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Original Article

A CROSS-SECTIONAL STUDY ON KNOWLEDGE, ATTITUDE, AND PRACTICES TOWARDS PREMARITAL SCREENING FOR SICKLE CELL DISEASE AMONG ADULTS IN GOMBE HOSPITAL, BUTAMBALA DISTRICT.

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Abstract.

Background.

According to the WHO, 300,000 children with SCD are born worldwide every year. Moreover, about 5% of the world's population carries hemoglobinopathy genes that cause SCD. This study assessed the knowledge, attitudes, and practices of adults towards premarital screening for sickle cell disease at Gombe Hospital, Butambala District.

Methodology.

The research adopted a descriptive cross-sectional study design using quantitative collection methods. A simple random sampling technique was employed to obtain a desired sample size of 100 respondents. Data was manually tallied using tally sheets, and results were obtained using Microsoft Word and Excel and presented in the form of pie charts and tables.

Study results.

Most 45 (45%) of the respondents were aged 18-29 years,69(69%) were female, and 939% had attained secondary education. Concerning knowledge, 80(80%) of the respondents were unaware of premarital screening, and 85(85%) were unaware of their hemoglobin genotype. Regarding participants' attitudes,76(76%) believed screening was Important and 63(63%) supported making it mandatory. Practices were limited, with 79(79%) never screened for SCD, although 62(62%) expressed willingness to consider screening in the future.

Conclusion.

The study revealed low levels of knowledge and limited practices regarding premarital screening for sickle cell disease among adults at Gombe Hospital, despite positive attitudes toward its importance and necessity. There is a need for enhanced education and community awareness to improve understanding and participation in premarital screening initiatives.

Recommendation.

There is a need for combined efforts from different stakeholders like the government, the Ministry of Health, and health practitioners to ensure couples ready for marriage actively seek information and guidance on premarital screening for sickle cell disease and consider participating in screening together, recognizing it as an essential step in safeguarding their future family health.

Keywords: *Sickle Cell Disease, Premarital Screening, Knowledge of Adults, Gombe Hospital.*
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Background.

Sickle Cell Disease (SCD) continues to be a major global public health concern (WHO, 2017). The condition is characterized by the presence of abnormally shaped red blood cells. Under normal circumstances, red blood cells are biconcave in shape, allowing them to pass smoothly through narrow blood vessels and deliver oxygen throughout the body. However, in individuals with SCD, these cells become rigid, sticky, and crescent-shaped—resembling a sickle—leading to a reduced lifespan and resulting in a persistent shortage of red blood cells. Globally, approximately 300,000 children are born with SCD each year, and an estimated 5% of the population carries genes responsible for hemoglobin disorders, including SCD (WHO, 2018).

Uganda is among the countries with a high burden of sickle cell disease, with a national trait prevalence of 13.3% and a disease prevalence of 0.73% (MOH Uganda, 2023). Each year, an estimated 5,000 to 20,000 children in Uganda are born with SCD, and tragically, around 80% of these children die before the age of five (Tusuubira et al., 2018). When both parents are carriers of the sickle cell gene, there is a 25% chance that the child will inherit the disease (MOH Uganda, 2023).

To address this challenge, Uganda has established seven Centers of Excellence focused on newborn screening and 80 satellite clinics providing care and treatment for children living with SCD. In addition, the Ministry of Health has intensified efforts in public sensitization and has promoted premarital screening as a key strategy to reduce transmission, improve diagnosis, and enhance treatment access (MOH, 2023). Despite these initiatives, the uptake of premarital screening remains low, even though it is recognized as one of the most effective interventions for preventing the disease in future generations. This study, therefore, seeks to evaluate the knowledge, attitudes, and practices of adults regarding premarital screening for sickle cell disease at Gombe Hospital in Butambala District and to offer evidence-based recommendations to bridge the identified gaps.

Methodology.

Study Design.

This study employed a descriptive cross-sectional study design. This study design was chosen because it allowed for the collection of data from a dynamic population in a short period.

Study Area

The study was conducted at Gombe Hospital, located in Butambala District. The hospital is situated off the Mpigi–Kabulasoke–Maddu–Sembabule Road, in the central business district of the town of Gombe, approximately 70 kilometers (43 miles) southwest of Mulago National Referral Hospital.

Study Population

The study population included all adults at Gombe Hospital.

