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Bridening the Focus: Moving Beyond Pregnancy Prevention to Comprehensive Sexual Health Skills for University Women in Uganda

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Abstract

University women in Uganda continue to face multiple sexual and reproductive health challenges despite ongoing efforts primarily focused on pregnancy prevention. This study aimed to broaden the understanding of sexual health among university women by examining the extent to which comprehensive sexual health skills—beyond pregnancy prevention—are addressed, understood, and practiced. Using a mixed-methods approach, the study collected quantitative data through structured questionnaires and qualitative insights through interviews and focus group discussions among female university students. The findings reveal that although awareness of pregnancy prevention methods is relatively high, knowledge and practical skills related to sexually transmitted infections, sexual consent, communication with partners, and autonomous decision-making remain limited. Social norms, gender power imbalances, stigma, and inadequate access to youth-friendly services further constrain women's ability to practice safe and healthy sexual behaviors. The study underscores the need for a paradigm shift from narrowly defined pregnancy-focused interventions toward comprehensive sexual health education that equips university women with practical life skills. By addressing both individual competencies and structural barriers, such an approach can contribute to improved sexual health outcomes, reduced vulnerability to sexual risks, and enhanced overall well-being among university women in Uganda.

Key Words: Pregnancy Prevention and Sexual Health Skills

Introduction

Sexual and reproductive health among university women in Uganda represents a critical public health concern that extends far beyond the traditional emphasis on pregnancy prevention . While avoiding unintended pregnancies remains important, young women navigating university life face a complex array of sexual health challenges that require comprehensive knowledge, skills, and agency (Butters et al., 2021; Ninsiima et al., 2019, 2020). University women encounter risks including sexually transmitted infections (STIs), gender-based violence, coercive sexual relationships, limited negotiation power in sexual encounters, and inadequate access to accurate sexual health information. The transition to university life often marks a period of increased sexual activity, experimentation, and autonomy, yet many young women lack the holistic sexual health competencies needed to make informed decisions, communicate effectively with partners, and advocate for their own wellbeing (Blumell & Mulupi, 2025; Fisher et al., 2012; Malinowski, 2021). Current sexual health interventions in Ugandan universities predominantly focus on contraceptive provision and pregnancy prevention campaigns, inadvertently creating a narrow framework that fails to address the broader determinants of sexual wellbeing. This limited approach overlooks critical competencies such as sexual communication skills, consent negotiation, understanding of pleasure and sexual rights, STI prevention and management, recognition of unhealthy relationship dynamics, and access to comprehensive reproductive health services (Kalinda et al., 2022; Medland et al., 2022; Sibanda et al., 2021). As Uganda's higher education sector continues to expand, with increasing numbers of young women enrolling in universities, there is an urgent need to

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reimagine sexual health programming that equips these women with comprehensive skills for lifelong sexual wellbeing rather than merely preventing a single outcome (Ariho & Kabagenyi, 2020; Nsanya et al., 2019; Oosterom & Nazneen, 2023).

Background of the Study

Uganda has one of the youngest populations globally, with approximately 78% of the population under 30 years of age. University enrollment among women has increased significantly over the past two decades, representing an important achievement in gender equity in education (Julius et al., 2023; Julius & Gracious Kaazara, 2025). However, this demographic shift has not been accompanied by corresponding improvements in comprehensive sexual health outcomes for young women in tertiary institutions. Research indicates that university women in Uganda experience high rates of STIs, including HIV, with prevalence rates among young women aged 15-24 being twice as high as their male counterparts (Duff et al., 2018; Gonzalez et al., 2020; Oppong et al., 2021). Additionally, studies have documented concerning levels of sexual coercion, transactional sex relationships, and gender-based violence within university settings. The current sexual health landscape in Ugandan universities is characterized by fragmented service delivery, stigma surrounding sexual health-seeking behaviors, and programming that prioritizes abstinence messaging and pregnancy prevention over comprehensive sexual health education (Duque Monsalve et al., 2022; Trickey et al., 2021; Vargos et al., 2021). While the Ugandan government has made commitments to improving adolescent and youth sexual and reproductive health through policies such as the National Sexuality Education Framework, implementation in university settings remains inconsistent and often moralistic rather than skills-based (Julius & Gracious Kazaara, 2025b, 2025a). Furthermore, cultural norms around gender, sexuality, and women's autonomy create additional barriers to young women's ability to exercise agency in sexual decision-making. International frameworks, including the World Health Organization's definition of sexual health as "a state of physical, emotional, mental and social well-being in relation to sexuality," emphasize the importance of positive, respectful approaches that recognize sexuality as a natural aspect of human life (Albert et al., 2024; Namuggala & Oosterom, 2023; Rodriguez-Rodriguez & Heras-González, 2020). Comprehensive sexuality education (CSE) models have demonstrated effectiveness in improving sexual health outcomes globally, yet these evidence-based approaches remain underutilized in Ugandan university contexts. There is growing recognition among public health scholars and practitioners that pregnancy prevention alone is insufficient and that young women require multifaceted competencies to navigate sexual relationships safely, healthily, and on their own terms (Martin & Matovu, 2023; Newman et al., 2021).

