



Integrating Acupressure and Nutritional Support Within a Positive Youth Development-Based Midwifery Model to Improve Reproductive Health Among Young Women

Eka Mardiana Afrilia^{1*}, Titin Martini², Hikmah³

^{1,2,3} Midwifery Study Program, Faculty of Health Sciences, Universitas Muhammadiyah Tangerang, Indonesia

*Corresponding Author: ekamardianaafri@umt.ac.id

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Abstract

Reproductive health among young women is influenced by physical, nutritional, and psychosocial factors; however, most interventions address these aspects separately. This study aimed to evaluate the effectiveness of integrating acupressure and nutritional support within a Positive Youth Development (PYD)-based midwifery care model to improve reproductive health among young women. This study employed a quasi-experimental design with a pretest-posttest control group approach. A total of 60 young women aged 15–24 years were selected using purposive sampling and assigned to intervention and control groups. Data were collected using a validated and reliable questionnaire, and the intervention was conducted over six weeks. Statistical analysis was performed using paired-sample t-tests and independent-samples t-tests. The results showed that the mean reproductive health score in the intervention group increased from 60.27 to 82.30, whereas the control group increased from 58.43 to 65.50. A statistically significant difference was observed between the two groups ($p = 0.000$), indicating that the integrated intervention was more effective than standard reproductive health education. These findings suggest that a midwifery care model integrating acupressure, nutritional support, and Positive Youth Development effectively improves reproductive health among young women. This approach offers a holistic, youth-friendly strategy that may be incorporated into reproductive health promotion and preventive care programs.

Keywords

acupressure;
midwifery care;
nutritional support;
positive youth development;
reproductive health.

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Introduction

Reproductive health is a fundamental component of overall well-being among young women, as it influences not only physical conditions but also psychological and social functioning. Young women experience significant physiological and emotional changes during adolescence and early

adulthood, which may affect their reproductive health status (Ara et al., 2022). Maintaining optimal reproductive health during this period is essential to prevent long-term complications and to support future maternal health outcomes (Gani et al., 2023). Globally, reproductive health has become a priority in public health and nursing practice due to its impact on quality of life, productivity, and population health outcomes (Taheri et al., 2025).

Despite its importance, reproductive health problems among young women remain prevalent worldwide. Many adolescents and young women experience menstrual disorders, dysmenorrhea, anemia, and inadequate reproductive health knowledge (Pouraliroudbaneh et al., 2024). These issues are also commonly reported in community and primary healthcare settings, particularly in developing countries, where access to comprehensive, youth-friendly reproductive health services remains limited (Gizaw et al., 2022; Jacobs et al., 2023). In many cases, healthcare services tend to focus primarily on curative aspects, while preventive, promotive, and psychosocial dimensions of reproductive health receive less attention (Musindo et al., 2023). This condition indicates that reproductive health challenges are not only clinical but also behavioral and social in nature.

Several factors contribute to these reproductive health problems, including poor nutritional status, unhealthy lifestyle behaviors, limited knowledge, and psychological stress (Rotimi & Singh, 2024). Inadequate dietary intake, particularly low iron consumption, increases the risk of anemia, which is closely associated with menstrual health and overall reproductive function (Munro et al., 2023). In addition, psychological stress may disrupt hormonal balance, leading to irregular menstrual cycles and increased menstrual discomfort (Attia et al., 2023). Lack of empowerment and low self-efficacy among young women further limit their ability to adopt healthy reproductive behaviors (Attia et al., 2023). These multidimensional factors suggest that reproductive health problems require a comprehensive and integrated approach.

Ideally, reproductive health services for young women should adopt a holistic and integrative approach that addresses physical, nutritional, psychological, and behavioral aspects simultaneously (Tepy et al., 2025). Midwifery care plays a strategic role in delivering such services through promotive and preventive interventions (Dayyani et al., 2022). The integration of complementary therapies, nutritional support, and empowerment-based approaches is increasingly recognized as an effective strategy in improving reproductive health outcomes (van Lonkhuijzen et al., 2025). Positive Youth Development (PYD) is a strength-based framework that emphasizes building competencies, confidence, and resilience among young people, enabling them to make informed health decisions and engage in positive behaviors (Donovan et al., 2025).

