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Original Research Article

Health facility and workforce factors influencing utilization of reproductive health services in selected South Sudan public health facilities

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ABSTRACT

Background: Despite representing only one-tenth of the global population and 20% of worldwide births, nearly half of all maternal deaths occur in Africa. RH issues account for up to 18% of the global disease burden and 32% for women of reproductive age. Access to essential RH interventions, including family planning, is limited in Sub-Saharan Africa, characterized by low contraceptive use (13%) and a high total fertility rate (5.5 children per woman).
Methods: This study used a mixed-method research design, integrating both quantitative and qualitative approaches to provide a comprehensive understanding of the factors influencing RH service utilization in South Sudan. This design allowed for in-depth exploration and quantitative analysis of data patterns and trends.
Results: The study identified significant barriers to RHS utilization among women in South Sudan. Although many women were aware of the nearest RH clinic, 42.3% were not. Accessibility was a major issue, with 45.8% of women living more than 2 km from the nearest clinic, and the average distance being 2.2 km. Statistically significant relationships were found between health facility characteristics and RHS use. Interviews indicated that higher education levels among healthcare providers improved their skills, critical thinking, and ability to deliver comprehensive RH care, positively influencing service utilization.
Conclusions: Key determinants of RHS utilization included awareness of services, proximity to facilities, and availability of contraceptives. The health workforce's education, staffing levels, workload management, and fair compensation were also critical. To improve RHS utilization, the study recommends community outreach to raise awareness, expand facilities in remote areas, and offer diverse contraceptive options. Future research should address limitations like sampling biases and regional focus, explore broader geographical areas, longitudinal trends, and the impact of specific interventions, and consider technology's role in enhancing access.

Keywords: Health facility, Reproductive health services, South Sudan, Utilization, Workforce

INTRODUCTION

The healthcare system comprises a network of production units aimed at enhancing the population's health status. Primary healthcare and its associated facilities serve as the gateway to advanced care levels.[1] Evaluating health system performance commonly involves analyzing care delivery components, which sheds light on the efficacy and efficiency of service provision. Measurement of health system functioning encompasses cost-effective analysis, technical efficiency, and allocative efficiency.[2]

Literature predicts a projected deficit of 12.9 million skilled healthcare workers by 2035, primarily concentrated in Africa and Southeast Asia due to low remuneration and insufficient incentives, potentially leading to a departure of 40% of health professionals within the next decade.[3] This trend, exacerbated by

internal and international health worker migrations, worsens regional disparities in healthcare staffing. The evolution of medical technology and the demand for advanced care underscore the need for a more proficient healthcare workforce. WHO emphasizes the pivotal role of health workers as the backbone of healthcare systems, responsible for care delivery, program management, and crisis response.[4]

The utilization of health services significantly influences health outcomes, particularly in resource-limited rural regions, such as rural sub-Saharan Africa, where access to health services profoundly impacts health utilization patterns.[5] Enhancing health service accessibility is vital for improving quality of life, reducing health disparities, and better serving target populations, necessitating a comprehensive understanding and assessment of healthcare access and its spatial variations for effective resource allocation and program planning.[6]

Despite Africa's representation of only one-tenth of the global population and 20% of worldwide births, nearly half of all maternal deaths occur in this region. Reproductive health issues account for up to 18% of the global disease burden and 32% of the total burden for women of reproductive age.[7] Access to crucial RH interventions, particularly family planning, remains restricted, characterized by low contraceptive use (13%) and a high total fertility rate (5.5 children per woman) in Sub-Saharan Africa.[8]

In the context of South Sudan, limitations in capacity and a challenging governance environment significantly impede the implementation of basic health services and governmental policies. Reports suggest persistent inadequacies in building government capacity.[9] Moreover, economic and social challenges, encompassing health budget cuts, inflation, and food insecurity, further compound these difficulties. The economic crisis has adversely affected programs, including reproductive health services, funded by external donors.[10] Consequently, the utilization and adoption of RHS in South Sudan are intricately linked to these multifaceted challenges, heightening the critical nature of this issue.

