

RESEARCH ARTICLE

Developing a Prenatal Health Literacy Tool for Filipino Women

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Abstract

Pregnancy is a critical period in every woman's life. The health of both the mother and her unborn child is at stake, with poor access to needed prenatal care services. Obtaining prenatal care is affected by the pregnancy literacy of the expectant mother. However, the assessment tool for health literacy among Filipino pregnant women is limited. This paper aimed to examine existing maternal health literacy instruments. Hopefully, an adopted tool can be found for assessing prenatal health literacy. After examining existing maternal health literacy tools, 18 questions were suggested that can be further modified before they are used for Filipino pregnant women to assess their prenatal health literacy.

Keywords: *prenatal care, pregnant women, maternal health literacy, prenatal health literacy, prenatal health literacy tool*

Introduction

In the Philippines, 3% of pregnant women do not receive any antenatal care, and more than 50% of women of reproductive age (15 to 49 years old) have at least one problem in accessing health services (Philippine Statistics Authority and ICF, 2018). As pregnancy is a critical period for every woman's life, access and utilization of antenatal healthcare services is crucial to ensure both the life and health of the mother and her child. Utilization of antenatal health services positively impacts pregnancy outcomes (Juneja et al., 2016), and better utilization of antenatal services is affected by maternal literacy (Gupta et al., 2015). Assessment of maternal health literacy is therefore vital in identifying pregnant women with low levels of maternal health literacy for early health intervention. This paper aims to examine existing maternal health literacy tools that may be adopted in evaluating prenatal health literacy of Filipino pregnant women

Early prevention and treatment of various diseases, communicable or noncommunicable, is possible if only individuals can make appropriate health decisions (Agosto et al., 2018). This is the idea of health literacy, which involves competencies related to access, understanding, appraisal, and use of health information in preventing disease and promoting health (Sørensen et al., 2012). Health literacy (HL) is a concept introduced in 1974 (Simonds, 1974) that has an increasing importance in public health and healthcare (Sørensen et al., 2012). It was defined by the United States of America (USA)-Institute of Medicine of the National Academies as the degree to which people can acquire, process, and comprehend basic health information and services needed to make rightful health decisions (Ratzan & Parker, 2000).

The Philippines has a relatively high rate of 96.5% basic literacy level from the recent report of the conducted study by the

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Philippine Statistics Authority (PSA) in 2019 regarding the Functional Literacy, Education and Mass Media Survey (Philippine Statistics Authority, 2021). This said rate, however, does not necessarily translate to having high HL rate among Filipinos. Adequate literacy is crucial in maintaining health (Ferguson, 2008). Conversely, individuals with limited HL frequently encounter problems exploring the healthcare system and struggle to perform tasks such as reading instructions in a medicine bottle and calculating cough syrup dosage (Wallace, 2006). Hence, assessing the HL of patients will assist healthcare providers in identifying appropriate methods for giving health information and instruction. Globally, HL is a critical element in ensuring better health outcomes (United Nations Economic and Social Council, 2009).

Background

Prenatal care consists of screening for prenatal problems that can increase the risk of poor pregnancy outcomes, administering needed treatments, and educating expectant mothers about safer childbirth plans (Lavado et al., 2010). The World Health Organization (WHO) recommends that pregnant mothers obtain components of prenatal care from the antenatal health facility. This means that pregnant mothers must have health work-ups to confirm pregnancy and assess risk factors; receive health counseling regarding nutrition, birth plan, pregnancy danger signs, contingency plan, contraception, and breastfeeding; obtain prenatal services including iron-folic acid supplementation, immunization against tetanus, psychosocial support, and safe-keeping of records are geared toward improved health of both the mother and the child (Lavado et al., 2010). If pregnant women are aware of and access these prenatal care services through HL, they will achieve better health and pregnancy outcomes (Ghanbari et al., 2012).

The HL level in the Philippines was reported to be low (Javier Jr et al., 2019) due to the discovery that pregnant women belong to vulnerable population groups. Hence, this paper aims to review existing maternal HL tools for assessing prenatal HL in the Philippines. It is the goal of this study to validate and to develop a reliable prenatal HL tool that will facilitate the researcher and healthcare provider's identification of the HL level of Filipino pregnant women.