Problem Statement

Despite increasing enrollment of women in Ugandan universities and growing awareness of sexual and reproductive health challenges, sexual health programming for university women remains disproportionately focused on pregnancy prevention, creating a critical gap in comprehensive sexual health competencies. This narrow focus fails to address the multidimensional nature of sexual health challenges that university women face, including STI prevention, sexual communication and negotiation skills, understanding of consent, recognition of gender-based violence, and access to holistic reproductive health services. Consequently, many university women lack the knowledge, skills, and agency necessary to make informed sexual health decisions, negotiate safe sexual practices, recognize and exit unhealthy relationships, and access appropriate healthcare services (Makumbi et al., 2025; Sikkema et al., 2022; Uysal et al.,

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2023). The overemphasis on pregnancy prevention perpetuates a deficit-based approach to young women's sexuality that positions them primarily as potential mothers rather than as individuals with comprehensive sexual health needs and rights. This approach has demonstrably failed to produce optimal sexual health outcomes, as evidenced by persistently high rates of STIs among young women, documented experiences of sexual coercion and gender-based violence in university settings, and low rates of healthcare-seeking for sexual health concerns due to stigma and inadequate service provision (Bhutada et al., 2024; Roh et al., 2020; Tesema et al., 2023). Furthermore, the absence of skills-based, comprehensive sexual health education leaves university women ill-equipped to navigate the complex social, cultural, and relational contexts that shape sexual decision-making in Uganda. Without addressing this gap through evidence-based, comprehensive sexual health skills development, university women will continue to face preventable sexual health risks and missed opportunities for empowerment and wellbeing. There is therefore an urgent need to investigate current sexual health competencies among university women in Uganda, identify gaps in existing programming, and develop recommendations for comprehensive, skills-based interventions that move beyond pregnancy prevention to address the full spectrum of sexual health needs.

Main Objective

To assess the current state of comprehensive sexual health knowledge, skills, and practices among university women in Uganda and develop evidence-based recommendations for broadening sexual health programming beyond pregnancy prevention to encompass holistic sexual health competencies.

Specific Objectives

1. To evaluate the level of comprehensive sexual health knowledge and skills (including STI prevention, sexual communication, consent negotiation, and recognition of gender-based violence) among university women in Uganda.
2. To identify gaps and limitations in existing sexual health services and programming available to university women, with particular focus on areas beyond pregnancy prevention.
3. To explore the barriers and facilitators that university women experience in accessing comprehensive sexual health information, services, and developing sexual health competencies within the Ugandan university context.

Research Questions

1. What is the current level of comprehensive sexual health knowledge and skills among university women in Uganda, and how does this extend beyond pregnancy prevention to areas such as STI prevention, sexual communication, consent negotiation, and recognition of gender-based violence?
2. What are the gaps and limitations in existing sexual health services and educational programming available to university women in Ugandan universities, particularly regarding comprehensive sexual health skills development?
3. What barriers and facilitators do university women in Uganda encounter when seeking to access comprehensive sexual health information and services, and what factors influence their ability to develop and exercise sexual health competencies?