While global health outcomes have exhibited improvement over the past two decades, South Sudan has also experienced substantial progress, notably a reduction in maternal mortality, neonatal mortality, infant mortality, and under-five stunting.[11] Access to RHS, such as antenatal care and contraception, has shown significant improvement in Sub-Saharan Africa. Nonetheless, access to healthcare, particularly RHS, remains a significant hurdle in South Sudan, largely due to ongoing conflicts and an unstable peace process.[12] South Sudan faces multifaceted challenges in its healthcare system, notably concerning RHS. These challenges are compounded by capacity limitations, a challenging governance environment, ongoing conflicts, and external economic pressures, which have adversely affected the implementation and accessibility of basic health services, including RH interventions.

Understanding the nuanced relationship between health facility characteristics, the health workforce, and the utilization of RHS is imperative to address the persisting barriers and challenges faced by South Sudan's healthcare system. This study seeks to fill the existing research gap by offering an in-depth exploration of these determinants and their impact on RHS utilization. By identifying key influencers affecting the uptake of RHS, the study aimed to provide evidence-based recommendations for policy formulation, resource allocation, and program planning to enhance reproductive health outcomes in South Sudan.

METHODS

This study utilized a mixed-method research design, combining quantitative and qualitative approaches to explore the factors influencing the utilization of RHS in South Sudan. Quantitative data was gathered from women of reproductive age visiting public health facilities between May and July 2023, focusing on how health facility characteristics impact RHS utilization. Qualitative insights were obtained through interviews with key informants, examining the influence of the health workforce on RHS uptake. Grounded in the health belief model (HBM) and the theory of reasoned action (TRA), the study aimed to understand how individual beliefs, attitudes, and systemic factors, such as facility characteristics and workforce adequacy, shape the utilization of RHS in a resource-constrained setting like South Sudan.

Study sites

The research was conducted in public health facilities in Western Equatoria and Central Equatoria states of South Sudan, where approximately 83% of the population resides in rural areas with a low population density of about 15 individuals per square kilometre. These rural regions face healthcare delivery challenges due to sparse populations, mobile pastoral communities, and restricted access from prolonged conflicts. Data collection involved all four tiers of the South Sudan health system, including Boma health teams at the community level, primary healthcare units (PHCU), primary healthcare centers (PHCC), and hospitals, which are strategically distributed to serve both rural and urban areas.[13]

Sampling, recruitment of study participants and data collection

The study's sampling, recruitment, and data collection were conducted in public health facilities in Western Equatoria and Central Equatoria. A multi-stage cluster random sampling method was used for quantitative data collection, involving two stages: selecting health facilities and identifying participants. Initially, a comprehensive list of public health facilities in each state was created,

from which at least three facilities per state were selected using systematic random sampling. Participants were then chosen using a probability proportionate to size approach, based on population lists such as the 2018 census of women aged 15 to 49. A systematic random start number and calculated sampling intervals were used to identify and select participants until the required number was reached.

For qualitative data, key informants knowledgeable about RHS were identified through a snowball sampling method. Key informants were notified via letter and telephone to schedule interviews and FGDs. The researcher, assisted by five trained research assistants (RAs), conducted field data collection and management. The RAs received comprehensive training on the study's objectives, methodologies, and ethical considerations, including data confidentiality. Written consent was obtained from participants before interviews, ensuring the confidentiality of their information. Face-to-face interviews were conducted using structured data collection tools, beginning with an introduction by the interviewer about their identity, organizational affiliation, and the study's objectives.

Data analysis

The data from the questionnaires underwent a thorough analysis process. Initially, all data were entered into a Microsoft Excel spreadsheet and then exported to IBM SPSS version 23, where they were consolidated into a master file. Data preparation involved transforming raw data into a usable format through validation, editing, and coding. Descriptive statistics, including mean, median, mode, percentage, frequency, and range, were used to summarize the data. Cross-tabulations were employed to explore relationships between variables and compare outcomes across different demographic groups.

