the amount of time you waited? Would you say it was very short, somewhat short, somewhat long, or very long?	Retained	Yes	Yes	Yes
	#14: Did the doctors and nurses at the facility talk to you about how you were feeling?	Retained	Yes	Yes	Yes
	#15: Did the doctors, nurses or other staff at the facility try to understand your anxieties and fears?	Retained	Yes	No	No
	#17: Were you allowed to have someone you wanted to stay with you during labor?	Retained	Yes	Yes	No
	#18: Were you allowed to have someone you wanted to stay with you during delivery?	Retained	Yes	Yes	No
	#19: When you needed help, did you feel the doctors, nurses or other staff at the facility paid attention?	Retained	Yes	Yes	Yes
	#20: Do you feel the doctors or nurses did everything they could to help control your pain?	Retained	Yes	Yes	No
	#23: Did the doctors, nurses or other staff at the facility ask you or your family for money other than the official cost	Deleted: low loading	No	Yes	No
	#24: Do you think there was enough health staff in the facility to care for you?	Retained	Yes	Yes	No
	#25: Did you feel the doctors, nurses or other staff at the facility took the best care of you?	Retained	Yes	Yes	Yes
	#26: Did you feel you could completely trust the doctors, nurses or other staff at the facility with regards to your care?	Deleted: low loading	Yes	Yes	No
	#27: Thinking about the labor and postnatal wards, Did you feel the health facility was crowded?	Retained	Yes	No	No
	#28: Thinking about the wards, washrooms and the general environment of the health facility, will you say the facility was very clean, clean, dirty, or very dirty?	Deleted: low loading	Yes	Yes	No
	#29: Was there water in the facility?	Deleted: low loading	Yes	No	No
	#30: Was there electricity in the facility?	Deleted: low loading	Yes	No	No
	#31: In general, did you feel safe in the health facility?	Deleted: low loading	Yes	Yes	No

Table 10 Distribution of full PCMC scale and subscales of 300 women in Cambodia

	Number of items	Mean scores	SD	Min	Max	Possible range
Full PCMC Scale	30	69.32	9.47	48	89	0 to 90
Subscale						
Dignity and respect	6	16.01	1.53	8	18	0 to 18
Communication and autonomy	9	15.43	3.92	6	24	0 to 27
Supportive Care	15	36.26	4.38	24	44	0 to 45

Table 11 CVI evaluation of the 31-item Kh-PCMC scale by eight experts

Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Number of agreement	Item CVI[1]
1	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
2	-	-	✓	✓	✓	✓	✓	✓	6	0.75
3	-	✓	✓	✓	✓	✓	✓	✓	7	0.87
4	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
5	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
6	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
7	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
8	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
9	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
10	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
11	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
12	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
13	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
14	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
15	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
16	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
17	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
18	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
19	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
20	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
21	✓	-	✓	✓	✓	✓	✓	✓	7	0.87
22	✓	-	✓	✓	✓	✓	✓	✓	7	0.87
23	✓	-	✓	✓	✓	✓	✓	✓	7	0.87
24	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
25	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
26	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
27	✓	-	✓	✓	✓	✓	✓	✓	7	0.87
28	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
29	✓	-	✓	✓	✓	✓	✓	✓	7	0.87
30	✓	-	✓	✓	✓	✓	✓	✓	7	0.87
31	✓	✓	✓	✓	✓	✓	✓	✓	8	1.00
									S-CVI/Ave[2]=	0.96
									S-CVI/UA[3]=	0.74
Number of agreement	29	24	31	31	31	31	31	31	Average propotion of agreement across experts[4]	0.96
Propotion of relevant	0.93	0.77	1.00	1.00	1.00	1.00	1.00	1.00		

[1]Item CVI=Number of experts rating the item either 3 or 4/total number of experts.

[2]S-CVI/Ave=Sum of the I-CVIs (I-CVI1+I-CVI2+I-CVI3+ …….+I-CVIn)/total number of items. Averaging method.

[3]S-CVI/UA=Number of items that achieved rating 3 or 4 by all experts/total number of items. Universal agreement method.

[4]Average propotion of agreement across experts=Proportion of agreement of each expert/total number of experts

"-" l= not relevant, 2= unable to assess relevant, " ✓ " 3= relevant with needs minor revisions, 4= very relevant

Table 12 Standards for evaluating the quality of PROM development (COSMIN box 1)

Ratings: V= very good; A = adequate; D = doubtful; I = inadequate; N= not applicable		
1a. PROM design		PROM
General design requirements		
1	Is a clear description provided of the construct to be measured?	V
2	Is the origin of the construct clear: was a theory, conceptual framework or disease model used or clear rationale provided to define the construct to be measured?	V
3	Is a clear description provided of the target population for which the PROM was developed?	V
4	Is a clear description provided of the context of use (i.e. discriminative, evaluative purpose, and/or predictive)	V
5	Was the PROM development study performed in a sample representing the target population for which the PROM was developed?	V
Concept elicitation (relevance and comprehensiveness)		
6	Was an appropriate qualitative data collection method used to identify relevant items for a new PROM?	V
7	Were skilled group moderators/ interviewers used?	A
8	Were the group meetings or interviews based on an appropriate topic or interview guide?	V
9	Were the group meetings or interviews recorded and transcribed verbatim?	V
10	Was an appropriate approach used to analyse the data?	V
11	Was at least part of the data coded independently?	V
12	Was data collection continued until saturation was reached?	V
13	For quantitative studies: was the sample size appropriate?	V
	SUBTOTAL QUALITY CONCEPT ELICITATION STUDY *Lowest score of items 6-13*	**A**
	TOTAL QUALITY OF THE PROM DESIGN *Lowest score of items 1-13*	**A**
1b. Cognitive interview study or other pilot test		
14	Was a cognitive interview study or other pilot test performed? *If NO skip items 15-35*	V
General design requirements		
15	Was the cognitive interview study or other pilot test performed in a sample representing the target population?	V
Comprehensibility		
16	Were patients asked about the comprehensibility of the PROM? *If NO or not clear, skip items 17-25*	V
17	Were all items tested in their final form?	V
18	Was an appropriate qualitative method used to assess the comprehensibility of the PROM instructions, items, response options, and recall period?	V
19	Was each item tested in an appropriate number of patients?	V
20	Were skilled interviewers used?	A
21	Were the interviews based on an appropriate interview guide?	V
22	Were the interviews recorded and transcribed verbatim?	V
23	Was an appropriate approach used to analyse the data?	V
24	Were at least two researchers involved in the analysis?	V
25	Were problems regarding the comprehensibility of the PROM instructions, items, response options, and recall period appropriately addressed by adapting the PROM?	V
	SUBTOTAL QUALITY OF COMPREHENSIBILITY STUDY *Lowest score of items 15-25*	A
Comprehensiveness		
26	Were patients asked about the comprehensiveness of the PROM? *If NO or not clear, skip items 27-35*	V
27	Was the final set of items tested?	V
28	Was an appropriate method used for assessing the comprehensiveness of the PROM?	V
29	Was each item tested in an appropriate number of patients?	V
30	Were skilled interviewers used?	A
31	Were the interviews based on an appropriate interview guide?	V
32	Were the interviews recorded and transcribed verbatim?	V
33	Was an appropriate approach used to analyse the data?	V
34	Were at least two researchers involved in the analysis?	V
35	Were problems regarding the comprehensiveness of the PROM appropriately addressed by adapting the PROM?	V
	SUBTOTAL QUALITY OF COMPREHENSIVENESS STUDY *Lowest score of items 15, 26-35*	A
	TOTAL QUALITY OF THE PILOT STUDY *Lowest score of items 14-35*	A
	TOTAL QUALITY OF THE PROM DEVELOPMENT STUDY *Lowest score of items 1-35*	A

Table 13 Standards for evaluating the quality of content validity studies of PROMs (COSMIN box 2)

Score: V= very good; A = adequate; D = doubtful; I = inadequate; N= not applicable		
		PROM
2a. Asking patient about relevance		
1	Was an appropriate method used to ask patients whether each item is relevant for their experience with the condition?	V
2	Was each item tested in an appropriate number of patients?	V
3	Were skilled group moderators/interviewers used?	A
4	Were the group meetings or interviews based on an appropriate topic or interview guide?	V
5	Were the group meetings or interviews recorded and transcribed verbatim?	V
6	Was an appropriate approach used to analyse the data?	V
7	Were at least two researchers involved in the analysis?	V
	SUBTOTAL QUALITY OF RELEVANCE STUDY *Lowest score of items 1-7*	**A**
2b. Asking patients about comprehensiveness		
8	Was an appropriate method used for assessing the comprehensiveness of the PROM?	V
9	Was each item tested in an appropriate number of patients?	V
10	Were skilled group moderators/interviewers used?	A
11	Were the group meetings or interviews based on an appropriate topic or interview guide?	V
12	Were the group meetings or interviews recorded and transcribed verbatim?	V
13	Was an appropriate approach used to analyse the data?	V
14	Were at least two researchers involved in the analysis?	V
	SUBTOTAL QUALITY OF COMPREHENSIVENESS STUDY *Lowest score of items 8-14*	**A**
2c. Asking patients about comprehensibility		
15	Was an appropriate qualitative method used for assessing the comprehensibility of the PROM instructions, items, response options, and recall period?	V
16	Was each item tested in an appropriate number of patients?	V
17	Were skilled group moderators/interviewers used?	A
18	Were the group meetings or interviews based on an appropriate topic or interview guide?	V
19	Were the group meetings or interviews recorded and transcribed verbatim?	V
20	Was an appropriate approach used to analyse the data?	V
21	Were at least two researchers involved in the analysis?	V
	SUBTOTAL QUALITY OF COMPREHENSIBILITY STUDY *Lowest score of items 15-21*	**A**
2d. Asking professionals about relevance		
22	Was an appropriate method used to ask professionals whether each item is relevant for the construct of interest?	V
23	Were professionals from all relevant disciplines included?	V
24	Was each item tested in an appropriate number of professionals?	V
25	Was an appropriate approach used to analyse the data?	V
26	Were at least two researchers involved in the analysis?	V
	SUBTOTAL QUALITY OF RELEVANCE STUDY *Lowest score of items 22-26*	**V**
2e. Asking professionals about comprehensiveness		
27	Was an appropriate method used for assessing the comprehensiveness of the PROM?	I
28	Were professionals from all relevant disciplines included?	V
29	Was each item tested in an appropriate number of professionals?	V
30	Was an appropriate approach used to analyse the data?	NA
31	Were at least two researchers involved in the analysis?	V
	SUBTOTAL QUALITY OF COMPREHENSIVENESS STUDY *Lowest score of items 27-31*	**I**

Table 14 Criteria for content validity of 20-item Kh-PCMC scale

Score: + = sufficient; - = insufficient; ? = indeterminate; ± = inconsistent					
PROM (subscale)	**PROM development study**	**Content validity study**	**Rating of reviewers**	**OVERALL RATINGS PER PROM**	**QUALITY OF EVIDENCE**
	+ / - / ?	**+ / - / ?**	**+ / - / ?**	**+ / - / ± / ?**	**High, moderate, low, very low**
Relevance					
1 Are the included items relevant for the construct of interest?[1]	+	+	+		
2 Are the included items relevant for the target population of interest?[1]	+	+	+		
3 Are the included items relevant for the context of use of interest?[1]	+	+	+		
4 Are the response options appropriate?	+	+	+		
5 Is the recall period appropriate?	+	+	+		
RELEVANCE RATING (+ / - / ± / ?)	**+**	**+**	**+**	**+**	**High**
Comprehensiveness					
6 Are all key concepts included?	+	-	±		
COMPREHENSIVENESS RATING (+ / - / ± / ?)	**+**	**-**	±	±	**moderate**
Comprehensibility					
7 Are the PROM instructions understood by the population of interest as intended?	+	+			
8 Are the PROM items and response options understood by the population of interest as intended?	+	+			
9 Are the PROM items appropriately worded?			+		
10 Do the response options match the question?			+		
COMPREHENSIBILITY RATING (+ / - / ± / ?)	**+**	**+**	**+**	**+**	**High**
CONTENT VALIDITY RATING (+ / - / ± / ?)	**+**	**±**	**+**	**+**	**High**

[1] These criteria refer to the construct, population, and context of use of interest in the systematic review.

[2] Add more columns if more content validity studies are available

[3] If ratings are inconsistent between studies, consider using separate tables for subgroups of studies with consistent results.

Table 15 Rotated factor loadings of 31 items on subscale from a survey of 300 women

	Factor 1	Factor 2	Factor 3	Cut off point
16 Able to ask questions	**0.937**	-0.183	-0.051	
5 friendly manner	**0.908**	-0.057	-0.101	
11 Language	**0.699**	0.036	0.024	
4 respect	**0.658**	0.194	-0.055	
19 Attention when needed help	**0.657**	0.093	0.167	
14 talk about feeling	**0.656**	0.059	-0.099	
10 Delivery position choice	**0.591**	-0.233	0.28	
27 crowded	**0.532**	-0.381	-0.058	
20 Control pain	**0.503**	0.219	-0.048	
15 Support anxiety	**0.479**	0.165	0.019	
3 Call by name	**0.448**	0.24	0.004	
1 Time to care	**0.382**	-0.275	0.042	
28 clean	0.269	-0.121	-0.065	**Deleted: cut off of 0.30**
31 Safe	0.261	-0.042	-0.088	**Deleted: cut off of 0.30**
2 Introduce themselves	0.182	0.029	0.079	**Deleted: cut off of 0.30**
7 Record confidentiality	0.168	-0.063	-0.013	**Deleted: cut off of 0.30**
22 Physical abuse	-0.06	-0.025	-0.016	**Deleted: cut off of 0.10**
8 Involvement in care	-0.228	**0.812**	-0.036	
24 Enough staff	-0.079	**0.671**	0.004	
13 Explain medicine	0.211	**0.587**	0.064	
12 Explain procedures	0.195	**0.542**	0.121	
25 Took best care	0.173	**0.54**	-0.034	
6 privacy	-0.18	**0.357**	-0.099	
26 Trust	0.285	0.297	-0.083	**Deleted: cut off of 0.30**
30 Electricity	-0.086	0.28	-0.017	**Deleted: cut off of 0.30**
29 water	-0.026	0.212	-0.027	**Deleted: cut off of 0.30**
23 Bribes	-0.096	0.205	-0.064	**Deleted: cut off of 0.30**
9 consent to procedures	0.129	0.187	0.053	**Deleted: cut off of 0.30**
18 Delivery companion	-0.05	-0.019	**0.931**	
17 Labor companion	-0.09	-0.058	**0.903**	
21 Verbal abuse	0.015	-0.054	0.064	**Deleted: cut off of 0.10**
*Principal factor and Promax rotation				

Table 16 Exploratory factor analysis result of 20 items of the Kh-PCMC scale

Factor (data based)	Items	Factor 1	Factor 2	Factor 3	Theoretical factor structure
Dignity and respect	16 Able to ask questions	**.92**	-.15	-.07	Communication and autonomy
	5 friendly manner	**.89**	-.04	-.10	Dignity and respect
	11 Language	**.67**	.09	.01	Communication and autonomy
	14 talk about feeling	**.64**	.07	-.11	Dignity and respect
	19 Attention when needed help	**.64**	.13	.16	Supportive care
	4 respect	**.64**	.22	-.06	Supportive care
	10 Delivery position choice	**.62**	-.24	.28	Communication and autonomy
	27 crowded	**.55**	-.39	-.06	Supportive care
	20 Control pain	**.47**	.26	-.05	Supportive care
	15 Support anxiety	**.46**	.19	.03	Supportive care
	3 Call by name	**.45**	.25	.00	Communication and autonomy
	1 Time to care	**.38**	-.26	.04	Supportive care
Communication and autonomy	8 Involvement in care	-.22	**.80**	-.04	Communication and autonomy
	24 Enough staff	-.08	**.66**	.02	Supportive care
	13 Explain medicine	.20	**.62**	.04	Communication and autonomy
	12 Explain procedures	.18	**.57**	.11	Communication and autonomy
	25 Took best care	.16	**.52**	-.02	Supportive care
	6 privacy	-.18	**.34**	-.08	Dignity and respect
Supportive care	18 Delivery companion	-.01	.02	**.93**	Supportive care
	17 Labor companion	-.05	-.02	**.90**	Supportive care
	Correlation between factors	I	II	III	
	I	—	.56*	.06	
	II		—	.03	
	III			—	
Principal factor, Promax rotation					
* p<.01					

Table 17 Exploratory factor analysis result of 29 items of the Kh-PCMC scale

Factor (data based)	Items	Factor 1	Factor 2	Factor 3	Theoretical factore structure
Dignity and respe	16 Able to ask questions	**0.94**	-0.18	-0.05	Communication and autonomy
	5 friendly manner	**0.91**	-0.06	-0.10	Dignity and respect
	11 Language	**0.70**	0.04	0.02	Communication and autonomy
	4 respect	**0.66**	0.19	-0.06	Dignity and respect
	19 Attention when needed help	**0.66**	0.09	0.17	Supportive care
	14 talk about feeling	**0.66**	0.06	-0.10	Supportive care
	10 Delivery position choice	**0.59**	-0.23	0.28	Communication and autonomy
	27 crowded	**0.53**	-0.38	-0.06	Supportive care
	20 Control pain	**0.50**	0.22	-0.05	Supportive care
	15 Support anxiety	**0.48**	0.17	0.02	Supportive care
	3 Call by name	**0.45**	0.24	0.00	Communication and autonomy
	1 Time to care	**0.38**	-0.28	0.04	Supportive care
	28 clean	**0.27**	-0.12	-0.07	Supportive care
	31 Safe	**0.26**	-0.04	-0.09	Supportive care
	2 Introduce themselves	**0.18**	0.03	0.08	Communication and autonomy
	7 Record confidentiality	**0.17**	-0.06	-0.01	Dignity and respect
Communication a	8 Involvement in care	-0.23	**0.81**	-0.04	Communication and autonomy
	24 Enough staff	-0.08	**0.67**	0.00	Supportive care
	13 Explain medicine	0.21	**0.59**	0.06	Communication and autonomy
	12 Explain procedures	0.20	**0.54**	0.12	Communication and autonomy
	25 Took best care	0.17	**0.54**	-0.03	Supportive care
	6 privacy	-0.18	**0.36**	-0.10	Dignity and respect
	26 Trust	0.29	**0.30**	-0.08	Supportive care
	30 Electricity	-0.09	**0.28**	-0.02	Supportive care
	29 water	-0.03	**0.21**	-0.03	Supportive care
	23 Bribes	-0.10	**0.21**	-0.06	Supportive care
	9 consent to procedures	0.13	**0.19**	0.05	Communication and autonomy
Supportive care	18 Delivery companion	-0.05	-0.02	**0.93**	Supportive care
	17 Labor companion	-0.09	-0.06	**0.90**	Supportive care
	Correlation between factors	I	II	III	
	I	—	.58*	0.13	
	II		—	0.10	
	III			—	
Principal factor, Promax rotation					
* $p<.01$					

Table 18 The reasons to eliminate PCMC scale items during factor analysis

Reasons	Items
Low factor loading of less than 0.3 Low I-CVI	#2: During your time in the health facility did the doctors, nurses, or other health care providers introduce themselves to you when they first came to see you?
Low factor loading of less than 0.3 High mean (+1SD) of greater than 2.9	#7: Do you feel like your health information was or will be kept confidential at this facility?
Low factor loading of less than 0.3	#9: Did the doctors, nurses or other staff at the facility ask your permission/consent before doing procedures on you?
Low factor loading of less than 0.3 High mean (+1SD) of greater than 2.9	#21: Did you feel the doctors, nurses, or other health providers shouted at you, scolded, insulted, threatened, or talked to you rudely?
Low factor loading of less than 0.3 High mean (+1SD) of greater than 2.9	#22: Did you feel like you were treated roughly like pushed, beaten, slapped, pinched, physically restrained, or gagged?
Low factor loading of less than 0.3 High mean (+1SD) of greater than 2.9	#23: Did the doctors, nurses or other staff at the facility ask you or your family for money other than the official cost
Low factor loading of less than 0.3	#26: Did you feel you could completely trust the doctors, nurses or other staff at the facility with regards to your care?
Low factor loading of less than 0.3 Theoretically different demension	#28: Thinking about the wards, washrooms and the general environment of the health facility, will you say the facility was very clean, clean, dirty, or very dirty?
Low factor loading of less than 0.3 High mean (+1SD) of greater than 2.9 Theoretically different demension	#29: Was there water in the facility?
Low factor loading of less than 0.3 High mean (+1SD) of greater than 2.9 Theoretically different demension	#30: Was there electricity in the facility?
Low factor loading of less than 0.3 High mean (+1SD) of greater than 2.9 Theoretically different demension	#31: In general, did you feel safe in the health facility?