Sample Size Determination.

The sample size was determined using Burton's formula:

$n=QR/O$

Where: Q = total number of days that will be spent on data collection (10 days)

R: maximum number of respondents per day (10)

O maximum time spent on each respondent (1 hour)

The number of respondents that will be employed in this study is 100.

Sampling Technique.

A simple random sampling without replacement was used to select respondents. This minimized bias and gave everyone an equal chance of participating in the study.

Sampling Procedure.

Each day, 10 respondents were sampled for 10 days, totaling 100 respondents. This was done using a lottery system where 20 pieces of paper, numbered from 1 to 20, were folded uniformly and placed in a small box. Every adult who agreed to participate in the study was asked to pick one. Only those who picked papers with even numbers participated in the study.

Data Collection Method.

The questionnaire method was used to collect data from the respondents.

Data Collection Tools.

A semi-structured, self-administered questionnaire with closed and open-ended questions was used for data collection. This method was chosen because it was cost-effective, reliable, and time-efficient.

Data Collection Procedure.

An introductory letter from the Research and Ethics Committee of Kampala Institute of Health Professionals was presented to the Medical Superintendent of Gombe Hospital to seek permission for data collection. After approval, the researcher proceeded to the different departments, targeting one department per day. The researcher introduced themselves to the in-charges of each department, who then introduced the researcher to the clients. The purpose of the study was explained, and consent was sought. Sampled respondents were given questionnaires to fill out, which were checked for completeness and then securely stored.

Study Variables.

The dependent variable was the practices of premarital screening for sickle cell disease.

The independent variables were the knowledge and attitudes of adults towards premarital screening for sickle cell disease.

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Inclusion criteria

The study involved adults above 18 years of age who were present at the hospital at the time of study and had provided informed consent, were physically strong, and were in a sound mental state.

Exclusion criteria

The study excluded adults who were too weak or sick and those who were mentally unstable.

Data Analysis and Presentation.

Data was analyzed manually by tallying, and the results were entered into a computer and analyzed using Microsoft Excel to generate tables and figures. Data was also presented in narrative paragraphs.

Results.

Socio-demographic characteristics of respondents

Table 1: Social demographic characteristics of respondents (n =100)

Variable	Frequency (f)	Percentage (%)
Age		
18-29 years	45	45.0
30-39 years	22	22.0
40-49 years	18	18.0
50 years and above	15	15.0
Total	**100**	**100.0**
Sex		
Male	31	31.0
Female	69	69.0
Total	**100**	**100.0**
Level of education		
Tertiary	22	22.0
Secondary	39	39.0
Primary	28	28.0
Never went to school	11	11.0
Total	**100**	**100.0**

Table 1 shows that, regarding Age, most of the respondents 45/100 (45.0%), were aged 18 – 29 years, and the least 15/100 (15.0%), were aged 50 and above years.

Regarding sex, most of the respondents, 69/100 (69.0%), were females, and the least 31/100 (31.0%) were males.

Regarding the level of education attained by respondents, most of them 39/100 (39.0%), were secondary, and the least 11/100 (11.0%), never went to school.

Knowledge of adults towards premarital screening for sickle cell disease.

Figure 1: A pie chart showing the distribution of respondents on whether they had ever heard about pre-marital screening. (n =100).