Measures of statistical significance, such as the p value, were calculated to determine if findings were statistically meaningful, with a p value of less than 0.05 indicating significance. Inferential analyses, including correlation, regression, and analysis of variance, were also conducted. Linear regression, for example, was used to predict the utilization of RHS based on factors like climate change or socio-cultural characteristics.

Qualitative data underwent preliminary content analysis to identify common patterns and trends related to the influence of health facility characteristics and the health workforce on RHS uptake and utilization. This involved identifying themes and discussing their implications.

By integrating these analyses, the study aimed to provide a comprehensive understanding of the factors influencing RHS utilization in South Sudan, highlighting the relationships between various health facilities and workforce characteristics and the uptake of RHS.

Ethical considerations

The study adhered to strict ethical standards throughout its execution. Ethical approval was obtained from relevant authorities, including the Ministry of Health in South Sudan, the Research Ethics Committee (REC) of South Sudan, and the institutional ethical review committee (IERC) of Mount Kenya University. Permissions were also secured from key sectoral and departmental heads to access public health facilities. Participants were assured of anonymity, confidentiality, and their right to withdraw at any time, which was communicated and documented. High ethical standards were maintained in data collection, with special precautions taken to comply with COVID-19 regulations and ensure the safety of both the research team and participants.

RESULTS

Health facility characteristics and utilization of reproductive health services

Socio-demographic characteristics of women of reproductive age visiting health facilities

Table 1 presents the socio-demographic characteristics of women of reproductive age visiting selected public health facilities in South Sudan. The majority of women (58.0%) seeking reproductive health services are from Central Equatoria, while 42.0% are from Western Equatoria. This distribution indicates a relatively higher representation from Central Equatoria. Nearly half of the women (46.5%) seeking reproductive health services are younger than 30 years, while 53.5% are 30 years and older. This distribution suggests a diverse age range among women accessing reproductive health services (Table 1).

Distance of public health facilities offering reproductive health services

Most of the women (33.3%, 133) reported that public health facilities offering RHS were within 3 km from their households with 22.8% of women reporting that public health facilities were offering RHS within 0.5 km. Women who lived within a 2 km radius distance from the nearest RHS clinic and their homes less than 30 minutes walking distance were classified as having high geographical accessibility and low otherwise. Thus, over 45.8% of the women reported living outside a 2 km radius distance from the nearest RHS clinic. The overall, mean distance to the nearest RHS centre from the household was 2.2 km (Figure 1).

Table 1: Socio-demographic characteristics of women of reproductive age.

Variable	Category	Frequency	Percentage
State	Central Equatoria	232	58.0
	Western Equatoria	168	42.0
Age (years)	<30	186	46.5
	30 and >30	214	53.5
Marital status	Single	82	20.5
	Married	268	67.0
	Divorced	25	6.3
	Widowed	25	6.3
Place of residence	Urban	74	18.5
	Rural	326	81.5
Employment status	In school or training	48	12.0
	Paid/wage/paid in kind employed	19	4.8
	Self-employed	121	30.3
	Unemployed	173	43.3
	Unemployed but not seeking work for other reasons	39	9.8
Household wealth status	Poor (<500,000 SSP)	365	91.3
	Middle (500,000 SSP-1,000,000 SSP)	35	8.8
Religion	Christian	348	87.0
	Traditional	52	13.0
Education status	No school	147	36.8
	Only traditional/non-formal school	53	13.3
	Dropped-out of school	27	6.8
	Completed secondary	173	43.3

Source: research data (2023).