One potential solution is to develop an integrated midwifery care model that combines acupressure, nutritional support, and PYD-based empowerment. Acupressure has been widely used as a complementary therapy to relieve menstrual pain and improve physiological balance, while nutritional support addresses deficiencies that affect reproductive health. PYD-based interventions focus on enhancing self-efficacy, decision-making skills, and health awareness among young women. Previous studies have shown that acupressure can reduce dysmenorrhea and that nutritional interventions can improve anemia and menstrual health (Kamilia et al., 2026; Kong et al., 2023). Additionally, PYD approaches have been associated with improved health behaviors and psychosocial outcomes. However, existing studies tend to examine these interventions separately, and limited research has explored their integration within a comprehensive midwifery care model. Furthermore, previous research has not adequately addressed the combined physiological, nutritional, and psychosocial dimensions of reproductive health within a single intervention framework. This gap highlights the need for an integrated and theory-based approach, which constitutes the novelty of the present study.

This study is guided by Roy's Adaptation Model, which explains how individuals respond to internal and external stimuli through adaptive mechanisms that influence health outcomes (Browning & Callis, 2020). In this context, reproductive health is viewed as an adaptive response to

physiological, psychological, and environmental stimuli. Acupressure, nutritional support, and PYD-based interventions act as adaptive stimuli that enhance individuals' ability to cope with stress, improve physiological balance, and adopt healthy behaviors. The independent variable is the integrated intervention model, while the dependent variable is reproductive health among young women. The relationship between these variables is explained through adaptive processes, where improved coping mechanisms and behavioral changes lead to better health outcomes.

This study's findings are expected to contribute to nursing and midwifery practice by providing evidence on the effectiveness of an integrated, holistic intervention model for improving reproductive health among young women. This study may support healthcare providers in developing more comprehensive, youth-friendly services, enhancing the implementation of complementary and preventive care, and strengthening health promotion strategies. In addition, the results may inform policy development and help advance integrative approaches in reproductive health services.

Therefore, this study aimed to examine the effectiveness of integrating acupressure and nutritional support within a Positive Youth Development-based midwifery model to improve reproductive health among young women.

Materials and Methods

Study Design

This study used a quasi-experimental, pretest-posttest control-group design to evaluate the effectiveness of an integrated midwifery care model that combines acupressure and nutritional support within a Positive Youth Development (PYD) framework to improve reproductive health among young women. The quasi-experimental design was selected because it allows comparison of outcomes between an intervention group and a control group in a real-world setting where randomization may not be feasible (Creswell & Creswell, 2023). Participants in the intervention group received a structured program consisting of acupressure training, nutritional education and support, and PYD-based counseling, while the control group received standard reproductive health education.

Measurements were conducted at two time points, which were before the intervention (pretest) and after the intervention (posttest), to assess changes in reproductive health outcomes. This design enables identification of the intervention's effect by comparing within-group changes and between-group differences following implementation of the integrated midwifery model.

Participants

This study used purposive sampling, selecting participants based on characteristics relevant to the study objectives (Sugiyono, 2017). This approach ensured that respondents met the criteria to participate in the integrated midwifery care model, which combined acupressure, nutritional support, and Positive Youth Development (PYD) components. Inclusion criteria included young women aged 15–24 years who were willing to participate in the study, could communicate effectively, and were committed to attending all intervention sessions. In addition, participants were required not to be pregnant and not to be currently enrolled in any other structured reproductive health or complementary therapy program that could influence study outcomes. The exclusion criteria included participants who did not complete the full series of intervention sessions, those who withdrew during the study, and respondents who provided incomplete questionnaire data, making their data unsuitable for analysis. Participants were recruited in the Ciledug subdistrict of Tangerang City through coordination with local health workers and community leaders. Eligible participants who met the criteria were invited to join the study and provided informed consent prior to data collection. The sample consisted of 60 participants, divided into 30 in the intervention group and 30

in the control group. The sample size was determined based on feasibility considerations and recommendations for quasi-experimental studies, which suggest a minimum of 30 participants per group to achieve sufficient statistical power for detecting pretest–posttest differences.

