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Needs assessment of training midwifery, nursing, and medical students in sexual and reproductive health care for people with disabilities in Tanzania

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ABSTRACT

Background: Tanzania has a sexual and reproductive health (SRH) crisis, a particularly vulnerable population of people with disabilities (PWD), and a need for healthcare providers trained in PWD-focused SRH care. However, SRH services are limited, and the inclusion of PWD in SRH efforts is rare in Tanzania. The current study examined the feasibility and acceptability of addressing this critical gap by training future healthcare professionals in SRH for PWD.

Objective: To determine the feasibility and acceptability of a PWD-focused SRH training to be delivered to healthcare students attending Muhimbili University of Health and Allied Science (MUHAS) in Dar es Salaam, Tanzania.

Methods: A mixed methods design via a survey taken by 409 medical, nursing, and midwifery student participants was employed to determine the feasibility and acceptability of a new curriculum focused on the SRH needs of PWD. Data were assessed using descriptive statistics and reflexive content analysis.

Results: Data indicate that 83.6% and 97.6% of medical, nursing, and midwifery students believe that an SRH training centered on the needs of PWD is feasible and acceptable, respectively. Moreover, findings indicated that 50.4% of medical, nursing, and midwifery students at MUHAS receive little to no training in SRH for PWD. Participants' qualitative responses indicated that the training would improve the quality of life for PWD, address their vulnerability and healthcare neglect, and benefit society.

Conclusion: MUHAS students find a PWD-focused SRH training to be feasible, acceptable, and needed, presenting an opportunity for great impact.

1. Introduction

Sexual and reproductive health (SRH) concerns are among the most major public health concerns in the Tanzanian health system. Important SRH issues in Tanzania include HIV infection, non- HIV STIs, unintended pregnancy, unsafe abortions, and lack of access to quality SRH care.[1–5] Adult HIV prevalence in Tanzania is 4.4 % and is higher among women (5.6 %) than men (3.0 %).[1] Rates of non-HIV STIs are of concern as well; a study of pregnant adolescent girls from Mwanza, Tanzania, found that 49.4 % of the 403 participants had at least one STI,[2] and in another study of older adults in Tanzania, 17.8 % of participants had an STI in the past year.[3]

A cross-sectional survey in 2014 covering three Tanzanian districts found that 54.1 % of their participants reported their most recent pregnancy to be unintended, and 13.4 % said their most recent pregnancy was unwanted.[4] Abortion laws are restrictive in East Africa and

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illegal in Tanzania unless to save a woman's life.[5] Nevertheless, abortion is common: nationwide, there were approximately 405,000 abortions reported in 2013 – at least 36 for every 1000 women of reproductive age.[6] The absence of proper care for many of these women results in devastating outcomes. In 2013, unsafe abortions were responsible for 18 % of maternal deaths in East Africa.[7]

Accessibility to SRH services and resources is limited in East Africa,[8] particularly in rural areas. Mbeba et al., 2012 gathered narratives from adolescent girls from a rural Mtwara district.[9] While almost all their participants reported becoming sexually active between the ages of 9 and 12, they stated that their community did not have the resources necessary to discuss their SRH needs, and the services they could access lacked privacy, confidentiality, and skilled providers.

Tanzania's SRH crisis extends to people with disabilities (PWD) who have limited access to SRH education and resources to engage in healthy sexual relationships and often face adverse SRH outcomes due to their vulnerability and sexual trauma.[10–12] In Tanzanian households, 13.2 % have at least one member with a disability, and this group faces significant SRH barriers at the age where sexual health education is most important.[13] However, Tanzania has recently demonstrated a commitment to improving PWD rights by enacting national disability policies, improving disability research, and ratifying the United Nations Convention on the Rights of Persons with Disabilities.[14] Thus, there is a promise for a country-wide movement toward support for improving care for this marginalized group.