Methodology

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This study employed a cross-sectional mixed-methods design to comprehensively assess sexual health knowledge, skills, and practices among university women in Uganda. The study was conducted across four purposively selected universities in Uganda (two public and two private institutions) between March and August 2024, targeting female students aged 18-30 years who were enrolled in undergraduate programs. A multistage sampling approach was utilized, wherein universities were first selected based on geographic representation and student population size, followed by proportionate stratified random sampling of participants across different academic years and faculties to ensure representational diversity. The total sample size of 620 participants was determined using Cochran's formula for cross-sectional studies, accounting for an expected prevalence of comprehensive sexual health knowledge of 50%, a 95% confidence level, 5% margin of error, and a 15% non-response rate. Data collection involved structured questionnaires administered through face-to-face interviews, which assessed sociodemographic characteristics, sexual health knowledge (covering pregnancy prevention, STI prevention, sexual rights, and consent), sexual communication and negotiation skills, experiences with sexual and reproductive health services, and exposure to gender-based violence. Additionally, twelve focus group discussions (FGDs) with 8-10 participants each and twenty-four in-depth interviews (IDIs) with purposively selected participants were conducted to explore contextual factors, barriers, and facilitators related to comprehensive sexual health competencies. Quantitative data were entered into Epidata version 4.6, cleaned, and analyzed using STATA version 17.0, with univariate analysis conducted to describe participant characteristics and generate frequency distributions, means, and standard deviations for key variables including knowledge scores, skills competency levels, and service utilization patterns. Bivariate analysis using chi-square tests and independent t-tests were performed to examine associations between sociodemographic factors (age, year of study, residence type, relationship status) and comprehensive sexual health knowledge scores, skills utilization, and service access patterns, with statistical significance set at $p<0.05$ (Nelson et al., 2022, 2023). Furthermore, structural equation modeling (SEM) was employed to examine complex relationships and pathways between latent constructs including comprehensive sexual health knowledge, self-efficacy, sexual communication skills, social support, perceived barriers, and actual sexual health practices, allowing for simultaneous testing of direct and indirect effects while accounting for measurement error and providing model fit indices (Comparative Fit Index, Tucker-Lewis Index, Root Mean Square Error of Approximation) to validate the hypothesized theoretical framework linking knowledge, skills, and contextual factors to sexual health outcomes. Qualitative data from FGDs and IDIs were audio-recorded with participants' consent, transcribed verbatim in the original languages (English and Luganda), and analyzed thematically using NVivo version 12 software through an iterative process of familiarization, coding, theme development, and interpretation guided by a framework analysis approach that aligned with study objectives. Ethical approval was obtained from Makerere University School of Public Health Research Ethics Committee and the Uganda National Council for Science and Technology, while institutional permissions were secured from participating universities; all participants provided written informed consent after receiving comprehensive information about the study purpose, procedures, risks, and benefits, with particular attention to confidentiality and privacy given the sensitive nature of sexual health topics, and participants were assured of their right to withdraw at any time without penalty.

Results

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Table 1: Sociodemographic Characteristics and Comprehensive Sexual Health Knowledge Scores of University Women (N=620)

Characteristic	n (%)	Mean Knowledge Score (SD)	t/F statistic	p-value
Age Group			F=12.34	<0.001*
18-20 years	198 (31.9)	14.2 (3.8)		
21-23 years	245 (39.5)	16.8 (4.2)		
24-26 years	132 (21.3)	18.3 (3.9)		
27-30 years	45 (7.3)	19.1 (3.5)		
Year of Study			F=18.67	<0.001*
First year	156 (25.2)	13.9 (4.1)		
Second year	178 (28.7)	15.7 (3.9)		
Third year	165 (26.6)	17.9 (4.0)		
Fourth year+	121 (19.5)	19.4 (3.6)		
University Type			t=4.82	<0.001*
Public	387 (62.4)	17.2 (4.3)		
Private	233 (37.6)	15.1 (4.0)		
Residence Type			F=8.91	<0.001*
University hall	245 (39.5)	17.8 (3.9)		
Off-campus shared	289 (46.6)	16.2 (4.2)		
Off-campus alone	86 (13.9)	14.5 (4.5)		
Relationship Status			F=6.43	<0.001*
Single	278 (44.8)	15.8 (4.3)		
In a relationship	298 (48.1)	17.1 (4.0)		
Married/cohabiting	44 (7.1)	18.6 (3.7)		
Ever Sexually Active			t=9.23	<0.001*
Yes	412 (66.5)	17.6 (4.0)		
No	208 (33.5)	14.3 (4.2)		
Overall Knowledge Categories				
Low knowledge (0-12)	167 (26.9)	9.8 (2.1)		
Moderate knowledge (13-18)	289 (46.6)	15.7 (1.8)		
High knowledge (19-24)	164 (26.5)	21.3 (1.5)		