Table 19 Conformatory factor analysis results of 300 women

Index	X^2	*df*	GFI[1]	CFI[2]	RMSEA[3]
Cut-off of Good fit			>0.95	>0.97	<0.05
Cut-off of Accepted fit			>0.90	>0.95	<0.08
Model 1 (EFA data-derived 20 items）*	534.92	167.00	0.85	0.86	0.09
Model 2 (theoretically derived 20 items）	1028.73	167.00	0.73	0.67	0.13
Model 3 (EFA data-derived 29 items) *	1043.21	374.00	0.81	0.78	0.08
Model 4 (theoretically derived 29items ）*	1551.88	374.00	0.72	0.62	0.10

*Warning. No path diagram.

[1]The Goodness of Fit is the proportion of variance accounted for by the estimated population covariance.

[2]The Comparative Fit Index compares the fit of a target model to the fit of an independent, or null, model.

[3]The Root Mean Square Error of Approximation is a parsimony-adjusted index. Values closer to 0 represent a good fit.

Table 20 Internal consistency and distribution of the 20-item K-PCMC scale and subscale from a survey of 300 women

	Alpha	Mean	SD	Min	Max	Possible range
Full PCMC scale (20 items)	.86	44.25	8.68	26	60	0 to 60
Sub-scale						
Dignity and respect (12 items)	.85	25.68	5.87	13	37	0 to 36
Communication and autonomy (6items)	.76	13.40	3.79	4	18	0 to 18
Supportive care (2 items)	.91	5.18	1.72	0	6	0 to 6

Table 21 Predefined hypotheses testing and result

Hypotheses	Correlation value	Confirmed
There is positive little to moderate correlation between PCMC full score and satisfaction with care.	0.249**	Yes
There is positive little to moderate correlation between PCMC full score and quality of care rating.	0.593**	Yes
There is positive little to moderate correlation between PCMC full score and the future intention to seek delivery care in the same facility.	-0.065	No
There is positive moderate correlation between dignity and respect subscale score and satisfaction with care.	0.601**	Yes
There is positive moderate correlation between communication and autonomy subscale and satisfaction with care.	0.474**	Yes
There is positive little to moderate correlation between dignity and respect subscale score and quality of care rating.	0.311**	Yes
There is positive little correlation between communication and autonomy subscale and quality of care rating.	0.149**	Yes
There is negative little correlation between PCMC full score and poor.	-0.026	No
There is negative little correlation between literacy and PCMC full score. (It is expected illiterate women have lower PCMC score than women with literacy.)	-0.146*	Yes
There is negative little correlation between mode of delivery and PCMC full score. (It is expected women with C/S have lower PCMC score than women with vaginal delivery.)	-0.177**	Yes

** p<.05 ** p<.01*

Correlation coefficient: <0.3 low, 0.3-0.6 moderate, 0.6<high

Table 22 Quality of study on measurement properties of the 20-item Kh-PCMC scale

PROM	Content validity						Structural validity	Internal consistency	Cross-cultural validity	Reliability	Measurement error	Criterion validity	Construct validity		Responsiveness			
	Asking patients				Asking experts								Convergent validity	Known groups validity	Comparison with gold standard	Comparison with other instruments	Comparison between subgroups	Comparison before and after intervention
	Relevance	Comprehensiveness	Comprehensibility	Relevance	Comprehensiveness													
Kh-PCMC scale	+	+	+	+	–		?	+	?	N/A	N/A	N/A	+	?	N/A	N/A	N/A	N/A

Table 23 Lists of Reliability and Validity of 20-item Kh-PCMC scale assessed in Phase 2

		Full PCMC scale (20 items)	Subscale		
			Dignity and respect (12 items)	Communication and autonomy (6items)	Supportive care (2 items)
Internal consistency (N=300)		α=0.86	α=0.85	α=0.76	α=0.909
Hypotheses testing for construct validity (N=300)					
	Satisfaction with care	0.249***	0.601***	0.474***	-0.13*
	Quality of care rating	0.593***	0.311***	0.149**	-0.105
	Future intention to give birth	-0.065	-0.28	-0.08	-0.04
*** $p<.001$ (2-tailed) ** $p<.01$ (2-tailed) * $p<.05$ (2-tailed)					

Table 24 The 20-item Kh-PCMC scale

Subscale	Contents	Items
Dignity and respect	To assess maternity care that women felt the medical staff did something good to them, which is attributed to Buddhist values such as Karma.	#16: Did you feel you could ask the doctors, nurses or other staff at the facility any questions you had?
		#5: Did the doctors, nurses, and other staff at the facility treat you in a friendly manner?
		#11: Did the doctors, nurses or other staff at the facility speak to you in a language you could understand?
		#14: Did the doctors and nurses at the facility talk to you about how you were feeling?
		#19: When you needed help, did you feel the doctors, nurses or other staff at the facility paid attention?
		#4: Did the doctors, nurses, or other staff at the facility treat you with respect?
		#10: During the delivery, do you feel like you were able to be in the position of your choice?
		#27: Thinking about the labor and postnatal wards, Did you feel the health facility was crowded?
		#20: Do you feel the doctors or nurses did everything they could to help control your pain?
		#15: Did the doctors, nurses or other staff at the facility try to understand your anxieties and fears?
		#3: Did the doctors, nurses, or other health care providers call you by your name?
		#1: How did you feel about the amount of time you waited? Would you say it was very short, somewhat short, somewhat long, or very long?
Communication and autonomy	To assess maternity care that related to effective communication between women and medical staff.	#8: Did you feel like the doctors, nurses or other staff at the facility involved you in decisions about your care?
		#24: Do you think there was enough health staff in the facility to care for you?
		#13: Did the doctors and nurses explain to you why they were giving you any medicine?
		#12: Did the doctors and nurses explain to you why they were doing examinations or procedures on you?
		#25: Did you feel the doctors, nurses or other staff at the facility took the best care of you?
		#6: During examinations in the labor room, were you covered up with a cloth or blanket or screened with a curtain so that you did not feel exposed?
Supportive care	To assess maternity care that related to family presence. Cambodian people attach great importance to the family in the collectivistic culture.	#17: Were you allowed to have someone you wanted to stay with you during labor?
		#18: Were you allowed to have someone you wanted to stay with you during delivery?

Supplementary table 1 The revision process and reasons for revisions

#	Original Question	Initial translation Khmer version 1	Khmer version 3 (1st round of CI)	Back-translation (version 3)	Final Khmer version	Back-translation (final version)
1	How did you feel about the amount of time you waited? Would you say it was very short, somewhat short, somewhat long, or very long?	តើអ្នកគិតយ៉ាងម៉េចចំពោះពេលវេលានៃការរង់ចាំ? តើអ្នកគិតថាវាខ្លីណាស់ ខ្លីបន្តិច យូរបន្តិច ឬយូរណាស់?	តើអ្នកមានអារម្មណ៍យ៉ាងណាចំពោះចំនួននៃពេលវេលាដែលអ្នករង់ចាំក្នុងការទទួលការថែទាំ?	How did you feel about the amount of **time you waited to receive care**?	តើគាំងពីពេលអ្នកចូលមកមន្ទីពេទ្យរហូតបានទទួលការថែទាំ,អ្នកបានចាំយូរឬស្រាប់ ?	Did you feel to wait long or short from **when you arrived to when you received care**?
2	During your time in the health facility did the doctors, nurses, or other health care providers **introduce themselves** to you when they first came to see you?	ក្នុងអំឡុងពេលអ្នកនៅមន្ទីរពេទ្យ តើគ្រូពេទ្យនិងបុគ្គលិកផ្សេងទៀតបានណែនាំខ្លួនគេដល់អ្នកនៅពេលដែលគេជួបអ្នកលើកដំបូងឬទេ?	គ្រូពេទ្យនិងបុគ្គលិកផ្សេងទៀតបានស្វាគមន៍អ្នកទេ នៅពេលដែលគេជួបអ្នកលើកដំបូងឬទេ?	During your time in the health facility did the doctors, nurses, or other health care providers **welcome** you when they first came to see you?	តើអំឡុងពេលអ្នកនៅក្នុងមន្ទីរពេទ្យ/មណ្ឌលសុខភាព, ក្រុមគ្រូពេទ្យបានណែនាំខ្លួន ពេលពួកគាត់បានជួបអ្នកលើកដំបូងដែរឬទេ? ឧទាហរណ៍ ជ្រាប់ឈ្មោះ និងជំនាញរបស់ពួកគេទេ?	During your time in the health facility did the medical staffs introduce themselves to you when they first came to see you? **For example, their name or profession.**
3	Did the doctors, nurses, or other health care providers **call you by your name**?	តើគ្រូពេទ្យ ឬបុគ្គលិក ដទៃទៀតនៅ បានហៅអ្នកតាមឈ្មោះទេ?	តើគ្រូពេទ្យ ឬបុគ្គលិក ដទៃទៀត បានហៅអ្នកដោយសមរម្យ ដោយមិនរើសអើង ឬមើលងាយអ្នកទេ?	Did the doctors, nurses, or other health care providers call you appropriately by not discriminating or looking down on you?	តើក្រុមគ្រូពេទ្យបានហៅអ្នកតាមឈ្មោះដែរឬទេ?	Did the medical staffs **call you by your name**?
					តើគ្រូពេទ្យឬបុគ្គលិកដទៃទៀត បានហៅអ្នកដោយសមរម្យឬទេ?	Did the medical staffs call you **appropriately**?
6	During examinations in the labor room, were you covered up with a cloth or blanket or screened with a curtain so that you did not feel exposed?	ក្នុងអំឡុងពេលពិនិត្យក្នុងបន្ទប់ឈឺពោះ សម្រាល តើអ្នកត្រូវបានគេគ្របដោយក្រណាត់ ឬភួយ ឬ ជាំង ដោយវាំងននដើម្បីកុំអោយ អ្នកដទៃមើលឃើញឬទេ?	ក្នុងអំឡុងពេលពិនិត្យក្នុងបន្ទប់ឈឺពោះ សម្រាល តើអ្នកត្រូវបានគេជាំងដើម្បីកុំអោយអ្នកដទៃមើលឃើញឬទេ?	During examinations in the labor room, were you covered up that no one else can see?	អំឡុងពេលពិនិត្យនៅក្នុងបន្ទប់ឈឺពោះសម្រាលកូន (ឧទាហរណ៍ ការពិនិត្យស្បូន) តើអ្នកគិតថាអ្នកត្រូវបានគេជាំង ដោយគេញ្រក្រណាត់រឺភួយរឺបិទជាមួយវាំងននទេ?	During examinations in the labor room **(for example, pelvic examination),** were you covered up with a cloth or blanket or screened with a curtain ?
7	Do you feel like your health **information** was or will be kept confidential at this facility?	តើអ្នកគិតថាថាពាត៌មានសុខភាពរបស់អ្នក ត្រូវបានគោរក្សាជាការសំងាត់ទេ?	តើអ្នកគិតថាពាត៌មានសុខភាពរបស់អ្នក ត្រូវបានគោរក្សាជាការសំងាត់ទេ?	Do you feel like your health information was kept confidential?	តើអ្នកគិតថា ពាត៌មានសុខភាពរបស់អ្នក ត្រូវបានក្រុមគ្រូពេទ្យរក្សាជាការសម្ងាត់ ដែរឬទេ? ឧទាហរណ៍ព័ត៌មានរបស់អ្នកក្តងរបាយការណ៍ពេទ្យ	Do you feel like your health information was kept confidential at this facility? **For example, the information on the medical record.**
8	Did you feel like the doctors, nurses or other staff at the facility **involved you in decisions** about your care?	តើអ្នកគិតថាគ្រូពេទ្យ ឬបុគ្គលិកដទៃទៀតបានអោយអ្នកចូលរួមក្តងការសម្រេចចិត្តទាក់ទងនឹង ការថែទាំរបស់អ្នកឬទេ?	តើអ្នកគិតថាគ្រូពេទ្យ ឬបុគ្គលិកដទៃទៀតបានអោយអ្នកចូលរួមក្តងការសម្រេចចិត្តទាក់ទងនឹង ការថែទាំរបស់អ្នកឬទេ?	Did you feel like the doctors, nurses or other staff at the facility involved you in decisions about your care?	ក្តងការសម្រាលកូនលើកនេះ, តើ ក្រុមគ្រូពេទ្យបានសួរយោបល់ឬការសម្រេចចិត្តរបស់អ្នកដែរឬទេ ? ឧទាហរណ៍តើអ្នកអាចសម្រេចចិត្តដោយខ្លួនឯងថាចង់សម្រាលកូនដោយធម្មជាតិឬវះកាត់បានទេ?	Did you feel like the medical staffs at the facility **considered your ideas in decisions** about your care? **For example, can you decide for yourself whether you want to have a natural or caesarean section?**
9	Did the doctors, nurses or other staff at the facility ask your permission/consent before doing procedures on you?	តើគ្រូពេទ្យ ឬបុគ្គលិកដទៃទៀតបានសុំការអនុញ្ញាតិអ្នក/ការយល់ព្រមរបស់អ្នកមុនពេលពិនិត្យឬទេ?	តើគ្រូពេទ្យ ឬបុគ្គលិកដទៃទៀតបានសុំការអនុញ្ញាតិអ្នក/ការយល់ព្រមរបស់អ្នកមុនពេលពិនិត្យឬទេ?	Did the doctors, nurses or other staff at the facility ask your permission/consent before doing procedures on you?	តើមុនពេលពិនិត្យដូចជាពិនិត្យស្បូនជាដើម ក្រុមគ្រូពេទ្យបានសុំការអនុញ្ញាត / ការយល់ព្រមពីអ្នកដែរឬទេ?	Did the medical staffs at the facility ask your permission/consent before doing procedures on you? **For example, pelvic examination and episiotomy**?

#	Original Question	Initial translation Khmer version 1	Khmer version 3 (1st round of CI)	Back-translation (version 3)	Final Khmer version	Back-translation (final version)
10	During the delivery, do you feel like you were able to be in the **position** of your choice?	ក្នុងអំឡុងពេលសម្រាល តើអ្នកគិតថា អ្នកអាចស្ថិតនៅក្នុងឥរិយាបថដែលជាជម្រើសរបស់អ្នកឬទេ?	តើពេលសម្រាល អ្នកគិតថា អ្នកស្ថិតក្នុងឥរិយាបថដែលងាយស្រួលសម្រាលកូនឬទេ ?	During the delivery, do you think you were in a **comfortable** delivery position?	ក្នុងអំឡុងពេលឈឺពោះសម្រាលកូន, តើអ្នកគិតថា អ្នកអាចធ្វើចលនាបានដោយសេរីដែរឬទេ ?	During the delivery, do you feel like you were able to be **in your favorite free position**?
					តើពេលសម្រាល អ្នកបានកេងបញ្ឆរជង្គង់មែនទេ?	Did you delivered in the supine position?
12	Did the doctors and nurses explain to you why they were doing examinations or procedures on you?	តើគ្រូពេទ្យពន្យល់អ្នកថាតើហេតុអ្វីបាន ជាពួកគេកំពុងពិនិត្យអ្នកឬធ្វើសកម្មភាពណាមួយលើអ្នកឬទេ?	តើគ្រូពេទ្យពន្យល់អ្នកថាតើហេតុអ្វីបាន ជាពួកគេកំពុងពិនិត្យអ្នកឬធ្វើសកម្មភាពណាមួយលើអ្នកឬទេ?	Did the doctors and nurses explain to you why they were doing examinations or procedures on you?	តើក្រុមគ្រូពេទ្យបានពន្យល់អ្នកពីគោលបំណងនិងមូលហេតុដែលគេធ្វើតេស្តឬពិនិត្យអ្នកទេ? ឧទាហរណ៍ពេលពិនិត្យស្បូននិងស្តាប់បេះដូងកូន	Did the medical staffs explain to you **the objectives or reasons** why they were doing examinations or procedures on you? **For example, pelvic examination or fetal heart rate monitering**
14	Did the doctors and nurses at the facility talk to you about how you were feeling?	តើគ្រូពេទ្យបានជជែកជាមួយអ្នកថា តើអ្នកមានអារម្មណ៍ដូចម្តេចទេ?	តើគ្រូពេទ្យបានសួរអ្នកពីអារម្មណ៍អ្នកទេ?	Did the doctors and nurses at the facility talk to you about how you were feeling?	តើក្រុមគ្រូពេទ្យ បានសួរអ្នកថា តើអ្នកស្រួលខ្លួនហើយឬនៅ	Did the medical staffs at the facility talk to you about how you were **feeling (physical)** ?
					តើក្រុមគ្រូពេទ្យ បានសួរអ្នក ពីអារម្មណ៍របស់អ្នកដែរឬទេ?	Did the medical staffs at the facility talk to you about how you were **feeling (psychological)**?
19	When you needed help, did you feel the doctors, nurses or other staff at the facility paid attention?	នៅពេលដែលអ្នកត្រូវការជំនួយ តើអ្នកគិតថា គ្រូពេទ្យ ឬបុគ្គលិក ដទៃទៀត យកចិត្តទុកដាក់ ចំពោះអ្នក ឬទេ?	នៅពេលដែលអ្នកមានបញ្ហា តើអ្នកគិតថា គ្រូពេទ្យ ឬបុគ្គលិកដទៃទៀត យកចិត្តទុកដាក់ចំពោះអ្នក ឬទេ?	When you have a problem, did you feel doctors or other staff care about you?	នៅពេលអ្នកត្រូវការជំនួយ តើអ្នកគិតថា ក្រុមគ្រូពេទ្យបានយល់ពីតម្រូវការរបស់អ្នកទេ?	When you needed help, did you feel the medical staffs at the facility **respond to what you need**?

