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**Implementation of Menstrual Cycle and Fertility Awareness Education for Community
Healthcare Providers Serving Guatemalan Women**

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Executive Summary

Introduction of the Problem

Teenage pregnancy in developing countries contributes to poverty and increases maternal and fetal morbidity and mortality (Plan International, 2022). In 2018, the estimated number of teenage pregnancies in Guatemala was higher than in other Central American countries (Poelker & Gibbons, 2018). Approximately 105,000 Guatemalan adolescents (ages 15-19) became pregnant each year between 2014 and 2020 (Gomez et al, 2020).

In the United States, there were approximately 158,000 teenage pregnancies (ages 15-19) in 2020 (Office of Population Affairs, 2021). The United States population is nearly twenty times greater than Guatemala's population, so the percentage of teenage pregnancies in Guatemala is much higher (World Bank, 2022). Measures must be taken to reduce these statistics, as teenage pregnancies contribute to multiple comorbidities for both mothers and their children.

In Guatemala, there is a mid-sized, rural healthcare clinic that provides resources to families living there and in surrounding communities, free of cost (Land of Hope, 2023). During a mission trip to this clinic in October of 2022, a medical team from the United States evaluated 446 patients within seven days (Backpack EMR, 2022). Of the patients seen during this mission trip, approximately 70% of them were female with a large majority in their childbearing years (ages 12-51) (Backpack EMR, 2022). At the time of the October 2022 medical mission trip, there was no established protocol for menstrual cycle awareness. Therefore, menstrual cycle and fertility education should be provided to this population so young Guatemalan women can be empowered and make independent, informed decisions.

Literature Review

This literature review aimed to identify previous research regarding evidence-based practice guidelines and statistically significant interventions used to increase fertility awareness, which could positively impact the rate of adolescent pregnancy in the indigenous women population of Guatemala. Guatemalan health literacy, specifically family planning education, along with contraceptive knowledge, were all investigated in the literature review.

Barriers to Fertility Awareness

Lack of Knowledge.

Indigenous Guatemalan women have a higher risk of teen pregnancy and less knowledge about contraception than their urban Guatemalan counterparts (Richardson et al., 2016). The Preventing Through Education Act was passed through Guatemalan legislation in 2010 which requires schools to teach sexual education to both male and female students (Burke, 2016). Most Guatemalan children only attend school for an abbreviated period, with a third completing sixth grade (Ospina, 2015). Therefore, when research was conducted four years after this legislation was passed, findings demonstrated a slight, insignificant decrease in teenage pregnancy rates (Burke, 2016). Although strides were made to incorporate reproductive knowledge in the academic setting, the dramatic attrition rate before puberty leads to continued illiteracy on the topics of fertility awareness and reproductive health. Sexual education must also be provided outside of the school setting to have a larger impact on this population (Ospina, 2015).

Poverty.

Impoverished people share commonalities that impact their access to healthcare services, including residing in rural communities, lack of education, and being of young age (World Bank, 2019). As of 2014, approximately sixty percent of the Guatemalan population lived on less than \$3.50 United States dollars per day; most of whom were indigenous people (Cross, De La Cruz

& Dent, 2019). Research studies show that healthcare resources are limited in Guatemala, especially at clinics and hospitals in rural areas (Hughes, M., Schmidt, J., & Svenson, J., 2022). Even if patients have access to contraceptives, they may lack the resources to pay for them and may not know how to use them correctly (World Health Organization, 2022). Lack of access to healthcare has a direct impact on reproductive knowledge.

Religion.

Another contributing factor to the high number of teenage pregnancies in Guatemala is related to the prominence of Catholic religion within the country (Greguš, 2019). Catholicism reinforces abstinence and does not support the use of alternative contraceptive methods (Greguš, 2019). According to the World Health Organization, male and female adolescents have difficulty finding organizations or providers willing to dispense contraceptives, as most healthcare facilities deem it inappropriate (2022). Sexual education in public schools is also met with resistance as it violates religious freedom (Ospina, 2015).

Gender Inequality.