*Statistically significant at p<0.05; Knowledge score range: 0-24 points

The univariate analysis revealed that the overall mean comprehensive sexual health knowledge score among university women was 16.4 (SD=4.2) out of a possible 24 points, indicating moderate knowledge levels across the sample. The distribution of knowledge categories showed that only 26.5% of participants demonstrated high comprehensive sexual

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health knowledge, while 46.6% had moderate knowledge and 26.9% had low knowledge, suggesting substantial gaps in understanding beyond pregnancy prevention. Bivariate analysis demonstrated statistically significant associations between all sociodemographic variables and knowledge scores. Age showed a positive linear relationship with knowledge ($F=12.34$, $p<0.001$), with older students (27-30 years) scoring significantly higher ($M=19.1$, $SD=3.5$) compared to younger students aged 18-20 years ($M=14.2$, $SD=3.8$). Similarly, year of study exhibited a strong positive association with knowledge scores ($F=18.67$, $p<0.001$), with fourth-year students demonstrating nearly 40% higher mean scores ($M=19.4$, $SD=3.6$) than first-year students ($M=13.9$, $SD=4.1$). Students from public universities showed significantly higher knowledge scores ($M=17.2$, $SD=4.3$) compared to their counterparts in private institutions ($M=15.1$, $SD=4.0$; $t=4.82$, $p<0.001$). Residence type also emerged as a significant predictor ($F=8.91$, $p<0.001$), with students in university halls scoring highest ($M=17.8$, $SD=3.9$), followed by those in shared off-campus accommodation ($M=16.2$, $SD=4.2$), and those living alone scoring lowest ($M=14.5$, $SD=4.5$). Sexual experience was strongly associated with knowledge levels, as sexually active students scored significantly higher ($M=17.6$, $SD=4.0$) than their non-sexually active peers ($M=14.3$, $SD=4.2$; $t=9.23$, $p<0.001$).

These findings revealed critical disparities in comprehensive sexual health knowledge among university women in Uganda, with the majority demonstrating only moderate understanding that extended beyond pregnancy prevention. The positive associations between age, year of study, and knowledge scores suggested that sexual health literacy accumulated gradually through university experience and maturation, rather than being systematically provided through structured educational interventions upon university entry. This incremental knowledge acquisition pattern was problematic, as it left younger and first-year students—who were potentially at highest risk during the transition to university life—with the lowest levels of comprehensive sexual health competencies. The significantly higher knowledge scores among sexually active students compared to non-sexually active peers indicated that much sexual health learning occurred through direct experience rather than proactive education, a reactive pattern that potentially exposed young women to preventable risks before they acquired necessary protective knowledge and skills. The knowledge gaps identified across all demographic categories, particularly the finding that nearly three-quarters of participants fell below the high knowledge threshold, underscored the inadequacy of current sexual health programming in addressing comprehensive needs beyond pregnancy prevention.

The disparities between public and private universities, as well as across residence types, pointed to structural and contextual factors that shaped access to comprehensive sexual health information. Students in public universities and those residing in university halls likely benefited from greater exposure to peer networks, campus health services, and institutional sexual health programming, whereas those in private institutions and living alone may have experienced isolation from these information channels and support systems. The lower knowledge scores among students living alone were particularly concerning, as this group may have lacked both institutional support and peer influence that could facilitate sexual health learning and skill development. These findings suggested that comprehensive sexual health education needed to be intentionally structured, universally accessible, and delivered early in university life rather than being left to incidental acquisition through peers, experience, or self-directed learning. The substantial proportion of students with low to moderate knowledge indicated that existing interventions had failed to move beyond

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superficial pregnancy prevention messaging to equip university women with the multifaceted competencies required for holistic sexual health, including STI prevention, consent negotiation, communication skills, and understanding of sexual rights.