Supplementary table 2 Distribution of PCMC variables

PCMC variable	Number	Percent
#1. Did you feel to wait long or short from when you arrived to when you received care?		
0. very short	118	39.20
1. somewhat short	142	47.20
2. somewhat long	39	13.00
3. very long	1	0.30
#2. During your time in the health facility did the medical staff introduce themselves to you when they first came to see you? For example, their name or profession.		
0 No, none of them	259	86.00
1 Yes, a few of them	19	6.30
2 Yes, most of them	6	2.00
3 Yes, all of them	16	5.30
#3.1. Did the medical staff call you by your name?		
0 No, never	49	16.30
1 Yes, a few times	90	29.90
2 Yes, most of the time	88	29.20
3 Yes, all the time	73	24.30
#3.2. Did the medical staff call you by bong/ oung?		
0 No, never	17	5.60
1 Yes, a few times	56	18.60
2 Yes, most of the time	187	62.10
3 Yes, all the time	40	13.30
#3.3. Did the medical staff call you appropriately?		
0 No, never	1	0.30
1 Yes, a few times	6	2.00
2 Yes, most of the time	166	55.10
3 Yes, all the time	127	42.20

PCMC variable	Number	Percent
#4. Did the medical staff at the facility treat you with respect?		
0 No, never	1	0.30
1 Yes, a few times	16	5.30
2 Yes, most of the time	180	59.80
3 Yes, all the time	103	34.20
#5. Did the medical staff at the facility treat you in a friendly manner?		
0 No, never	1	0.30
1 Yes, a few times	56	18.60
2 Yes, most of the time	154	51.20
3 Yes, all the time	89	29.60
#6. During examinations in the labor room (for example, pelvic examination), were you covered up with a cloth or blanket or screened with a curtain?		
0 No, never	1	0.30
1 Yes, a few times	2	0.70
2 Yes, most of the time	36	12.00
3 Yes, all the time	261	86.70
#7. Do you feel like your health information was kept confidential at this facility? For example, the information on the medical record.		
0 No, never	2	0.70
1 Yes, a few times	2	0.70
2 Yes, most of the time	22	7.30
3 Yes, all the time	250	83.10
4 Did not know it was kept confidential	24	8.00

PCMC variable	Number	Percent
#8. Did you feel like the medical staff at the facility considered your ideas in decisions about your care? For example, can you decide for yourself whether you want to have a natural or caesarean section?		
0 No, never	56	18.60
1 Yes, a few times	11	3.70
2 Yes, most of the time	62	20.60
3 Yes, all the time	157	52.20
4 Did not have to make any decisions	0	0.00
5 preferable to follow doctors	14	4.70
#9. Did the medical staff at the facility ask your permission/consent before doing procedures on you? For example, pelvic examination and episiotomy?		
0 No, never	1	0.30
1 Yes, a few times	9	3.00
2 Yes, most of the time	63	20.90
3 Yes, all the time	227	75.40
#10. During the delivery, do you feel like you were able to be in your favorite free position?		
0 No, never	17	5.60
1 Yes, for a short time	36	12.00
2 Yes, most of the time	100	33.20
3 Yes, all the time	143	47.50
4 No choice other than following doctors	4	1.30
#11. Did the medical staffs at the facility speak to you in a language you could understand?		
0 No, never	1	0.30
1 Yes, a few times	23	7.60
2 Yes, most of the time	173	57.50
3 Yes, all the time	103	34.20

PCMC variable	Number	Percent
#12. Did the medical staff explain to you the objectives or reasons why they were doing examinations or procedures on you? For example, pelvic examination or fetal heart rate monitoring.		
0 No, never	38	12.60
1 Yes, a few times	21	7.00
2 Yes, most of the time	127	42.20
3 Yes, all the time	114	37.90
#13. Did the medical staff explain to you why they were giving you any medicine?		
0 No, never	95	31.60
1 Yes, a few times	40	13.30
2 Yes, most of the time	46	15.30
3 Yes, all the time	118	39.20
4 Did not get any medicine	1	0.30
#14.1. Did the medical staff at the facility talk to you about how you were feeling? (Physical)		
0 No, never	28	9.30
1 Yes, a few times	7	2.30
2 Yes, most of the time	35	11.60
3 Yes, all the time	230	76.40
#14.2. Did the medical staff at the facility talk to you about how you were feeling? (Psychological)		
0 No, never	16	5.30
1 Yes, a few times	34	11.30
2 Yes, most of the time	171	56.80
3 Yes, all the time	79	26.20

PCMC variable	Number	Percent
#15. Did the medical staff at the facility try to understand your anxieties and fears?		
0 No, never	2	0.70
1 Yes, a few times	17	5.60
2 Yes, most of the time	166	55.10
3 Yes, all the time	114	37.90
4 I did not have any anxieties or fears	1	0.30
#16. Did you feel you could ask t the medical staffs at the facility any questions you had?		
0 No, never	2	0.70
1 Yes, a few times	57	18.90
2 Yes, most of the time	152	50.50
3 Yes, all the time	89	29.60
#17. Were you allowed to have someone you wanted to stay with you during labor?		
0 No, never	24	8.00
1 Yes, a few times	5	1.70
2 Yes, most of the time	32	10.60
3 Yes, all the time	238	79.10
4 I did not want someone to stay with me	1	0.30
#18. Were you allowed to have someone you wanted to stay with you during delivery?		
0 No, never	28	9.30
1 Yes, a few times	7	2.30
2 Yes, most of the time	35	11.60
3 Yes, all the time	230	76.40
4 I did not want someone to stay with me	0	0

PCMC variable	Number	Percent
#19. When you needed help, did you feel the medical staff at the facility respond to needs?		
0 No, never	7	2.30
1 Yes, a few times	22	7.30
2 Yes, most of the time	183	60.80
3 Yes, all the time	88	29.20
#20. Do you feel the medical staff did everything they could to help control your pain?		
0 No, never	26	8.60
1 Yes, a few times	45	15.00
2 Yes, most of the time	118	39.20
3 Yes, all the time	97	32.20
4 No pain	14	4.70
#21. Did you feel the medical staff shouted at you, scolded, insulted, threatened, or talked to you rudely?		
0 No, never	289	96.00
1 Yes, once	5	1.70
2 Yes, a few times	3	1.00
3 Yes, many time	3	1.00
#22. Did you feel like you were treated roughly like pushed, beaten, slapped, pinched, physically restrained, or gagged?		
0 No, never	292	97.00
1 Yes, once	2	0.70
2 Yes, a few times	3	1.00
3 Yes, many time	4	1.30
#23. Did the medical staff at the facility ask you or your family for money other than the official cost?		
0 No, never	293	97.40
1 Yes, a few times	6	2.00
2 Yes, most of the time	1	0.30
3 Yes, all the time	1	0.30

PCMC variable	Number	Percent
#24. Do you think there was enough health staff in the facility to care for you?		
0 No, never	24	8.00
1 Yes, a few times	9	3.00
2 Yes, most of the time	110	36.50
3 Yes, all the time	157	52.20
#25. Did you feel the medical staff at the facility took the best care of you?		
0 No, never	5	1.70
1 Yes, a few times	10	3.30
2 Yes, most of the time	157	52.20
3 Yes, all the time	128	42.50
#26. Did you feel you could completely trust the medical staff at the facility with regards to your care?		
0 No, never	1	0.30
1 Yes, a few times	4	1.30
2 Yes, most of the time	112	37.20
3 Yes, all the time	183	60.80
#27. Thinking about the labor and postnatal wards, did you feel the health facility was crowded?		
0 No, never	131	43.50
1 Yes, once	102	33.90
2 Yes, a few times	58	19.30
3 Yes, many time	9	3.00
#28. Thinking about the wards, washrooms and the general environment of the health facility, will you say the facility was very clean, clean, dirty, or very dirty?		
0 Very dirty	0	0
1 Dirty	21	7.00
2 Clean	270	89.70
3 Very clean	9	3.00

PCMC variable	Number	Percent
#29. Was there water in the facility?		
0 No, never	1	0.30
1 Yes, a few times	1	0.30
2 Yes, most of the time	23	7.60
3 Yes, all the time	275	91.40
#30. Was there electricity in the facility?		
0 No, never	0	0
1 Yes, a few times	1	0.30
2 Yes, most of the time	9	3.00
3 Yes, all the time	290	96.30
#31. In general, did you feel safe in the health facility?		
0 No, never	0	0
1 Yes, a few times	3	1.00
2 Yes, most of the time	24	8.00
3 Yes, all the time	273	90.70

*Excluded from final India scale: #15 (Support anxiety), #27 (Crowding), #29 (Water), #30 (Electricity)
Excluded from final Kenya scale: #23 (Bribes)

APPENDIX

Appendix 1: Flyer

Development of Cambodian version of person-centered maternity care scale (cognitive interview)

Call for Participants

Reproductive aged women who had just delivered at this facility

【Objective】
To develop and refine the Cambodian version of PCMC scale that is easy to understand and answer to Cambodian women

【Procedure】
- Face to face interview in Khmer at the private space within facility
- We will ask your childbirth experience of received care
- We will ask additional probes for the questions which were difficult to answer
- It will take 60-80 minutes
- The interview will be audio recorded when you agree.

Participation in this study is completely based on your free will.
The decision will not affect your current or future care or any other benefits
All data will only be used for research purposes.

You will be given some gifts for the time you spend giving interview.

When you are interested in participating this study, please contact the following contact.

【Principal investigator】 Prof. Asako Takekuma Katsumata. Faculty of Medicine, University of Tsukuba E-mail: asakotk@md.tsukuba.ac.jp 【Address】Global Health Nursing, Faculty of Medicine, University of Tsukuba. 1-1-1, Tennoudai, Tsukuba, Ibaraki, Japan	【Co-Investigator】 Ms. Yuko Takahashi Naito. Doctoral program in Nursing Science, Graduate School of Comprehensive Human Sciences, University of Tsukuba E-mail: s1930481@s.tsukuba.ac.jp 【Contact in Khmer】 Mobile: 012-402190 (Field coordinator)

ការជ្រើសរើសអ្នកចូលរួមស្រាវជ្រាវ

ស្ត្រីកម្ពុជាដែលបានសម្រាលកូនតាមជម្មជាតិនៅមន្ទីរពេទ្យនេះ

【គោលបំណង】
កែលម្អកម្រងសំនួរទាក់ទងនឹងបទពិសោធន៍នៃការថែទាំផ្នែកសម្ភពរបស់ស្ត្រីកម្ពុជា
【ព័ត៌មានលម្អិត】
- បទសម្ភាសន៍នឹងត្រូវធ្វើឡើងជាភាសាខ្មែរនៅទីកន្លែងឯកជនមួយក្នុងអាគារ។
- យើងនឹងសួរអ្នកអំពីបទពិសោធន៍ថែទាំសម្ភពរបស់អ្នក។
- យើងនឹងសួរសំណួរមួយចំនួនដែលពិបាកយល់ឬពិបាកបកស្រាយ។
- ពេលវេលាគឺប្រហែល 60-80 នាទី។

ប្រសិនបើអ្នកយល់ព្រមខ្ញុំសូមថតសម្លេងសំភាសន៍។

ការចូលរួមក្នុងការសិក្សាស្រាវជ្រាវគឺជាការស្ម័គ្រចិត្ត។
មិនមានការពិន័យឬគុណវិបត្តិណាមួយនឹងកើតឡើងទេទោះជាអ្នកមិនសហការនឹងការសិក្សាស្រាវជ្រាវនេះ ។
យើងមិនយកខ្លឹមសារដែលអ្នកបាននិយាយទៅ ប្រើប្រាស់ក្រៅពីការស្រាវជ្រាវទេ។

ជាការថ្លែងអំណរគុណ យើងនឹងផ្តល់ជូនអ្នកនូវរបស់ប្រើប្រាស់ប្រចាំថ្ងៃ។

ប្រសិនបើអ្នកចាប់អារម្មណ៍ក្នុងការសហការជាមួយការស្រាវជ្រាវនេះសូមទាក់ទង៖

អ្នកទទួលបន្ទុកស្រាវជ្រាវ	អ្នកសហការស្រាវជ្រាវ
អាសាកូ ខាត់ស្សឺម៉ាតា តាកេឃីម៉ា សាស្ត្រាចារ្យសាកលវិទ្យាល័យសឺគីប៉ាក់ អ៊ីមែល៖ asakotk@md.tsukuba.ac.jp អាស័យដ្ឋាន៖ មន្ទីរពិសោធន៍វេជ្ជសាស្ត្រនិងវេជ្ជសាស្ត្រអន្តរជាតិ សាកលវិទ្យាល័យ Tsukuba 1-1-1 Tennoudai, Tsukuba, Ibaraki, Japan	យូកូណៃគូ និស្សិតថ្នាក់បណ្ឌិតនៃសាលាឧត្តមសិក្សាវិទ្យាសាស្ត្រមនុស្សទូទៅ អ៊ីមែល៖ s1930481@s.tsukuba.ac.jp ទំនាក់ទំនងនៅប្រទេសកម្ពុជា៖ ទូរស័ព្ទ៖ ០១២-៤០២១៩០ (អ្នកសម្របសម្រួល)

Development of Cambodian version of person-centered maternity care scale (pilot test)

Call for Participants

Reproductive aged women who had just delivered at this facility

【Objective】

To examine whether the Cambodian version of Person-Centered Maternity Care scale is valid and reliable to Cambodian women

【Procedure】

- Self-administrated online questionnaire survey
- We will ask your childbirth experience of received care
- When you are difficult to read, we will read around each item of the questionnaire
- It will take 30-40 minutes

Participation in this study is completely based on your free will.
The decision will not affect your current or future care or any other benefits
All data will only be used for research purposes.

You can access online questionnaire to scan QR code using your smart phone or tablet.

When you are interested in participating this study, please contact the following contact.

【Principal investigator】 Prof. Asako Takekuma Katsumata Faculty of Medicine, University of Tsukuba E-mail: asakotk@md.tsukuba.ac.jp 【Address】Global Health Nursing, Faculty of Medicine, University of Tsukuba. 1-1-1, Tennodai, Tsukuba, Ibaraki, Japan	【Co-Investigator】 Ms. Yuko Takahashi Naito. Doctoral program in Nursing Science, Graduate School of Comprehensive Human Sciences, University of Tsukuba. E-mail: s1930481@s.tsukuba.ac.jp 【Contact in Khmer】 Mobile: 012-402190 (Field coordinator)

ការជ្រើសរើសអ្នកចូលរួមស្រាវជ្រាវ

ស្ត្រីកម្ពុជាដែលបានសម្រាលកូនតាមជម្មជាតិនៅមន្ទីរពេទ្យនេះ

【គោលបំណង】

បញ្ជាក់ថា រង្វាស់ PCMC ជាភាសាខ្មែរគឺពិតជាត្រឹមត្រូវនិងអាចទុកចិត្តបាន

【ព័ត៌មានលម្អិត】

- ការសង្ខេបតិសំណួរដោយប្រើកម្រងសំណួរតាមអ៊ីនធឺណិត
- យើងនឹងសួរអ្នកអំពីបទពិសោធន៍ថែទាំសម្ភពរបស់អ្នក។
- ប្រសិនបើអ្នកពិបាកអាន យើងនឹងអានផ្ទាល់មាត់នូវសំនួរនិងចម្លើយ។
- ពេលវេលាគឺប្រហែល 30-40 នាទី។

ការចូលរួមក្នុងការសិក្សាស្រាវជ្រាវគឺជាការស្ម័គ្រចិត្ត។
មិនមានការពិន័យឬគុណរិបត្តិណាមួយនឹងកើតឡើងទេទោះជាអ្នកមិនសហការនឹងការសិក្សាស្រាវជ្រាវនេះ ។
យើងមិនយកខ្លឹមសារដែលអ្នកបាននិយាយទៅ ប្រើប្រាស់ក្រៅពីការស្រាវជ្រាវទេ។

អ្នកអាចចូលមើលកម្រងសំណួរតាមអ៊ិនធរណេតដោយស្កេនលេខកូដ QR
នៅលើស្មាតហ្វូនឬថេប្លេតរបស់អ្នក។

ប្រសិនបើអ្នកចាប់អារម្មណ៍ក្នុងការសហការជាមួយការស្រាវជ្រាវនេះសូមទាក់ទង៖

អ្នកទទួលបន្ទុកស្រាវជ្រាវ **អាសាកូ ខាត់ស៊ូម៉ាតា តាកេយីម៉ា** សាស្ត្រាចារ្យសាកលវិទ្យាល័យសឺគីប៉ាក់ អ៊ីមែល៖ asakotk@md.tsukuba.ac.jp អាស័យដ្ឋាន មន្ទីរពិសោធន៍វេជ្ជសាស្ត្រនិងវេជ្ជសាស្ត្រអន្តរជាតិ សាកលវិទ្យាល័យ Tsukuba 1-1-1 Tennoudai, Tsukuba, Ibaraki, Japan	អ្នកសហការស្រាវជ្រាវ **យូកូណៃកូ** និស្សិតថ្នាក់បណ្ឌិតនៃសាលាឧត្តមសិក្សាវិទ្យាសាស្ត្រមនុស្សទូទៅ អ៊ីមែល៖ s1930481@s.tsukuba.ac.jp ទំនាក់ទំនងនៅប្រទេសកម្ពុជា៖ ទូរស័ព្ទ៖ ០១២-៤០២១៩០ (អ្នកសម្របសម្រួល)

Appendix 2: Explanation sheet

Explanation sheet (cognitive interview)

Title: Development of Cambodian version of person-centered maternity care scale

＜Introduction＞

My name is Yuko Takahashi Naito, a doctoral student of Graduate School of Comprehensive Human Sciences, the University of Tsukuba. We will ask postpartum women's experiences of received care at public health facilities in Cambodia. Reproductive aged postpartum Cambodian women will be eligible, and you are invited to take part in this study. It is important to raise women's voices for quality improvement, because women are the center of maternity care.

