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Use of a Facilitated Discussion Model for Antenatal Care to Improve Communication

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Introduction

With today's increasing emphasis on patient-centered care, patient involvement, and health education, health literacy has become an important topic in health care. Broadly speaking, health literacy is used as a term to describe communication activities which can influence health outcomes via the access and use of health care services, patient-provider interactions, and personal management of health and illness (Nutbeam, 2000; von Wagner, Steptoe, Wolf, & Wardle, 2009). Numerous definitions of health literacy exist within the academic literature (e.g., Berkman, Davis, & McCormack, 2010; Nutbeam, 2000; Sorensen et al., 2012; Squiers, Peinado, Berkman, Boudewyns, & McCormack, 2012; von Wagner et al., 2009) and white papers (e.g., Agency for Healthcare Research and Quality, 2014; Institute of Medicine, 2004; United States Department of Health and Human Services, 2014; World Health Organization [WHO], 2013). While these definitions all attempt to describe this relatively new health construct, a standard definition of health literacy has not been agreed upon nor has it been consistently utilized in research (Berkman et al., 2004). Furthermore, the majority of these definitions have been confined to describing health literacy within developed countries. Thus, despite this burgeoning emphasis on health literacy in high

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resource countries (Sorensen et al., 2012); there is a dearth of literature on health literacy in low-resource and developing countries (von Wagner et al., 2009).

The concept of health literacy can be expanded upon to encompass a specific focus on maternal health literacy. According to Renkert and Nutbeam (2001), “maternal health literacy can be defined as the cognitive and social skills which determine the motivation and ability of women to gain access to, understand, and use information in ways that promote and maintain their health and that of their children” (p. 382). There is limited work focusing specifically on maternal health literacy. Past work has included assessing the relationship between maternal health literacy and (a) breastfeeding (Kaufman, Skipper, Small, Terry, & McGrew, 2001); (b) cervical and breast cancer screening (Scott, Gazmararian, Williams, & Baker, 2002); and (c) antenatal health behaviors between rural and urban women in one district in Ghana (Edum-Fotwe, 2012).

This paper focuses on the findings from a descriptive pilot study to assess the feasibility of providing focused antenatal care (FANC) in a group setting to improve patient-provider communication and patient engagement thereby improving health literacy. The construction and testing of this model is part of a larger NIH-funded study to determine whether exposure to the group FANC modules increases Ghanaian women's use of professional midwives for delivery and improves antenatal and birth outcomes.

Background

Generally, health literacy refers to “people's knowledge, motivation, and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning health care, disease prevention, and health promotion to maintain or improve quality of life during the life course” (Sorensen et al., 2012, p. 3). Nutbeam (2000) describes three levels on the continuum of health literacy targeted to reach different patient populations and impact different levels of change; (a) functional health literacy; (b) interactive or tailored health literacy; and (c) critical health literacy. In the first level, functional health literacy, patients receive factual health information for their own individual benefit (Nutbeam, 2000). Next on the continuum is an interactive or tailored approach to health literacy in which a patient would develop personal skills to extract health information from everyday activities and various forms of communication for their individual benefit (Nutbeam, 2000). In the third and final level, critical literacy, the patient utilizes advanced cognitive skills to critically analyze health information for individual benefit and the potential to impact political and social change (Nutbeam, 2000). These levels highlight the varying abilities of patients and their potential to achieve health literacy based on the information and tools they are provided.

The majority of existing models and definitions view health literacy as constant and do not adequately consider the *process* of health literacy (Sorensen et al., 2012). Health literacy is directly connected to general literacy. Patients must possess the tools and methods necessary to receive and access health information, understand and comprehend the available information, process and evaluate the information, and finally use that information to impact their own health (Sorensen et al., 2012). Health literacy is not static. Health care interactions

and interventions must aim to address all of the steps within the process while also considering the varying levels of health literacy among the target patient populations (Sorensen et al., 2012).

Health Literacy and Maternal-Child Health

Women have been identified as essential elements for health care change. In most parts of the world approximately 80% of women make the health care decisions for their family (Plianbangchang, 2007).

