



Library-based access to reproductive health information from an informatics perspective in Tanzanian universities

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ABSTRACT

This study investigates academic libraries in Tanzania, focusing on the Institute of Accountancy Arusha (IAA) and Tumaini University Makumira (TUMA), to examine access to reproductive health information from an informatics perspective. This study was anchored on three theories. The Health Belief Model Information, Seeking Behavior Theory and The Digital Divide Theory. A cross-sectional descriptive survey design was employed, involving 130 respondents drawn from students, librarians, and other staff. Data were gathered through questionnaires, interviews, and observation and were analyzed using Statistical Package for the Social Sciences (SPSS) alongside thematic content analysis. The findings reveal that access to reproductive health information through academic libraries remains limited, largely due to inadequate subject-specific information resources, insufficient information-searching skills, and constrained Information Communication Technology [ICT] infrastructure. Although some libraries implemented awareness-raising initiatives such as orientation programs and current awareness services, these efforts were insufficient to ensure effective access to and utilization of reproductive health information. Viewed from an informatics perspective, the results highlight gaps in digital information system support and user competencies that hinder equitable access to essential health information. The study concludes that academic libraries at IAA and TUMa possess significant potential to support access to reproductive health information, but this role is not fully optimized. It therefore recommends increased budgetary support, integration of information literacy training into academic curricula, enhancement of ICT infrastructure, and the establishment of counseling units to strengthen library-based access to reproductive health information and promote student health awareness in Tanzanian universities.

Keywords: Academic Libraries, Health Informatics, Library-Based Information Access, Reproductive Health Information, Tanzania

I. INTRODUCTION

Reproductive health is central to human wellbeing, encompassing the ability to have a safe and satisfying sexual life, decide freely about reproduction, and access reliable health information and services (World Health Organization [WHO], 2020). Access to reproductive health information (RHI) is especially crucial for students in higher learning institutions, who face risks of sexually transmitted infections (STIs), unintended pregnancies, and inadequate knowledge of contraceptive methods (Mbugua & Karonjo, 2018; Mcharo et al., 2021). In Tanzania and East Africa, several studies have examined sexual and reproductive health knowledge among students, but limited attention has been paid to the role of academic libraries in providing this information (Lwoga et al., 2021; Chibwae et al., 2018). While institutions like Mzumbe University and Mbeya colleges have been studied, there is little evidence on the extent to which libraries at the Institute of Accountancy Arusha (IAA) and Tumaini University Makumira (TUMa) support access to reproductive health information.

According to Mbugua and Karonjo (2018), research on the effects of education on health has focused primarily on the cross-generational links between parents' education and their children's health; much less attention has been devoted to the contemporaneous links between being a student and remaining healthy or being a student and acquiring specific health-related knowledge and skills. This challenge is reflected in institutional awareness initiatives, such as the slogan at IAA encouraging students to prioritize both academic success and health awareness. It suffices to say that, reproductive health information using easily-accessible materials in the library may help to reduce the existing problem/gap. This is true because information is power. But it is not clearly known if students from various colleges and universities including the Institute of Accountancy Arusha (IAA) and Tumain University Makumira (TUMa) have an access to health information in their library

This gap is critical because academic libraries function as information systems within the informatics field. Their resources, services, and digital infrastructures determine how effectively students can access and utilize RHI.

Thus, this study situates library-based access to reproductive health information within the broader scope of informatics, highlighting how digital and physical collections can contribute to health literacy, equity, and informed decision-making.

In this context, academic libraries function as information systems within the informatics domain, where the organization, storage, retrieval, and dissemination of reproductive health information depend on both digital infrastructure and user competencies (Mbelle et al., 2021). Therefore, access to reproductive health information in university libraries should be understood not only as a health or educational issue, but also as an informatics concern related to information systems design, accessibility, and effective use.