＜Purpose / Procedure＞

The objective of this study is to develop and refine the Cambodian version of Person-Centered Maternity Care (PCMC) scale that is easy to understand and answer to Cambodian women. Face to face interviews or online video interviews will be conducted in Khmer at the private space inside the health facility or at home. The interviewer will read aloud each item of the questionnaire to let you answer a response option, including socio-economic background, maternal characteristics and experience of received care and satisfaction. Then, the interviewer will ask additional probes for items that have questions or items that have taken a long time to answer, such as "what other word could we use?" or "what does it mean to you?" After all the questions, you will be asked your overall impression. It will take 60-80 minutes. The interview will be audio recorded when you agree. During the interview, please refrain mentioning personally identifiable information.

＜Result＞

As a result of this research, a draft Cambodian version of PCMC scale will developed. The findings of future quantitative study using this scale would be useful to improve the quality of maternity care in Cambodia.

＜Risks＞

Some of the question may evoke emotional response or may cause you to feel anxious or upset. You may also feel time constraints and fatigue. You don't have to force yourself to talk about something you don't want to talk about. You can interrupt the interview at any time and rescheduled if you want. It is welcome to participate in the interview while breastfeeding or lying down.

＜Benefit＞

There may not benefit for you personally, but for researchers, health care providers and policy makers may learn how Cambodian women experiences maternity care during childbirth. The finding of this study may contribute to better provision of quality of care.

＜Reward＞

You will be given some gifts for the time you spend giving interview.

＜Participation and Withdrawal＞

Participation in this study is completely based on your free will. You have the right to refuse to participate in this study. You can withdraw at any time after giving your consent without asking any reasons. The decision will not affect your current or future care or any other benefits to which you are entitled. Please note that we may use the data after analyzing the data.

＜Privacy and confidentiality＞

All of the answers to questions that you give in this study will be kept confidential.

・The data will be de-identified, and participants will be identifiable only by a unique identifier code. When personally identifiable information will be obtained during the interviews, the relevant section will be deleted. We will not access to your medical record.

・All data will only be used for research purposes. The result will be published in scientific paper and presented at academic conference, but no individual will be identified.

・Interviews data will be kept separately from personally identifiable information. Electronic data will be stored on a password-locked USB. Data will be stored for 10 years, and will be deleted after ten years.

If you have any questions, please contact the following contact information.

Explained by Ms. Yuko Takahashi Naito
a doctoral student of Graduate School of Comprehensive Human Sciences
E-mail: s1930481@s.tsukuba.ac.jp

Principal investigator
Asako Takekuma Katsumata
E-mail: asakotk@md.tsukuba.ac.jp

សេចក្តីណែនាំសម្រាប់ការស្រាវជ្រាវ (សម្រាប់ការសម្ភាសន៍ការយល់ដឹង)

ចំណងជើងការស្រាវជ្រាវ៖ ការអភិវឌ្ឍមាត្រដ្ឋានថែទាំមាតុភាពនៅកម្ពុជាផ្តោតលើមាតា

<ស្ថានភាពស្រាវជ្រាវបច្ចុប្បន្ន>

ខ្ញុំឈ្មោះ**យូកូ ណៃតូ**ជានិស្សិតថ្នាក់បណ្ឌិតនៃសាលាឧត្តមសិក្សាវិទ្យាសាស្ត្រមនុស្សទូទៅនៃសាកលវិទ្យាល័យTsukuba។ក្នុងគោលបំណងលើកកម្ពស់គុណភាពនៃការថែទាំផ្នែកសម្ភពនៅតាមមណ្ឌលសុខភាពនៅប្រទេសកម្ពុជា,យើងសាកសួរអំពីបទពិសោធន៍នៃការថែទាំដែលអ្នកបានទទួលក្នុងកំឡុងពេលសម្រាលកូន,ផ្តោតលើស្ត្រីដែលស្ថិតក្នុងវ័យបន្តពូជ ណាដែលទើបតែសម្រាលកូនតាមធម្មជាតិក្នុងអំឡុងពេល9សប្តាហ៍នៅតាមមណ្ឌលសុខភាពសាធារណៈ។វាមានសារៈសំខាន់ណាស់ក្នុងការឆ្លុះបញ្ចាំងពីបទពិសោធន៍របស់ស្ត្រីក្នុងមាតុភាពដើម្បីលើកកម្ពស់គុណភាពនៃការថែទាំសម្ភពពីព្រោះស្ត្រីគឺជាតួអង្គសំខាន់ពាក់ពាន់នឹងការថែទាំមាតុភាព។

<ពន្យល់អំពីផែនការស្រាវជ្រាវនិងវិធីសាស្ត្រ>

គោលបំណងនៃការសិក្សានេះគឺដើម្បីបញ្ជាក់និងកែលំអថាតើមាត្រដ្ឋាន "ការយកចិត្តទុកដាក់ចំពោះ ស្ត្រី" ដែលត្រូវបានបកប្រែទៅជាភាសាខ្មែរគឺជាកម្រងសំណួរដែលងាយយល់និងងាយឆ្លើយសម្រាប់ ម្តាយថ្មីៗនៅក្នុងប្រទេសកម្ពុជា។ វិធីសាស្ត្រគឺការសំភាសន៍។ បទសម្ភាសន៍នេះនឹងត្រូវធ្វើឡើងដោយអ្នកស្រាវជ្រាវជនជាតិខ្មែរជាភាសាខ្មែរនៅទីកន្លែងឯកជន។ដំបូងអ្នកស្រាវជ្រាវនឹងសួរអ្នកអំពីព័ត៌មានប្រវត្តិសេដ្ឋកិច្ចនិងខ្លឹមសារនៃការសម្រាលកូនលើកនេះ។ បន្ទាប់មកអ្នកស្រាវជ្រាវនឹងអានសំណួរនីមួយៗនៃកម្រងសំណួរ“ ការយកចិត្តទុកដាក់លើស្ត្រី” ម្តងមួយៗហើយបន្ទាប់មកចូរអ្នកជ្រើសរើសចម្លើយដែលសមស្របពីចម្លើយទាំងបួនកម្រិត។ ហើយមានសំនួរបន្ថែមពីនេះលើចំណុចនីមួយៗខ្លះៗទៀតផងដែរ។ ឧទាហរណ៍:តើមានពាក្យជាភាសាខ្មែរណាដែលសមញ្ញាជាងនេះទេ? តើអ្នកបកស្រាយសំណួរឬជម្រើសចម្លើយនោះយ៉ាងដូចម្តេច?បន្ទាប់ពីសំណួរទាំងអស់ត្រូវបានសួរនោះ,យើងសួរអ្នកអំពីចំណាប់អារម្មណ៍ទូទៅរបស់អ្នក។ បទសម្ភាសន៍នឹងចំណាយពេល ៤០-៦០ នាទី។ ប្រសិនបើអ្នកមិនប្រកាន់យើងសុំការអនុញ្ញាតថតសំភាសន៍សម្រាប់ការវិភាគ។

<លទ្ធផលនៃសមិទ្ធិផលនៃផែនការស្រាវជ្រាវ>

ជាលទ្ធផលនៃការស្រាវជ្រាវនេះគឺសម្រេចបាននូវកម្រងសំណួរអំពី“ការយកចិត្តទុកដាក់លើស្ត្រី” ដែលអាច ប្រើបាននៅទូទាំងប្រទេសកម្ពុជា។ នៅពេលអនាគត,លទ្ធផលនៃការស្ទង់មតិថ្នាក់ជាតិដែលបានធ្វើឡើងដោយប្រើកម្រងសំណួរនេះនឹងត្រូវបានអនុវត្តទៅលើសុខាភិបាល,ការអប់រំនិងគោលនយោបាយដែលមានគោលបំណងលើកកម្ពស់គុណភាពនៃការថែរក្សាសម្ភពនៅកម្ពុជា។

<គ្រោះថ្នាក់និងព្រឹត្តិការណ៍មិនល្អនៃផែនការស្រាវជ្រាវនិងវិធីសាស្ត្រដែលអាចកើតមានឡើងនិងវិធានការដោះស្រាយ >

ដោយសារតែអ្នកនឹងត្រូវបានសួរអំពីបទពិសោធន៍អំឡុងពេលពេលសម្រាលកូន,អ្នកអាចមានអារម្មណ៍រំលឹកឬអារម្មណ៍ពុះកញ្ជ្រោលដោយការនឹកឃើញដល់ការសម្រាលកូនរបស់អ្នក។ ដូចគ្នានេះផងដែរដោយសារតែអ្នកកំពុងស្ថិតក្នុងពេលបំបៅកូននោះអ្នកអាចនឹងមានអារម្មណ៍ថាអស់កម្លាំងឬមិនមានពេលគ្រប់គ្រាន់ព្រោះត្រូវចូលរួមសហការជាមួយការស្រាវជ្រាវនេះ។ ការសម្រាលកូនគឺជារឿងផ្ទាល់ខ្លួននិងឯកជនដូច្នេះអ្នកមិនចាំបាច់ប្រាប់ខ្ញុំពីអ្វីដែលអ្នកមិនចង់និយាយទេ។យើងស្វាគមន៍ជានិច្চក្នុងការចូលរួមសំភាសន៍បន្តើរហើយបំបៅដោះកូនបន្តើរឬម្តាយអាចទម្រែតខ្លួនបន្តើរក៏បាន។ ដោយសារតែអ្នកទើបតែសម្រាលកូនថ្មីៗដូច្នេះអ្នកអាចបញ្ឈប់ការសម្ភាសន៍នៅពេលណាដែលអ្នកមានអារម្មណ៍អស់កម្លាំង។ ប្រសិនបើចង់បាន,យើងអាចរកកាលបរិច្ឆេទថ្មីនៅថ្ងៃក្រោយ។ ប្រសិនបើអ្នកមានសំណូមពរឬសំណួរទាក់ទងនឹងខ្លឹមសារនៃការ

ស្រាវជ្រាវសូមទាក់ទងអ្នកស្រាវជ្រាវនៅពេលណាក៏បាន។

<ផលចំណេញដែលបានព្យាករណ៍>
មិនមានអត្ថប្រយោជន៍ផ្ទាល់សម្រាប់អ្នកទេប៉ុន្តែព័ត៌មានដែលយើងទទួលបាននៅពេលនេះនឹងជួយលើកកម្ពស់គុណភាពនៃការថែសម្ភពនៅប្រទេសកម្ពុជានាពេលអនាគតហើយនឹងជួយឱ្យស្ត្រីទទួលបានការថែទាំសុខភាពមាតុភាពល្អនាពេលអនាគត។

<សូមអរគុណ >
ក្នុងនាមជាថ្លែងអំណរគុណដែលបានចំណាយពេលចូលរួមការស្រាវជ្រាវនេះនិងចែករំលែកបទពិសោធន៍ដ៏មានតម្លៃរបស់អ្នក,យើងនឹងផ្តល់ជូនអ្នកនូវរបស់របរដូចជាសាប៊ូមានសាប៊ូដុំជាដើម ។

<ការចូលរួមនិងលែលែងពីការស្រាវជ្រាវ >
ការចូលរួមរបស់អ្នកក្នុងការសិក្សានេះគឺជាការស្ម័គ្រចិត្ត។ មិនមានការពិន័យទេចំពោះការមិនយល់ព្រមចំពោះការសិក្សាស្រាវជ្រាវនេះ។ សូម្បីតែបន្ទាប់ពីមានការយល់ព្រមក៏អ្នកអាចដកការព្រមព្រៀងរបស់អ្នកភ្លាមៗនៅពេលណាមួយដោយទាក់ទងអ្នកស្រាវជ្រាវមុនពេលវិភាគទិន្នន័យ។ អ្នកនឹងមិនត្រូវបានសួរពីហេតុផលណាមួយនៅពេលអ្នកដកការព្រមព្រៀងរបស់អ្នក។

<ការការពារសិទ្ធិមនុស្ស>
ព័ត៌មាននិងព័ត៌មានផ្ទាល់ខ្លួនដែលអ្នកផ្តល់ឱ្យយើងក្នុងបទសម្ភាសន៍ត្រូវបានធានាការសម្ងាត់យ៉ាងតឹងរឹង។

- ព័ត៌មានផ្ទាល់ខ្លួននឹងត្រូវលាក់ឈ្មោះដើម្បីកុំអោយបុគ្គលម្នាក់អាចកំណត់អត្តសញ្ញាណថាជានរណាម្នាក់បាន និង គ្រប់គ្រងលេខសម្គាល់(ID)ជំនួសឈ្មោះ។ អ្នកស្រាវជ្រាវជាអ្នកគ្រប់គ្រងព័ត៌មានផ្ទាល់ខ្លួន។ យើងមិនទទួលបានព័ត៌មានកំណត់ត្រាវេជ្ជសាស្ត្រពីកន្លែងពេទ្យទេ។ ក្នុងអំឡុងពេលសំភាសន៍ប្រសិនបើយើងទទួលបានព័ត៌មានដែលអាចកំណត់អត្តសញ្ញាណបានអ្នកស្រាវជ្រាវនឹងលុបផ្នែកដែលពាក់ព័ន្ធ។ ទិន្នន័យដែលបានលុបនឹងមិនត្រូវបានប្រើសម្រាប់ការស្រាវជ្រាវទេ។
- ទិន្នន័យទាំងអស់នឹងត្រូវបានប្រើសម្រាប់គោលបំណងស្រាវជ្រាវប៉ុណ្ណោះ។ លទ្ធផលនៃការស្រាវជ្រាវនេះនឹងត្រូវបានបង្ហាញជាការបកស្រាយហើយនឹងត្រូវបានបង្ហាញនៅឯសន្និសិទសិក្សាដែលពាក់ព័ន្ធនិងដាក់ជូនប៉ុន្តែនៅពេលនោះមិនមាននរណាម្នាក់ត្រូវបានគេស្គាល់អត្តសញ្ញាណឡើយ។

ទាក់ទងនឹងការការពារព័ត៌មានផ្ទាល់ខ្លួន,ព័ត៌មានបទសម្ភាសន៍នឹងត្រូវគ្រប់គ្រងដោយអ្នកស្រាវជ្រាវនេះដាច់ដោយឡែកពីព័ត៌មានដែលអាចកំណត់អត្តសញ្ញាណផ្ទាល់ខ្លួន។ ព័ត៌មាននៅលើក្រដាសត្រូវបានដាក់ក្នុងធ្មេីចាក់សោរហើយត្រូវបានគ្រប់គ្រងយ៉ាងតឹងរឹងហើយទិន្នន័យអេឡិចត្រូនិចត្រូវបានការពារដោយយូអេសប៊ី(USB)ឬកុំព្យូទ័រដែលការពារដោយពាក្យសម្ងាត់។ ទិន្នន័យនឹងត្រូវរក្សាទុកក្នុងរយៈពេល ១០ ឆ្នាំបន្ទាប់ពីបញ្ចប់ការស្រាវជ្រាវហើយព័ត៌មានផ្ទាល់ខ្លួននឹងត្រូវបំផ្លាញបន្ទាប់ពីនោះ។
ប្រសិនបើអ្នកមានចម្ងល់ឬសំណួរទាក់ទងនឹងការស្រាវជ្រាវសូមទាក់ទងទំនាក់ទំនងខាងក្រោម។
អ្នកពន្យល់
យូកូណៃតូ និស្សិតថ្នាក់បណ្ឌិតនៃសាលាឧត្តមសិក្សាវិទ្យាសាស្ត្រមនុស្សទូទៅ
s1930481@s.tsukuba.ac.jp
ព័ត៌មានទំនាក់ទំនង
អ្នកទទួលបន្ទុកស្រាវជ្រាវ ខាត់ស៊ីម៉ាតា តាកេយីម៉ា សាស្ត្រាចារ្យសាកលវិទ្យាល័យសឺគីជាក់ អ៊ីមែល៖ asakotk@md.tsukuba.ac.jp

Explanation sheet (Pilot test)

Title: Development of Cambodian version of person-centered maternity care scale

＜Introduction＞

My name is Yuko Takahashi Naito, a doctoral student of Graduate School of Comprehensive Human Sciences if the University of Tsukuba. We will ask postpartum women's experiences of received care at public health facilities in Cambodia. Reproductive aged postpartum Cambodian women will be eligible, and you are invited to take part in this study. It is important to raise women's voices for quality care improvement, because women are the center of maternity care.

＜Purpose / Procedure＞

The objective of this study is to examine whether the Cambodian version of PCMC scale is valid and reliable to Cambodian women. Self-administrated online questionnaire survey will be conducted at the private space inside the health facility. You can access online questionnaire to scan QR code using your smartphone or tablet. When you are difficult to read, the enumerator will read aloud each item of the questionnaire to let you select an answer option. It will take 30-40 minutes.

＜Result＞

As a result of this research, a Cambodian version of PCMC scale will be developed. The findings of future quantitative study using this scale would be useful to improve the quality of maternity care in Cambodia.