Instrument

The instrument used in this study was the Reproductive Health and Empowerment Questionnaire, which was developed and adapted by the researcher based on existing literature on adolescent reproductive health, nutritional status, complementary therapy (acupressure), and the Positive Youth Development (PYD) framework. The instrument was developed to ensure its relevance in measuring reproductive health outcomes among young women within an integrated midwifery care model. The instrument consists of several domains, including: (1) reproductive health knowledge, (2) attitudes toward reproductive health, (3) self-efficacy and empowerment based on PYD principles, (4) menstrual health and physical symptoms (including dysmenorrhea), and (5) basic nutritional behavior. The questionnaire was designed as a self-administered instrument using a 5-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (5), with higher scores indicating better reproductive health status and empowerment (Arikunto, 2010).

Content validity was established through expert judgment involving three experts in midwifery, nutrition, and adolescent health, ensuring that all items were relevant, clear, and representative of the constructs being measured. Construct validity was assessed using Pearson product-moment correlation, and all items showed correlation coefficients (r values) higher than the r table value at a significance level of 0.05, indicating that the items were valid. Reliability testing used Cronbach's alpha, yielding $\alpha \geq 0.70$, indicating good internal consistency and reliability. This confirms that the questionnaire consistently measures the intended constructs.

In addition to the questionnaire, a demographic data form was used to collect participant characteristics, including age, education level, and menstrual history. Anthropometric measurements such as body mass index (BMI) and/or mid-upper arm circumference (MUAC) were also recorded to support the assessment of nutritional status. The instrument was used to measure changes in reproductive health outcomes before and after implementing the integrated acupressure, nutritional support, and PYD-based midwifery intervention.

Intervention

The intervention implemented in this study consisted of an integrated midwifery care model combining acupressure and nutritional support within a Positive Youth Development (PYD) framework, aimed at improving reproductive health among young women. This intervention was designed to address reproductive health holistically by integrating physical, behavioral, and psychosocial components. The intervention was conducted in the Ciledug subdistrict of Tangerang City during the study period. The researcher delivered it, together with trained facilitators with backgrounds in midwifery and adolescent health. Prior to implementation, the facilitators underwent training to ensure standardized delivery of all components of the intervention. All sessions were conducted in a supportive, youth-friendly environment to encourage active participation and engagement.

The intervention program included acupressure techniques, nutritional education, and PYD-based counseling. Participants were introduced to simple acupressure techniques related to reproductive health, particularly those aimed at reducing menstrual discomfort. Specifically, acupressure was applied at the SP6 acupoint, a technique commonly used to relieve menstrual discomfort and improve pelvic blood circulation. These techniques were demonstrated and practiced under supervision, with participants encouraged to continue practicing independently. In addition, participants received structured nutritional education focusing on a balanced diet, adequate iron intake, and healthy eating behaviors relevant to reproductive health. Educational materials and

practical guidance supported behavioral change. The PYD component emphasized strengthening self-efficacy, decision-making skills, body awareness, and positive health behaviors through interactive discussions, reflection, and peer engagement.

The intervention was implemented over six weeks, with sessions held twice per week, each lasting approximately 60–90 minutes. This duration was considered sufficient to allow participants to understand, practice, and internalize the intervention components.

Participants in the control group received standard reproductive health education commonly provided in the setting, without additional training in acupressure, structured nutritional support, or PYD-based empowerment activities. This approach allowed for comparison between the integrated intervention model and conventional education in improving reproductive health outcomes.

Data Collection

Data collection was conducted in the Ciledug subdistrict of Tangerang City. Data were collected in two stages: before the intervention (pretest) and after the intervention (posttest), to assess changes in reproductive health outcomes among young women following implementation of the integrated midwifery care model. During the pretest stage, participants completed a structured questionnaire to assess baseline conditions, including reproductive health knowledge, attitudes, self-efficacy, menstrual health, and nutritional behavior. In addition, basic demographic data and anthropometric measurements were recorded to support the assessment of participants' nutritional status. After the pretest, participants in the intervention group underwent the integrated program, consisting of acupressure, nutritional education, and PYD-based counseling, over the predetermined intervention period, while the control group received standard reproductive health education.

After the intervention, all participants completed the same questionnaire as a posttest to evaluate changes in reproductive health outcomes. This approach allowed for the comparison of pre-intervention and post-intervention conditions within and between groups. The researcher collected data directly at the study site. During the process, trained research assistants assisted the researcher by facilitating questionnaire distribution, providing instructions to participants, and ensuring that all responses were completed accurately and comprehensively. Before data collection, the research assistants received training on study procedures, ethical considerations, and standardized methods for assisting participants to maintain data quality and consistency.