One of the critical components of health within a nation is antenatal care. Health care interventions focused on the perinatal period often aim to provide health promotion and education to prevent morbidity and mortality related to preventable causes. Despite a worldwide focus on reducing maternal mortality, approximately 800 women die every day from preventable causes related to pregnancy and childbirth with 99% of deaths occurring in developing countries (WHO, 2014). Teaching women to recognize the major complications that account for the majority of maternal deaths is recommended during regular antenatal care. This includes unsafe abortion, high blood pressure during pregnancy, complications from delivery, hemorrhage, and infections (WHO, 2014).

With health literacy closely tied to general literacy, it is important for providers to tailor health messages to their target audience. In the past decade the overall number of non-literate persons has fallen. Nonetheless, 774 million adults – 64% of whom are women – lack basic reading and writing skills (United Nations Educational, Scientific, and Cultural Organization, 2013). The lowest literacy rates are found in sub-Saharan Africa and parts of South and West Asia. In many parts of sub-Saharan Africa, literacy rates for women are far lower than for men. In 2010, the youth female literacy rate (percentage of females aged 15-24 years) in sub-Saharan Africa was 68.7% compared to 77.9% for youth male (Trading Economics, 2010). The youth literacy rate is defined as the percentage of people aged 15-24 years who can both read and write, with understanding, a short simple statement on their everyday life (World Bank, 2014).

Health Literacy in the Ghanaian Context

It has been well-established that patient and provider literacy may also impact the distribution, understanding, and utilization of education materials (Althabe et al., 2008). Recent research in Ghana has demonstrated a positive relationship between higher levels of maternal health literacy with more antenatal clinic visits and delivery at a facility with a skilled birth attendant (Edum-Fotwe, 2012). Thus, it is essential that antenatal health care and health education be targeted to an individual patient's level of health literacy.

Within the last decade Ghana has adopted the FANC model based on results from the WHO antenatal care randomized trial (Villar et al., 2001). This model incorporates a minimum of four antenatal care visits throughout the course of a woman's pregnancy with the overarching goals of targeted assessment and individualized care to ensure the uncomplicated progress of the pregnancy (United States Agency for International Development [USAID], 2004). Focused antenatal care visits generally incorporate the following categories during each visit: (a) health promotion and disease prevention (e.g.,

immunizations against tetanus, reduction of iron deficiency anemia as well as education about danger signs, nutrition, and hygiene); (b) early detection and treatment of existing diseases and conditions (e.g., chronic infections, high blood pressure, malaria, or sexually transmitted infections); (c) early detection and management of complications (e.g., infection, vaginal bleeding, abnormal fetal growth); and (d) birth preparedness including complication readiness (e.g., selecting a birth location, planning for transportation) (USAID, 2004). Ghana has made great strides in antenatal care with the most recent Demographic and Health Survey (Ghana Statistical Service [GSS], Ghana Health Service [GHS], & ICF Macro, 2009) showing 95% of pregnant women received antenatal care from a health professional. However, only 68% of women attending antenatal care report receiving information on the signs of pregnancy complications (GSS, GHS, & ICF Macro, 2009), highlighting a potential disconnect between attendance at antenatal visits and information shared with and remembered by the women attending the visits.

The purpose of this pilot study is to examine the usefulness and feasibility of providing FANC in a group setting using a manualized intervention to improve patient-provider communication, patient engagement, and improve health literacy. Specifically, we intend to answer the following research questions: (a) does a group format for providing FANC influence the health care provider's perceptions of improved communication and patient engagement? (b) does group care, using a participatory format to provide FANC, help address the barriers to delivering health care information to pregnant women? and (c) does the Health Literacy Skills Framework (Squiers et al., 2012) provide a suitable framework to develop and assess maternal health literacy?

Methods

Design

An exploratory, mixed methods study design using surveys and a focus group were used to gather data to answer the research questions. Institutional review board approval for the study was obtained from the University of Ghana Noguchi Memorial Institute for Medical Research; the Kwame Nkrumah University of Science and Technology Committee on Human Research, Publications and Ethics; and the University of Michigan.