＜Risks＞

Some of the questions may evoke emotional response or may cause you to feel anxious or upset. You may also feel time constraints and fatigue. You can interrupt answering questionnaire at any time and reschedule if you want.

＜Benefit＞

There may not benefit for you personally, but for researchers, health care providers and policy makers may learn how women experiences maternity care during childbirth. The finding of this study may contribute to better provision of quality of care.

＜Reward＞

You will be given some gifts for the time you spent giving the interview.

＜Participation and Withdrawal＞

Participation in this study is completely based on your free will. You have the right to refuse to participate in this study. Since this is an anonymous questionnaire, we will consider that you have agreed by submitting the questionnaire. Please note that consent cannot be withdrawn after submission.

＜Privacy and confidentiality＞

All of the answers to questions that you give in this study will be kept confidential.

・The data will be de-identified, and participants will be identifiable only by a unique identifier code. We will not access to your medical record.

・All data will only be used for research purposes. The result will be published in scientific paper and presented at academic conference but no individual will be identified.

・The data will be kept separately from personally identifiable information. Electronic data will be stored on a password-locked USB. Data will be stored for 10 years, and will be deleted after ten years.

If you have any questions, please contact the following contact information.

Explained by Ms. Yuko Takahashi Naito
a doctoral student of Graduate School of Comprehensive Human Sciences
E-mail: s1930481@s.tsukuba.ac.jp

Principal investigator
Asako Takekuma Katsumata
E-mail: asakotk@md.tsukuba.ac.jp

សេចក្តីណែនាំសម្រាប់ការស្រាវជ្រាវ (សម្រាប់ការសម្ភាសន៍ការយល់ដឹង)

ចំណងជើងការស្រាវជ្រាវ៖ ការអភិវឌ្ឍមាត្រដ្ឋានថែទាំមាតុភាពនៅកម្ពុជាផ្តោតលើមាតា

<ស្ថានភាពស្រាវជ្រាវបច្ចុប្បន្ន>
ខ្ញុំឈ្មោះយូកូ ណៃតូជានិស្សិតថ្នាក់បណ្ឌិតនៃសាលាឧត្តមសិក្សាវិទ្យាសាស្ត្រមនុស្សទូទៅនៃសាកលវិទ្យាល័យTsukuba។ ក្នុងគោលបំណងលើកកម្ពស់គុណភាពនៃការថែទាំផ្នែកសម្ភពនៅតាមមណ្ឌលសុខភាពនៅប្រទេសកម្ពុជា,យើងសាកសួរអំពីបទពិសោធន៍នៃការថែទាំដែលអ្នកបានទទួលក្នុងកំឡុងពេលសម្រាលកូន,ផ្តោតលើស្ត្រីដែលស្ថិតក្នុងរយៈបន្តពូជ ណាដែលទើបតែសម្រាលកូនតាមធម្មជាតិក្នុងអំឡុងពេល9សប្តាហ៍នៅតាមមណ្ឌលសុខភាពសាធារណៈ។វាមានសារៈសំខាន់ណាស់ក្នុងការឆ្លុះបញ្ចាំងពីបទពិសោធន៍របស់ស្ត្រីក្នុងមាតុភាពដើម្បីលើកកម្ពស់គុណភាពនៃការថែទាំសម្ភពពីព្រោះស្ត្រីគឺជាតួអង្គសំខាន់ពាក់ពាន់នឹងការថែទាំមាតុភាព។

<ពន្យល់អំពីផែនការស្រាវជ្រាវនិងវិធីសាស្ត្រ>
គោលបំណងនៃការសិក្សានេះគឺដើម្បីបញ្ជាក់និងកែលំអថាតើមាត្រដ្ឋាន "ការយកចិត្តទុកដាក់ចំពោះ ស្ត្រី" ដែលត្រូវបានបកប្រែទៅជាភាសាខ្មែរគឺជាកម្រងសំណួរដែលងាយយល់និងងាយឆ្លើយសម្រាប់ ម្តាយថ្មីៗនៅក្នុងប្រទេសកម្ពុជា។ វិធីសាស្ត្រគឺការសំភាសន៍ដោយប្រើកម្រងសំណួរអ្នកដទៃបំពេញជំនួស។ បទសម្ភាសន៍នេះនឹងត្រូវធ្វើឡើងដោយអ្នកស្រាវជ្រាវជនជាតិខ្មែរជាភាសាខ្មែរនៅទីកន្លែងឯកជន។ដំបូងអ្នកស្រាវជ្រាវនឹងសួរអ្នកអំពីព័ត៌មានប្រវត្តិសេដ្ឋកិច្ចនិងខ្លឹមសារនៃការសម្រាលកូនលើកនេះ។ បន្ទាប់មកអ្នកស្រាវជ្រាវនឹងអានសំណួរនីមួយៗនៃកម្រងសំណួរ" ការយកចិត្តទុកដាក់លើស្ត្រី" ម្តងមួយៗហើយបន្ទាប់មកចូរអ្នកជ្រើសរើសចម្លើយដែលសមស្របពីចម្លើយទាំងបួនកម្រិត។ ហើយមានសំនួរបន្ថែមពីនេះលើចំណុចនីមួយៗខ្លះៗទៀតផងដែរ។ ឧទាហរណ៍:តើមានពាក្យជាភាសាខ្មែរណាដែលសមញ្ញជាងនេះទេ? តើអ្នកបកស្រាយសំណួរឬជម្រើសចម្លើយនោះយ៉ាងដូចម្តេច?បន្ទាប់ពីសំណួរទាំងអស់ត្រូវបានសួរនោះ,យើងសួរអ្នកអំពីចំណាប់អារម្មណ៍ទូទៅរបស់អ្នក។ បទសម្ភាសន៍នឹងចំណាយពេល ៤០-៦០ នាទី។ ប្រសិនបើអ្នកមិនប្រកាន់យើងសុំការអនុញ្ញាតថតសំភាសន៍សម្រាប់ការវិភាគ។

<លទ្ធផលនៃសមិទ្ធផលនៃផែនការស្រាវជ្រាវ>
ជាលទ្ធផលនៃការស្រាវជ្រាវនេះគឺសម្រេចបាននូវកម្រងសំណួរអំពី"ការយកចិត្តទុកដាក់លើស្ត្រី" ដែលអាច ប្រើបាននៅទូទាំងប្រទេសកម្ពុជា។ នៅពេលអនាគត,លទ្ធផលនៃការស្ទង់មតិថ្នាក់ជាតិដែលបានធ្វើឡើងដោយប្រើកម្រងសំណួរនេះនឹងត្រូវបានអនុវត្តទៅលើសុខាភិបាល,ការអប់រំនិងគោលនយោបាយដែលមានគោលបំណងលើកកម្ពស់គុណភាពនៃការថែរក្សាសម្ភពនៅកម្ពុជា។

<គ្រោះថ្នាក់និងព្រឹត្តិការណ៍មិនល្អនៃផែនការស្រាវជ្រាវនិងវិធីសាស្ត្រដែលអាចកើតមានឡើងនិងវិធានការដោះស្រាយ >
ដោយសារតែអ្នកនឹងត្រូវបានសួរអំពីបទពិសោធន៍អំឡុងពេលពេលសម្រាលកូន,អ្នកអាចមានអារម្មណ៍រំលឹកឬអារម្មណ៍ពុះកញ្ជ្រោលដោយការនឹកឃើញដល់ការសម្រាលកូនរបស់អ្នក។ ដូចគ្នានេះផងដែរដោយសារតែអ្នកកំពុងស្ថិតក្នុងពេលបំបៅកូននោះអ្នកអាចនឹងមានអារម្មណ៍ថាអស់កម្លាំងឬមិនមានពេលគ្រប់គ្រាន់ព្រោះត្រូវចូលរួមសហការជាមួយការស្រាវជ្រាវនេះ។ ការសម្រាលកូនគឺជារឿងផ្ទាល់ខ្លួននិងឯកជនដូច្នេះអ្នកមិនចាំបាច់ប្រាប់ខ្ញុំពីអ្វីដែលអ្នកមិនចង់និយាយទេ។យើងស្វាគមន៍ជានិច្চក្នុងការចូលរួមសំភាសន៍បន្តើរហើយបំបៅដោះកូនបន្តើរឬម្តាយអាចទម្រេតខ្លួនបន្តើរក៏បាន។ ដោយសារតែអ្នកទើបតែសម្រាលកូនថ្មីៗដូច្នេះអ្នកអាចបញ្ឈប់ការសម្ភាសន៍នៅពេលណាដែលអ្នកមានអារម្មណ៍អស់កម្លាំង។ ប្រសិនបើចង់បាន,យើងអាចរកកាលបរិច្ឆេទថ្មីនៅថ្ងៃក្រោយ។ ប្រសិនបើអ្នកមានសំណូមពរឬសំណួរទាក់ទងនឹងខ្លឹមសារនៃការ

ស្រាវជ្រាវសូមទាក់ទងអ្នកស្រាវជ្រាវនៅពេលណាក៏បាន។

<ផលចំណេញដែលបានព្យាករណ៍>
មិនមានអត្ថប្រយោជន៍ផ្ទាល់សម្រាប់អ្នកទេប៉ុន្តែព័ត៌មានដែលយើងទទួលបាននៅពេលនេះនឹងជួយលើកកម្ពស់គុណភាពនៃការថែសម្ភពនៅប្រទេសកម្ពុជានាពេលអនាគតហើយនឹងជួយឱ្យស្ត្រីទទួលបានការថែទាំសុខភាពមាតុភាពល្អនាពេលអនាគត។

< សូមអរគុណ>
ក្នុងនាមជាថ្លែងអំណរគុណដែលបានចំណាយពេលចូលរួមការស្រាវជ្រាវនេះនិងចែករំលែកបទពិសោធន៍ដ៏មានតម្លៃរបស់អ្នក,យើងនឹងផ្តល់ជូនអ្នកនូវរបស់របរដូចជាសាប៊ូមានសាប៊ូដុំជាដើម ។

<ការចូលរួមនិងលែលែងពីការស្រាវជ្រាវ >
ការចូលរួមរបស់អ្នកក្នុងការសិក្សានេះគឺជាការស្ម័គ្រចិត្ត។ មិនមានការពិន័យទេចំពោះការមិនយល់ព្រមចំពោះការសិក្សាស្រាវជ្រាវនេះ។ សូម្បីតែបន្ទាប់ពីមានការយល់ព្រមក៏អ្នកអាចដកការព្រមព្រៀងរបស់អ្នកភ្លាមៗនៅពេលណាមួយដោយទាក់ទងអ្នកស្រាវជ្រាវមុនពេលវិភាគទិន្នន័យ។ អ្នកនឹងមិនត្រូវបានសួរពីហេតុផលណាមួយនៅពេលអ្នកដកការព្រមព្រៀងរបស់អ្នក។

<ការការពារសិទ្ធិមនុស្ស>
ព័ត៌មាននិងព័ត៌មានផ្ទាល់ខ្លួនដែលអ្នកផ្តល់ឱ្យយើងក្នុងបទសម្ភាសន៍ត្រូវបានជានាការសម្ងាត់យ៉ាងតឹងរឹង។

・ ព័ត៌មានផ្ទាល់ខ្លួននឹងត្រូវលាក់ឈ្មោះដើម្បីកុំអោយបុគ្គលម្នាក់អាចកំណត់អត្តសញ្ញាណថាជានរណាម្នាក់បាន និង គ្រប់គ្រងលេខសម្គាល់ (ID) ជំនួសឈ្មោះ។ អ្នកស្រាវជ្រាវជាអ្នកគ្រប់គ្រងព័ត៌មានផ្ទាល់ខ្លួន។ យើងមិនទទួលបានព័ត៌មានកំណត់ត្រាវេជ្ជសាស្ត្រពីកន្លែងពេទ្យទេ។ ក្នុងអំឡុងពេលសំភាសន៍ប្រសិនបើយើងទទួលបានព័ត៌មានដែលអាចកំណត់អត្តសញ្ញាណបានអ្នកស្រាវជ្រាវនឹងលុបផ្នែកដែលពាក់ព័ន្ធ។ ទិន្នន័យដែលបានលុបនឹងមិនត្រូវបានប្រើសម្រាប់ការស្រាវជ្រាវទេ។

・ ទិន្នន័យទាំងអស់នឹងត្រូវបានប្រើសម្រាប់គោលបំណងស្រាវជ្រាវប៉ុណ្ណោះ។ លទ្ធផលនៃការស្រាវជ្រាវនេះនឹងត្រូវបានបង្ហាញជាការបកស្រាយហើយនឹងត្រូវបានបង្ហាញនៅឯសន្និសិទសិក្សាដែលពាក់ព័ន្ធនិងដាក់ជូនប៉ុន្តែនៅពេលនោះមិនមាននរណាម្នាក់ត្រូវបានគេស្គាល់អត្តសញ្ញាណឡើយ។

ទាក់ទងនឹងការការពារព័ត៌មានផ្ទាល់ខ្លួន,ព័ត៌មានបទសម្ភាសន៍នឹងត្រូវគ្រប់គ្រងដោយអ្នកស្រាវជ្រាវនេះដាច់ដោយឡែកពីព័ត៌មានដែលអាចកំណត់អត្តសញ្ញាណផ្ទាល់ខ្លួន។ ព័ត៌មាននៅលើក្រដាសត្រូវបានដាក់ក្នុងធ្មេចាក់សោរហើយត្រូវបានគ្រប់គ្រងយ៉ាងតឹងរឹងហើយទិន្នន័យអេឡិចត្រូនិចត្រូវបានការពារដោយយូអេសប៊ី (USB) ឬកុំព្យូទ័រដែលការពារដោយពាក្យសម្ងាត់។ ទិន្នន័យនឹងត្រូវរក្សាទុកក្នុងរយៈពេល ១០ ឆ្នាំបន្ទាប់ពីបញ្ចប់ការស្រាវជ្រាវហើយព័ត៌មានផ្ទាល់ខ្លួននឹងត្រូវបំផ្លាញបន្ទាប់ពីនោះ។
ប្រសិនបើអ្នកមានចម្ងល់ឬសំណួរទាក់ទងនឹងការស្រាវជ្រាវសូមទាក់ទងទំនាក់ទំនងខាងក្រោម។
អ្នកពន្យល់ យូកូណៃតូ និស្សិតថ្នាក់បណ្ឌិតនៃសាលាឧត្តមសិក្សាវិទ្យាសាស្ត្រមនុស្សទូទៅ
s1930481@s.tsukuba.ac.jp
អ្នកទទួលបន្ទុកស្រាវជ្រាវ អាសាកូ ខាត់ស៊ីម៉ាតា តាកេយីម៉ា សាស្ត្រាចារ្យសាកលវិទ្យាល័យសឺគីប៉ាក់ អ៊ីមែល៖ asakotk@md.tsukuba.ac.jp

Appendix 3: Informed Consent and Withdrawal Forms

Informed Consent form
(Cognitive interview)

To the Dean, Faculty of Medicine, University of Tsukuba

I was fully informed about the study entitled "Development of Cambodian version of person-centered maternity care scale" and understood the objective, procedure, risk and benefit. I agree to participate this study after confirming that I will not have any disadvantage even if I do not agree to take part of this study.

However, I confirm that this consent is based on my own will and can be withdrawn at any time.

_____/_____/_____

Name

Signature

We gave written and oral explanations about the study entitled "Development of Cambodian version of person-centered maternity care scale" on Y/ M/ D and obtained the consent as described above.

Explainer Affiliation_____

Name

លិខិតឯកភាព

សាកលវិទ្យាល័យសីគីប៉ាក់

ខ្ញុំបានទទួលការពន្យល់យ៉ាងពេញលេញអំពីគោលបំណង, វិធីសាស្ត្រ, លទ្ធផលនិងហានិភ័យនៃការសិក្សាស្តីស្រាវជ្រាវពី"ការអភិវឌ្ឍមាត្រដ្ឋានថែទាំមាតុភាពនៅកម្ពុជាផ្តោតលើមាតា" ។ លើសពីនេះខ្ញុំយល់ព្រមក្លាយជាអ្នកសហការក្នុងការសិក្សានេះបន្ទាប់ពីបានបញ្ជាក់ថាខ្ញុំមិនទទួលរងនូវគុណវិបត្តិអ្វីឡើយទោះបីខ្ញុំមិនយល់ព្រមទទួលយកការសិក្សានេះក៏ដោយ។ :
ទោះយ៉ាងណាក៏ដោយខ្ញុំបញ្ជាក់ថាការព្រមព្រៀងនេះពីងផ្អែកតែលើឆន្ទៈរបស់ខ្ញុំហើយអាចដកនៅពេលណាក៏បាន។

ថ្ងៃ ខែ ឆ្នាំ

ឈ្មោះ
(ហត្ថលេខាសរសេរដោយដៃឬក្រា)

ទាក់ទងនឹងការស្រាវជ្រាវស្តីពីកម្រងសំណួរ ស្តីពី " "ការអភិវឌ្ឍមាត្រដ្ឋានថែទាំមាតុភាពនៅកម្ពុជាផ្តោតលើមាតា"ជាភាសាអង់គ្លេស កំណែខ្មែរនិងការបន្សាំវប្បធម៌" យើងបានពន្យល់ជាលាយលក្ខណ៍អក្សរនិងផ្តាល់មាត់នៅថ្ងៃ ខែ ឆ្នាំ ហើយទទួលបានការព្រមព្រៀងខាងលើ ។

អ្នកពន្យល់

អង្គភាព / ការងារ _____

ឈ្មោះ _____

ហត្ថលេខា

Withdrawal form
(Cognitive interview)

To the Dean, Faculty of Medicine, University of Tsukuba

I have agreed to participate the study entitled “Development of Cambodian version of person-centered maternity care scale” and signed the consent form, but I will withdraw that consent.