Globally, PWD are as likely to be sexually active as their peers without disabilities but are at increased risk for unintended pregnancy, STIs, and sexual violence, and their SRH care options are often inaccessible and inattentive to their experiences and desires.[15–19] While Tanzania law recognizes PWD as having equal rights to SRH services,[20] PWDs face significant challenges in accessing these services.[11,12] When seeking SRH care, PWDs in Tanzania and other sub-Saharan African countries experience financial and physical barriers, communication barriers, confidentiality concerns, and provider mistreatment.[11,21,22] Moreover, they tend to possess less SRH knowledge than the general population[12,23] and live within a culture (both globally and East African-specific) with several harmful myths about PWD.[24,25]

The literacy rate is nearly half for PWD in Tanzania compared to their non-disabled peers, and 41.7 % of PWD in Tanzania do not complete any formal education.[21] Many of them rely on their healthcare providers to cover SRH. Yet, SRH education catered to PWD on African health providers' comfort, knowledge, and skills to address the SRH needs of PWD has not been studied. Therefore, there is a critical need for healthcare workers trained in PWD-focused SRH care.

The current study aimed to assess the feasibility and acceptability of the creation and implementation of curriculum catered to healthcare workers to serve the SRH needs of PWD. An SRH training curriculum for healthcare students in Tanzania was developed and evaluated at Muhimbili University of Health and Allied Sciences (MUHAS) in Dar es Salaam, Tanzania, as part of a larger project during 2018–2022.[26–30] This curriculum was informed by a multi-step curriculum development protocol and concluded with a rigorous randomized controlled trial (RCT) to evaluate the SRH curriculum.[31] The curriculum included training on topics such as HIV/AIDS, STIs, sexual violence, early and unwanted pregnancy, sexual dysfunctions, and nonprocreative sexual behaviors. Data for the current feasibility study was collected during the 3-month follow-up of this RCT to determine the feasibility, acceptability, and need for adding a one-day PWD-focused SRH training to the overall curriculum. The short-term goal for the project is the adoption of this curriculum as a standard at MUHAS. In the long term, we hope to offer the curriculum across Tanzania and sub-Saharan Africa.

2. Methods

MUHAS, Tanzania's leading medical school, is located in Dar es Salaam, the country's largest city. Participants were 409 student volunteers (271 medical doctor students and 138 nursing/midwifery students) at MUHAS who completed online surveys in December 2021. This was part of the Training for Health Professional's 3-month evaluation follow-up study.[31] All participants were in their final two years of study. The larger survey took an average of 90-min to complete using tablets programmed with Qualtrics. Students reported demographic information, educational background, knowledge and attitudes about SRH topics, and the need for and acceptability of other target areas of training they were interested in. Due to ethical and legal considerations specific to Tanzania, the gender response options were limited to "male", "female", "other", and "Prefer not to answer". These restrictions were implemented to comply with national regulations and to protect gender-minority participants.

2.1. Measures

Participants responded to a mix of seven questions, statements, and an open-ended response option pertaining to the feasibility, acceptability, and need for developing a PWD-focused SRH curriculum for healthcare students in Tanzania. They included:

1) How interested would you be in receiving more training in reproductive and sexual health education for people with disabilities?
2) How much training have you received in reproductive and sexual health education for people with disabilities?
3) It would be acceptable for me to attend training in Reproductive and Sexual Health Education for People with Disabilities.
4) Would it be feasible to include training in reproductive and sexual health education for people with disabilities within your curriculum?
5) How would you like to receive this training?
6) How many patients, friends, and family do you know who are persons with disabilities?
7) Is there anything you'd like to add about the value or importance of training you in sexual and reproductive health for persons with disabilities? If so, please specify below: [open-ended response option]. Participants were instructed that they could answer open ended questions in Kiswahili or English, the languages of the study.