Data Analysis

The collected data were analyzed using SPSS (Statistical Package for the Social Sciences) version 26. Data analysis evaluated the effectiveness of the integrated midwifery care model combining acupressure, nutritional support, and Positive Youth Development (PYD) in improving reproductive health among young women. Descriptive statistics were first performed to summarize participant characteristics, including age, educational background, and baseline reproductive health conditions. Before hypothesis testing, data normality was assessed using the Shapiro–Wilk test to determine appropriate statistical tests for further analysis.

To examine changes within each group, a paired-samples t-test compared pretest and posttest scores in the intervention and control groups. To assess differences between groups, an independent-samples t-test compared mean changes in reproductive health outcomes between the intervention and control groups. If the data did not meet the assumptions of normality, non-parametric alternatives, namely the Wilcoxon signed-rank test for within-group comparisons and the Mann–Whitney U test for between-group comparisons, were applied. The level of statistical significance used in this study was $p < 0.05$, indicating that observed differences were considered statistically significant.

Results and Discussions

Characteristics of Respondents

A total of 60 young women participated in this study: 30 in the intervention group and 30 in the control group. The mean age of participants in the intervention group was 19 years, while in the control group it was 20 years. Most participants in both groups had a senior high school educational background. Baseline characteristics did not differ significantly between the two groups, indicating comparability prior to the intervention. This comparability was further confirmed using chi-square analysis for categorical variables (education level) and an independent-samples t-test for continuous variables (age), both of which showed no statistically significant differences between the intervention and control groups ($p > 0.05$), indicating that any post-intervention differences observed could reasonably be attributed to the intervention rather than to pre-existing group disparities.

Validity and Reliability of the Instrument

Construct validity was assessed using Pearson product-moment correlation by examining the relationship between each item and the total score. The results showed that all items had significant positive correlations with the total score ($p < 0.05$), with correlation coefficients ranging from $r = 0.714$ to $r = 0.783$ for the pretest and $r = 0.770$ to $r = 0.852$ for the posttest. These values exceeded the r table value (0.254), indicating that all items were valid. Furthermore, the significant correlations among domains suggest that the instrument demonstrates good construct consistency in measuring reproductive health and empowerment among young women.

Table 1. Output Reliability Statistics

Test	Cronbach's alpha
Pre	0.805
Post	0.868

The instrument's reliability was assessed using Cronbach's alpha to determine the questionnaire's internal consistency. Based on the analysis results (See Table 1), the Cronbach's alpha value for the pretest was 0.805, while for the posttest it was 0.868. These values indicate that the instrument has good to very good internal consistency, as both coefficients exceed the minimum acceptable threshold of 0.70. The pretest reliability coefficient ($\alpha = 0.805$) suggests that the instrument items were consistently measuring the construct of reproductive health and empowerment before the intervention. Meanwhile, the higher posttest coefficient ($\alpha = 0.868$) indicates improved consistency among responses after the intervention, which may reflect participants' clearer understanding of the questionnaire items.

Normality Test

Table 2. Output Normality Test

Test	Group	P-value
Pre	Intervention	0.557
	Control	0.579
Post	Intervention	0.361
	Control	0.557

The Shapiro-Wilk test was conducted to assess data normality. Table 2 showed that both pretest and posttest scores in the intervention and control groups were normally distributed ($p > 0.05$). Therefore, parametric tests were used for further analysis.

Changes in Reproductive Health Scores Within Groups

Table 3. Output Changes in Reproductive Health Scores Within Groups

Test	Group	Mean	Standard Deviation
Pre	Intervention	60.27	9.425
	Control	58.43	7.551
Post	Intervention	82.30	8.213
	Control	65.50	8.144

Table 3 showed an increase in reproductive health scores in both groups after the intervention; however, the magnitude of improvement differed substantially between the intervention and control groups.

In the intervention group, the mean reproductive health score increased from 60.27 (SD = 9.425) at pretest to 82.30 (SD = 8.213) at posttest, indicating substantial improvement after implementing the integrated midwifery care model. This finding suggests that combining acupuncture, nutritional support, and PYD-based interventions effectively enhanced reproductive health among young women.