1.1 Research Questions

- i. What reproductive health information resources are available in the academic libraries of the Institute of Accountancy Arusha (IAA) and Tumaini University Makumira (TUMa)?
- ii. To what extent are reproductive health information resources accessible to students in the libraries of IAA and TUMa?
- iii. What challenges do students face when accessing reproductive health information through academic libraries at IAA and TUMa?
- iv. What measures can be adopted by academic libraries to improve access to and utilization of reproductive health information among students at IAA and TUMa?

II. LITERATURE REVIEW

2.1 Theoretical Review

This study is anchored on three theories. The Health Belief Model (Rosenstock, 1974) posits that health behaviors are influenced by perceptions of risk and benefits, shaped by access to accurate information. Information Seeking Behavior Theory (Katz, 1963) explains that individuals actively seek information based on needs and availability of resources. The Digital Divide Theory (van Dijk, 2006) highlights how infrastructural and literacy-related inequalities limit access to information in resource-poor contexts. These frameworks collectively emphasize the importance of both availability and user capacity in accessing reproductive health information.

2.2 Empirical Review

2.2.1 Availability and Accessibility of Reproductive Health Information

Empirical studies from Africa and other developing regions indicate persistent challenges in university students' access to reproductive health information. Evidence from East Africa shows that although students increasingly rely on digital platforms for health-related information, access remains uneven due to inadequate ICT infrastructure, limited digital literacy, and weak institutional support systems (Mbugua & Karonjo, 2018; Lwoga et al., 2017). These findings suggest that the availability of information resources alone does not ensure effective access or use.

2.2.2 Institutional Support and Information Sources

Existing literature highlights the role of educational institutions in facilitating access to health information. Studies by Amour et al. (2021) and Mcharo et al. (2021) demonstrate that access to reproductive health information is influenced by the presence of reliable information sources and supportive learning environments. However, much of this research focuses on health facilities or informal online sources, with limited emphasis on academic libraries as structured information systems within universities.

2.2.3 Information-Seeking Skills and System Usability

From an informatics perspective, access to reproductive health information is further shaped by users' information-seeking skills and system usability. Mbelle et al. (2021) and Lwoga et al. (2017) show that inadequate search skills, socio-cultural stigma, and poorly designed digital systems constrain effective access, while information literacy training and robust digital repositories enhance utilization.

2.2.4 Research Gap

Despite this growing body of research, limited empirical evidence exists on how academic libraries in Tanzanian universities support access to reproductive health information within an informatics framework. This study addresses this gap by examining academic libraries at the Institute of Accountancy Arusha (IAA) and Tumaini University Makumira (TUMa), thereby contributing context-specific evidence on library-based access to reproductive health information.

III. METHODOLOGY

3.1 Research Design

Fraenkel and Wallen (2020) defined study design as a detailed outline of how a study is done. The study design and sampling for a study typically include things like how the data for the study's collected what tools are used to collect the data for the study and the ways the data, from the study will be looked at. In this study the researcher used a cross-sectional, descriptive survey research design to collect qualitative and quantitative data through the use of a standardized questionnaire with both close and open-ended questions, interviews, and observation, regarding the availability and accessibility of reproductive health information by students in academic Libraries, with particular reference to the Institute of Accountancy and Tumaini University Makumira libraries in Arusha, Tanzania.

3.2 Study Area

The study area was the Institute of Accountancy Arusha (IAA) and Tumaini University, Makumira (TUMa). The Institute of Accountancy Arusha and Tumaini University Makumira were chosen for their diverse student populations, which include people from various socioeconomic origins, locations, and cultural contexts. This variety is expected to provide a better understanding of the elements that influence the availability and accessibility of reproductive health information. Therefore, the researcher was motivated to find out whether information on reproductive health is available at the respective libraries for students use, in order to prepare a healthy generation of elites.