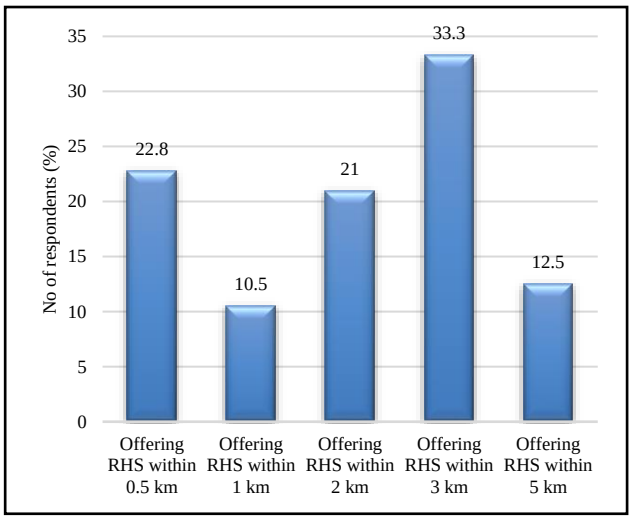

Figure 1: Mean total PH facilities offering RHS within 0.5 to 5 km.

Association between health facility characteristics and reproductive health services utilization

Relationship between the provision of intrauterine devices and utilization of RHS: the p value of 0.000 indicates a highly significant relationship. The odds ratio of 10.473 suggested that the provision of intrauterine devices is associated with a 10.473 times higher likelihood of uptake and utilization of RHS compared to not providing intrauterine devices. Relationship between the provision of oral contraceptives and utilization of RHS: the p value of 0.000 indicates a highly significant relationship. The odds ratio of 33.060 suggested that the provision of oral contraceptives is associated with a 33.060 times higher likelihood of utilization of RHS compared to not providing oral contraceptives. However, the wide range of the confidence interval (7.444 to 146.827) suggest some uncertainty in estimating the true odds ratio, but it still supports the notion that the odds of experiencing the outcome are significantly higher in the exposed group (Table 2).

In addition, relationship between the provision of injectables and utilization of RHS: the p value of 0.004 suggested a statistically significant relationship. The odds ratio of 0.213 indicates that the provision of injectables is associated with a 0.213 times lower likelihood of utilization of RHS compared to not providing injectables (Table 2). Moreover, relationship between the provision of spermicidal agents and utilization of RHS: the p value of 0.003 suggested a statistically significant relationship. The odds ratio of 3.171 indicate that the provision of spermicidal agents is associated with a 3.171 times higher likelihood of utilization of RHS compared to not providing spermicidal agents (Table 2).

Table 2: Health facility characteristics associated with RH services utilization among women of reproductive age.

Variables	User of RH services n (%) n=290	Non-user of RH services n (%) n=110	OR (95% CI)	P value
Hospital classification				
Hospital (state, teaching, and county)	101(34.8)	40 (36.4)	1	
Primary health care unit/centre	189 (65.2)	70 (63.6)	1.178 (0.476-2.916)	0.723
RHS accessibility				
Living within 2 km radius	160 (55.2)	57 (51.8)	1	
Living outside 2 km radius	130 (44.8)	53 (48.2)	0.916 (0.429-1.956)	0.820
Additional revenue resources and NGO affiliation				
Yes	99 (34.1)	39 (35.5)	1	
No	191 (65.9)	71 (64.5)	0.681 (0.271-1.709)	0.413
Provision of intrauterine devices				
Yes	105 (36.2)	71 (64.5)	1	
No	185 (63.8)	39 (35.5)	10.473 (3.992-27.472)	0.000**
Provision of oral contraceptives				
Yes	203 (70.0)	108 (98.2)	1	
No	87 (30.0)	2 (1.8)	33.060 (7.444 146.827)	0.000**
Provision of condoms (male and female)				
Yes	206 (71.0)	89 (80.9)	1	
No	84 (29.0)	21 (19.1)	0.993 (.466-2.116)	0.986
Provision of injectables				
Yes	125 (43.1)	65 (59.1)	1	
No	165 (56.9)	45 (40.9)	0.213 (0.074-0.613)	0.004**
Provision of emergency contraceptive pills				
Yes	258 (89.0)	78 (70.9)	1	
No	32 (11.0)	32 (29.1)	0.453 (0.187-1.101)	0.080
Provision of spermicidal agents				
Yes	58 (20.0)	40 (36.4)	1	
No	232 (80.0)	70 (63.6)	3.171 (1.496-6.720)	0.003**

Source: research data (2023). **Correlation is significant at the 0.01 level. *Correlation is significant at the 0.05 level.