Prior to this pilot study, a curriculum developed by the American College of Nurse Midwives, entitled Home Based Life Saving Skills (HBLSS), was modified for use in the antenatal care setting (HBLSS-M). Home Based Life Saving Skills uses a participatory process that builds on local traditional knowledge and skills through discussion, demonstration, negotiation, and practice, working towards skills that are acceptable and thus more likely to be used when needed (Sibley, Buffington, Beck, & Armbruster, 2001). The methodology uses demonstration and role play to reinforce key messages and help learning. To maximize effective communication and learning among participants, who may have various levels of general literacy and health literacy, content is reinforced during training through pictorial *Take Action Cards* that are also provided for home reference (Sibley & Buffington, 2003). See Figure 1 for an example of a *Take Action Card*. By teaching the women to recognize problems using the *Take Action Cards* the first level of health literacy,

providing factual health information for an individual's benefit is actualized (Nutbeam, 2000).

Materials for the manualized intervention and pilot study were adapted using the WHO (2006) standards for maternal and neonatal care as a guide within the content domains of: (a) understanding and recognition of danger signs in pregnancy, (b) preparedness for birth, (c) understanding and recognition of danger signs in the newborn, and (d) steps for referral of mother or newborn; as well as utilization of antenatal services (Lori, Yi, Ackah, & Adanu, 2014). The manualized intervention includes a Facilitator's Guide, Large Picture Cards for use in the group FANC sessions, and a *Take Action Card* booklet for each pregnant woman to take home and use as a reminder of topics and concepts covered during the antenatal care allowing her to extract health information from various forms of communication for her own individual benefit; addressing level two on the health literacy continuum (Nutbeam, 2000).

Theoretical Background

We used the Health Literacy Skills Framework (Squiers et al., 2012) to guide the development of this pilot study and to assist in interpretation of results. The Health Literacy Skills Framework uses an ecological perspective with a feedback loop to help assist in the development and testing of potential interventions to impact a patient's health literacy (Squiers et al., 2012). The framework addresses individual characteristics (i.e., demographics, individual resources, capabilities, and prior knowledge) to understand an individual's health literacy skills in regards to print literacy, communication, and information seeking. It also considers how the individual's comprehension of stimuli and potential mediators may impact overall health behaviors and outcomes. In this pilot study, we specifically focus on evaluating the demographics, individual resources, and prior knowledge of pregnant participants to explore their relationship with health literacy skills, comprehension of stimuli, and ultimately maternal health related behaviors and outcomes from the perspective of their midwives. The goal was to examine and begin to modify the theoretical framework, allowing for its use in future large-scale interventions to assess maternal health literacy.

Sample and Setting

A facility-driven convenience sample of six Ghanaian midwives was recruited from a busy urban district hospital in the Ashanti Region of Ghana in February and March 2014. Any professional midwife, 18 years or older, who could speak English and Twi and had provided antenatal care at the district hospital clinic during the previous year prior to the start of the study met the inclusion criteria and was invited to participate in the study. As Twi is the major indigenous language in the Ashanti Region and the language spoken by the majority of women attending antenatal care at the study site, midwives who spoke both English and Twi were recruited for the pilot study as well as the larger study. All midwives who met the inclusion criteria agreed to participate and were enrolled in the study. To test the surveys for use in the Ghanaian context our small sample size is appropriate for a pilot study.

Description of the Training/Educational Model

A training of trainers (TOT) was conducted with the six midwives for three hours a day over a period of five days. The midwives then participated in a week of “teach back” under the supervision of the trainers with an additional two weeks of “practice teaching” with support and supervision. To establish fidelity with the modules, seventy-two women were next recruited to attend group sessions (6 groups of 12 participants) allowing the midwives to work in pairs to continue to refine their facilitation skills and use of the seven modules over a three month period. Each midwife administered the seven modules to two groups over the course of establishing fidelity for a total of 14 group visits. Additionally, a registered nurse was employed to provide support and supervision to the participating midwives using a skills checklist to ensure that teaching methods were being utilized correctly. Following completion of the three month fidelity period, we used qualitative and quantitative analytic techniques to examine the midwives’ perception of effective communication and patient engagement before and after implementation of the group FANC.