3.3 Population and Sampling Procedure

Sampling technique is the method of selecting a number of individuals or objects from a population in which selected group contains elements representative of the characteristics found in the entire group. Kothari, (2019) defines sampling as the process of selecting a subset of units from the population. This study used Simple Random and Purposive Sampling techniques to select the sample for this study. Simple Random Sampling is a subset of individuals (a sample) chosen from a larger set a population (Kothari 2019). This study employed a cross-sectional descriptive survey design, collecting both quantitative and qualitative data. The study area included IAA and TUMa, chosen for their diverse student populations. A total of 130 respondents participated: 114 students selected through simple random sampling, and 16 librarians, counselors, and deans selected purposively. Primary data was collected using questionnaires, interviews, and observation, while secondary data was obtained from published works. This technique helped the researcher to gain access to all the potential information about the study. Also, the method was used due to the nature of this study, which demands collection of data from informed and experienced persons in the universities involved in the study.

3.4 Data Collection Methods

Kabir and Mahtab (2023) and Teddlie and Tashakkori (2020), define data collection as the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes. This study collected both primary and secondary data. Primary data were collected using open as well as closed ended questioners and face to face interview methods.

3.5 Data Analysis

Rwegoshora (2014) defines data analysis as the ordering of data into constituent parts in order to obtain answers to research questions, with the aim of arriving at some general principles that can be applied to other situations. Data were analyzed using SPSS (version 20) for descriptive statistics, and qualitative responses were coded thematically

3.6 Ethical Considerations

Ethical considerations were observed throughout the study. Participation in the study was voluntary, and informed consent was obtained from all respondents prior to data collection. Participants were informed of the purpose of the study and their right to withdraw at any stage without any consequences. Anonymity and confidentiality were assured by excluding personal identifiers from the data collection instruments and reports. Data collected were used strictly for academic purposes. Permission to conduct the study was obtained from the relevant institutional authorities at the Institute of Accountancy Arusha and Tumaini University Makumira.



IV. FINDINGS & DISCUSSION

4.1 Availability and Accessibility of Reproductive Health Information

Objective of the study sought to examine the availability and accessibility of reproductive health information by students at the libraries of the Institute of Accountancy Arusha and Tumaini University Makumira (TUMa). The terms availability and accessibility complement each other. It is the availability which determines accessibility. Respondents were asked to state on the availability and accessibility of reproductive health information at their respective libraries. The information sought was considered important because the availability and accessibility of reproductive health information held in the respective libraries is a vitally valuable resource to students in terms of enabling them realize the risks posed by unsafe sex.

Findings showed that a majority (52.4%) of respondents reported that reproductive health materials were scanty in their libraries, while (31.1%) said they were unavailable. Only a small proportion acknowledged their presence. These results highlight a critical gap in library collections. From a theoretical standpoint, this aligns with the Digital Divide Theory, demonstrating that infrastructural limitations hinder equitable access.