Health workforce and utilization of reproductive health services

Adequate and qualified personnel providing reproductive health services

The analysis revealed that having a limited number of qualified staff, including doctors, nurses, and midwives, impacted the delivery of RHS. The lack of specialized skills and expertise results in suboptimal service provision and limited capacity to address the diverse needs of individuals seeking RHS in the selected public health facilities. In addition, with the shortage of qualified staff, it was evident that delays and bottlenecks in service delivery were a recurrent theme, leading to longer waiting times and decreased utilization of RHS. For instance, one of the key informants that was interviewed stated that:

"*The limited availability of qualified personnel can hinder the ability to meet the demand for reproductive health services, thereby affecting utilization".* (Nurse L. O., 2023)

Though it was established that personnel working in the selected health facilities had relevant academic qualifications, most of them needed refresher training. Participants argued that when it comes to RHS delivery, the field is continuously evolving, with new research, guidelines, and best practices emerging. Thus, it was important for staff including nurses and midwives, to undergo regular refresher training, since most of the staff knowledge and skills on RHS were considered outdated, it hindered their ability to provide up-to-date and evidence-based RH strategies such as the provision of modern contraceptives. From the interaction with key informants, it was evident that some of the personnel providing RHS in public health facilities had limited confidence and competence. One of the participants stated that:

"*Nurses and midwives who have not received refresher training lack confidence and competence in certain areas of reproductive health service provision. This results in hesitation, suboptimal decision-making, and a decreased ability to address complex or specialized cases, leading to*

reduced utilization of reproductive health service". (Doctor P. O., 2023)

Refresher training ensures that all personnel are aligned with standardized protocols and practices in RHS delivery. Lack of refresher training can result in variations in care provided by different staff members, potentially leading to inconsistencies in service quality and patient experiences. Thus, the research findings suggest that the influence of adequate staffing on the uptake and utilization of RHS in South Sudan's public health facilities is constrained by having few qualified staff and staff needing refresher training. These factors can impact the quality, availability, and consistency of RHS, ultimately affecting individuals' utilization of these services.

The analysis revealed that healthcare providers with higher education levels, such as advanced degrees in medicine, nursing, or midwifery, bring advanced knowledge and specialized skills to RHS provision. Advanced education equips them with a deeper understanding of RH concepts, research, and evidence-based practices, enabling them to deliver high-quality care. The experts that were interviewed posit that health professionals with higher education levels possess critical thinking abilities and analytical skills, enabling them to make informed decisions and provide comprehensive and individualized RH care. Individualized RH care was further found to contribute to improved utilization of RHS, as women visiting public health facilities felt confident in the expertise of the healthcare provider.

The study also found that having higher education levels empowered healthcare providers to take on leadership roles and engage in advocacy efforts to promote RHS. For instance, doctors and nurses who are well-trained were found to contribute to policy development, program implementation, and community education, which can positively impact the utilization of RHS.

"*At the community level, trained mid-level cadres namely, nurses, clinical officers, and midwives. encouraged and supported community and home-based initiatives on life-saving skills. Emphasis was based on building the capacity of other community health workers/groups on health promotion (including referral for deliveries to the Primary health care centres"*. (BHW, 2023).

Thus, the study proposed that by improving the health workforce education level and promoting continuous professional development, the influence of adequate staffing on the uptake and utilization of RHS in South Sudan's public health facilities can be strengthened. Investing in higher education levels and providing opportunities for continuous learning can enhance healthcare providers' knowledge, skills, confidence, and leadership abilities. Consequently, this can improve the quality of RHS, increase patient trust, and positively influence individuals' utilization of these services.