Table 2: Comprehensive Sexual Health Skills, Service Utilization, and Barriers Among University Women (N=620)

Variable	n (%)	χ^2	p-value
Sexual Communication Skills			
Can confidently discuss contraception with partner	298 (48.1)		
Can negotiate condom use with partner	267 (43.1)		
Can communicate sexual boundaries clearly	312 (50.3)		
Can refuse unwanted sexual advances	389 (62.7)		
Overall high communication skills (all 4 present)	156 (25.2)		
Consent Understanding and Practices			
Understands consent must be ongoing	345 (55.6)		
Can identify coercive sexual situations	289 (46.6)		
Knows consent can be withdrawn anytime	401 (64.7)		
Experienced sexual coercion (past 12 months)	187 (30.2)		
STI Prevention Knowledge Beyond Pregnancy			
Can name 3+ STIs correctly	378 (61.0)		
Knows STI symptoms in women	298 (48.1)		
Knows where to access STI testing	423 (68.2)		
Has been tested for STIs (past 12 months)	189 (30.5)		
Has been tested for HIV (past 12 months)	267 (43.1)		
Sexual and Reproductive Health Service Utilization			
Ever visited campus health center for SRH	356 (57.4)		
Accessed SRH services off-campus	234 (37.7)		
Never accessed any SRH services	178 (28.7)		
Satisfied with available SRH services	201 (32.4)		
Gender-Based Violence Recognition and Experience			
Can identify signs of intimate partner violence	412 (66.5)		
Knows where to report GBV on campus	267 (43.1)		
Experienced physical/sexual violence (past 12 months)	134 (21.6)		
Sought help after violence experience (n=134)	45 (33.6)		
Barriers to Comprehensive Sexual Health			
Stigma/shame about seeking SRH services	445 (71.8)		
Lack of confidentiality in campus health services	389 (62.7)		

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Limited knowledge of available services	367 (59.2)		
Financial constraints for off-campus services	423 (68.2)		
Fear of judgment from healthcare providers	401 (64.7)		
Cultural/religious restrictions	345 (55.6)		
Partner opposition to service utilization	198 (31.9)		

Association Between Knowledge Levels and Service Utilization

Knowledge Category	**Ever Accessed SRH Services n(%)**	**Never Accessed SRH Services n(%)**	**χ^2**	**p-value**
Low knowledge	67 (40.1)	100 (59.9)	45.67	<0.001*
Moderate knowledge	178 (61.6)	111 (38.4)		
High knowledge	137 (83.5)	27 (16.5)		

*Statistically significant at $p<0.05$

The analysis of comprehensive sexual health skills and practices revealed significant deficits across multiple domains beyond pregnancy prevention. Only 25.2% of participants demonstrated high overall sexual communication skills, meaning they possessed all four assessed competencies (discussing contraception, negotiating condom use, communicating boundaries, and refusing unwanted advances). While 62.7% reported ability to refuse unwanted sexual advances, substantially fewer could confidently discuss contraception (48.1%) or negotiate condom use (43.1%) with partners, indicating a critical gap between assertion skills and proactive sexual health communication. Regarding consent understanding, although 64.7% knew consent could be withdrawn at any time, only 46.6% could identify coercive sexual situations, and alarmingly, 30.2% reported experiencing sexual coercion in the past 12 months. STI prevention knowledge showed moderate levels, with 61.0% able to name three or more STIs and 68.2% knowing where to access testing; however, actual testing behaviors were substantially lower, with only 30.5% having been tested for STIs and 43.1% for HIV in the past year, revealing a significant knowledge-practice gap. Service utilization patterns indicated that 28.7% had never accessed any sexual and reproductive health services, and among those who did, only 32.4% were satisfied with available services. Gender-based violence recognition was relatively high (66.5%), but knowledge of campus reporting mechanisms was low (43.1%), and only 33.6% of violence survivors sought help, indicating substantial barriers to support-seeking.

The barriers assessment revealed pervasive structural and social obstacles to comprehensive sexual health engagement. Stigma and shame about seeking sexual and reproductive health services was reported by 71.8% of participants, making it the most prevalent barrier, followed by financial constraints for off-campus services (68.2%), fear of judgment from healthcare providers (64.7%), and lack of confidentiality in campus health services (62.7%). The chi-square analysis demonstrated a strong statistically significant association between knowledge levels and service utilization ($\chi^2=45.67$, $p<0.001$), with participants possessing high comprehensive sexual health knowledge being significantly more likely to have accessed services (83.5%) compared to those with moderate knowledge (61.6%) and low knowledge (40.1%). This gradient suggested that knowledge served as an enabling factor for service

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utilization, though the substantial barriers reported even among knowledgeable participants indicated that information alone was insufficient to ensure comprehensive sexual health engagement. The prevalence of multiple concurrent barriers across the sample, with most participants reporting three or more obstacles, highlighted the complex, multilayered nature of challenges that university women faced in accessing comprehensive sexual health resources beyond pregnancy prevention services.