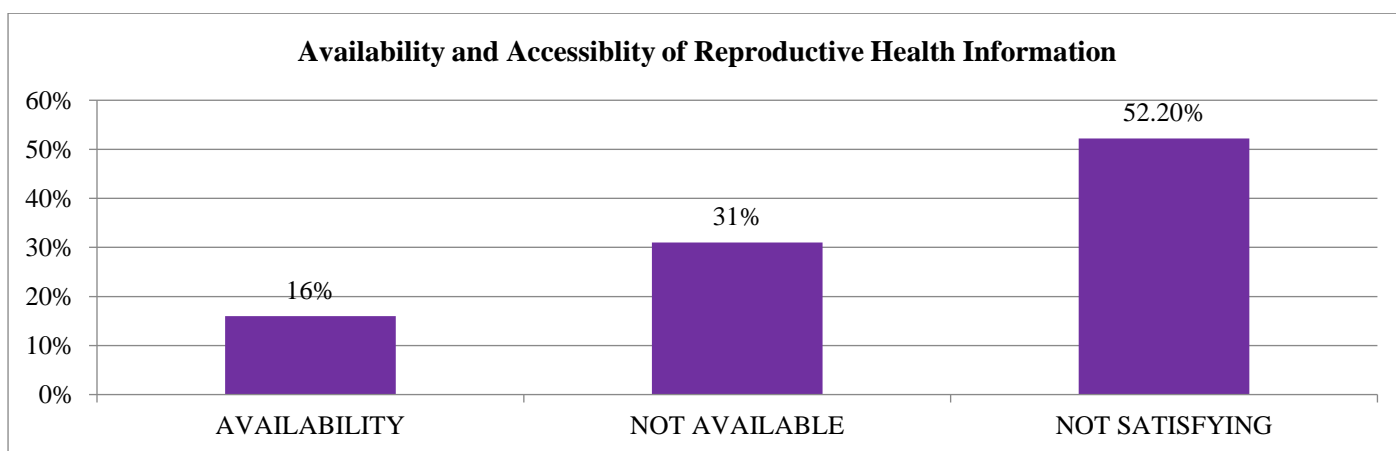


Figure 1
Availability and Accessibility of Reproductive Health Information

Based on these findings it is clear that the majority of the respondents agreed that materials related to reproductive health information was not held by the respective libraries and therefore they had little understanding on the availability of such information in their libraries. However it is also important to note that, although the number of respondents 13(32%), who agreed on the availability of materials related to reproductive health information in their respective libraries is small, it is nonetheless significant in terms of acknowledging that some effort towards acquiring such information had been made by the respective libraries, albeit in a small way.

4.2 Challenges Faced by IAA and TUMa students when Accessing Reproductive Health Information and Proposed Suggestions to Counter the Challenges

Accessing reproductive health information can present challenges for students, particularly those from underrepresented or marginalized backgrounds. By acknowledging the challenges and outlining potential solutions, it is possible to embark on the right path towards resolving the challenges at hand Challenges Faced in Accessing Reproductive Health Information. Respondents were asked to state the challenges they faced when accessing reproductive health information at IAA and TUMa. The responses are summarized in Table 1.

Table 1
Challenges in Accessing Reproductive Health Information

Challenges	Frequency	Percentage
Poor knowledge on information searching skills	28	27.2%
Feeling shy to ask the information about Reproductive health	5	4.9%
Shortage of information sources	48	46.6%
There is no centre or counselling unit around the Institute	20	19.4%
There is no reference librarian to direct the users on the ways of accessing RHI	2	1.9%
Total	103	100%

Challenges identified included shortage of resources (46.6%), poor search skills (27.2%), lack of counseling



units (19.4%), and student reluctance due to stigma (4.9%). Such barriers underscore the relevance of the Information Seeking Behavior Theory, which emphasizes the need for supportive environments to enhance information use. Students suggested solutions such as increased budget allocations, integration of RHI into the curriculum, and improved ICT infrastructure. These align with the Health Belief Model, as better access and literacy can positively shape perceptions and behaviors

4.3 Proposed Solutions to the Challenges

Respondents were asked to propose solutions which will mitigate those challenges associated with the availability and accessibility of RHI. This question was directed to students because it is believed that they understand the challenges they face when accessing the reproductive health information. Responses are summarized in Table 2.

Table 2
Proposed Solutions to the Challenges (N=103)

Solution to the challenges	Frequency	Percentage
Librarians should introduce information literacy training to all library users	6	5.8%
Institutions should integrate aspects of Reproductive Health sciences into their Curriculum as a required one semester/term course.	14	13.6%
Librarians should establish information literacy to all library users	12	11.7%
Adequate Funds be Provided to support library budget for the acquisition and development of core collection of library/information resources, pertaining to Reproductive Health.	30	29.1%
Institutions should establish Counselling Units with qualified personnel, in order to assist students on matters of reproductive health concerns.	9	8.7%
Information Search skills be a core aspect of Information Literacy Training program to be Provided by the institute/ university libraries.	28	27.2%
Total	103	100%

Findings in Table 5.1.2 show that 30(29.1%) out of 103 respondents proposed the allocation of an adequate budget to the libraries, for the acquisition and development of reproductive health information resources, followed by 28(27.2%) respondents who proposed the provision of information search skills training through library IL programs, 14(13.6%) Institutions should integrate aspects of Reproductive Health sciences into their Curriculum, 12(11.7%) proposed the provision of user education on how to search information, 9(8.7%) proposed the establishment of Counselling Units at institutions of higher learning.