Workload and salary

The analysis revealed that the health workers including nurses, clinical officers, and midwives are overburdened with excessive workload, and have limited time to spend with clients seeking RHS. For instance, one of the clinical officers who was interviewed complained that:

"*Due to workload issues Clinical Associates (CAs) end up doing rushed consultations and reduced opportunities for thorough assessments and discussions about family planning, antenatal care, HIV testing and counselling or other reproductive health services. As a result, most women visiting public health facilities felt that their concerns are not adequately addressed, leading to decreased utilization of reproductive health services"*. (KI-CO, 2023)

The study also established that overworked health workers struggle to provide individualized care due to time constraints. They had difficulty tailoring services to meet the specific needs and preferences of each woman visiting the clinic. This results in a standardized approach to care, which may not fully address the unique circumstances and concerns of women, potentially leading to decreased utilization of RHS. Therefore, MOH and other stakeholders should focus on expanding comprehensive RH coverage by developing a priority-oriented focus on RHS delivery and ensuring the best use of resources as well as addressing the unique circumstances and concerns of women of reproductive age.

Fatigue and burnout also emerged as common themes from the thematic analysis. It was evident from the analysis that most of the health workers felt that they were being overworked which led to fatigue and burnout. One of the doctors who was interviewed pointed that:

"*As the only qualified hospital doctor in the health facility, I am extremely overworked, and this is likely to lead to reduced concentration, compromised decision-making, and increased likelihood of errors. This can also lead to suboptimal service delivery and reduced satisfaction among women who are seeking reproductive health services in this health facility"*. (KI-MD, 2023)

The research findings suggest that the influence of workload issues on the utilization of RHS in South Sudan's public health facilities is negatively affected by health workers being overworked. By examining the challenges related to workload issues, the findings of this study can inform strategies to address these issues. For instance, increasing access to skilled health workers through training and recruitment of midwives and training on RH skills including an authorization of mid-level cadres namely, nurses, clinical officers, and midwives to function as CAs to provide essential RHS. Ultimately, addressing workload issues can enhance the uptake and utilization of RHS in South Sudan through workforce

planning, task-shifting, sharing, and workload redistribution.

The analysis established that the influence of salary issues on the uptake and utilization of RHS in selected South Sudan public health facilities is negatively affected by health workers being paid low wages and feeling that they are unfairly compensated for the amount of work done. For instance, the key informant stated that:

"*Most of the health workers complained that they are receiving low wages that may lead to experiencing a lack of motivation and job satisfaction. The perception of being undervalued and under-compensated can negatively impact their dedication to providing high-quality reproductive health services, further resulting in decreased motivation to go above and beyond, potentially affecting the utilization of reproductive health services"*. (MW, 2023)

The study established that some of the health workers who were working in the selected RH clinics believed that they were being paid low salaries, and a result created the perception that RHS are undervalued within the healthcare system. This perception can impact the community's trust and confidence in the quality of care provided, resulting in decreased utilization of reproductive health services. In addition, one of the participants stipulated that:

"Health workers who feel undervalued may be less inclined to invest their time and effort in enhancing their skills and knowledge, leading to stagnation in service delivery including RH services". (MW, 2023)

According to the participants addressing salary issues and ensuring fair compensation for health workers can lead to increased motivation, job satisfaction, and retention rates. Adequate wages can also contribute to improved quality of care and increased trust from women who are seeking RHS in public health facilities. The findings of this study can guide policymakers and stakeholders in implementing interventions to improve the financial compensation of health workers, particularly those working in RH clinics, and address the salary disparities, thereby positively impacting the uptake and utilization of RHS in South Sudan public health facilities.

DISCUSSION

Health facility characteristics and utilization of reproductive health services

The findings from this study provide significant insights into the factors influencing the utilization of RHS in South Sudan. Key health facility characteristics such as awareness, proximity, and the availability of contraceptive methods were identified as critical determinants of RHS utilization. This discussion interprets the present study results and compares them with previous studies to contextualize the findings within the broader literature.