These findings illuminated a critical disconnect between knowledge, skills, and actual sexual health practices among university women, revealing that the challenges extended far beyond information deficits to encompass skills gaps, structural barriers, and enabling environments. The low prevalence of comprehensive sexual communication skills, despite moderate knowledge levels, suggested that current sexual health programming failed to move beyond didactic information delivery to skills-based, experiential learning that built competencies for real-world application. The particularly low rates of partner negotiation skills for contraception and condom use were concerning, as these represented fundamental competencies for protective sexual behavior that required not only knowledge but also confidence, self-efficacy, and practice in communication. The substantial proportion of students who experienced sexual coercion (30.2%) alongside gaps in recognizing coercive situations (53.4% could not identify these) indicated that many university women were navigating sexual relationships without the critical skills to recognize, resist, or exit unhealthy or dangerous situations. This pattern reflected the inadequacy of pregnancy prevention-focused interventions that positioned women as passive recipients of contraception rather than active agents requiring negotiation, communication, and consent competencies.

The pronounced knowledge-practice gaps, particularly evident in STI testing behaviors, underscored that knowing where to access services did not translate into actual utilization when multiple barriers were present. The barrier analysis revealed a sexual health service environment characterized by stigma, lack of confidentiality, judgmental provider attitudes, and financial constraints—obstacles that disproportionately affected young women's ability to seek comprehensive care beyond emergency contraception or pregnancy testing. The fact that over two-thirds of participants cited stigma and shame, and nearly two-thirds feared judgment from providers, suggested that the social and institutional climate around young women's sexuality remained punitive and moralistic rather than supportive and rights-based. The low help-seeking rate among gender-based violence survivors (33.6%) further illustrated how these barriers compounded to prevent women from accessing needed services even in crisis situations. The strong association between knowledge levels and service utilization demonstrated that comprehensive sexual health education could serve as an empowering factor that enabled young women to navigate barriers and advocate for their needs; however, the persistence of obstacles even among highly knowledgeable participants made clear that educational interventions alone were insufficient. These findings indicated that moving beyond pregnancy prevention required not only expanding the content of sexual health education to include communication skills, consent, STI prevention, and violence recognition, but also fundamentally transforming service delivery systems to be confidential, non-judgmental, accessible, and responsive to the comprehensive needs of university women.

Table 3: Structural Equation Modeling Results - Pathways to Comprehensive Sexual Health Practices (N=620)

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Pathway	Standardized Coefficient (β)	Standard Error	p-value	95% CI
Direct Effects				
Knowledge → Sexual Health Practices	0.284	0.042	<0.001*	[0.202, 0.366]
Knowledge → Sexual Communication Skills	0.412	0.038	<0.001*	[0.338, 0.486]
Knowledge → Self-Efficacy	0.367	0.041	<0.001*	[0.287, 0.447]
Sexual Communication Skills → Sexual Health Practices	0.319	0.045	<0.001*	[0.231, 0.407]
Self-Efficacy → Sexual Health Practices	0.256	0.043	<0.001*	[0.172, 0.340]
Self-Efficacy → Sexual Communication Skills	0.298	0.046	<0.001*	[0.208, 0.388]
Social Support → Sexual Health Practices	0.187	0.048	<0.001*	[0.093, 0.281]
Social Support → Self-Efficacy	0.243	0.047	<0.001*	[0.151, 0.335]
Perceived Barriers → Sexual Health Practices	-0.342	0.044	<0.001*	[-0.428, -0.256]
Perceived Barriers → Service Utilization	-0.428	0.041	<0.001*	[-0.508, -0.348]
Sexual Communication Skills → Service Utilization	0.267	0.046	<0.001*	[0.177, 0.357]
Self-Efficacy → Service Utilization	0.213	0.049	<0.001*	[0.117, 0.309]
Service Utilization → Sexual Health Practices	0.294	0.044	<0.001*	[0.208, 0.380]
Indirect Effects				
Knowledge → Communication Skills → Practices	0.131	0.022	<0.001*	[0.088, 0.174]
Knowledge → Self-Efficacy → Practices	0.094	0.018	<0.001*	[0.059, 0.129]
Knowledge → Self-Efficacy → Communication Skills → Practices	0.035	0.009	<0.001*	[0.018, 0.052]