The findings also revealed the suggestion that funds be provided through a budget, for the acquisition and development of core collection of reproductive health sciences in the university libraries, in order to support the new curriculum. This would minimize or solve the problem concerning the accessibility and utilization of reproductive health information resources by students at the Institute of Accountancy Arusha (IAA) and Tumaini University Makumira (TUMA) libraries, specifically, and generally across university campuses, nationwide. This should go hand in hand with coordinating the provision of training on searching skills to students, which is likely to solve the problem of accessing and utilizing Reproductive Health Information resources.

In this respect one Interviewee commented that:

'The library orientation should go beyond the expository of establishing a program to orient library users on online databases because currently the IT has tremendously transformed the world so much that a lot of information can be accessed online vide databases.' (Respondent from IAA) 23th October 2025

Also,

"The institutions should subscribe to on line data databases like "Electronic Care Records and the World Health Organization journals Online" on which they will access get information about health care in general to the schools or institutions on which the problem of Funding will be solved accordingly". (Respondent from IAA) 23th October 2025

Generally and based on the afore going findings, one would consider a three- pronged approach towards establishing the parameters for putting in place the infrastructure, in order to realize the institutional/national goal for integrating Reproductive Health Sciences into the university curriculum. In this process, the role of librarians, as stake holders and resource managers/ advisors, will be crucial in determining the information resources required to run university academic courses. Firstly, one would envisage the need for collaboration between academic staff and library staff on campus, to sensitize top institution/university management, into realizing the need to integrate Reproductive Health sciences into the institution curriculum, as a cross cutting concept and a subject matter of

serious national concern.

When the proposal to launch a new course is accepted, through academic organs including senate, academic planning committees, and others, and the modality of its implementation agreed upon, that will cause for consideration of the teaching and learning resources, including the creation of a library budget, to enable the program take off. As a new course, it will require financial resources to take care of teaching and learning resources, including the deployment of a skeleton staff, to coordinate or run/manage the program on the institutions campus., Most importantly though, as for the introduction of any new courses in the university, it may require the creation of a core collection of information resources, for both print and non-print/electronic resources on reproductive health sciences, as well as strengthening the campus IT infrastructure for the provision and utilization of these information resources, in order to meet the instructional and learning information needs of the students in the new course program.

4.4 Summary of the Key Findings

The study assessed the availability and accessibility of reproductive health information to students at the Institute of Accountancy Arusha (IAA) and Tumaini Makumira University (TUMa) libraries. Specifically the study sought to establish the demographic profile of students at IAA and TUMa in Arusha, Tanzania; examine the availability and accessibility of reproductive health information by students at the libraries of the Institute of Accountancy and Tumaini University Makumira (TUMa) in Arusha, Tanzania; find out the methods used to promote the availability and accessibility of reproductive health information at the Institute of Accountancy (IAA) and Tumaini University Makumira (TUMa) libraries in Arusha, Tanzania; and identify the challenges faced by IAA and TUMa students in accessing reproductive health information and propose suggestions for addressing the challenges encountered

The researcher considered gender, age group and education level of respondents. In this study, findings showed that the number of female respondents 69 (67%) who participated in this survey, surpassed that of male 34(23%) participants. This situation did not affect the study because the female participants participated fully in this study. On the education level of respondents who participated in the study (Table 4.2), findings showed that it comprised certificate holders 31(30.1); diplomas 27(28.2%); first degree holders 22(21.6%); master's degree 19(18.5%) holders as well as PhD holders 2(1.9%). This implies that the data collected from these respondents were worthy and trusted.