Awareness of health facilities

The study found that 57.8% of women were aware of the nearest reproductive health clinic, while 42.3% were not. This highlights a substantial gap in public health information dissemination, a finding that aligns with previous studies conducted in similar low-resource settings. For instance, Babalola and Moodley emphasized that lack of awareness is a significant barrier to health services utilisation in Sub-Saharan Africa, often leading to underutilization of essential services.[14] In contrast, studies in more developed regions report higher awareness levels due to better infrastructure and communication networks.[15] The relatively high level of awareness in the challenging healthcare landscape of South Sudan could be attributed to localized efforts by NGOs or community health workers, which aligns with global trends observed by the WHO regarding the impact of community-based interventions on service awareness.[16] The implications of these findings underscore the need for targeted health education campaigns, particularly in rural and conflict-affected areas, to increase awareness and subsequently improve RHS utilization.

Proximity to health facilities

Proximity to health facilities is a critical determinant of healthcare utilization, and the study found that 33.3% of women reported that public health facilities offering RHS were within 3 km of their households, with 22.8% reporting facilities within 0.5 km. These findings are consistent with Gopalan et al, who identified distance as a barrier to healthcare access in resource-constrained settings.[17] However, the relatively high percentage of women reporting facilities within 0.5 km suggests some localized improvements in health service infrastructure or recent expansions of healthcare facilities closer to communities, which contrasts with studies in more developed regions where geographic coverage is generally better.[18] The unexpected non-significant association between proximity to health facilities and RHS utilization in the present study diverges from the findings of Gage et al, who emphasized the critical role of proximity in healthcare utilization.[19] This discrepancy may be due to contextual factors unique to South Sudan, such as transportation challenges, security issues, or sociocultural barriers that are not mitigated by physical proximity alone.

Availability of contraceptive methods

The availability of contraceptive methods was found to be a significant factor influencing RHS utilization. The study revealed a strong association between the provision of intrauterine devices (IUDs) and oral contraceptives and higher utilization rates of RHS, with odds ratios of 10.473 and 33.060, respectively. This finding aligns with the

literature, where Cleland et al. highlighted the importance of modern contraceptive availability in facilitating access to reproductive health services.[20] However, the study also found a significant association between the provision of injectables and spermicidal agents and RHS utilization, which supports the findings of Weinberger et al, who suggested that diverse contraceptive options can increase overall usage rates.[21] The low availability of long-acting reversible contraceptives (LARCs), such as IUDs, reflects global concerns about supply chain issues and cultural preferences, as observed by Lazzerini et al.[22] This limitation may also correlate with the high fertility rates and low contraceptive prevalence in the region, as previously reported by WHO.[23]

Integrated sexual and reproductive health services

The study's findings indicate a focus on the prevention and management of STIs and HIV within reproductive health services, with these services being the most commonly offered at 11.9%. This is consistent with global health priorities in regions with high prevalence rates of these conditions, as emphasized by WHO.[24] The study's finding of a significant provision of services related to gender-based violence (GBV) management (11.4%) reflects an awareness and attempt by public health facilities to address the immediate health needs of GBV survivors, which aligns with findings from Buard et al.[25] However, the relatively lower availability of IUDs and spermicidal agents, which are crucial for preventing unintended pregnancies, indicates ongoing challenges in providing comprehensive RHS in low-resource settings.

Health workforce and reproductive health services utilization

The present study highlights critical factors related to the health workforce that influence the utilization of RHS in public health facilities in South Sudan. The findings suggest that adequate staffing, education levels, workload management, and fair compensation are pivotal in determining the quality and accessibility of RHS. These results align with existing literature but also reveal unique insights specific to the South Sudanese context.