The Facilitator's Guide for Antenatal Care is a step-by-step guide detailing how to conduct each of the seven FANC visits. It also includes chapters on becoming a facilitator, how people learn, and how to use the facilitator's guide. The TOT included training on how to facilitate groups, how to be an active listener, how people learn and conditions for learning, and the use of picture cards as an important training resource in health teaching for helping people learn when they do not read or do not read very well. The picture cards were used as visual images to enhance communication and learning in the group setting. They provided a valuable group discussion and learning aid to stimulate thinking and reflection, dialogue, and learning among participants.

The *Take Action Card* booklet is a set of pictures corresponding to each topic covered in the FANC sessions for each pregnant woman to take home and use as a reminder of problems and actions to take when problems arise. The pictures are the same pictures used by the facilitators as teaching tools in the group FANC visits.

Measures

The study utilized survey questions adapted from a behavioral intervention to examine facilitator's communication skills implementing a curriculum for HIV awareness among Latino youth (Center for Disease Control, 2015). Face validity was conducted and questions were refined to assure context and comprehension of the concepts of communication and engagement to the Ghanaian context. The first set of 16 questions utilized a five point Likert scale ranging from 1=*strongly disagree* to 5=*strongly agree* to assess the midwives’ perception of *communication* during the group FANC visit. A total *communication* score was computed for each participant that completed the pre- and post-test with a total possible range of 16-80. The *communication* questions demonstrated a Cronbach alpha internal consistency of .941 during pre-testing.

The second set of six questions focused on the midwives’ perception of patient *engagement* during the group FANC visit. These questions utilized a five point Likert scale where lower values indicated negative perceptions (i.e., disliked very much, not at all, very

uncomfortable, understood almost nothing, learned almost nothing, and very distracted) while higher values indicated positive perceptions (i.e., liked very much, talked a great deal, very comfortable, understood almost everything, learned almost everything, very attentive). A total *engagement* score was computed for each participant that completed the pre- and post-test with a total possible range of 6-30.

Data Collection

Prior to the survey and focus group, the purpose of the study was explained and all questions answered. Written informed consent was obtained from all participants. All survey measures were completed at two time points: after the initial TOT (n=6) and three-months later after the midwives had each conducted 14 group visits using the newly learned methodology for group FANC (n=5). All surveys were written in English and were completed independently by each participant.

Qualitative data were obtained from a semi-structured focus group conducted with four of the six midwife participants that were available. Additionally, the registered nurse that attended all group FANC visits and provided support and supervision for the midwives participated in the focus group resulting in a total of five participants. The focus group was conducted in English by a research assistant in a private room within the health facility. Questions were aimed at understanding the participant's perceptions of *communication* and *engagement* with patient's during their antenatal care visits as well as exploring the participants' views on delivering antenatal care in a participatory, group format. The focus group was audio recorded and transcribed verbatim.

Data Analysis

Quantitative descriptive statistical analyses were performed using IBM SPSS Statistics for Windows, version 21.0 (IBM, Armonk, NY, USA). All data were entered into SPSS and double-checked. All *p*-values were set at $p < .05$. Basic demographic characteristics of the sample were assessed first. Next, the means and standard deviations for all questions and scales were computed. Finally, paired samples *t*-tests were used to compare the means computed for each scale. Despite the small sample size, research has demonstrated that paired *t*-tests with small sample sizes ($n < 5$) are feasible (de Winter, 2013).