The cultural norm of gender inequality and the general belief that women cannot make decisions for themselves in Guatemala heavily impacts female education, poverty, healthcare access, and pregnancy rates (Poelker & Gibbons, 2018). Frequently, women cannot receive birth control from medical professionals unless they are accompanied to the visit by a male (Ospina, 2015). Young indigenous Guatemalan women tend to conform to cultural norms, succumb to peer pressure, and lack negotiating abilities to convince their male counterparts that contraception is appropriate (Poelker & Gibbons, 2018). Data from the report *Teenage Pregnancy and Opportunities in Latin America and the Caribbean: on Early Motherhood, Poverty and Economic Achievement* suggests that if inequality between the genders is decreased

and more opportunities become available for women, then teenage pregnancy rates will decrease (World Bank Group, 2013).

Decreased Access to Electronic Devices.

Many Guatemalans do not have access to the internet or personal electronic devices (Rodríguez, 2023). Usage of the Internet, cellular phones, and social media within populations residing in Central America grew 34.5 percent of Guatemalans by 2018 (Rodríguez, 2023). Therefore, health information transmitted via electronic platforms is not readily available.

Fertility Awareness Interventions

Standard Days Method® and CycleBeads®. The Standard Days Method® (SDM), formerly known as the rhythm method, uses fertility awareness to teach women about the days in their menstrual cycle when there is a more significant potential for them to get pregnant (VanEnk et al., 2018). Fertility awareness and monitoring menstrual cycles need to be taught to Guatemalan women through alternative methods that do not include electronic or virtual devices. CycleBeads® uses different colored beads to help women track the reproductive days in their cycle (Marston & Church, 2016). When women monitor their cycle with beads and abstain from sexual intercourse during the predicted fertile days, the system is 95% effective (Marston & Church, 2016).

Empowerment of Women

In developing countries, a common belief is that a woman's worth is associated with her ability to reproduce and have many children (Poelker & Gibbons, 2018). Specifically, in Central America, gender role ideologies of machismo and marianismo are limiting because these beliefs restrict women from strengthening their societal positions and becoming empowered (Poelker &

Gibbons, 2018). It is important to allow women to make fertility and reproductive health decisions because it is directly correlated with empowerment (Poelker & Gibbons, 2018).

Project Methods

Purposes

The goal of this quality improvement project was to identify perspectives that inhibit family planning awareness, educate others about Standard Days Method® (SDM) and CycleBeads®, and ultimately, empower young Guatemalan women by teaching them about their menstrual cycles, Standard Days Method® (SDM) and CycleBeads®.

Implementation Design

The quality improvement project design was presented and approved by the primary stakeholder. Next, an IRB was submitted for the project, and approval was received. Barriers that inhibit family planning awareness in Guatemalan were identified in a literature review investigation. Reproductive education intervention was constructed, along with a 13-question pre- and post-education Likert scale questionnaire to be presented to participants.

At the beginning of December 2023, Southern Illinois University of Edwardsville (SIUE) advanced practice nursing students, SIUE faculty, and Guatemalan volunteers/workers were all asked to take part in this quality improvement project. While on a medical mission trip to Guatemala, participants in the project were given the pre-education Likert scale questionnaire to complete. After the questionnaire was administered, the lead investigator educated participants about the Standard Days Method® (SDM) and CycleBeads via PowerPoint and verbal explanation. Interested and willing participants then created CycleBeads® necklaces. After completion of the education and necklace creation, participants from the United States were

given a 13-question, post-education Likert scale questionnaire. Results from the Likert scale questionnaires were analyzed and entered into a Microsoft Excel spreadsheet.

Evaluation

Fourteen participants in the quality improvement project were volunteer healthcare providers from the United States, and eight were female volunteers who reside or work at a Guatemalan rural healthcare clinic. Each of the educational sessions lasted approximately 20 minutes. CycleBeads® kits were distributed to the participants for use in patient encounters. After completing the seven days of patient care time in Guatemala, the American participants completed a post-survey to reassess their attitudes and perspectives about fertility awareness and the menstrual cycle. The lead investigator was unable to administer the post-education Likert questionnaire to the indigenous participants, as they were either not on-site or had prior commitments on the last day of service.