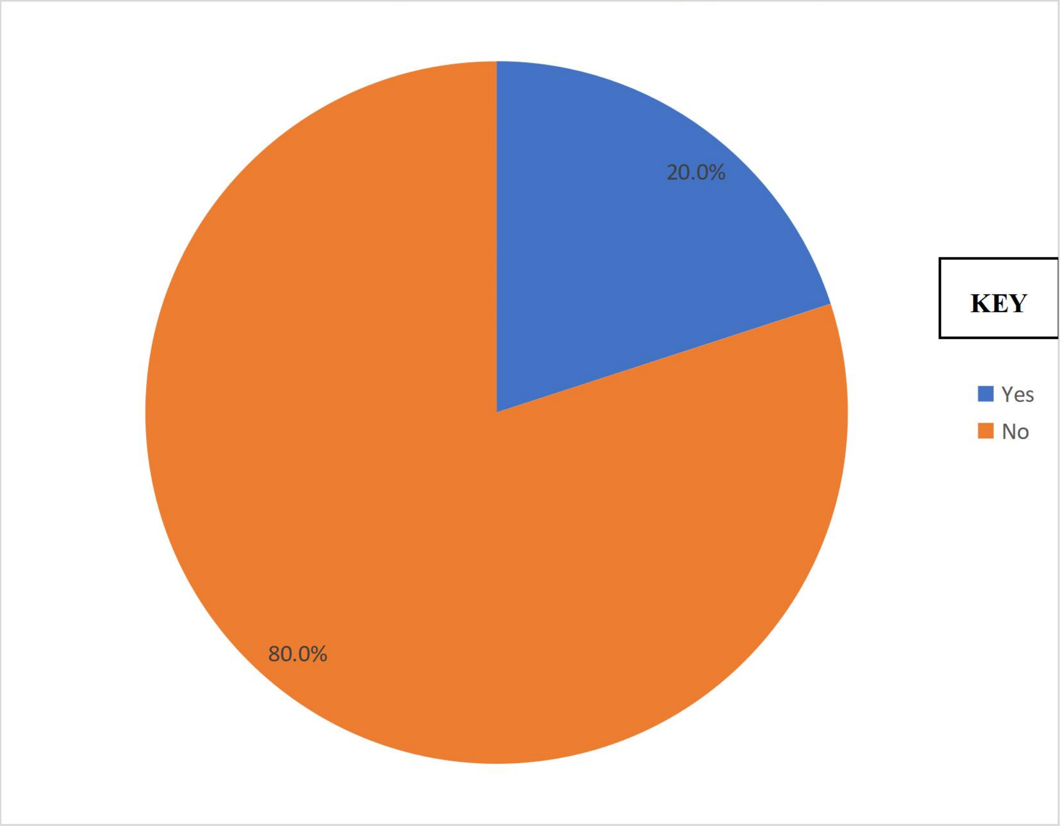

Figure 1 indicates that, majority of respondents, 80 (80.0%), had never heard about pre-marital screening, while the minority, 20 (20.0%), had heard about pre-marital screening.

Table 2: Showing respondents' responses on where they heard the information about sickle cell screening from (n=100)

Response	Frequency (f)	Percentage (%)
Health worker/educator	50	50.0
Friends	25	25.0
Media	25	25.0
Total	**100**	**100.0**

Table 2 indicates that half of the respondents, 50(50.0%), heard the information from health workers/educators, and less than half, 25 (25.0%), heard the information from friends and media.

Figure 2: A pie chart showing results for whether a couple should be screened before marriage (n=100)

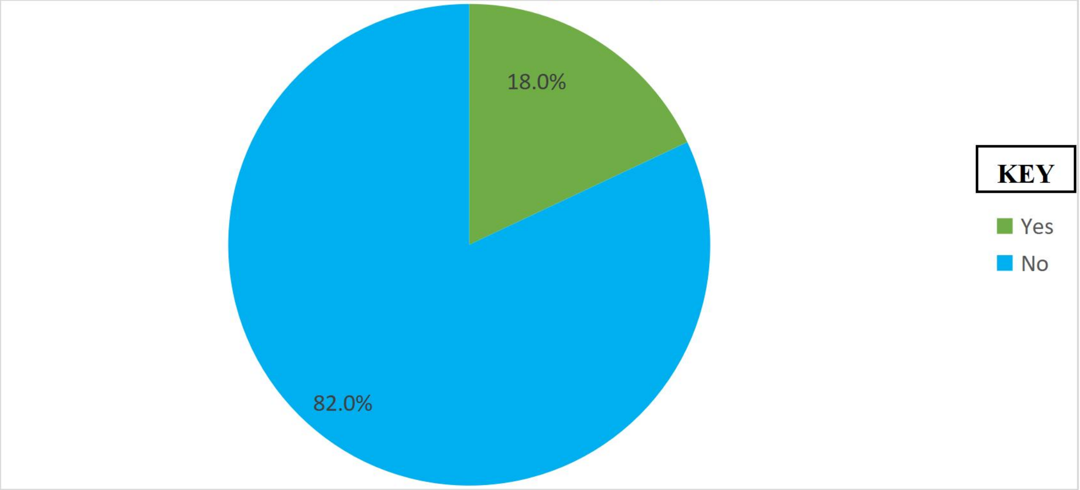

Figure 2 shows that, majority of respondents, 82 (82.0%), disagreed with screening couples before marriage, while the minority, 18 (18.0%), agreed to it.