In contrast, the control group showed a smaller increase, with the mean score rising from 58.43 (SD = 7.551) at pretest to 65.50 (SD = 8.144) at posttest. Although there was an improvement, the change was relatively modest compared to the intervention group, indicating that standard reproductive health education alone had a more limited impact. Overall, these findings show that the intervention group improved reproductive health scores more than the control group, highlighting the effectiveness of the integrated midwifery care model in improving reproductive health outcomes among young women.

Comparison of Mean Differences in Reproductive Health Scores Between Groups

Table 4. Output Results of Independent Samples t-Test for Equality of Variances and Mean Differences

	Levene's Test for Equality of Variances	P-value
Equal variances assumed	0.798	0.000

Table 4's results of Levene's Test showed a p-value of 0.798, which is greater than 0.05, indicating that the assumption of homogeneity of variances was met. Therefore, the analysis proceeded using the equal-variances assumption in the independent-samples t-test. Furthermore, the t-test showed a p-value of 0.000, indicating a statistically significant difference in mean changes in reproductive health scores between the intervention and control groups. This finding suggests that the integrated midwifery care model had a significantly greater effect compared to standard reproductive health education. To provide more comprehensive reporting of the statistical analysis, the mean improvement in reproductive health scores was 22.03 points in the intervention group compared with 7.07 points in the control group, yielding a mean difference of 14.97 points between groups. This magnitude of difference reflects a large and practically meaningful effect, reinforcing that the observed statistical significance ($p = 0.000$) also corresponds to a clinically relevant improvement in reproductive health outcomes.

Discussion

This study found that the integrated midwifery care model combining acupuncture, nutritional support, and Positive Youth Development (PYD) significantly improved reproductive health among young women compared with standard reproductive health education. The substantial increase in mean reproductive health scores in the intervention group, alongside the statistically significant difference between groups, indicates the effectiveness of this holistic intervention approach. These results are consistent with the theoretical framework of Roy's Adaptation Model, which suggests that individuals respond to health-related stimuli through adaptive mechanisms (Hosseini & Soltanian, 2022; Motaarefi et al., 2025). In this study, the integrated intervention functioned as a positive

adaptive stimulus that enhanced participants' ability to manage physiological, psychological, and behavioral aspects of reproductive health.

The effectiveness of the integrated intervention can be explained through several interrelated biological and psychosocial mechanisms. Acupressure applied at the SP6 point is believed to stimulate neuroendocrine responses by improving pelvic blood circulation, modulating the autonomic nervous system, and promoting endorphin release, which collectively help reduce menstrual discomfort and support overall reproductive comfort. Nutritional education contributed to improved iron and micronutrient intake, which are essential for hemoglobin synthesis, hormonal balance, and healthy menstrual function. In parallel, the PYD component strengthened self-efficacy, health decision-making skills, and reproductive health literacy, enabling participants to adopt and sustain healthier reproductive behaviors. Together, these three components likely produced synergistic effects that no single intervention could achieve on its own.

The findings align with previous research showing that acupressure interventions can reduce menstrual discomfort and improve physiological balance. At the same time, nutritional support, particularly adequate iron intake, plays a crucial role in improving reproductive health outcomes. In addition, studies on Positive Youth Development have highlighted its effectiveness in improving self-efficacy, decision-making skills, and health-related behaviors among adolescents. However, most previous studies have examined these interventions separately (de Sousa et al., 2022; Ganaprakasam et al., 2025; Zava et al., 2022). The present study extends the literature by showing that integrating these three components within a single midwifery care model produces a stronger, more comprehensive effect on reproductive health outcomes.

Compared with prior studies that focused primarily on physical or psychological interventions, this study provides evidence that a multidimensional approach addressing physiological, nutritional, and psychosocial factors simultaneously is more effective. This supports the growing body of literature emphasizing the importance of holistic and integrative healthcare approaches in nursing and midwifery practice. The greater improvement observed in the intervention group suggests that combining complementary therapy with behavioral and empowerment-based strategies can enhance both immediate health outcomes and long-term health behaviors.