The pre-education Likert scale questionnaires portrayed that the majority (80% or higher) of the American participants believe reproductive education should be taught in public schools, both young men and young women should be taught about reproductive education to increase body awareness and sexual autonomy, and that there are increased health risks associated with teenagers becoming pregnant. Over 80% of the American participants also felt comfortable discussing reproductive health topics, women's menstrual cycles, and fertility with others, have a good understanding of a woman's menstrual cycle and how it affects a woman's fertility, and understand the timeframe when a woman is fertile during her monthly cycle.

On the contrary, the surveys indicated that less than 75% of the indigenous participants believe reproductive education should be taught in public schools and there are increased health risks associated with teenagers becoming pregnant. Most of the indigenous participants, over

80%, believe both young men and young women should be taught about reproductive education to increase body awareness and sexual autonomy. Indigenous participants also felt comfortable teaching others about a woman's menstrual cycle and how it affects fertility.

In comparison of the participants' pre and post survey responses, most of the results were similar, except for two questions. On these two questions, there was greater than a 25% difference in pre-survey answers of the American and indigenous participants. These questions included one regarding increased health risks associated with teenage pregnancy and the other focused on awareness of the fertile window within the menstrual cycle. Approximately half of the indigenous participants believe there are no increased health risks associated with teenagers becoming pregnant, whereas more than 80% of the American healthcare volunteers believed there are increased risks. A little over half of the indigenous participants were able to identify the fertile window, whereas over 80% of American participants reported confidence in identification of the fertile window.

Overall, the comparison of the American participants' results from the pre- and post-survey responses were not vastly different. Most of the questions resulted in no changes of greater than 25% from pre-to-post-survey except one question. A single question focused on the beliefs about health risks associated with teenage pregnancy decreased by over 25% from pre-to-post-survey in the American participant population. Participants did not indicate why their answers changed, despite their participation in education intervention covering this topic.

Limitations

When attempting to conduct a quality improvement project in a foreign country, one of the largest obstacles is the language barrier. To overcome this issue, the surveys, intervention education, and the presentation were prepared in English and Spanish. A translator was onsite

during the mission trip to provide further clarification to Spanish-speaking participants if needed. However, interpretation of translated communication can be impacted by tone, personal beliefs, or pre-existing knowledge. Sexual education is a sensitive topic to cover any language, and the addition of a language barrier increases the probability of miscommunication.

Obtaining post-survey data from the indigenous participants would have been beneficial for complete data analysis. If this quality improvement project were to be repeated, it would be beneficial to identify and communicate a set time to review the education and administer post-education surveys to include the indigenous participants' input.

Impact on Practice

Although this quality improvement project was aimed to increase awareness of the menstrual cycle for young females who receive medical care at this rural clinic in Guatemala, it could be used to teach males or females, of any age, globally. The materials are relatively inexpensive, and the knowledge applies to all people regardless of ethnicity, socioeconomic status, and age. The success of other research studies and the positive reception of CycleBeads® in Guatemala indicates teaching the Standard Days Method® (SDM), specifically with CycleBeads®, is an educational trend that could continue being taught in other countries around the world.

Conclusion

While we cannot know if the fertility awareness education impacted the rates of knowledge and confidence in the indigenous participant population, these rates in the American participants did not vary greatly from pre-to post-survey results. As previously mentioned, many of the American participants had background medical knowledge, but not all had formal medical training. Some of the American participants also had background knowledge on fertility

awareness and the menstrual cycle, but most were not familiar with the Standard Days Method® and the use of CycleBeads® prior to the intervention. Further data collection is necessary to determine if the education on the menstrual cycle, Standard Days Method®, and CycleBeads® provided was beneficial to Guatemalan women in the long term. By instructing Guatemalan women on fertility awareness, they become empowered through education. Having this knowledge gives women more control over the timing of their pregnancies, and ultimately impact the rate of teenage pregnancy within rural Guatemalan communities. This could lead to better health outcomes for child-bearing women and their children.

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