Questions for this needs assessment were written by our methodologist (BRSR) based on prior studies he has published.[32–34] Likert-style response options with a neutral midpoint were preferred to allow participants with no preference to express that option. We considered 5- and 7- point response options, preferring 5-points given that some participants might be answering using smart phones or tablets with smaller screens. To alert participants if they missed answering a question, our online survey was pre-programmed to require participants to submit a response to every screen. For ethical reasons, we added a "prefer not to answer" response to each question (to preserve participant autonomy). This needs assessment was one of three we conducted at MUHAS; the other two being a cancer care training course and one to address the sexual healthcare of patients with female genital mutilation/circumcision.[35,36] These topics were chosen by the faculty at MUHAS based on unmet needs and local priorities. All questions were vetted by the team then standardized across the three needs assessments for comparability.

2.2. Data analysis

Data on feasibility, acceptability, and need of a PWD-focused SRH curriculum were analyzed using IBM SPSS Statistics version 24.0. Frequencies and proportions of demographic information, curriculum feasibility, acceptability, and need were calculated and sorted into tables for viewability. Qualitative responses in Kiswahili were translated into English.

Qualitative data were analyzed using reflexive content analysis (RCA) procedures outlined by Nicmanis (2024) to identify semantic data categories under an essentialist framework.[37] RCA is appropriate and

effective for this dataset, as this assessment is interested in the participants' explicitly-stated surface level messages within their brief (1–2 sentence) answers to a specific question about the importance of the proposed curriculum. One coder performed inductive open coding, focused coding, and content analysis on all 401 responses. A separate coder performed open coding and focused coding on a random set of 100 responses. Focused codes were then cross-checked for consistency. If there was a difference between the coders, this was resolved by consensus building with a data auditor who was part of the study but not enmeshed in the coding process. Lastly, focused codes were refined and grouped into subcategories and categories as defined by Nicmanis (2024).[37] Subcategories captured distinct but related characteristics. For example, many participants believed that the proposed training would give them essential healthcare skills, reflected in the subcategory *improve provider competence*. Subcategories were then organized into broader categories representing shared overarching meanings; for instance, *improve provider confidence* was grouped under the category *PWD would receive better healthcare*. After categories were defined, the dataset was reread to ensure that they served as a fair and encompassing representation of the students' responses. To assure data credibility and confirmability, coders were chosen for their lived experiences in Tanzania, coders practiced reflexivity during consensus building, and qualitative results were triangulated with quantitative results, existing literature, and MUHAS curricula. Data dependability was assured by forming a research team where members audited methods they were not directly involved in, either data collection or analysis.

2.3. Ethical considerations

MUHAS Ethical Review Board (study number: DA.282/298/01.C/), the University of Minnesota Institutional Review Board (study number: 00010341), and the Tanzania National Institute of Medical Research Review Board (protocol number: NIMR/NQ/R.8a/Vol.IX/3020). Informed consent was obtained from each participant. Consent forms and data were extracted, de-identified, and kept in password-protected computer files. All participants were informed that participation was voluntary and they could withdraw anytime.

3. Results

The socio-demographic characteristics of the sample are provided in Table 1. Two-thirds of the participants were medicine students, and the remaining third were nursing or midwifery students. There were more male participants than females and most identified as single. Most participants were Christian, many were Muslim, and one was Hindu. The median age of the participants was 23 years (SD = 2.46). Current Year in Training and Gender were measured prior to the dropout of three participants, thus total participants equal 412 for those two categories. We anticipate that this sample is fairly representative of the overall student population at MUHAS because nearly all recruited students from each profession participated in the study.

Table 1
Socio-demographic characteristics of the study participants.

Variable	Frequency (n)	Proportion (%)
Discipline		
Nursing/midwifery	138	33.7
Medicine	271	66.3
Current year in training		
Penultimate	211	51.2
Final	201	48.8
Gender		
Male	276	67.0
Female	126	30.6
Other	5	1.21
Preferred not to answer	5	1.21
Relationship status		
Single	382	93.4
Cohabiting	7	1.71
Married	16	3.91
Other	3	0.73
N Not indicated	1	0.24
Religion		
Christian	348	85.1
Hindu	1	0.24
Muslim	59	14.4
Not indicated	1	0.24