Adequate staffing and service utilization

The study identifies adequate staffing as a crucial determinant of RHS utilization, emphasizing the negative impact of understaffing on service availability, patient waiting times, and overall service quality. This finding is consistent with previous studies that have demonstrated the importance of sufficient healthcare personnel in enhancing service delivery and patient outcomes.[26,27] In particular, the shortage of midwives and nurses, as noted in this study, mirrors global concerns about healthcare workforce shortages in low-resource settings.[28] The study's revelation that understaffing not only limits service provision but also contributes to increased workloads and burnout among existing staff is supported by similar findings in other low-resource settings, where workforce shortages have been shown to strain healthcare systems and reduce service uptake.[29,30]

However, the study also adds to the existing body of knowledge by illustrating how these staffing shortages directly impact healthcare provider morale and patient trust, elements that are often underexplored in the literature. The observation that understaffing can lead to stress and dissatisfaction among health workers, which in turn affects their interactions with patients, provides a nuanced understanding of the complex relationship between staffing levels and service utilization.

Education levels and service quality

The study's findings suggest that healthcare providers with higher education levels are better equipped to deliver high-quality RHS, a conclusion that aligns with existing literature. Higher education levels among healthcare providers have been associated with improved patient outcomes and increased service utilization.[31] The study further corroborates the notion that advanced degrees in medicine, nursing, or midwifery enhance healthcare providers' ability to apply evidence-based practices and offer individualized care, which boosts women's confidence in utilizing RHS.

This study also emphasizes the role of continuous professional development in maintaining and enhancing the competencies of healthcare providers. The finding that ongoing training programs improve technical competencies and foster a culture of learning aligns with global recommendations for workforce development strategies in low-resource settings.[32] Moreover, the study's focus on the variability in educational backgrounds among healthcare providers and its impact on practice adds a new dimension to the discourse. While advanced degrees were seen as beneficial, the pivotal roles played by mid-level cadres, such as nurses and clinical officers, in promoting RHS at the community level highlight the importance of both formal education and on-the-job training.

Workload and service delivery

The study's exploration of workload issues among health workers in South Sudanese public health facilities reveals significant barriers to effective RHS delivery. The findings resonate with global literature indicating that high workloads negatively impact the quality of care and reduce patient satisfaction.[33] Studies from similar settings have reported that excessive workloads contribute to burnout among health workers, affecting their performance and, consequently, service utilization.[34] The present study's findings are consistent with these observations, as health workers expressed concerns about being overburdened, leading to rushed consultations and suboptimal service provision.

The unexpected finding that some health workers, despite facing high workloads, continue to exhibit dedication to their roles suggests that intrinsic motivation and professional values play a significant role in health worker behavior. This finding is in line with the literature, which indicates that factors beyond financial incentives, such as a sense of duty or commitment to patient care, may influence health workers' performance.[35]

Salary and motivation

Low wages emerged as a significant factor affecting health workers' motivation and commitment to delivering quality RHS. This finding aligns with existing studies that have documented how inadequate compensation undermines morale and retention in healthcare settings, particularly in resource-constrained environments.[36] The perception among health workers that they are undervalued due to low salaries was also noted in this study, a finding that has been reported in other low-resource settings, where financial constraints often lead to dissatisfaction and reduced service quality.[37]

However, the study also highlights a paradox where, despite low wages, some health workers remain committed to their roles, suggesting that financial incentives are not the sole determinants of health worker behavior. This insight underscores the importance of considering both extrinsic and intrinsic motivators when designing interventions to improve health worker motivation and service delivery.

CONCLUSION

In conclusion, the present study provides a comprehensive analysis of how health facility and workforce factors influence the utilization of reproductive health services (RHS) in South Sudan. The findings reveal that awareness, proximity, and contraceptive availability are crucial determinants of RHS utilization, aligning with previous research while highlighting unique challenges specific to the South Sudan context. Key factors such as adequate staffing, advanced education, manageable workloads, and fair compensation are essential for improving RHS delivery, echoing the broader literature on health workforce dynamics. However, the study also uncovered unexpected outcomes, particularly regarding the role of facility classification and proximity, which indicate a need for tailored interventions.

The study's limitations include its focus on specific public health facilities, which may not fully represent RHS utilization across different settings, and the reliance on qualitative data, which may introduce subjective biases. Future research should address these limitations by expanding the geographical and temporal scope and incorporating quantitative methods to provide a more comprehensive understanding of RHS utilization in South Sudan.

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