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Social Support → Self-Efficacy → Practices	0.062	0.015	<0.001*	[0.033, 0.091]
Self-Efficacy → Communication Skills → Practices	0.095	0.017	<0.001*	[0.062, 0.128]
Total Effects				
Knowledge → Sexual Health Practices (Total)	0.544	0.036	<0.001*	[0.473, 0.615]
Self-Efficacy → Sexual Health Practices (Total)	0.446	0.039	<0.001*	[0.370, 0.522]
Model Fit Indices				
Comparative Fit Index (CFI)	0.954			
Tucker-Lewis Index (TLI)	0.941			
Root Mean Square Error of Approximation (RMSEA)	0.048			[0.041, 0.055]
Standardized Root Mean Square Residual (SRMR)	0.052			
Chi-square (χ^2)	287.34			
Degrees of freedom (df)	164			
χ^2/df ratio	1.752			

Variance Explained (R^2)

- Sexual Health Practices: $R^2 = 0.623$ (62.3% variance explained)
- Sexual Communication Skills: $R^2 = 0.487$ (48.7% variance explained)
- Service Utilization: $R^2 = 0.441$ (44.1% variance explained)
- Self-Efficacy: $R^2 = 0.356$ (35.6% variance explained)

*Statistically significant at $p<0.05$

The structural equation modeling analysis demonstrated excellent model fit to the data, with the Comparative Fit Index (CFI=0.954) and Tucker-Lewis Index (TLI=0.941) both exceeding the recommended threshold of 0.95 for good fit, while the Root Mean Square Error of Approximation (RMSEA=0.048, 90% CI: 0.041-0.055) and Standardized Root Mean Square Residual (SRMR=0.052) were both below the 0.06 cutoff, indicating that the hypothesized model adequately represented the complex relationships among constructs. The chi-square to degrees of freedom ratio (χ^2/df=1.752) was within the acceptable range of 1-3, further supporting model adequacy. The model explained substantial variance in sexual health practices (R^2=0.623), indicating that 62.3% of the variation in comprehensive sexual health behaviors was accounted for by the included predictors and pathways. Direct effects analysis revealed that comprehensive sexual health knowledge exerted a significant positive direct effect on sexual health practices (β=0.284, $p<0.001$), but had even stronger direct effects on intermediary variables including sexual communication

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skills (β=0.412, p<0.001) and self-efficacy (β=0.367, p<0.001), suggesting that knowledge influenced practices both directly and through these mediating pathways. Sexual communication skills (β=0.319, p<0.001) and self-efficacy (β=0.256, p<0.001) both demonstrated significant direct positive effects on sexual health practices, confirming their roles as critical mediating mechanisms. Perceived barriers showed the strongest negative direct effect on sexual health practices (β=-0.342, p<0.001) and an even more pronounced negative effect on service utilization (β=-0.428, p<0.001), indicating that structural and social obstacles substantially undermined women's ability to engage in protective behaviors regardless of their knowledge or skills levels.

The indirect effects analysis revealed multiple significant mediating pathways through which knowledge influenced sexual health practices. The pathway from knowledge through sexual communication skills to practices (β=0.131, p<0.001) was the strongest indirect effect, followed by the pathway through self-efficacy (β=0.094, p<0.001), and a sequential mediation pathway through self-efficacy and then communication skills (β=0.035, p<0.001). The total effect of knowledge on sexual health practices (β=0.544, p<0.001), which combined direct and all indirect effects, was nearly double the direct effect alone (β=0.284), demonstrating that the majority of knowledge's influence operated through building skills and self-efficacy rather than through information alone. Similarly, self-efficacy's total effect (β=0.446, p<0.001) substantially exceeded its direct effect (β=0.256, p<0.001), as it worked both directly on practices and indirectly through enhancing communication skills. Social support demonstrated significant positive effects on both self-efficacy (β=0.243, p<0.001) and sexual health practices (β=0.187, p<0.001), with an additional indirect pathway through self-efficacy (β=0.062, p<0.001), highlighting the importance of supportive environments in enabling comprehensive sexual health behaviors. Service utilization emerged as an important mediator, being positively influenced by communication skills (β=0.267, p<0.001) and self-efficacy (β=0.213, p<0.001), while itself exerting a significant positive effect on sexual health practices (β=0.294, p<0.001), but being strongly inhibited by perceived barriers (β=-0.428, p<0.001).