4.4.1 Discussion of finding on exciting literature

The present study found that reproductive health information resources in the academic libraries of IAA and TUMa were limited in both availability and accessibility. This empirical evidence confirms earlier observations by Mbugua and Karonjo (2018) and Mcharo et al. (2021), who reported that inadequate institutional information provision contributes to low reproductive health awareness among university students.

Similarly, the influence of ICT infrastructure and information literacy identified in this study supports the findings of Lwoga et al. (2017), who emphasized that effective access to health information requires both technological capacity and user competencies.

Furthermore, this study revealed that poor information-searching skills restricted students' utilization of reproductive health resources. This result is consistent with Mbelle et al. (2021), who demonstrated that limited information literacy reduces meaningful engagement with available health information platforms.

Although previous studies acknowledged these challenges, the present study extends existing literature by demonstrating that academic libraries in Tanzanian universities remain underutilized as formal informatics systems for reproductive health information dissemination. This contribution provides context-specific evidence that strengthens understanding of library-based reproductive health information access within higher learning institutions.

4.5 Availability and Access to Reproductive Health Information, Digital Divide Perspective

The results indicate that reproductive health information resources were neither sufficiently available nor easily accessible in the academic libraries examined. This situation can be interpreted through the Digital Divide Theory (van Dijk, 2006), which explains inequalities in information access as a consequence of uneven technological capacity and infrastructure. In the present study, inadequate ICT facilities and limited electronic resources restricted students' opportunities to obtain reproductive health information, suggesting that structural and technological gaps continue to limit equitable information access within higher learning institutions.

4.6 Information-Searching Skills and Access, Information Seeking Behavior Perspective

Findings further demonstrate that limited information-searching skills posed a significant barrier to students' access to reproductive health information. In line with the Information Seeking Behavior Theory (Katz, 1963), effective access to information depends largely on users' competencies, prior experience, and familiarity with information systems. Students who lacked adequate search skills were therefore less able to identify, retrieve, and use



relevant library resources, even in situations where such resources were available.

4.7 Awareness, Use, and Health Decisions, Health Belief Model Perspective

Viewed through the Health Belief Model (Rosenstock, 1974), insufficient access to reproductive health information may adversely affect students' awareness and perceptions of reproductive health risks. Limited information exposure can reduce perceived susceptibility and perceived benefits of preventive actions, thereby weakening motivation to seek reliable health information or related services. Consequently, enhancing access to credible reproductive health information through academic libraries has the potential to support informed decision-making and promote positive health behaviors among university students.

4.8 Informatics Perspective Integration

On the other hand, if the analysis was conducted from the informatics perspective, the implications of the findings would lie in the fact that the issue of reproductive health information availability in academic libraries depends on the intersection of information systems, technology infrastructure, and skills. The limited availability of ICT facilities and resources limited the capabilities of library information systems, and the low level of informatics literacy among the students made it difficult for them to access the desired information. The findings of this study imply the importance of addressing the issue of reproductive health information availability and access as envisaged by Amour et al. (2021) and Mcharo et al. (2021) through improving the library information system and providing informatics skills to the students.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This study examined library-based access to reproductive health information at the Institute of Accountancy Arusha (IAA) and Tumaini University Makumira (TUMa) from an informatics perspective. The findings indicate that reproductive health information resources in the academic libraries studied were limited in both availability and accessibility. Inadequate ICT infrastructure, insufficient electronic resources, and limited information-searching skills among students emerged as key barriers to effective access and use.

From an informatics standpoint, the study demonstrates that access to reproductive health information is influenced by the interaction between library information systems, digital infrastructure, and user competencies. Academic libraries therefore play a potentially significant but underutilized role in supporting students' reproductive health information needs.

5.2 Recommendations

The study recommends strengthening ICT infrastructure, expanding digital and print reproductive health collections, and integrating information literacy training into library services and academic curricula. These measures would enhance equitable access to reproductive health information and support informed decision-making among university students.

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