The constant comparative method of analysis (Glaser, 1965; 1992) was used to identify core themes to supplement survey data that might contribute to understanding maternal health literacy in a low-resource country using the pre-existing Health Literacy Skills Framework (Squiers et al., 2012). The qualitative analysis was conducted by all authors reading through the transcript to capture general thoughts. Next an in-depth reading of the transcript occurred to identify and begin to label general codes. Then, categories were developed for the codes. The transcripts and all affiliated notes and memos were reviewed and categorized until data saturation occurred (Morse, Barrett, Mayan, Olson, & Spiers, 2008). After data saturation, consensus on categories was reached by all authors. Finally, the new categories were assimilated into the Health Literacy Skills Framework (Squiers et al., 2012) to begin the development of a theoretical framework specific to maternal health literacy that can be used to guide the development and assessment of future scale-ups of the intervention. Validation

with colleagues and the use of an audit trail contributed to validity (Sandelowski & Barroso, 2003). The verification techniques outlined by Morse and colleagues (2008) also contributed to qualitative rigor.

Results

Participant Characteristics

Participants included six Ghanaian midwives working at the participating health care facility within the Ashanti region of Ghana. The six women ranged in age from 22-58 years old ($M=44.33$ years, $SD=12.50$ years). They had been providing antenatal care for between 1-28 years ($M=8.17$, $SD=10.03$). See Table 1 for additional details about the participants.

Survey Data

Overall, participants scored perception of their *communication* and *engagement* with patients during antenatal care visits quite high indicating greater levels of communication and engagement. The mean pre-test score for the *communication* scale was 74.50 ($SD=6.46$) and the mean pre-test score for the *engagement* scale was 27.75 ($SD=1.26$). Post-test scores after group FANC was implemented also remained high. The mean post-test score for the *communication* scale was 72.50 ($SD=1.73$) and the mean post-test score for the *engagement* scale was 28.25 ($SD=1.50$). There were no significant differences in the mean *communication* ($t(df=3)=-.541$, $p=.626$) and *engagement* ($t(df=3)=-.775$, $p=.495$) scores between the pre- and post-test. See Tables 2 and 3 for additional details on individual scores by question.

Focus Group Data

To further examine the impact of participatory, group FANC on perceived patient-provider communication and engagement, qualitative data were collected through a semi-structured focus group with four of the six available midwives and the registered nurse ($n=5$). Three major themes emerged through the analysis of the qualitative data: (a) improved communication through the use of picture cards; (b) enhanced information sharing and peer support through the facilitated group process and; and (c) an improved understanding of patient concerns. The data from these semi-structured focus groups also contributed to an enhanced understanding of maternal health literacy in regards to the Health Literacy Skills Framework (Squiers et al., 2012).

Improved communication through the use of picture cards—While historically pictures have been an important resource for communicating health information, they are often used without thought for how the information will be assimilated by the viewer. As noted by this participant, there are limitations of using pictures without creating a conversation around the pictures: “There are some [mis]communications. Like the diet, the personal hygiene, the exercises. Okay, there are some exercises in the book. They ask, ‘Can we do that?’ I say, ‘Yeah, that's what the book is telling you, you can do it’. But they keep on asking. ‘With this big belly, can I squat, or can I do that?’ I say, ‘Yeah, it's good for you, that's why it's in the book’.”

Using the group FANC model, when a new topic is presented, the accompanying pictures help the participants understand the concepts. Using the picture cards as a discussion tool and a reminder helps the women understand the meaning of the picture. When they leave the group they can use the picture to remind them of the concepts they have learned. As one participant said: “Because when you show them the [picture] cards, they learn a lot from it, and they will be asking questions.” Another participant noted: “When they go home some sit down ... or look through [the *Take Action Card* booklet]...even [with] their friends, when they come together they share their views; they share their views with others.”

Enhanced information sharing and peer support—The midwives all voiced the difference they noted with information sharing and peer support among the women involved in the group FANC. This was striking to them in contrast to the individual care model that was used in the clinic prior to the pilot study. One midwife noted: “When they come they make friends, and they share information.” Midwives discussed the peer support they witnessed in the groups, “Sometimes I think it will work better because sometimes they don't understand and they feel comfortable asking their other colleague. And then when they explain, it's better then.”

Participants believed that support from family and friends also increased self-efficacy among the pregnant women involved in the group FANC. The midwives described some patients as not having support and mentioned that single adolescents are sometimes brought to the clinic by community members. One midwife noted: “And they make friends, so they share their problems among the group. So they make friends.” While another midwife commented: “I was going to say like, different views; they learn from others.”