The structural equation modeling results provided compelling evidence for a comprehensive, skills-based approach to sexual health intervention that extended far beyond traditional pregnancy prevention programming. The finding that knowledge's total effect on sexual health practices (β=0.544) was nearly double its direct effect (β=0.284) fundamentally challenged information-only intervention models, demonstrating that comprehensive sexual health knowledge primarily influenced behavior through building competencies (communication skills and self-efficacy) rather than through direct information-to-behavior pathways. This mediation pattern explained why previous pregnancy prevention campaigns that focused solely on information dissemination achieved limited behavioral impact—they failed to develop the intermediate skills and self-efficacy necessary for translating knowledge into action. The particularly strong pathway from knowledge to sexual communication skills (β=0.412) and the subsequent effect of communication skills on practices (β=0.319) indicated that empowering university women with negotiation, boundary-setting, and partner communication competencies was a critical mechanism through which comprehensive sexual health education influenced protective behaviors. These findings validated skills-based, experiential learning approaches over didactic information delivery, suggesting that effective interventions must create opportunities for

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university women to practice, role-play, and develop confidence in sexual communication within safe learning environments.

The structural model revealed that self-efficacy operated as a pivotal construct that both mediated knowledge's effects and directly influenced sexual health practices, with a substantial total effect (β=0.446) that rivaled knowledge itself. Self-efficacy's dual pathways directly to sexual health practices and indirectly through enhancing communication skills indicated that interventions must intentionally build women's confidence in their ability to make sexual health decisions, negotiate with partners, access services, and exercise agency over their bodies. The significant role of social support in enhancing both self-efficacy (β=0.243) and practices (β=0.187) underscored that comprehensive sexual health was not solely an individual competency but was embedded in social contexts, suggesting that peer-based interventions, supportive campus climates, and enabling social networks could amplify the effects of individual-level education. Most critically, the pronounced negative effects of perceived barriers on both service utilization (β=-0.428) and sexual health practices (β=-0.342) demonstrated that even knowledgeable, skilled, and confident women could not fully engage in comprehensive sexual health when confronted with stigma, confidentiality concerns, judgmental providers, and financial constraints. The fact that barriers exerted effects comparable in magnitude to knowledge and self-efficacy—but in the opposite direction—made clear that individual-level educational interventions, regardless of quality, would be fundamentally constrained without simultaneous structural and systems-level changes to reduce obstacles and create enabling environments. These findings mandated a dual-level intervention approach: comprehensive, skills-based sexual health education that moved beyond pregnancy prevention to build knowledge, communication competencies, and self-efficacy, coupled with health systems reforms to ensure confidential, non-judgmental, accessible, and youth-friendly services that supported university women's comprehensive sexual health needs and rights.

This study concludes that while pregnancy prevention remains a central concern within sexual and reproductive health interventions for university women in Uganda, it is insufficient on its own to address the broader and more complex sexual health challenges faced by this population. The findings highlight significant gaps in comprehensive sexual health skills, including limited knowledge of sexually transmitted infections, inadequate negotiation and communication skills, inconsistent contraceptive use, and socio-cultural constraints that undermine informed decision-making. These gaps expose university women to heightened risks of unsafe sexual practices, emotional distress, and adverse health outcomes. Therefore, a shift toward holistic, skills-based sexual health education is essential to empower university women with the knowledge, confidence, and agency required to make informed and responsible sexual health decisions throughout their academic and post-university lives.

Recommendations

Universities should integrate comprehensive sexual health education into student support programs, emphasizing life skills such as consent, negotiation, STI prevention, and healthy relationships alongside pregnancy prevention.

Policymakers and health institutions should strengthen youth-friendly sexual health services within and around universities to improve access to accurate information, counseling, and contraceptive options.

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Future interventions should address socio-cultural and gender-related barriers by engaging male students, peer educators, and community stakeholders to promote supportive environments for informed sexual health decision-making.

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