_____/_____/

Name

Signature

We confirmed the withdrawal of consent to participate the study entitled “Development of Cambodian version of person-centered maternity care scale”

_____/_____/

Confirmed Affiliation
Name

sign

លិខិតដកឯកភាព

សាកលវិទ្យាល័យសីគីប៉ាក់

ខ្ញុំបានយល់ព្រមសហការជាមួយការស្រាវជ្រាវលើ"ការអភិវឌ្ឍម្ហាត្រដ្ឋានថែទាំមាតុភាពនៅកម្ពុជា ផ្តោតលើមាតា" ហើយបានចុះហត្ថលេខាលើទម្រង់យល់ព្រមប៉ុន្តែខ្ញុំនឹងដកការយល់ព្រមនោះ។

ថ្ងៃ ខែ ឆ្នាំ

ឈ្មោះ
(ហត្ថលេខាសរសេរដោយដៃឬត្រា)

យើងបានបញ្ជាក់ពីការដកការព្រមព្រៀងដើម្បីសហការជាមួយការស្រាវជ្រាវអំពី "ការអភិវឌ្ឍម្ហាត្រដ្ឋានថែទាំមាតុភាពនៅកម្ពុជាផ្តោតលើមាតា" ។
ថ្ងៃ ខែ ឆ្នាំ

អ្នកបញ្ជាក់
អង្គភាព / ការងារ

ឈ្មោះ

ហត្ថលេខា

Appendix 4: Cognitive Interview Guide

Interview Guide (cognitive interview)

Please read the following questions and choose one of the options that best fits your experience.
If you can't read the Khmer, the interviewer will read the question for you, so please choose the one that best fits you from the options. When answering questions, if you have any questions that is difficult to understand, or something you want to confirm, please let us know. After answering all the questions, we would like to ask your overall impressions. Your feedback will help us improve this questionnaire for the use in Cambodia. If you don't mind, may I record this interview? During the interview, please kindly do not mention any personally identifiable information.

The following probes will be asked for items that have questions or confirmation, and items that have taken a long time to answer.

- Did you find this question easy to understand/answer?
- Which words were not easy to understand?
- Was it easy to remember what happened?
- What does “KEY WORD” mean to you?
- How would you rephrase this question to make it better?
- If rephrase “○○”, is that more easy to understand?
- How did you arrive at that answer?
- Is this important for you?
- What happened when you ….?
- Do you find this question offensive? Do you think other women feel uncomfortable?

Please let us know your overall impression of this questionnaire.

1. Did you feel that this questionnaire covers your maternity care experience during childbirth? Please let me know if you have anything to talk to.
2. Is this questionnaire just the right length? Or too long to too short?
3. What format do you think would be suitable for answering this questionnaire? For example, a interviewer will read aloud and give verbal answers, fill in papers by themselves, fill in online formats using their mobile
4. What is the good way to announce the recruitment of this study to get answers from many Cambodian postpartum women?

Thank you very much for your participation.

សេចក្តីណែនាំការសម្ភាសន៍ (ការសម្ភាសន៍ការយល់ដឹង)

សូមអានសំនួរខាងក្រោមនិងជ្រើសរើសមួយក្នុងចំនោមជំរើសទាំងអស់ដែលត្រូវនឹងបទពិសោធន៍របស់អ្នកបំផុត។

ប្រសិនបើអ្នកមិនអាចអានខ្មែរ អ្នកសម្ភាសន៍នឹងអានសំនួរសម្រាប់អ្នក ដូច្នេះសូមជ្រើសរើស ជម្រើសមួយដែលត្រូវនឹងអ្នកជាងគេ។នៅពេលដែលឆ្លើយសំនួរ ប្រសិនបើអ្នកមានសំនួរដែលពិបាក យល់ ឬមានអ្វីមួយដែលអ្នកចង់បញ្ជាក់ សូមអោយយើងដឹង។ បន្ទាប់ពីឆ្លើយសំនួរទាំងអស់ យើងសុំសួរ
អ្នកនូវចំណាប់អារម្មណ៍ទាំងមូល។
ពត៌មានត្រលប់របស់អ្នកនឹងជួយយើងធ្វើអោយមានភាពប្រសើរ
ឡើងនូវកម្រងសំនួរសម្រាប់ប្រើប្រាស់ក្នុងប្រទេសកម្ពុជា។ ប្រសិនបើអ្នកមិនប្រាកន់ តើខ្ញុំអាចថតសម្លេង នៃការសម្ភាសន៍នេះបានដែរឬទេ? ក្នុងអំឡុងពេលសម្ភាសន៍ សូមមេត្តាកុំប្រាប់ពត៌មានផ្ទាល់ខ្លួនដែល អាចអោយគេកត់សម្គាល់បាន។

សំនួរនាំមុខទាំងនេះនឹងសួរពីអ្វីដែលមានជាសំនូរឬការបញ្ជាក់ និងអ្វីដែលមានរយៈពេលយូរ មកហើយក្នុងការឆ្លើយ។

- តើអ្នកគិតថាសំនួរងាយស្រួលយល់/ឆ្លើយទេ?
- តើពាក្យណាមួយដែលមិនងាយនឹងយល់?
- តើវាងាយស្រួលក្នុងការចង់ចាំអ្វីដែលបានកើតឡើងឬទេ?
- តើ “ពាក្យគន្លឹះ” មានន័យយ៉ាងដូចម្តេចចំពោះអ្នក?
- តើអ្នកនឹងបង្កើតប្រយោគសំនួរសារឡើងវិញយ៉ាងដូចម្តេចដើម្បីអោយល្អប្រសើរជាងនេះ?
- ប្រសិនបើបង្កើតប្រយោគថ្មី “○○”, តើនោះគឺងាយស្រួលយល់ជាងដែរឬទេ?
- តើអ្នកអាចឆ្លើយបានយ៉ាងដូចម្តេច?
- តើនេះគឺសំខាន់សម្រាប់អ្នកទេ?
- តើមានអ្វីកើតឡើង នៅពេលដែលអ្នក ....?
- តើអ្នកគិតថាសំនួរនេះធ្វើអោយអ្នកមិនសប្បាយចិត្តឬទេ?
  តើអ្នកគិតថាស្ត្រីដទៃទៀតមានអារម្មណ៍ថាគ្មានភាពជាសុកដែរឬទេ?

សូមអោយយើងដឹងពីចំណាប់អារម្មណ៍ទាំងមូលរបស់អ្នកលើកម្រងសំនួរនេះ។

1. តើអ្នកមានអារម្មណ៍ថាកម្រងសំនួរនេះគ្របដណ្តប់បទពិសោធន៍ការថែទាំផ្ទៃកសម្ពាររបស់អ្នកក្នុង អំឡុងពេលសម្រាលកូនដែរឬទេ?

សូមអោយយើងបានដឹងប្រសិនបើអ្នកចង់និយាយពីអ្វីមួយ។

2. តើកម្រងសំនួរមានប្រវែងត្រឹមត្រូវល្អឬទេ? ឬវែងពេក ឬក៏ខ្លីពេក?
3. តើការប្រើប្រាស់ទ្រង់ទ្រាយ (format)
   បែបណាដែលសមស្របសម្រាប់ការឆ្លើយនឹងកម្រងសំនួរ នេះ? ឧទាហរណ៍
   អ្នកសម្ភាសន៍ម្នាក់នឹងអានអោយលឺៗ និងអោយចម្លើយជាពាក្យសម្តី ការបំពេញ
   ក្នុងក្រដាស់ដោយខ្លួនឯង
   ការបំពេញជាលក្ខណៈអនឡានដោយប្រើប្រាស់ទូរស័ព្ទដៃរបស់គេ។
4. តើមានមធ្យោបាយណាដែលល្អក្នុងការប្រកាសរើសស្ត្រីកម្ពុជាក្រោយសម្រាលអោយ
   បានចូលរួម ក្នុងការសិក្សានេះអោយបានច្រើននោះ?

សូមអរគុណច្រើនសម្រាប់ការចូលរួមរបស់អ្នក។

Appendix 5: Analytic Model

Cognitive process (Tourangeau, 1988)	The Appraisal System for Cross-National Surveys (Lee, 2014)	
Stage	Survey Features	Sources of Potential Problems
1. Comprehension	Instruction	Ambiguous
		Complicated
		Undefined or ill defined
		Conflicting
	Concept	Unclear
		Complicated
		Implicit assumption
		Multiple questions (i.e., asking a few things in one question)
		Multiple interpretations (i.e., a concept contains multiple meanings)
		Sensitive information (e.g., weight or potential legal consequences)
		Culturally inappropriate
	Vocabulary/ sentence	Awkward or uncommon
		Undefined/unclear/confusing
		Technical terms without providing definition
		Inappropriate for respondents (e.g., age, education level)
		Multiple definitions (e.g., "park")
		Lengthy or complex sentences
		Culturally inappropriate
		Lack of cultural equivalence
	Reference points	Missing
		Vague (e.g., "in recent years")
		Complex
		Conflicting
		Unanchored, undefined boundary (e.g.,"lifetime")
		Weakly anchored, uncertain boundary (e.g., "in your school days")
		Time period too short or too long
		Culturally inappropriate
		Lack of cultural equivalence
	Translation/ adaptation	Awkward or uncommon expressions
		Unclear words/sentences
		Words requiring adaptation
2. Retrieval	Task performance	Memory or retrieval problem
		Too challenging—reading comprehension or

		complex calculation Requiring too much detail of an event or information
		Non reachable answers (e.g., father's income, last election)
3. Judgment		Social desirability
		Perceived consequences (e.g., teachers may get to see the answer)
		Respondents' attention and motivation problem
		Refusal to answer
4. Response	Response category	Illogical order
		Ill-defined boundary setting
		Ill-defined category intervals
		Nonexclusive (i.e., overlapping categories)
		Nonexhaustive (i.e., missing categories)
		Ambiguous terms (e.g., nearly always, always)
		Culturally inappropriate or ineffective sets

Appendix 6: Content Validity Evaluation Form

Content Validity Evaluation Form

This is the Content Validity Evaluation Form of the Cambodian version of Person-centered maternity care scale (Afulani et al., 2017). Please evaluate the degree to which each item is "relevant to or representative to Cambodian women's childbirth experiences of received care. And please add suggestions for revisions when necessary. There are 31 items in total.
នេះគឺជាទម្រង់បែបបទវាយតម្លៃពីភាពត្រឹមត្រូវនៃខ្លឹមសារដែលបានបកប្រែជាភាសាខ្មែរ លើអ្នកធ្វើការថែទាំផ្នែកសម្ភព។ សូមវាយតម្លៃលើកម្រិតនៃសំណួរនីមួយៗដែលពាក់ព័ន្ធ ឬជាបទពិសោធរបស់ស្ត្រីកម្ពុជាក្នុងពេលសម្រាលកូន ហើយសូមផ្តល់ជាយោបល់សម្រាប់ការកែប្រែក្នុងករណីចាំបាច់។ ការបកប្រែជាភាសាខ្មែរត្រូវបានរៀបរៀងឡើងតាមលំនាំច្បាប់ដើមពីភាសាអង់គ្លេស។

#1: How did you feel about the amount of time you waited? Would you say it was very short, somewhat short, somewhat long, or very long?
តើគាំងពីពេលអ្នកចូលមកពេទ្យរហូតបានទទួលការថែទាំ,អ្នកបានចាំយូរឬនាប់ ?

1. ខ្លីណាស់
2. ខ្លីបន្តួរ
3. យូរ បន្តួរ
4. យូរណាស់

Content Experts: Please evaluate the above item is relevant or representative of Cambodian women. And please check (✓) or circle (◯) one that best describe your evaluation. សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគូសធីក ឬគូសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#2: During your time in the health facility did the doctors, nurses, or other health care providers introduce themselves to you when they first came to see you?
តើអំឡុងពេលអ្នកនៅក្នុងមន្ទីរពេទ្យ/មណ្ឌលសុខភាព, ក្រុមគ្រូពេទ្យបានណែនាំខ្លួនពេលពួកគេបានជួបអ្នកលើកដំបូងទេ?

1. ទេមិន មានទេ
2. ចាស មានម្នាក់ឬពីរនាក់
3. ចាស ភាគ ច្រើន
4. ចាស ទាំងអស់គ្នា

Content Experts:

សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគូសធីក ឬគូសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#3: Did the doctors, nurses, or other staff at the facility health care providers **call you by your name**?
តើគ្រូពេទ្យឬបុគ្គលិក ដទៃទៀត បានហៅអ្នកដោយសមរម្យឬទេ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគ ច្រើន
4. ចាស គ្រប់ ពេល

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគូសធីក ឬគូសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#4: Did the doctors, nurses, or other staff at the facility **treat you with respect**?
តើក្រុមគ្រូពេទ្យបានថែទាំអ្នកដោយយកចិត្តទុកដាក់និងការគោរពឬទេ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគ ច្រើន
4. ចាស គ្រប់ ពេល

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគូសធីក ឬគូសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#5: Did the doctors, nurses, and other staff at the facility **treat you in a friendly manner**?
តើក្រុមគ្រូពេទ្យ បានថែទាំអ្នកដោយស្និតស្នាលទេ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគ ច្រើន
4. ចាស គ្រប់ ពេល

Content Experts: សូមរាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការរាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចរាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#6: During examinations in the labor room, were you covered up with a cloth or blanket or screened with a curtain so that you did not feel exposed?
ក្នុងអំឡុងពេលពិនិត្យនៅក្នុងបន្ទប់ឈឺពោះសម្រាលកូន (ឧទាហរណ៍ការពិនិត្យស្បូន) តើអ្នកគិតថាអ្នកត្រូវបានគេបាំង ដោយគេញ្ជរក្រណាត់រឺភួយរឺបិទជាមួយរាំងននទេ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគ ច្រើន
4. ចាស គ្រប់ ពេល

Content Experts: សូមរាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការរាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចរាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#7: Do you feel like your **health information** was **kept confidential** at this facility?
តើអ្នកគិតថា ក្រុមគ្រូពេទ្យរក្សាជាការសម្ងាត់,កុំអោយអ្នកដទៃដឹងរឿងទាក់ទងនឹងសុខភាពរបស់អ្នកទេ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគ ច្រើន

4. មិនដឹងថាគេលាក់ការសម្ងាត់ឬអត់ទេ
5. អត់មានអីចង់លាក់ជាំងទេ

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#8: Did you feel like the doctors, nurses or other staff at the facility **involved you in decisions** about your care?
ក្នុងការសម្រេចចិត្តទាក់ទងនឹងការសម្រាលកូន លើកនេះ, តើ ក្រុមគ្រូពេទ្យបានយោគយល់ដល់គំនិតអ្នកទេ ?

1. ចាស ម្តង ឬពីរដង
2. ចាស ភាគច្រើន
3. ចាស គ្រប់ ពេល
4. មិនចាំ ជាច់ធ្វើ ការ សម្រេច ចិត្តណាមួយទេ
5. សម្រេចតាមពេទ្យល្អជាង

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#9: Did the doctors, nurses or other staff at the facility ask your **permission/consent** before doing procedures on you?
តើមុនពេលពិនិត្យដូចជាពិនិត្យស្បូនជាដើម ក្រុមគ្រូពេទ្យបានសុំការអនុញ្ញាត / យល់ព្រម ពីអ្នកដែរឬទេ?

1. ទេ មិនដែលទេ
2. ចាស ម្តងឬ ពីរ ដង
3. ចាស ភាគ ច្រើន
4. ចាស់គ្រប់ ពេល

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ

	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#10: During the delivery, do you feel like you were **able to be in the position of your choice**?
ក្នុងអំឡុងពេលឈឺពោះសម្រាលកូន, តើអ្នកគិតថា អ្នកអាចធ្វើចលនាបានដោយសេរីទេ ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬ ពីរ ដង
3. ចាស ភាគ ច្រើន
4. ចាស់ក្រៃ ពេល
5. No choice

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#11: Did the doctors, nurses or other staff at the facility speak to you in a language you could understand?
តើក្រុមគ្រូពេទ្យបាននិយាយជាមួយអ្នកដោយប្រើភាសាមញ្ញដែលអ្នកយល់នយបានឬទេ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬ ពីរ ដង
3. ចាស ភាគ ច្រើន
4. ចាស់ក្រៃ ពេល

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#12: Did the doctors and nurses explain to you **why** they were **doing examinations or procedures on you**?
តើក្រុមគ្រូពេទ្យបានពន្យល់អ្នកពីគោលបំណងនិងមូលហេតុដែលគេធ្វើតេស្តឬពិនិត្យអ្នកទេ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬ ពីរ ដង
3. ចាស ភាគ ច្រើន
4. ចាស់គ្រប់ ពេល

Content Experts: សូមរាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការរាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចរាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#13: Did the doctors and nurses explain to you why they were giving you any medicine?
តើក្រុមគ្រូពេទ្យ បានពន្យល់ពីមូលហេតុថា ហេតុអ្វីបានជាពួកគេផ្តល់ថ្នាំណាមួយអោយអ្នកឬទេ?
1. ទេមិន ដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគ ច្រើន
4. ចាស គ្រប់ពេល
5. មិនដែលបានទទួលថ្នាំណាមួយទេ

Content Experts: សូមរាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការរាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចរាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#14: Did the doctors and nurses at the facility **talk to** you about how you were **feeling**?
តើក្រុមគ្រូពេទ្យ បានសួរ អ្នកថាស្រួលខ្លួនឬអត់ទេ?
1. ទេមិន ដែលទេ

2. ចាស ម្តងឬពីរដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#15: Did the doctors, nurses or other staff at the facility try to understand your anxieties and fears?
តើក្រុមគ្រូពេទ្យបានព្យាយាមយល់ពីការព្រួយបារម្ភនិងការភ័យខ្លាចរបស់អ្នកទេ?
1. មិន ដែល ទេ
2. ចាស ម្តង ឬពីរ ដង
3. ចាស ភាគ ច្រើន
4. ចាស គ្រប់ ពេល
5. មិនមាន ការថប់ បារម្ភឬ ភ័យខ្លាចទេ

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#16: Did you feel you could ask the doctors, nurses or other staff at the facility any questions you had?
តើអ្នកគិតថាអាចសួរសំនួរណាមួយទៅក្រុមគ្រូពេទ្យ ដោយស្រួលទេ ?
1. ទេមិន ដែលទេ
2. ចាស ម្តងឬពីរ ដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយ

	តម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#17: Were you allowed to have someone you wanted to stay with you during labor?
តើអ្នកត្រូវបានអនុញ្ញាតឱ្យនៅជាមួយនរណាម្នាក់ដែលអ្នកចង់នៅជាមួយក្នុងបន្ទប់ឈឺពោះទេ?