Finally, the midwives expressed that being with the women in a group made them, as providers, seem more approachable. This sentiment is reflected in the following remark: “Sometimes when we meet them like this, and we talk to them, they feel like you are their confidant. You are meeting them, and teaching them and like today, they felt appreciatively; many appreciated what we did. So [then] they normally come to you with any problems that they have.”

Improved understanding of patient's concerns—The third and final theme reflected in the data related to how the midwives themselves benefitted from improved communication in the group FANC model. When discussing individual care verses the group model, one midwife noted: “Individually we are going to say the same thing. Do you get me? Repetition...but when they are twelve [in a group] you say the same thing maybe twice or thrice. In the individual you are going to say it twelve times.”

Because this is a busy urban clinic, the midwives often see many pregnant women in a day. This midwife discussed the advantage of group FANC over individual care: “When you get tired- when they come individually, when you get tired, you may forget something.” Another noted, “You maybe forget to tell one or two points. When you become tired- you forget some of the things.”

Providing care in a group allows more time for the midwives to dialogue with the women, “[We] ask them what they know about pregnancy. Through their view, it’s good to know what they know.” All the midwives agreed that providing antenatal care in a group was easier, faster, and that they were less likely to forget educational points because they were not fatigued from so many visits. Finally, one midwife summed things up this way: “When we are in the group, because of the [picture] cards that we show, okay things will go faster... Because when you start around 9, by 12 or 1 you are tired. But when they are within the group, we are communicating and they are giving us feedback. So it makes it easier.”

Modified Theoretical Framework: Maternal Health Literacy Skills Framework

A goal of this pilot study was to explore the use of the Health Literacy Skills Framework (Squiers et al., 2012) as a basis for the development and assessment of future large-scale studies related to maternal health literacy. Based on the mixed methods analysis from this pilot study, the Health Literacy Skills Framework (Squiers et al., 2012) was modified to focus on maternal health literacy in low-resource countries. Concepts were incorporated into the modified version and retitled as the Maternal Health Literacy Skills Framework (see Figure 2), with the changes noted in red boxes. Participants in our study believed that support from family and friends increased self-efficacy using the group prenatal care model. The participants described some patients as not having support and noted single adolescents are sometimes brought to the clinic by community members. They also noted that other young women “... have no problems. Their families are supporting them, the husband [is there] to support; maybe a friend”.

The data suggest that patients must first have a belief in their ability to seek out educational resources and care. Self-efficacy was the concept described by participants in contrast to individual resources, which was previously used in the Health Literacy Skills Framework (Squiers et al., 2012). Additionally, participants in our study believed the patients’ educational background factored heavily into their ability to employ health literacy skills. This was evident in participant’s recognition that using the picture cards allowed patients to “see the pictures” because “some are literate, some are illiterate”. The improved patient/provider communication noted through the use of picture cards and the enhanced information sharing and peer support elicited through the group FANC undoubtedly provided patients with additional tools to invoke self-determination, and carry out the behaviors they thought were most important to improve pregnancy outcomes. Based on these results, the baseline characteristics of *self-efficacy* and *educational background* and the process of *self-determination* were incorporated into the modified Maternal Health Literacy Skills Framework (Figure 2).

Discussion

This is one of the first attempts to study maternal health literacy within a low-resource country. Quantitative survey results indicate that midwives believe they are doing a good job communicating with and engaging antenatal patients regardless of whether care is provided individually or in a group format. However, focus group data provide a more comprehensive assessment of maternal health literacy and antenatal care. Participants believe it is necessary

to meet patients where they are and that group FANC facilitates peer and family support. Within these major themes lies an understanding that each individual woman's demographic characteristics, self-efficacy, educational level, and prior knowledge impact their health literacy skills, their self-determination regarding health behaviors, and ultimately their maternal health behaviors and outcomes. These concepts are reflected in the modified theoretical framework, Maternal Health Literacy Skills Framework. Many women in Ghana, especially women from lower socioeconomic status and lower educational attainments, have limited self-efficacy and decision-making powers within their households and around reproductive health issues (Darteh, Doku, & Esia-Donkoh, 2014). Thus, it is possible that the group FANC model provides them with the support and knowledge to increase their self-efficacy to seek maternal health care and make healthy decisions for themselves and their babies.