Literature review

HL is characterized by familiarity with healthcare terms, medical terms, and health conditions or issues (Sykes et al., 2013) and the ability to access and use available resources within the family or social structure, community, or the healthcare system (Palumbo, 2016). The definition of HL was further extended in the context of maternal HL from individualistic promotion and maintenance of good health to promotion and maintenance of

mother's and child's good health (Renkert & Nutbeam, 2001). Maternal health literacy (MHL) was defined in several ways. It was described as the intellectual and social skills that inspire and empower women to obtain and to utilize health information to protect and to promote their health and that of their children (Moynihan, 2015; Renkert & Nutbeam, 2001). It was also defined as a skill in identifying the dangerous symptoms of the pregnancy period, healthy lifestyles, and pregnancy nutrition (Kohan et al., 2008). According to these definitions, MHL is characterized by having adequate health knowledge, the capability to access health information, sufficient and accurate health information, and the utilization of this health information in the decision-making process among pregnant women. Thus, MHL enables pregnant women to have well-timed prenatal care, empowered decision-making, and education on managing labor, such as acceptance of midwifery treatment and management of pain (Kohan et al., 2008; Renkert & Nutbeam, 2001).

Given the conceptual definition, MHL can be adopted for prenatal HL in the Philippines. A pregnant mother has MHL when she: (1) is capable of communicating health information both in writing and verbally through familiarity and adequate knowledge about health terms and issues; (2) can assess the accuracy of information brought about by understanding the importance of maternal health and health promotion; and (3) can utilize the health information learned for the decision-making process in accessing quality prenatal health care.

Tools to Assess Maternal Health Literacy

A few studies retrieved tools for measuring MHL among pregnant mothers (Goel et al., 1996; Gunville & Williams, 2019; Guttersrud et al., 2015; Mojinyinola, 2011; Taheri et al., 2020). However, the Prenatal Care Health Literacy Instrument (Gunville & Williams, 2019) and the Maternal Health Literacy Inventory in Pregnancy (Taheri et al., 2020) were reviewed as these articles present the processes of how the MHL tool was developed.

The Prenatal Care Health Literacy Instrument

The Prenatal Care Health Literacy Instrument (PCHLI) was developed based on the concept that HL is a cognitive skill involving the ability to understand and to learn regarding pregnancy danger signs, intrauterine development, health, and timing of screening tests for the fetus (Gunville & Williams, 2019) (Tables 1 and 2). Having these HL skills can disrupt the complex interacting factors (behavior, social, genetics, environment, geographical location, finances, and access to healthcare) that contribute to the high infant death rates among American Indians (Gunville & Williams, 2019). Hence, PCHLI was developed as it was intended to be used for American Indian women of reproductive age. It is composed of 25 items,

Table 1. Summary of key characteristics of reviewed MHL tools

Variable	Prenatal Care Health Literacy Instrument	Maternal Health Literacy Inventory in Pregnancy
MHL tool	The development of a prenatal care health literacy instrument for American Indian mothers (Gunville & Williams, 2019)	Development and psychometric properties of maternal health literacy inventory in pregnancy (Taheri et al., 2020)
Purpose	The purpose of this study is to measure a prenatal care health literacy instrument among American Indian women of reproductive age, considering the cultural context surrounding the prenatal period.	To evaluate psychometrically the properties of maternal health literacy used during pregnancy.
Conceptual definition	Health literacy is a cognitive skill: the ability to understand and be knowledgeable about pregnancy danger signs, intrauterine development, health, and the timing of screening tests for the fetus.	MHL has cognitive knowledge of maternal health and can access and appraise health information, make decisions, and utilize health information.
Items and dimensions	The final instrument consisted of 25 questions that answers four domains: <ol style="list-style-type: none"> 1. Knowledge of health, prevention, and risk factors during pregnancy (13 items) 2. Interpretation of graphic information on infant mortality (2 items) 3. Knowledge of pregnancy warning signs (4 items) 4. Knowledge of development, health, and screening points of the fetus (6 items) 	MHELIP is composed of 4 dimensions and 48 items: <ol style="list-style-type: none"> 1. Maternal health knowledge (21 items) 2. Search for maternal health information (6 items) 3. Assessment of maternal health information (6 items) 4. Maternal health decision-making and behavior (15 items)
Sample Characteristics	American Indian women of reproductive age	<p>Qualitative study</p> <ul style="list-style-type: none"> ● 19 pregnant women <p>Content Validity</p> <ul style="list-style-type: none"> ● Ten experts on gynecology, midwifery, reproductive health, maternal and child health, health education, nursing, and health literacy ● 15 pregnant mothers to check the possibility of misinterpreting items ● 15 pregnant mothers to score the usefulness of each item <p>Construct Validity</p> <ul style="list-style-type: none"> ● 30 pregnant mothers conveniently sampled