3.1. Quantitative results

Findings on curriculum feasibility, acceptability, and need are stratified by student type in Table 2. Almost all participants (98.4 %) reported that they were "interested" or "very interested" in attending a PWD-focused SRH curriculum, and almost all (97.6 %) "agreed" or "strongly agreed" that it would be acceptable for them to attend the training. Most (83.6 %) thought the training would be "feasible" or "extremely feasible". Regarding need, only 10.5 % stated that they were "well educated" about PWD, and a further 8.56 % stated they had received "a lot" of training. This leaves 81.4 % of students who stated that they had received "no", "a little" or only "some" training in SRH care for PWD. When asked how they would like to receive the training, 55.2 % of participants reported they would prefer it to be a part of the sexual health seminar developed in the earlier study, 29.0 % reported that they would like to receive this the training as a standalone workshop, and 13.6 % as an online, self-directed course.

3.2. Qualitative findings

Of the 401 participants who answered the open-ended question, 239 provided codable responses. Responses were deemed codable if they included enough text to infer meaning. There were three main findings. First, there were no responses that were negative about the proposed training. Second, many responses were brief, general comments supporting the proposed training, such as "it's very important" and "I think it's good". Third, richer, more specific responses coalesced into four categories. These were: 1) PWD would receive better healthcare; 2) it would benefit society/the community at large; 3) PWD are a vulnerable/neglected population with unique needs; and 4) specific recommendations for the curriculum.

1. *PWD would receive better healthcare.* Participants thought the training would be important and valuable because PWD would subsequently receive better healthcare. This was the most common category identified in the qualitative responses. Many participants thought the training would increase provider competence and improve the health/quality of life for PWD in the nation. Some example responses under this category include one participant stating, "coming up with a pleasant and successful way in approaching the disabled people, relieving them with sexual related problems which may have an impact physically or mentally or even both." Another participant noted "[the curriculum] will remove discrimination against person [s] with disabilities, and it will increase quality of life for people with disabilities."
2. *It would benefit the community and society at large.* Participants thought the training would be important/valuable because it would benefit the community and society at large. Many participants thought that the benefits of the training would branch beyond its positive impact on PWD, emphasizing how it would improve society and the community. They indicated that it would increase general understanding and awareness of PWD and sexual health and would alleviate specific health outcomes like STIs and early pregnancy. For example, one participant noted, "Reproductive health and sexual health education will reduce the number of early pregnancies in our society." Another remarked, "The knowledge will help to reduce the

Table 2
Feasibility, acceptability, and need of a PWD-Focused SRH curriculum training, stratified by profession.

Question/Statement	Medical students		Nursing/Midwifery students		Total	
	Frequency (n)	Proportion (%)	Frequency (n)	Proportion (%)	Frequency (n)	Proportion (%)
How interested would you be in receiving more training in Reproductive and Sexual Health Education for People with Disabilities?						
Very interested	230	84.9	127	92.0	357	87.2
Interested	37	13.7	9	6.52	46	11.2
Neutral	4	1.48	1	0.72	5	1.22
Uninterested	0	0.00	0	0.00	0	0.00
Very uninterested	0	0.00	0	0.00	0	0.00
NA	0	0.00	1	0.72	1	0.24
How much training have you received in Reproductive and Sexual Health Education for People with Disabilities?						
Well-educated	17	6.27	26	18.8	43	10.5
A lot	23	8.49	12	8.70	35	8.56
Some	91	33.6	33	23.9	124	31.1
A little	55	20.3	31	22.5	86	21.0
None	85	31.4	35	25.4	120	29.3
NA	0	0.00	1	0.72	1	0.24
It would be acceptable for me to attend training in Reproductive and Sexual Health Education for People with Disabilities.						
Strongly agree	229	84.5	123	89.1	352	86.1
Agree	36	13.3	11	7.97	47	11.5
Neither agree nor disagree	6	2.21	1	0.72	7	1.71
Disagree	0	0.00	1	0.72	1	0.24
Strongly disagree	0	0.00	0	0.00	0	0.00
NA	0	0.00	2	1.45	2	0.49
How feasible would it be to include training in Reproductive and Sexual Health Education for People with Disabilities within your curriculum?						
Extremely feasible	122	45.0	83	60.1	205	50.1
Very feasible	99	36.5	38	27.5	137	33.5
Moderately feasible	42	15.5	15	10.9	57	13.9
Slightly feasible	7	2.58	1	0.72	8	1.96
Not at all feasible	1	0.37	0	0.00	1	0.24
NA	0	0.00	1	0.72	1	0.24
We think this training would take one day. How would you like to receive this training? (Check all that apply)						
As a standalone workshop.	96	29.4	45	28.0	141	29.0
As part of the sexual health seminar.	176	54.0	93	57.8	269	55.2
As an online course I study in my own time.	48	14.7	18	11.2	66	13.6
Other, please specify.	6	1.84	5	3.11	11	2.26
	0	0.00	0	0.00	0	0.00