Figure 3: A pie chart showing results on whether adults knew their Hb genotype (n=100)

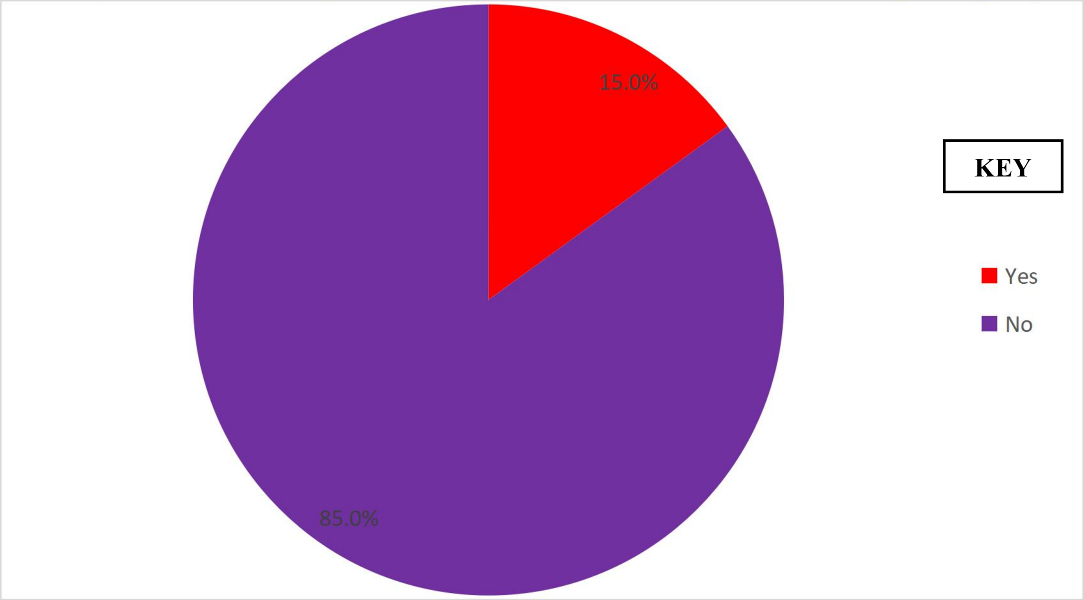

Figure 3 shows that, regarding their knowledge of their hemoglobin (Hb) genotype, the majority of respondents, 85(85.0%), did not know their Hb genotype, while the minority, 15 (15.0%), knew their Hb genotype.

Table 3: Showing respondents' response on whether pre-marital screening for SCD helped in preventing the disease (n=100)

Response	Frequency (n)	Percentage (%)
Yes	22	22.0
No	78	78.0
Total	**100**	**100.0**

Table 3 shows that, majority of respondents, 78 (78.0%), disagree with pre-marital screening for SCD helping in preventing the disease, while the minority, 22(22.0%), agreed to it.

Attitude of adults towards premarital screening for sickle cell disease.

Table 4: showing responses on different attitudes towards PMS for SCD (n=100)

Variable	Frequency (n)	Percentage (%)
Whether PMS for SCD is important		
Yes	76	76.0
No	24	24.0
Total	**100**	**100.0**
Consider screening for SCD before marriage		
Yes	55	55.0
No	45	45.0
Total	**100**	**100.0**
Whether to continue the marriage proposal even if the partner is a sickle		
Yes	11	11.0
No	81	81.0
Total	**100**	**100.0**
Whether premarital screening for sickle cell disease should be made mandatory		
Yes	63	63.0
No	37	37.0
Total	**100**	**100.0**
Whether more information is needed on premarital screening for SCD		
Yes	70	70.0
No	30	30.0
Total	**100**	**100.0**
The necessity to test all family members for SCD		
Yes	65	65.0
No	35	35.0
Total	**100**	**100.0**

Table 4 indicates that the majority of respondents, 76 (76.0%), believed that premarital screening for sickle cell is important, while the minority, 24 (24.0%), did not believe this.