Table 2. *Validity and reliability of reviewed MHL tools*

Variable	Prenatal Care Health Literacy Instrument	Maternal Health Literacy Inventory in Pregnancy
First Author (year), Country	Gunville & Williams(2019), United States	Taheri et al. (2020), Iran
Content Validity	<ol style="list-style-type: none"> The drafted instrument resulted from a rigorous literature review reviewed by experts: <ul style="list-style-type: none"> Three American Indian health disparity researchers One population health expert for relevance, duplication, and content coverage for each domain Questions relevant to the American Indian population were rewritten. As a basis for modifying the instrument to be more understandable or easier to answer, pretesting was conducted through cognitive interviews with: <ul style="list-style-type: none"> 2 American Indian community members 3 American Indian health disparity researchers 	<ul style="list-style-type: none"> The minimum accepted content validity ratio (CVR) was 0.51, which is why the 0.14-scored item "I can solve pregnancy problems" was removed from the original questionnaire. Fifteen pregnant women's data revealed the score is above 1.5 in all items; hence, no item was removed.
Construct Validity	Not indicated	Exploratory factor analysis showed a higher than 0.35-factor load in all items.
Criterion-related Validity	Not indicated	Not indicated
Reliability	Not indicated	The questionnaire consistency in the repeatability measurement revealed an intra-class correlation coefficient (ICC) of 0.96 (95% confidence interval) for the entire tool, which varied from 0.74 to 0.97 in different domains.

which cover four subscales (Gunville & Williams, 2019). The first dimension (13 items) is about the knowledge on health, prevention, and risk factors during pregnancy. Meanwhile, the second dimension (2 items) is related to the understanding of participants regarding ranks and rates through the interpretation of shown graphical information on infant mortality. On the other hand, the third dimension (4 items) gauges the knowledge on pregnancy warning signs. Finally, the fourth dimension (6 items) is a multiple choice question to gauge the knowledge on development, health, and screening points for the fetus. The validity of this instrument's content was conducted through a rigorous literature review, expert panel review, and cognitive

interviews. This said tool was projected to be pilot-tested among American Indian communities throughout the United States to determine its validity and feasibility.

The Maternal Health Literacy Inventory

Maternal Health Literacy Inventory in Pregnancy (MHELIP) is another tool developed based on the concept that MHL is having cognitive knowledge of maternal health, the capability to access and appraise health information, and the ability to make decisions and utilize health information (Taheri et al., 2020) (Tables 1 and 2). The MHELIP is a 48-item questionnaire

Table 3. Prenatal health literacy tool for Filipino pregnant women

Items	Response Scale			
Competence in communicating pregnancy-related information				
1. I can elucidate pregnancy-related information to others. ^a	Excellent	Good	Average	Poor
2. I can distinguish myths from accurate pregnancy-related information that I am sharing with others. ^a	Excellent	Good	Average	Poor
3. I can summarize the pregnancy-related information that healthcare provided to me. ^a	Excellent	Good	Average	Poor
4. I can explain to other pregnant women the health practices to promote pregnancy health. ^a	Excellent	Good	Average	Poor
5. I can persuade fellow pregnant women to follow recommended healthy prenatal care practices. ^a	Excellent	Good	Average	Poor
6. I can teach fellow pregnant mothers about healthy lifestyles and practices during the pregnancy period. ^a	Excellent	Good	Average	Poor
Health information assessment				
7. I verify health information sources to access accurate and correct pregnancy-related information. ^b	Every time	Often	Rarely	Never
8. I consult healthcare providers to clarify the correctness of pregnancy-related information. ^b	Every time	Often	Rarely	Never
9. I know the importance of accurate pregnancy health-related information in ensuring a healthy pregnancy. ^a	Every time	Often	Rarely	Never
10. I can identify myths from scientific pregnancy health-related information. ^a	Every time	Often	Rarely	Never
11. I know that not all information from traditional healers are accurate. ^a	Every time	Often	Rarely	Never
Utilization of health information				
12. I submit to needed and/or recommended tests and examinations for assessing my pregnancy-related risks. ^b	Every time	Often	Rarely	Never
13. I attend my regular prenatal check-up. ^{b,c}	Every time	Often	Rarely	Never
14. I implement healthy lifestyles and appropriate activities recommended to have a healthy pregnancy. ^b	Every time	Often	Rarely	Never
15. I am taking my iron-folic acid supplements and other recommended supplements regularly. ^c	Every time	Often	Rarely	Never
16. I submit myself for the recommended tetanus toxoid injection and other recommended immunizations. ^b	Every time	Often	Rarely	Never
17. I participate with healthcare providers in planning health promotion strategies to achieve a healthy pregnancy. ^b	Every time	Often	Rarely	Never
18. I avoid taking actions that can harm my pregnancy. ^b	Every time	Often	Rarely	Never