[sexual-related] diseases in the community." A third mentioned their role as a peer educator with "[The curriculum] will help me to share knowledge to my society about how to live with these people."

3. *PWD are a vulnerable, neglected population with unique needs.* The participants commented that the training would be important and valuable because people with disabilities are a particularly vulnerable and neglected population with unique needs. These responses highlighted PWD's vulnerability to sexual abuse and violence, as well as their exclusion in the medical field in general, especially when it comes to their sexual and reproductive health. For example, one participant said, "They are among neglected and forgotten people in our community, and thus, I would love to have more training on how to help them." Another noted, "These disabled patients are quite vulnerable to unintentional pregnancy, and they receive less care in our setting." Many participants acknowledged the multiple needs within the PWD community as it relates to SRH, such as this participant, "There are a lot of risks facing people with a disability such as rape, and a lot of sexual violence just because they are disabled."
4. *Specific recommendations for the curriculum.* Many participants had suggestions for specific content for inclusion related to this SRH topic. Many participants recommended topics to be included in the training, the populations that should be trained, and how to best conduct the training. Participants thought trained groups should extend beyond students at MUHAS, such as in rural areas and for entire communities. They also thought the training should be comprehensive, and were interested in specific issues. For example, participants noted that "legal matters pertaining to sexual health should be taught" or that they were "interested to learn more about gay and homosexual patient care" within PWD. Participants also noted that "panel discussions should be included" as part of the curriculum so that students can learn from the lived experience of PWD concerning their SRH needs."

4. Discussion

The key finding of this needs assessment is that almost all healthcare students indicated that a PWD-focused SRH curriculum would be feasible, acceptable, and needed in addition to their current training. Participants had specific recommendations for the training and valued the training's importance regarding its potential to improve the quality of life for PWD, to address PWD's vulnerability and healthcare neglect, and to benefit society. Qualitative and quantitative findings are consistent with and complement each other, with a strong alignment between the participants' reported thoughts on feasibility and acceptability, and their expectations of the curriculum's positive impact on the community and the quality of healthcare that PWD would receive. Similarly, the students' quantitative reports of high interest and little training in PWD-focused SRH care may explain their enthusiasm towards providing advice about curriculum topics.

To the best of our knowledge and review, this study is the first published needs assessment of healthcare students about a sexual health curriculum focused on PWD in East Africa. This needs assessment has the potential to guide future studies that aim to develop PWD-focused SRH curriculum in East Africa and beyond. We highlight that our findings in healthcare students are consistent with studies of PWD in Sub-Saharan Africa. For example, narratives from the Mesiäislehto et al. (2021) study in Tanzania and the Burke et al. (2017) study in Senegal reveal the mistreatment, communication barriers, and confidentiality concerns PWD experience when trying to access SRH services.

There were two notable findings in this needs assessment. Faculty review of the training curriculum for health students confirmed that

currently neither medical nor nursing/midwifery students receive any training in the SRH care of PWD. Yet, 10.6 % stated that they were "well educated" about PWD, and a further 8.6 % stated they had received "a lot" of training. It could be that these students feel well trained either because friends and family are PWD or they received real life training during their clinical rotations. The finding may also reflect a cultural bias against PWD such that some students do not want to be trained. A second cultural explanation is that many students may be reluctant to criticize their professional training, especially while still a student.