In regards to screening for SCD before marriage, most of the respondents, 55 (55.0%), considered it, while the least 45 (45.0%) did not consider it. For the case of whether to continue with the marriage proposal even if the partner is a sickler, the majority of respondents, 89(89.0%), did not agree with it, whereas the minority, 11 (11.0%), agreed with it. In regards to making premarital screening for SCD mandatory, most of the respondents, 63(63.0%), agreed with it while the least 37 (37.0%) disagreed. The majority of respondents, 70 (70.0%), were positive about the need for more information on premarital screening for SCD, while the minority, 30(37.0%), disagreed. For the case of whether it was necessary to test all family members for SCD, most of the respondents, 65 (65.0%), agreed, while the least 35 (35.0%) disagreed.

Practices of adults towards premarital screening for sickle cell disease

Figure 4: showing results on whether adults had ever been screened for SCD (n=100). Figure 4 indicates that, majority of respondents, 79 (79.0%), had never undergone screening, while only a minority, 21(21.0%), had ever been screened for sickle cell disease.

Figure 5: showing results on whether respondents had ever gone for SCD screening with their partner (n=100)

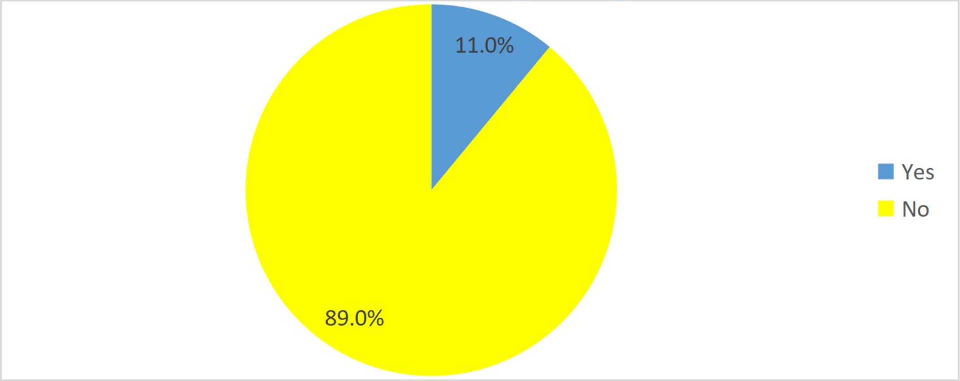

Figure 5 shows that, majority of respondents, 89/100 (89.0%), had not participated in partner-based screening, while minority group 11/100 (11.0%) reported ever going for SCD screening with their partners.

Figure 6: showing results on whether the respondents would consider doing premarital screening for SCD in the future (n=100)

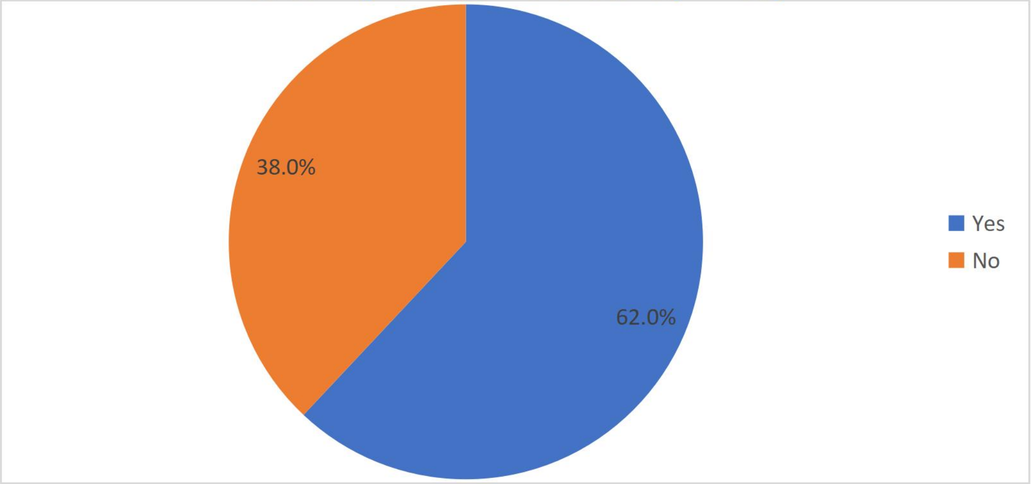

Figure 6 shows that most of the respondents, 62/100 (62.0%), expressed that they would consider doing premarital screening for SCCD in the future, while the least 38/100 (38.0%) indicated they would not.