^a Adopted from Guttersrud et al., 2015^b Adopted from Taheri et al., 2020^c Adopted from Gunville & Williams, 2019

consisting of four domains, including the “knowledge on maternal health” dimension, which measures maternal-health-related knowledge (items 1-21); “search for maternal health information” dimension, which measures the method of accessing health information (items 22-27); “assessment of maternal health information” dimension which measures the techniques used of assessing the health information learned (items 29-33); and “decision-making process and behavior toward maternal health” dimension which measure the use of health information through their decision-making process and health behaviors (items 34-48). The MHELIP tool measures the MHL of pregnant women's maternal knowledge, health information access, health information appraisal, and health information utilization.

Discussion

Each of the reviewed MHL tool that was developed has its specific concept and hypothesis. The PCHLI is used as a management for the complex cycle of interacting factors resulting in the high infant death rates of American Indians. By using this tool, intervention will be made to interrupt the cycle, thus reducing infant deaths (Gunville & Williams, 2019). On the other hand, the MHELIP defined MHL as a key to achieving healthy pregnancy and good maternal outcomes by improving antenatal healthcare using the developed MHL tool (Taheri et al., 2020).

Both tools have their own strengths and specific uses. The PCHLI tool is specific to measure MHL on a particular group of women (Gunville & Williams, 2019), and the MHELIP tool can be used for the general pregnant women population (Taheri et al., 2020). The reviewed instruments were products of a rigorous literature review that made the tools meaningful, with expert validation and adequate internal consistency. However, PCHLI can only measure MHL among American Indian pregnant women and MHELIP among general pregnant women. Selecting appropriate items from these tools and incorporating additional valuable items will be useful to fit into the assessment of prenatal HL among the general population of pregnant women and fit into the above-mentioned MHL attributes.

A good MHL is characterized by having the ability to communicate, to comprehend, and to utilize health information learned to promote prenatal health and well-being of both the mother and of her child. Guided by these attributes, items were selected from the reviewed tools and other sources. In addition to the MHL attributes, the prenatal HL tool developed incorporated the prenatal components recommended by the WHO that pregnant women should receive (pregnancy assessment, health promotion, prenatal services). Finally, the developed prenatal HL tool is composed of three subscales: (1)

competence in communicating pregnancy-related information, (2) health information assessment, and (3) utilization of health information. Table 3 presents the items adopted within each subscale.

Conclusion

In the Philippines, MHL is yet to be explored and strengthened. Adopting and modifying existing MHL tools can be used as an instrument in assessing prenatal HL as a basis for improving prenatal care in the country. Increased HL has a promising impact in improving maternal health and good pregnancy outcomes. Further exploration and enhancement of the developed prenatal health literacy instrument is needed for its possible adoption in the Philippines.

This review article adds to the knowledge related to pregnancy HL in the Philippines. It suggests an instrument to assess Filipino pregnant mothers' abilities in communicating, assessing, and utilizing health information learned in promoting their health and that of their unborn baby during pregnancy. This article indicates the modification and enhancement the pregnancy health literacy tool for its eventual utilization. The use of pregnancy health literacy tools facilitates healthcare providers to improve the provision of prenatal care among pregnant women and to help researchers to identify the prevalence of health literacy among pregnant mothers.

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Author contributions

EBFD completed the study conceptualization, methodology, and initial draft writing. EBFD, MJRT, CHH, and YJD were collaboratively involved in the review and editing of the paper. LMW, FWL, and CHH provided supervision until the manuscript was completed.

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Ethical approval

Our institute does not require ethical approval for this type of study.

**“Never give up on a dream just because
of the time it will take to accomplish it.
The time will pass anyway.”**

—Earl Nightingale