Findings from the qualitative research were used to guide implementation processes for the manualized intervention targeted at feedback, coaching, and quality improvement for the larger randomized clinical trial (Sandelowski & Leeman 2012). A self-monitoring form was developed for the midwives to provide continuous feedback on how communication and engagement with antenatal clients is progressing over time. While no significant change was found quantitatively on communication and engagement scores, the qualitative findings were essential to the development and testing of the manualized intervention.

Implementation Issues

Midwives in the pilot study embraced the concept of group antenatal care and could clearly identify advantages to the patients as well as to themselves as providers. However, because the implementation process of the intervention is targeted at the provider or system level additional considerations were needed (Sandelowski & Leeman, 2012). The logistics of organizing women into groups and arranging for them to return to the clinic for subsequent group visits was challenging. In a culture that does not organize health care visits around appointment times it was somewhat daunting for the midwives to coordinate care to keep women in a group for the entirety of their pregnancies. After numerous discussions, the midwives decided that in addition to writing down the date and time when the women should return for their follow-up visit they would contact them by cellphone prior to the day of their appointment. They believed this reminder system would help the women remember the correct day and time of their next FANC visit.

Additionally space was an issue at the clinic. Prior to the study, the antenatal clinic was housed temporarily in a large outpatient area with multiple large rooms while the new antenatal clinic was under construction. When the antenatal clinic moved to the new space, with much smaller rooms, identifying an appropriate space to hold the groups was a concern. The small rooms provided little ventilation and the heat was almost unbearable in the small rooms for the pregnant women. The midwives decided the large open waiting area could be sectioned off to provide enough privacy to hold the groups allowing adequate airflow and less cramped quarters for participants.

Because the concept of appointments for health care visits is a Western phenomenon, examining how this will be handled at the start of implementation is imperative.

Additionally, space within low resource settings for health care is often very limited with not enough chairs or room for patients other than large open air waiting areas. Understanding the culture of health care delivery as well as the limitations of the infrastructure are important considerations to take into account when working in low resource areas of the world.

Limitations

This pilot study was limited by a small sample size. Despite the small sample size, the study's pilot nature, and the focus on maternal health literacy in a low-resource country, our findings provide the first attempt at a modified health literacy framework focused on improving maternal health behaviors through an innovative strategy to improve communication. Additionally, this study utilized self-report surveys which may introduce social desirability bias. However, the study also used a focus group to further explore communication, patient engagement, and health literacy issues in group FANC that expanded upon the survey results. Finally, this work was limited to the Ashanti region of Ghana. It is essential that future studies continue to expand these ideas to additional geographical locations and cultures.

Conclusion

New approaches for improved communication to increase health literacy are sorely needed in countries where women continue to die from preventable causes. Facilitated group FANC actively involves participants by incorporating their abilities, knowledge, and needs. It creates an environment of respect and provides the opportunity for everyone involved to learn from each other. The use of picture cards coupled with demonstration and role play help create a collective understanding of what is represented in the picture for the group and serve as a reminder for women following the clinic visit.

Facilitated discussion models for delivery of care are not common in low-resource settings. Health literacy will improve when sustainable models for communicating useable information are developed. Delivering life-saving information in a format that is truly understandable will improve women's quality of life and potentially affect the long term outcomes for themselves and their families.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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What is already known about the topic?

- Health literacy is closely tied to general literacy.
- Literacy impacts the ability of patients to receive, understand, and utilize educational materials.
- Language and communication issues exist in the delivery of health care information to patients.
- There is limited research focused on maternal health literacy.

What this paper adds?

- Our findings highlight that group focused antenatal care improved communication between patients and providers.
- The use of a facilitated model using picture cards to create a conversation around a specific health topic improved understanding and engagement.
- Group antenatal care enhanced peer support and information sharing.
- The model used in this study improved participant midwives' understanding of patient concerns through improved communication.
- Providers were less fatigued when providing care to patients in a facilitated group format.