Table 5: Showing results on whether respondents ever participated in spreading awareness on premarital screening for SCD and other diseases (n=100)

Whether adults ever participated in spreading awareness on premarital screening for SCD and other diseases	Frequency (n)	Percentage (%)
Yes	**02**	**2.0**
No	**98**	**98.0**
Total	**100**	**100.0**

Table 5 indicates that the majority of respondents, 98/100 (98.0%), had not participated in raising awareness of premarital screening for SCD and other diseases, while a minority of 2/100 (2.0%) had ever engaged in the activity.

Discussion of results.

Knowledge of Adults on Premarital Screening for Sickle Cell Disease

A significant proportion of respondents (80%) reported having never heard of premarital screening for sickle cell disease (SCD). This lack of awareness could be attributed to insufficient public sensitization efforts on the condition. This finding contrasts sharply with a study in Lagos, Nigeria, where 77.3% of participants were aware that premarital screening could detect sickle cell disease or carrier status before marriage (Oluwakemi et al., 2022). Such disparities in awareness highlight the need for more effective and far-reaching public health education campaigns in areas like Gombe Hospital.

When asked about the sources of information, 50% of participants indicated that health professionals or educators informed them about premarital screening. This is likely because healthcare workers serve as critical conduits for health-related education. A similar pattern was observed in a study conducted in Oman, where 89.3% of participants were aware of premarital carrier screening, primarily through healthcare workers (Al-Farsi et al., 2014). This consistency underscores the pivotal role of health professionals in raising awareness and suggests that empowering them further could enhance knowledge dissemination in the Gombe community.

In terms of attitudes toward premarital screening, 82.0% of respondents disagreed with the notion that couples should undergo screening before marriage. This resistance may stem from limited knowledge and understanding of the preventive benefits of screening. Comparatively, a study in Saudi Arabia found that 95.9% of participants supported premarital screening (Alnakhli et al., 2023). This contrast points to the urgent need for targeted educational interventions in Gombe to stress the relevance of such screening.

Additionally, the study found that 85.0% of participants were unaware of their hemoglobin genotype, indicating a concerning knowledge gap. This finding diverges from a study in Nigeria by Isa et al. (2016), which reported that 71% of respondents knew their genotype. This lack of personal health information could further hinder the effectiveness of premarital screening programs and reinforce the need for comprehensive public health education on genetic conditions.

When asked whether premarital screening could help prevent sickle cell disease, 78.0% of respondents disagreed. This reflects a limited understanding of the disease and its prevention. The finding is consistent with Moustafa et al. (2022), who also reported that a significant portion of participants had insufficient knowledge. These results underscore the importance of expanding educational efforts to improve community understanding of SCD and its prevention.

Attitude of Adults Towards Premarital Screening for Sickle Cell Disease

In terms of awareness, 80.0% of participants reported having never heard of premarital screening for SCD, likely due to limited access to health information in rural settings. This result stands in contrast with a study in Saudi Arabia by Al-Qattan et al. (2019), where 98.3% of respondents had heard of premarital screening. The contrast emphasizes the importance of scaling up educational outreach efforts in Gombe and similar rural settings.

When asked if premarital screening should be mandatory, 63.0% of participants supported the idea. This may reflect concern for the health of future children, particularly in avoiding the birth of children with SCD by ensuring both partners are informed of their genetic status.

Additionally, 70.0% of respondents expressed interest in receiving more information about premarital screening. This desire likely stems from both a lack of prior exposure to relevant information and uncertainty about their health status. Gavamukyla et al. (2022) similarly reported that stigma and limited access to screening services negatively impacted discussions on screening and marriage, highlighting the need for robust educational strategies to overcome these barriers.

Regarding the importance of testing family members for SCD, 63.0% agreed it was necessary. Their reasoning may be tied to the belief that knowing family members' genetic status can help individuals avoid marrying those who are either carriers or have the disease, thereby protecting future generations. This is consistent with findings from Western Sudan, where Daak et al. (2016) reported that 73.1% of respondents supported family-wide screening for the same reasons.

Practices of Adults Regarding Premarital Screening for Sickle Cell Disease

When asked if they had ever undergone screening for SCD, the majority (79.0%) said they had not. This may be attributed to a combination of low awareness and the belief that SCD is not a health issue warranting priority screening. This result aligns with Al-Qattan et al. (2019), who also found that 80.0% of participants had poor engagement in premarital screening practices. This suggests a widespread lack of knowledge about personal health status related to SCD and signals a need for stakeholders to intensify awareness campaigns and consider policies that mandate such screening.