1. ទេ មិន ដែលទេ
2. ចាស ម្តងឬពីរ ដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល
5. ខ្ញុំមិនត្រូវការនរណាម្នាក់មកនៅជាមួយខ្ញុំទេ

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#18: Were you allowed to have someone you wanted to stay with you during delivery?
តើអ្នកត្រូវបានអនុញ្ញាតឱ្យនៅជាមួយនរណាម្នាក់ដែលអ្នកចង់នៅជាមួយក្នុងបន្ទប់សម្រាលទេ?

1. ទេ មិន ដែលទេ
2. ចាស ម្តងឬពីរ ដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល
5. ខ្ញុំមិនត្រូវការនរណាម្នាក់មកនៅជាមួយខ្ញុំទេ

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#19: When you needed help, did you feel the doctors, nurses or other staff at the facility paid attention?
នៅពេលអ្នកត្រូវការជំនួយ តើអ្នកគិតថា ក្រុមគ្រូពេទ្យបានយល់ពីតម្រូវការរបស់អ្នកទេ?

1. ទេមិនដែលទេ
2. ចាសម្តងឬពីរដង
3. ចាសភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមរាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការរាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចរាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#20: Do you feel the doctors or nurses did everything they could to help control your pain?
នៅពេលអ្នកឈឺពោះ តើអ្នកគិតថាក្រុមគ្រូពេទ្យបានព្យាយាមជួយកាត់បន្ថយអាការៈនោះទេ?

1. ទេមិនដែលទេ
2. ចាសម្តងឬពីរដង
3. ចាសភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមរាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការរាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចរាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#21: Did you feel the doctors, nurses, or other health providers shouted at you, scolded, insulted, threatened, or talked to you rudely?
តើអ្នកគិតថាក្រុមគ្រូពេទ្យបានស្រែកគំហកដាក់អ្នក ស្តីបន្ទោសអ្នក ដេរប្រមាថអ្នក គម្រាមអ្នក ឬនិយាយ ឈ្លើយ មកកាន់អ្នកដែរឬទេ?

1. ទេមិនដែលទេ

2. ចាស ម្តង
3. ចាស ម្តងឬ ពីរដង
4. ចាស ច្រើនដង

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#22: Did you feel like you were treated roughly like pushed, beaten, slapped, pinched, physically restrained, or gagged?
តើអ្នកគិតថាត្រូវបានគេរុញ,វាយដំ,វាយទះកំភ្លៀង, ក្តិច,ឃាត់ឃាំងរាងកាយ, ហាមឃាត់មិនឱ្យនិយាយដោយសេរីឬត្រូវគេធ្វើបាបឬទេ?
1. ទេមិនដែលទេ
2. ចាស ម្តង
3. ចាស ម្តងឬ ពីរដង
4. ចាស ច្រើនដង

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#23: Did the doctors, nurses or other staff at the facility ask you or your family for money other than the official cost?
តើក្រុមគ្រូពេទ្យ សុំលុយទឹកតែ ពីអ្នកឬ ក្រួសារអ្នកឬទេ?
1. ទេមិនដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយ

	តម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#24: Do you think there was enough health staff in the facility to care for you?
តើអ្នកគិតថាមានបុគ្គលិកថែទាំសុខភាពគ្រប់គ្រាន់ ដើម្បីថែទាំអ្នកទេ?
1. ទេមិនដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#25: Did you feel the doctors, nurses or other staff at the facility took the best care of you?
តើអ្នកគិតថាក្រុមគ្រូពេទ្យ បានថែទាំអ្នកបានយ៉ាងល្អទេ?
1. ទេមិនដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#26: Did you feel you could completely trust the doctors, nurses or other staff at the facility with regards to your care?
តើអ្នកគិតថាអ្នកអាច ជឿទុកចិត្ត ក្រុមគ្រូពេទ្យទាំងស្រុងទាក់ទងនឹងការ ថែទាំអ្នក

ឬទេ?
1. ទេមិនដែលទេ
2. ចាស ម្តងឬ ពីរដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#27: Thinking about the labor and postnatal wards, did you feel the health facility was crowded?
តើអ្នកគិតថាមន្ទីរពេទ្យ / មណ្ឌលសុខភាពមានមនុស្សច្រើនកកកុញនៅបន្ទប់សំរាលកូននិងកន្លែងថែទាំកូនទេ?
1. ទេមិនដែលទេ
2. ចាស ម្តង
3. ចាស ម្តងឬពីរដង
4. ចាស ច្រើនដង

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#28: Thinking about the wards, washrooms and the general environment of the health facility, will you say the facility was very clean, clean, dirty, or very dirty?
តើ បន្ទប់លាងដៃនិងកន្លែងថែទាំសុខភាពទាំងមូល ស្អាតខ្លាំង,ស្អាត,កខ្វក់ឬកខ្វក់ខ្លាំងមែនទេ?
1. កខ្វក់ណាស់
2. កខ្វក់
3. ស្អាត
4. ស្អាតណាស់

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពជា ហើយគួសធីក ឬគួស

រង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#29: Was there water in the facility?
តើនៅមន្ទីរពេទ្យមានទឹកដែលអាចប្រើបានឬទេ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬពីរដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#30: Was there electricity in the facility?
តើនៅមន្ទីរពេទ្យ មានភ្លើងដែលអាចប្រើបាន ឬទេ?
1. ទេ មិនដែលទេ
2. ចាស ម្តងឬពីរដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមវាយតម្លៃជាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

#31: In general, did you feel safe in the health facility?

ជាទូទៅ តើគិតថានៅមន្ទីរពេទ្យមាន សុវត្ថិភាព ដែរទេ?

1. ទេ មិនដែលទេ
2. ចាស ម្តងឬពីរដង
3. ចាស ភាគច្រើន
4. ចាស គ្រប់ពេល

Content Experts: សូមវាយតម្លៃធាតុខាងលើ ដែលទាក់ទង ឬតំណាងឱ្យស្ត្រីកម្ពុជា ហើយគួសធីក ឬគួសរង្វង់ ដែលពិពណ៌នាអំពីការវាយតំលៃរបស់អ្នក	
	1 = not relevant មិនពាក់ព័ន្ធ
	2 = unable to assess relevance without item revisions មិនអាចវាយតម្លៃបាន ដោយមិនមានពាក់ព័ន្ធសំណួរ
	3 = relevant but needs minor revision ពាក់ព័ន្ធប៉ុន្តែត្រូវការការពិនិត្យឡើងវិញតិចតួច
	4 = very relevant ពាក់ព័ន្ធខ្លាំង
Suggestion for revision ការផ្តល់យោបល់សម្រាប់ការពិនិត្យឡើងវិញ	

Thank you very much for your evaluation.

---END---

Appendix 7: Approval Letter (Tsukuba)

様式３（第１２条関係）

医の倫理委員会審査結果通知書

通知番号 第 1605 号
令和 2 年 12 月 24 日

申請者（研究責任者）
竹熊カツマタ麻子 殿

医学医療系長
加藤光保

令和2年9月30日付けで審査申請（新規）のありました研究の実施について、審査の結果、下記のとおり判定しましたので通知します。

記

1 研究題目 「Development of Cambodian version of person-centered maternity care scale 産婦を中心とした出産ケア尺度のカンボジア版の開発」

2 判 定

■ 承 認
□ 条件付承認
□ 変更の勧告
□ 不承認
□ 中 止
□ 非該当

3 理由（判定が承認以外の場合）、留意点、改善点等

4 その他

Appendix 8: Cambodian version of PCMC-scale

The Cambodian version of PCMC-scale

Section1: Socio-demographic Information

I would like to ask you some questions about yourself

Q.#	Question	Response	
1.1	How old are you now?	Age	
1.2	What is your marital status now?	Married	1
		Single	2
		Widowed	3
		Divorced	4
1.3	How many children do you have?		
1.4	How many years did you attend formal education?		
1.5	Can you read and write Khmer language?	No, cannot	0
		Yes, but with some difficulty	1
		Yes, very well	2
1.6	What is your occupation?	Farmer	1
		Factory worker	2
		Housewife	3
		Self-employed retail	4
		Government official	5
		Company employee	6
		Other	7
1.7	What is your religion?	Buddhism	1
		Muslim	2
		Christian	3
1.8	What do you have in your household? (Rating)	Temporary roof	Yes / No
		Permanent roof	Yes / No
		Bicycle	Yes / No
		Motorcycle	Yes / No
		Oxcart	Yes / No

		Radio	Yes / No
		TV	Yes / No
		Cow	Yes / No
1.9	Do you have health insurance?	None	1
		Government	2
		Private employees	3
		ID poor (Health Equity Hund)	4
		Factory worker	5
		Private	6
1.10	Where do you live?	Phnom Penh	1
		Kampong Chhnang	2
		Other provinces	3
1.11	How long does it take from your home to this heath facility?	Hour minutes	

Section2: Maternal characteristics

I would like to ask you some questions about pregnancy and childbirth.

Q.#	Question	Code	
2.1	How many times did you attend ANC during last pregnancy?		times
2.2	During last pregnancy, did you experience any serious health problems related to the pregnancy?	No	0
		Yes, vaginal bleeding	1
		Yes, hypertension	2
		Yes, others	3
2.3	Where did you give birth to your last child?	National hospital	1
		Provincial hospital	2
		Referral hospital	3
		Health center	4
2.4	Who assisted with the birth? (Multiple answers allowed)	Doctor	Yes / No
		Midwife	Yes / No
		Nurse	Yes / No
		Traditional Birth Attendant	Yes / No
2.5	Was the birth attendant a male or a	Male	1

	female?	Female	2
		Both	3
2.6	What was the way of childbirth?	Vaginal delivery	1
		Vaginal delivery (episiotomy)	2
		Vacuum extraction	3
		Caesarean section	4
2.7	Was your baby born well?	Stillbirth	0
		Hospitalized due to serious complications	1
		Livebirth	2
2.8	During the childbirth, did you experience any serious problems?	No	0
		Yes, postpartum bleeding	1
		Yes, hypertension	2
		Yes, prolonged labor	3
		Yes, others	4

Section3: PCMC-scale

"Now I am going to ask you some questions about your experiences in the health facility during your last delivery. Remember that all the questions in this section refer specifically to the time you were in the health facility for this last delivery. Also, know that everything you tell me is confidential and will not be shared with the health facility."				
Question	Response Options			
#1: Did you feel to wait long or short from when you arrived to when you received care?	Very Short	Somewhat short	Somewhat long	Very long
	0	1	2	3
"Now I will ask you some questions about how you were treated at the health facility. Tell me if the following things happened all the time, most of the time, a few times, or it never happened. You can say a few times if it happened one or two times, and most of the time will be if it happened 3 or more times, but not always. For some questions I will ask specifically if something occurred during labor, delivery, or after delivery. If I do not specify, please answer based on your experiences during the entire time you were in the facility from labor till discharge."				
#3: Did the medical staffs call you by your name?	No, never	Yes, a few times	Yes, most of the time	Yes, all the time
	0	1	2	3
#4: Did the medical staffs at the facility treat you with respect?	0	1	2	3
#5: Did the medical staffs at the facility treat you in a friendly manner?	0	1	2	3
#6: During examinations in the labor room, were you covered up with a cloth or blanket or screened with a curtain so that you did not feel	0	1	2	3

exposed?					
#8: Did you feel like the medical staffs at the facility ask your opinion and decision about your care?	No, never	Yes, a few times	Yes, most of the time	Yes, all the time	Did not have to make any decisions
	0	1	2	3	4
#10: During the delivery, do you feel like you were able to be in your favorite free position?	No, never	Yes, a few times	Yes, most of the time	Yes, all the time	
	0	1	2	3	
#11: Did the medical staffs at the facility speak to you in a language you could understand?	0	1	2	3	
#12: Did the medical staffs explain to you the objectives or reasons why they were doing examinations or procedures on you? For example, pelvic examination or fetal heart rate monitoring.	0	1	2	3	
#13: Did the medical staffs explain to you why they were giving you any medicine?	No, never	Yes, a few times	Yes, most of the time	Yes, all the time	Did not get any medicine
	0	1	2	3	4
#14: Did the medical staffs at the facility talk to you about how you were feeling?	No, never	Yes, a few times	Yes, most of the time	Yes, all the time	
	0	1	2	3	
#15: Did the medical staffs at the facility try to understand your anxieties and fears?	No, never	Yes, a few times	Yes, most of the time	Yes, all the time	Did not have any anxieties or fears
	0	1	2	3	4

#16: Did you feel you could ask the medical staffs at the facility any questions you had?	No, never	Yes, a few times	Yes, most of the time	Yes、all the time
	0	1	2	3
#17: Were you allowed to have someone you wanted to stay with you during labor?	No, never	Yes, a few times	Yes, most of the time	Yes, all the time	I don' want someone to stay with me
	0	1	2	3	4
#18: Were you allowed to have someone you wanted to stay with you during delivery?	0	1	2	3	4
#19: When you needed help, did you feel t the medical staffs at the facility paid attention?	No, never	Yes, a few times	Yes, most of the time	Yes, all the time
	0	1	2	3
#20: Do you feel the medical staffs did everything they could to help control your pain?	0	1	2	3
#24: Do you think there was enough health staff in the facility to care for you?	No, never	Yes, a few times	Yes, most of the time	Yes, all the time
	0	1	2	3
#25: Did you feel the medical staffs at the facility took the best care of you?	0	1	2	3
	No, never	Yes, once	Yes, a few	Yes, many

#27: Thinking about the labor and postnatal wards, did you feel the health facility was crowded?			times	times
	0	1	2	3

Section 4: predictable outcome

I would like to ask you overall satisfaction with received care.

4.1	Overall, taking everything into account, how are the maternity care in the health facility where you gave birth your last baby?	Very dissatisfied	1
		Dissatisfied	2
		Neither satisfied nor dissatisfied	3
		Satisfied	4
		Very satisfied	5
4.2	How would you rate the quality of maternity care at this facility?	Poor	1
		Fair	2
		Good	3
		Very good	4
		Excellent	5
4.3	Will you give birth at the same facility if you were to pregnant another baby in the future?	No	0
		Undecided	1
		Yes	2
4.4	If you now reconsider your birth experience, would you recommend a family member to deliver in the health facility where you gave birth?	No	0
		Yes, somewhat	1
		Yes, definitely	2

Thank you for your participation for this study.

រង្វាស់ PCMC ជាភាសាខ្មែរ

ផ្នែកទី 1: ពត៌មានប្រជាសាស្ត្រ
ខ្ញុំសូមសួរសំនួរខ្លះអំពីខ្លួនអ្នក។

ល.រសំនួរ	សំនួរ	ការឆ្លើយតប	
1.1	តើឥឡូវនេះអ្នកមានអាយុប៉ុន្មាន?	Age	
1.2	តើស្ថានភាពគ្រួសារអ្នកយ៉ាងដូចម្តេចដែរ?	រៀបការ	1
		នៅលីវ	2
		មេម៉ាយ/ពោះម៉ាយ	3
		លែងលះ	4
1.3	តើអ្នកមានកូនប៉ុន្មាននាក់?		
1.4	តើអ្នកទទួលការអប់រំផ្លូវការរយៈពេលប៉ុន្មានឆ្នាំដែរ?		
1.5	តើអ្នកអាចអាន និងសរសេរភាសាខ្មែរទេ?	ទេ មិនអាចទេ	0
		ចាសចេះ តែមិនបានល្អទេ	1
		ចាស ចេះបានល្អ	2
1.6	តើអ្នកមានមុខរបរជាអ្វី?	កសិករ	1
		អ្នកធ្វើការរោងចក្រ	2
		មេផ្ទះ	3
		អ្នកលក់ដូរដោយខ្លួនឯង	4
		បុគ្គលិករដ្ឋ	5
		បុគ្គលិកឯកជន	6
		ផ្សេងៗ	7
1.7	តើសាសនាអ្នកគឺអ្វី?	ព្រះពុទ្ធសាសនា	1
		សាសនាឥស្លាម	2
		គ្រឹះសាសនា	3
1.8	តើអ្នកមានអ្វីខ្លះនៅក្នុងផ្ទះរបស់អ្នក? (ការរាយតម្លៃ)	ដំបូលបណ្តោះអាសន្ន	Yes / No
		ដំបូលអចិន្ត្រៃយ៍	Yes / No
		កង់	Yes / No
		ម៉ូតូ	Yes / No

		រទេះគោ	Yes / No
		វិទ្យុ	Yes / No
		ទូរទស្សន៍	Yes / No
		គោ	Yes / No
1.9	តើអ្នកមានធានារ៉ាប់រងសុខភាពឬទេ?	ទេ	1
		រដ្ឋ	2
		បុគ្គលិកឯកជន	3
		ប័ណ្ណក្រីក្រ (មូលនិធិសមធម៌)	4
		ប័ណ្ណបសស(អ្នកធ្វើការរងចក្រ)	5
		ធានារ៉ាប់រងឯកជន ដូចជា ធនាគារអេស៊ីលីដាជាដើម	6
1.10	តើអ្នករស់នៅឯណា ?	ភ្នំពេញ	1
		កំពង់ឆ្នាំង	2
		ខេត្តផ្សេង	3
1.11	តើពីផ្ទះរហូតដល់មន្ទីរពេទ្យ ដោយម៉ូតូ ចំណាយពេលប៉ុន្មាន ?	ម៉ោង នាទី	

ផ្នែកទី 2: ពត៌មានអំពីម្តាយ (8 ចំនុច)

ខ្ញុំសូមសួរសំនួរខ្លះអំពីការមានផ្ទៃពោះ និងការសម្រាលកូនរបស់អ្នក។

ល.រសំនួរ	សំនួរ	កូដ	
2.1	តើអ្នកបានពិនិត្យផ្ទៃពោះបានប៉ុន្មានដងក្នុងអំឡុងពេលមានផ្ទៃពោះចុងក្រោយនេះ?	ដង	
2.2	ក្នុងអំឡុងពេលមានផ្ទៃពោះចុងក្រោយនេះតើអ្នកមានបទពិសោធន៍បញ្ហាសុខភាពធ្ងន់ធ្ងរណាមួយទាក់ទងនឹងការមានផ្ទៃពោះដែរឬទេ?	ទេ	0
		ចាស ធ្លាក់ឈាម	1
		ចាស លើសសម្ពាធឈាម	2
		ចាស ផ្សេងៗ	3
2.3	តើអ្នកសម្រាលកូនចុងក្រោយរបស់អ្នកនៅឯណាដែរ?	មន្ទីរពេទ្យជាតិ	1
		មន្ទីពេទ្យខេត្ត	2
		មន្ទីពេទ្យបង្អែក	3