Figure 1.
Example of Take Action Cards for Prevent Problems During Pregnancy

Figure 2.
 Modified Theoretical Framework – Maternal Health Literacy Skills Framework
 *Original model was developed by Squiers et al. (2012)
 **Red boxes indicate changes to the framework

Table 1

Participant Characteristics (n=6)

Characteristics	Results
Age	
Range	25-58 years old
Mean (SD)	44.33 (12.50)
Number of years licensed	
Range	2-14 years
Mean (SD)	7.50 (5.09)
Length of time provided antenatal care	
Range	1-28 years
Mean (SD)	8.17 (10.03)
Length of time at current position	
Range	1-13 years
Mean (SD)	5.50 (4.37)

Characteristics	Results (%/n)
Highest degree or diploma held	
2 year diploma/certificate	33.3% (2)
3 year diploma	66.7% (4)

Table 2**Health Care Provider's Perceptions of Communication**

Question	Pre-Test (M/SD) n=6	Post-Test (M/SD) n=5	T-test
Today, I communicated well with the women in my group.	4.50 (.55)	4.20 (.45)	
Today, I was able to get the women to actively participate in group discussions and activities	4.50 (.55)	4.40 (.55)	
Today, I picked up on how the women in my group were feeling or thinking.	4.67 (.52)	4.25 (.50)	
Today, I responded effectively to the women in my group.	4.50 (.55)	4.60 (.55)	
Today, I kept the women in my group focused on the session.	4.67 (.52)	4.60 (.55)	
Today, I delivered the program modules as written in the Facilitator's Guide.	4.50 (.55)	4.60 (.55)	
Today, I delivered each module in the Facilitator's Guide in the time allotted.	4.50 (.55)	4.20 (.45)	
Today, I did a good job of using the picture cards as written in the Facilitator's Guide.	4.67 (.52)	5.00 (.00)	
Today, I did a good job of teaching the informational content of the program as written in the Facilitator's Curriculum.	4.60 (.55)	4.60 (.55)	
Today, I provided effective feedback to participants during the demonstration activities.	4.33 (.52)	4.60 (.55)	
Today, I motivated the women to actively participate in the group discussions and activities.	4.83 (.41)	4.60 (.55)	
Today, I did a good job of reviewing the previous meeting as written in the Facilitator's Curriculum.	4.17 (.41)	3.80 (1.10)	
Today, I did a good job of asking what the participants know as written in the Facilitator's Guide.	4.50 (.55)	4.60 (.55)	
Today, I did a good job of sharing what the trained health worker knows as written in the Facilitator's Guide.	4.50 (.55)	4.40 (.55)	
Today, I did a good job of coming to agree on problems and solutions as written in the Facilitator's Guide.	4.83 (.41)	4.20 (.45)	
Today, I did a good job of guiding the participants to practice the actions as written in the Facilitator's Guide.	4.67 (.52)	4.20 (.45)	
Cumulative score for scale	74.50 (6.46)	72.50 (1.73)	t(df=3)=.541, p=.626

Table 3

Health Care Provider Perceptions of Patient Engagement

Question	Pre-Test (M/SD) n=6	Post-Test (M/SD) n=5	T-test
In general, how much did most of the women in your group seem to like the activities today?	5.0 (.00)	4.80 (.45)	
In general, how much did most of the women in your group talk and share thoughts with each other?	4.17 (.41)	4.50 (.58)	
In general, how comfortable about talking and sharing thoughts did most of the women in your group seem?	4.17 (.41)	4.40 (.55)	
In general, how much did most of the women in your group seem to understand the information presented in the group activities?	4.67 (.52)	4.60 (.55)	
In general, how much did most of the women in your group seem to learn from the group activities?	4.83 (.41)	4.80 (.55)	
In general, how attentive were most of the women in your group?	4.83 (.41)	5.00 (.00)	
Cumulative score for scale	27.75 (1.26)	28.25 (1.50)	t(df=3)=-.775, p=.495