Furthermore, 89.0% of participants reported never having been screened alongside their partners. This behavior reflects the prevailing knowledge gap about SCD and the importance of joint screening. In contrast, a study by Adigwe, Onavbavba, and Onoja (2022) reported that 67.1% of respondents prioritized SCD screening in their relationships. This difference highlights a need to promote couple-based screening as a common and beneficial practice.

However, 62.0% of participants indicated a willingness to undergo premarital screening in the future. This openness may stem from an understanding of the possible consequences of marrying a partner with the sickle cell trait or disease. Similarly, Oluwakemi et al. (2022) found that 92.4% of respondents were willing to undergo hemoglobin phenotype testing before marriage. This indicates a generally positive outlook and potential for increased participation in screening if awareness and access to services are improved.

Finally, when asked whether they had ever participated in raising awareness about premarital screening for SCD, 98.0% of participants said no. This may be because they lacked adequate knowledge. Isa et al. (2016) similarly found that 73.8% of respondents believed that their communities were not well informed about the importance of screening. This finding reveals a major gap in community-level advocacy and suggests that increased education, awareness efforts, and policy support are crucial to fostering greater community engagement and reducing the incidence of SCD.

Conclusion

The study revealed a low level of knowledge about premarital screening for sickle cell disease among adults at Gombe Hospital. Most respondents were unaware of the role of hemoglobin genotype screening in disease prevention, despite health workers being their primary source of information.

In regards to attitude, the study revealed a positive attitude towards premarital screening as the majority of the respondents considered it important, with many supporting mandatory screenings. However, opinions on personal involvement in screening were mixed. A significant proportion indicated they would reconsider marriage if a partner was a carrier, reflecting a cautious but supportive attitude towards premarital screening.

Concerning practices, most respondents had never undergone premarital screening but expressed a willingness to do so in the future. Awareness participation was notably low, with minimal community efforts to educate others about the benefits of premarital screening for sickle cell disease.

Study Limitations.

The study was limited by the nature of the study design, which did not permit follow-up. Therefore, conclusions were drawn based solely on the opinions of those who were available during the days of data collection.

Recommendation.

There is a need for combined efforts from different stakeholders like the government, the Ministry of Health, and health practitioners to ensure couples ready for marriage actively seek information and guidance on premarital screening for sickle cell disease and consider participating in screening together, recognizing it as an essential step in safeguarding their future family health.

Acknowledgment.

I would like to give my greatest honor to the Almighty God for the gift of life and protection He has given me throughout my whole life. Great Thanks to the administration of Kampala Institute of Health Professionals. The administration of Gombe Hospital enabled me to conduct research from the facility.

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Moses, for his tireless support and guidance throughout the conduct of this research study.
May God bless you all.

List of abbreviations.

ANC:	Antenatal Care
HbAs:	Hemoglobin structure of a carrier
MOH:	Ministry of Health
PMCS:	Premarital Counselling and Screening
PMGC:	Premarital Genetic Counselling
PMS:	Premarital Screening
SCD:	Sickle Cell Disease
SCTS:	Sickle Cell Trait Screening
WHO:	World Health Organization

Source of funding.

There is no source of funding.

Conflict of interest.

No conflict of interest was declared.

Availability of data.

Data used in this study are available upon request from the corresponding author.

Authors contribution

MT designed the study, conducted data collection, cleaned and analyzed data, and drafted the manuscript, and MWN supervised all stages of the study from conceptualization of the topic to manuscript writing.

Ethical approval.

Permission was sought from Gombe Hospital for data collection using an introductory letter from the Kampala Institute of Health Professionals. Respondents were selected based on informed consent. Confidentiality was maintained, and respondents were not required to write their names on the questionnaires but instead used codes to maintain anonymity.

Informed consent.

A consent form was filled out by the respondents after explaining the purpose of the study to them. The respondents were assured of confidentiality as no names would appear on the questionnaire. No participant was forced to participate in the study, and all the study materials used during the interviews were safely kept under lock and key, only accessible by the researcher.

Authors biography.

Mathias Tulyasingura is a student with a diploma in clinical medicine and community health at Kampala Institute of Health Professionals.

Moses Wasige Ngono is a research supervisor at the Kampala Institute of Health Professionals.

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