Although the control group also showed improved reproductive health scores, the magnitude of change was considerably lower than in the intervention group. This improvement may be attributed to several factors, including the standard reproductive health education received by control participants, a heightened awareness of reproductive health topics arising from participation in the study itself, the potential influence of repeated measurements through a pretest effect, and the possibility of informal information exchange among participants. Despite these contributing factors, the significantly greater improvement observed in the intervention group confirms that the integrated model provided additional and more substantial benefits beyond conventional education alone.

This study also contributes new knowledge by introducing an integrated PYD-based midwifery care model that has not been widely explored in previous research. While earlier studies have highlighted the benefits of acupressure, nutrition, and PYD individually, limited research has examined their combined effect within a structured intervention. Therefore, this study fills an important research gap by providing empirical evidence that integrating these components can produce synergistic effects on reproductive health. The improvement in posttest reliability observed in this study further supports the notion that participants developed a clearer understanding of reproductive health concepts after the intervention, indicating both cognitive and behavioral changes.

From a practical perspective, the findings of this study have important implications for nursing and midwifery practice. The integrated model can be applied as a youth-friendly, holistic, and cost-effective intervention in community health settings, schools, and primary healthcare services. It may enhance the role of nurses and midwives in delivering promotive and preventive care, improve

patient engagement, and support the development of more comprehensive reproductive health programs. Furthermore, this approach may strengthen health promotion strategies and inform policy development related to adolescent reproductive health services.

This study supports and extends existing theories and evidence by demonstrating that an integrated intervention combining acupressure, nutritional support, and PYD is more effective than conventional approaches. The findings highlight the importance of holistic, theory-based interventions in improving reproductive health among young women and provide a foundation for future research to explore further and refine integrative models in nursing and midwifery care.

Implications and limitations

The findings of this study have important implications for advancing nursing and midwifery science, particularly in developing integrative and theory-based interventions for reproductive health among young women. This study contributes to the conceptual understanding that reproductive health is a multidimensional construct influenced by physiological, nutritional, and psychosocial factors. By demonstrating the effectiveness of integrating acupressure, nutritional support, and Positive Youth Development (PYD) within a single framework, the study supports and extends Roy's Adaptation Model, highlighting how combined stimuli can enhance adaptive responses and health outcomes. Furthermore, the findings provide a scientific basis for future research to explore integrative, youth-centered care models and refine intervention strategies that address complex health needs holistically. This study also contributes to the growing body of evidence supporting the incorporation of complementary and empowerment-based approaches into mainstream healthcare research and policy development.

However, several limitations should be considered when interpreting the results. First, the sample size was relatively small and limited to a specific population of young women, which may affect the generalizability of the findings to broader populations or different settings. Second, purposive sampling may introduce selection bias, as participants were selected based on specific criteria rather than randomization. Third, the study relied on self-reported questionnaire data, which may be subject to response bias or social desirability bias. Additionally, the intervention was relatively short, which may not fully capture the long-term effects of the integrated model on reproductive health outcomes. Future studies should include larger, more diverse samples, use randomized controlled designs, and incorporate longer follow-up periods to strengthen the evidence and generalizability of the findings.

Relevance for Practice

The findings provide practical guidance for nurses, midwives, and healthcare providers in implementing holistic, youth-friendly reproductive health interventions. The integrated midwifery care model combining acupressure, nutritional support, and Positive Youth Development (PYD) can be applied in community health centers, schools, and adolescent health programs as a cost-effective and non-invasive approach to improve reproductive health outcomes. Healthcare practitioners can incorporate simple acupressure techniques into routine counseling sessions, provide structured nutritional education focusing on balanced diets and iron intake, and utilize PYD-based strategies to enhance self-efficacy and health-related decision-making among young women. In addition, healthcare institutions and policymakers can adopt this model as part of reproductive health promotion programs to strengthen preventive care and empower adolescents to manage their reproductive health actively.

Conclusion

This study demonstrated that the integrated midwifery care model combining acupressure, nutritional support, and Positive Youth Development (PYD) effectively improved reproductive health

among young women. The intervention group showed substantially greater improvement than the control group, indicating that a holistic approach addressing physical, nutritional, and psychosocial factors provides more meaningful outcomes than standard reproductive health education alone. These findings highlight the importance of implementing comprehensive, theory-based interventions in nursing and midwifery practice to enhance reproductive health and empower young women to adopt positive health behaviors.

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