		មណ្ឌលសុខភាព	4
2.4	តើនរណាជួយការសម្រាលនោះ? (ចម្លើយអាចមានច្រើនជាង1)	វេជ្ជបណ្ឌិត	1
		ឆ្មប	2
		គិលានុបដ្ឋាក-យិកា	3
		ឆ្មបបុរាណ	4
2.5	តើអ្នកសម្រាលកូនគឺជាមនុស្សប្រុស ឬមនុស្សស្រី?	ប្រុស	1
		ស្រី	2
		ទាំងពីរ	3
2.6	តើអ្នកសម្រាលកូនគឺដោយរបៀបណា?	សម្រាលតាមទ្វាមាសធម្មតា	1
		សម្រាលតាមទ្វាមាសធម្មតា (epi)	2
		សម្រាលដោយការបូម	3
		សម្រាលដោយការរុះកាត់	4
2.7	តើទារកសម្រាលមានសភាពដូចម្តេចដែរ?	កើតមកស្លាប់	0
		កើតមករស់តែត្រូវសម្រាកព្យាបាលនៅមន្ទីរពេទ្យ ដោយសារជំងឺឬពិការភាពធ្ងន់ធ្ងរ	1
		កើតមកសុខភាពល្អ	2
2.8	ក្នុងអំឡុងពេលសម្រាល តើអ្នកមានជួបប្រទះបញ្ហាធ្ងន់ធ្ងរណាមួយដែរឬ ទេ?	ទេ	0
		ចាស ធ្លាក់ឈាមក្រោយសម្រាល	1
		ចាស លើសសម្ពាធឈាម	2
		ចាស ឈឺពោះសម្រាលអូសបន្លាយ	3
		ចាស ផ្សេងៗ	4

ផ្នែកទី 3: PCMC-scale

រង្វាស់សម្រាប់វាស់ការថែទាំម្តាយមជ្ឈមណ្ឌល ក្នុងអំឡុងពេលឈឺពោះសម្រាល និងពេលសម្រាលនៅប្រទេសកម្ពុជា
“ឥឡូវនេះ ខ្ញុំសូមសួរអ្នកអំពីបទពិសោធន៍នៅមូលដ្ឋានសុខាភិបាលក្នុងអំឡុងពេលសម្រាលកូនចុងក្រោយរបស់អ្នក។ សូមចងចាំថា សំនួរទាំងអស់នៅក្នុងផ្នែកនេះសំដៅផ្តាល់ទៅលើពេលវេលាដែលអ្នកនៅមូលដ្ឋានសុខាភិបាលសម្រាប់ការសម្រាលកូនចុងក្រោយ។ ជាមួយគ្នានេះដែរ រាល់ពត៌មានទាំងអស់របស់អ្នក គឺត្រូវបានរក្សាជាការសម្ងាត់ ហើយនឹងមិនចែកចាយជាមួយមូលដ្ឋានសុខាភិបាលនោះទេ។

សំនួរ	ជម្រើសចម្លើយតប			
#1: តើអ្នកគិតយ៉ាងម៉េចចំពោះការរង់ចាំ? តើអ្នកគិតថាវាខ្លីណាស់ ខ្លីបង្គួរ យូរបង្គួរ ឬយូរណាស់?	ខ្លីណាស់	ខ្លីបង្គួរ	យូរបង្គួរ	យូរណាស់
“ឥឡូវនេះខ្ញុំសូមសួរអ្នកថាតើអ្នកត្រូវបានគេថែទាំអ្នកដោយរបៀបណានៅមូលដ្ឋានសុខាភិបាល។ សូមប្រាប់ខ្ញុំប្រសិនបើរឿងទាំងអស់កើតមានគ្រប់ពេល ភាគច្រើនពីរបីដង ឬមិនដែលកើតមានឡើង។ អ្នកអាចនិយាយថាម្តងឬពីរដង ប្រសិនបើវាកើតឡើងម្តងឬពីរដង និង ភាគច្រើន ប្រសិនបើវាកើតឡើងបីដងឬច្រើនជាងនេះ តែមិនមែនជានិច្ចកាល។ សម្រាប់សំនួរខ្លះ ខ្ញុំនឹងសួរបញ្ជាក់ប្រសិន បើកើតមានក្នុងអំឡុងពេលឈឺពោះសម្រាល សម្រាល ឬបន្ទាប់ពីសម្រាល។ ប្រសិនបើខ្ញុំមិន សួរបញ្ជាក់ សូមឆ្លើយតាមបទពិសោធន៍របស់ អ្នកក្នុង អំឡុងពេលអ្នកនៅមូលដ្ឋានសុខាភិបាលរហូតដល់ចេញពីមូលដ្ឋានសុខាភិបាល។				
#3: តើគ្រូពេទ្យ ឬបុគ្គលិក ដទៃទៀតនៅបានហៅអ្នកតាមឈ្មោះទេ?	ទេ មិនដែលទេ	ចាស ម្តងឬពីរដង	ចាស ភាគច្រើន	ចាស គ្រប់ពេល
#4: តើគ្រូពេទ្យ ឬបុគ្គលិក ដទៃទៀតថែទាំអ្នកដោយយកចិត្តទុកដាក់ឬទេ?				
#5: តើគ្រូពេទ្យ ឬបុគ្គលិក ដទៃទៀតមានភាពរួសរាយរាក់ទាក់ចំពោះអ្នកឬទេ?				
#6: ក្នុងអំឡុងពេលពិនិត្យក្នុងបន្ទប់ឈឺពោះសម្រាល តើអ្នកត្រូវបានគេគ្របដោយក្រណាត់ឬភួយ ឬ ជាំងដោយរាំងននដើម្បីកុំអោយអ្នកដទៃមើលឃើញឬទេ?				
#8: តើអ្នកគិតថាគ្រូពេទ្យ ឬបុគ្គលិកដទៃទៀតបានអោយអ្នកចូលរួមក្នុងការសម្រេចចិត្តទាក់ទងនឹង ការថែទាំរបស់អ្នកឬទេ?	ទេ មិនបានទេ	ចាស ម្តងឬពីរដង	ចាស ភាគច្រើន	ចាស គ្រប់ពេល	មិនចាំបាច់ធ្វើការសម្រេចចិត្តណាមួយទេ

#10: ក្នុងអំឡុងពេលសម្រាល តើអ្នកគិតថាអ្នកស្ថិតនៅក្នុងឥរិយាបថដែលជាជម្រើសរបស់អ្នកឬទេ?	ទេ មិនដែលទេ		ចាស ម្តងឬពីរដង	ចាស ភាគច្រើន	ចាស់ គ្រប់ពេល
#11: តើគ្រូពេទ្យ ឬ បុគ្គលិកដទៃទៀត និយាយជាមួយអ្នកជាភាសាដែលអ្នកអាចយល់បានទេ ?					
#12:តើគ្រូពេទ្យពន្យល់អ្នកថាតើហេតុអ្វីបាន ជាគេកំពុង ពិនិត្យអ្នកឬធ្វើសកម្មភាពណាមួយលើអ្នកទេ?					
#13: តើគ្រូពេទ្យ ពន្យល់អ្នកហេតុអ្វីបានជាគេផ្តល់ថ្នាំណាមួយអោយអ្នកឬទេ?	ទេមិនដែលទេ	ចាស ម្តងឬពីរដង	ចាស ភាគច្រើន	ចាស គ្រប់ពេល	មិនដែលបានទទួលថ្នាំណាមួយទេ

#14: តើគ្រូពេទ្យបានសួរអ្នកថា តើអ្នកមានអារម្មណ៍ដូចម្តេចទេ?	ទេមិនដែលទេ	ចាស ម្តងឬពីរដង	ចាស ភាគច្រើន	ចាស គ្រប់ពេល

#15: តើគ្រូពេទ្យឬបុគ្គលិកដទៃទៀត ព្យាយាមយល់ពីការថប់បារម្ភ និងការភ័យខ្លាច របស់អ្នក ឬទេ?	មិនដែលទេ	ចាស ម្តងឬពីរដង	ចាស ភាគច្រើន	ចាស គ្រប់ពេល	មិនមានការថប់បារម្ភឬភ័យខ្លាចទេ

#16: តើអ្នកគិតថាអ្នកអាចសួរគ្រូពេទ្យ ឬបុគ្គលិកដទៃ ទៀតនូវរាល់សំនួរដែលអ្នកមានឬទេ?	ទេមិនដែល	ចាស ម្តងឬពីរ	ចាស ភាគច្រើន	ចាស គ្រប់ពេល

	ទេ	ដង			
#17: តើអ្នកត្រូវបានគេអនុញ្ញាតិអោយនរណាម្នាក់ដែលអ្នកចង់អោយនៅជាមួយ (គ្រួសារ ឬមិត្តភក្តិ) មកនៅ ជាមួយអ្នកក្នុងអំឡុងពេលឈឺពោះសម្រាល ឬទេ?	ទេ មិនដែលទេ	ចាស ម្តងឬពីរដង	ចាស ភាគច្រើន	ចាស គ្រប់ពេល	ខ្ញុំមិនត្រូវការនរណាម្នាក់មកនៅជាមួយខ្ញុំទេ
#18:តើអ្នកត្រូវបានគេអនុញ្ញាតិអោយមាននរណាម្នាក់ដែលអ្នកចង់អោយនៅជាមួយក្នុងអំឡុងពេលសម្រាលឬទេ?					

#19: នៅពេលដែលអ្នកត្រូវការជំនួយ តើអ្នកគិតថា គ្រូពេទ្យ ឬបុគ្គលិកដទៃទៀត យកចិត្តទុកដាក់ ចំពោះអ្នក ឬទេ?	ទេមិនដែលទេ	ចាសម្តងឬពីរដង	ចាស ភាគច្រើន	ចាស គ្រប់ពេល
#20: តើអ្នកគិតថាគ្រូពេទ្យ ធ្វើអ្វីគ្រប់យ៉ាងដែល គេអាចធ្វើបានដើម្បីជួយ គ្រប់គ្រងការឈឺចាប់របស់ អ្នកទេ?				
#24: តើអ្នកគិតថាមានបុគ្គលិកសុខភាពគ្រប់គ្រាន់ ដើម្បីថែទាំអ្នកទេ?	ទេមិនដែលទេ	ចាស ម្តងឬពីរដង	ចាស ភាគច្រើន	ចាស គ្រប់ពេល
#25:តើអ្នកគិតថាថាគ្រូពេទ្យ ឬបុគ្គលិកដទៃទៀត បានថែរក្សាអ្នកបានយ៉ាងល្អទេ?				

ផ្នែកទី4៖ លទ្ធផលរំពឹងទុក (ការពេញចិត្ត សេចក្តីត្រូវការស្វែងរកការថែទាំ)
ខ្ញុំសូមសួរអំពីការពេញចិត្តរបស់អ្នកក្នុងការទទួលការថែទាំ។

4.1	សរុបសេចក្តីមកតើអ្នកមានការពេញចិត្តបែបណាក្នុងការថែទាំផ្នែកសម្ភពនៅមូលដ្ឋានសុខាភិបាលដែលអ្នកសម្រាលកូនចុងក្រោយរបស់អ្នក?	មិនពេញចិត្តខ្លាំង	1
		មិនពេញចិត្ត	2
		ពេញចិត្តផងមិនពេញចិត្តផង	3
		ពេញចិត្ត	4
		ពេញចិត្តខ្លាំង	5

4.2	តើអ្នកអាចវាយតម្លៃគុណភាពនៃការថែទាំផ្នែកសម្ភពនៅមូលដ្ឋាននេះយ៉ាងដូចម្តេចដែរ?	អន់	1
		គួរសម	2
		ល្អ	3
		ល្អណាស់	4
		ល្អប្រសើរ	5
4.3	តើអ្នកនឹងសម្រាលកូននៅមូលដ្ឋានដដែលនេះទេប្រសិនបើអ្នកសម្រាលកូនមួយទៀតនាពេលអនាគត?	ទេ	0
		មិនអាចសម្រេចចិត្តបាន	1
		ចាស	2
4.4	ប្រសិនបើអ្នកពិចារណាសារឡើងវិញទៅលើបទពិសោធន៍នៃការសម្រាលរបស់អ្នក តើអ្នកនឹងណែនាំអោយសមាជិកគ្រួសាររបស់អ្នកមកសម្រាលកូននៅមូលដ្ឋានសុខាភិបាលដែលអ្នកសម្រាលដែរឬទេ?	ទេ	0
		ចាស អាចណែនាំដែរ	1
		ចាស ពិតជាណែនាំ	2

សូមអគុណសម្រាប់ការចូលរួមរបស់អ្នកនៅក្នុងការសិក្សានេះ។

Appendix 9: Online interviews Guide

1. Preparation stage

Find local collaborators

- Support from the director of the target facility
- Support from key persons at the target facility who value the proposed study
- Support from local administrative coordinator
- Support from local research assistants

Equipment required for online interview in Cambodia side

- Two internet connection devices (PC, iPad, mini-Pad, smart phone etc.). One is for video call function; another is for input questionnaire answer.
- Internet SIM card
- Internet top-up card

The criteria of interviewers

- Reproductive aged female: The same age, gender and cultural background to potential respondents are recommended (Coast, 2006)
- Bilingual whose mother language is Khmer
- Experiences of a qualitative interview is recommended (Roura et al., 2009)
- Good interpersonal communication skill

Process of recruitment

- Open job announcement to medical students through former colleagues
- PI made a personnel online interview
- Made a service agreement

Honorarium for interviewer

- Initial cost for infection prevention materials (mask, Hand sanitizing alcohol etc.)
- Internet top-up fee
- Honorarium for face-to-face interview

Interviewer training

- Objective：To standardize the quality of data among interviewers (Barbosa, Duarte, Bastos, & Andrade, 2018)
- Training includes the purpose of the study, the role, and responsibility of interviewers, data collection procedures, the way to recruit eligible women, the concept of person-centered maternity care, the intended meanings of all items of PCMC-scale, practice sessions with the scale, and understanding of ethical considerations (Nápoles-Springer, Santoyo-Olsson, O'Brien, & Stewart, 2006).

2. Implementation stage

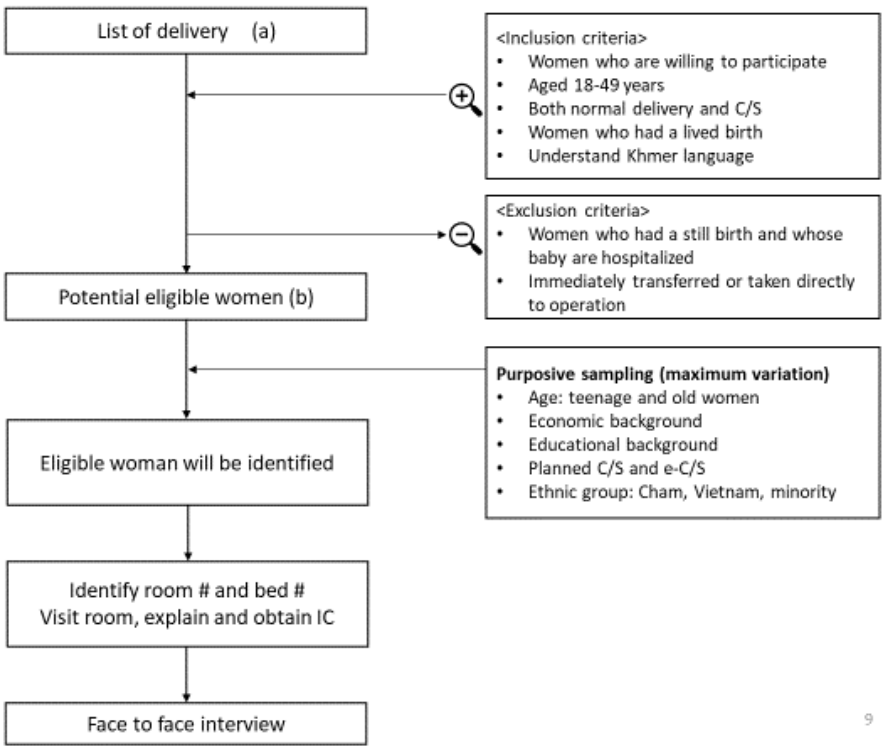
Dress code

- White nursing uniform
- Name tag

Procedure of interviews

Process	#	Detailed tasks
Check-In	1	Send a SNS message to PI when you arrive at hospital
Selection	2	Find the dairy report at delivery room
	3	Send a picture of the dairy report to PI
	4	Select an odd number by serial number among normal delivery from the report on that day (This means select Day 2)
	5	Select an odd number by serial number among C/S from the report 2 days before (This means select Day 6 of C/S)
	6	Find the room and bed number
	7	Go to see the woman
Before interview	8	Explain the objective of the study and ethical consideration using flyer
	9	Obtain verbal informed consent
Interview	10	Conduct face to face Interview
	11	Input answers to Google form
	12	Give a gift to the woman
	13	Continue interviews with other women
Report	14	Report the number of interview on that day to PI
	15	Send a SNS message to PI when you leave hospital

Procedure of Recruitment



Screening eligible women

a. Age

- Aged 18-49 years → Eligible
- Less than 18 years old or more than 49 years old → Not eligible

b. Mode of delivery

- Admitted during labor and Normal delivery at the hospital → Eligible
- Admitted during labor and C/S at the hospital → Eligible
- Immediately transferred and taken directly to C/S → Not eligible

c. Baby's outcome

- lived birth → Eligible
- Still birth → Not eligible
- Hospitalized NCU due to premature or serious complications → Not eligible

What to prepare before interviews

- Print out IC form
- Print out interview guide and questionnaire
- Souvenirs to women (baby soap, baby powder etc.)
- Internet devises (PC, smart phone, etc.)
- Mobile Wi-Fi

Standard precaution of infection control

- Mask
- Hand wash
- Gargle

Interview guide

Refer to

- Interview guide

Requests to interviewers throughout

- **Do not guide**
  - If you ask "all"? Women answer "all"
  - Provide all answer options
- **Always confirm answer options**
  - The first answer may be different from the answer you are talking deeply
  - When the same answer is repeated, provide all answer options
- **Ask woman's own experience**
  - When the answer was general, confirm "this time"

Problem solving

- Consult with key local collaborator
- Discuss what the problem is for the person or the issues

-End-