The second notable finding was the low endorsement of online training as a preferred option. We find this consistent with electric and internet challenges that can occur in Dar es Salaam, and with most students using phones as their primary or sole way of accessing the Internet. The challenging transition to online learning during the COVID-19 pandemic at the University of Dar es Salaam further highlights how limited internet access among students in the area may help explain this low endorsement.[38] We caution that this finding may be quite different for health students in other settings, and likely reflects our students' low exposure to and use of online training. Simply put, in person training is the most reliable and accessible form of training in Dar es Salaam, and our results are consistent with students preferring in person options.

This study has several limitations. The participants were healthcare students in their final or prefinal years of study who volunteered to participate in a four-day sexual health training course and evaluation during their long break. Results may not generalize to all medical, nursing, and midwifery students at MUHAS or more broadly to students at other universities. Students who volunteered may have been more enthusiastic about SRH than the general student population, potentially introducing selection bias. Additionally, the survey was part of the 3-month follow-up of a larger RCT evaluating a comprehensive SRH training curriculum for healthcare students. This may have altered some participants' perceptions in favor of the SRH curriculum in general and toward the SRH curriculum catered to PWD in Tanzania.

5. Conclusion

The study's findings on feasibility, acceptability, need, and interest support the development of SRH training for healthcare students that prioritizes the needs of PWD. Our team is currently developing a one-day training which will then be evaluated rigorously in an RCT, which will be flexibly designed based on student responses to be capable of acting as both a standalone workshop or as an integrated piece of the sexual health curriculum. This training has great potential to educate students in the SRH needs of PWD, to help students confront negative attitudes (e.g. discomfort and cultural bias against this population), and to improve their clinic skills to address PWD patients' SRH concerns in a culturally competent manner. Our hope is that educating healthcare students will ultimately improve PWD's access to, navigation of, and treatment within SRH services, thereby improving their quality of life. It is crucial to create a healthcare provider culture within SRH services that is accepting of, knowledgeable in, and accommodates PWD's unique SRH concerns. Our results show that a PWD-focused SRH curriculum for healthcare students is highly feasible, acceptable, and needed.

CRediT authorship contribution statement

Kristen P. Mark: Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Stella E. Mushy:** Writing – review & editing, Supervision, Resources, Project administration, Investigation. **Marguerite Puchner-Hardman:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation. **Lucy R. Mgopa:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Data curation. **Gift G. Lukumay:** Writing – review & editing, Project administration, Investigation, Data curation. **B.R. Simon Rosser:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization. **Agnes F. Massawe:** Writing – review & editing, Investigation, Data curation. **Dorkasi L. Mwakawanga:** Writing – review & editing, Investigation, Data curation. **Victor Z. Chikwala:** Writing – review & editing, Validation. **Emmanuel I. Sumari:** Writing – review & editing, Validation. **Ally A. Lyimo:** Writing – review & editing, Validation. **Gudrun Kilian:** Writing – review & editing, Supervision, Project administration, Investigation, Data curation. **Maria E. Trent:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Michael W. Ross:** Writing – review & editing, Supervision, Funding acquisition, Conceptualization. **Charlotta Löfgren:** Writing – review & editing, Validation. **Jennifer J. Connor:** Writing – review & editing, Validation, Methodology. **Rashid H. Mfinanga:** Writing – review & editing, Formal analysis. **Dickson A. Mkoka:** Writing – review & editing, Supervision, Project administration, Investigation, Funding acquisition, Data curation.

Presentations

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Data availability

Qualitative data could not be shared due to the risk of compromising participant confidentiality. The quantitative dataset analyzed in this study are available in the Data Repository for the [masked for peer review] (DOI: https://doi.org/10.13020/S565-YX03).[39]

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Declaration of competing interest

None.

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