








Research Article

Level of Satisfaction with the Learning Environment and Transition to Employment among Health Professions Graduates at a Ugandan Medical School

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Background. To ensure training quality, medical training institutions must provide an adequate learning environment and prepare trainees for work but there is research paucity on the subject. We determined the level of satisfaction with the learning environment and transition to employment among graduates of a Ugandan medical school. **Materials and Methods.** We conducted an online cross-sectional survey among graduates of Mbarara University of Science and Technology medical school in Uganda, graduating between 1995 and 2020 between March and November 2022. We used Likert scales to measure satisfaction with the learning environment and assessed relevance of the training in transition to the job market. Participants were reached by snowballing and data were analyzed using R-Studio. **Results.** A total of 361 graduates responded to the survey. Majority were male (72%) and reported having formal employment (94%). Most (57.4%) of the graduates were satisfied with the quality of teaching at medical school. In contrast, fewer graduates (31.2%) were satisfied with the state of the infrastructure at the university and the opportunities available to influence medical school policy such as inclusion on key medical school governance committees. Majority (85%) utilized the knowledge and skills acquired at university in their current job and 75% were satisfied with their ability to perform well under pressure. However, only 37% and 25.4% reported that the medical school supported them in internship and employment search. **Conclusion.** Students were satisfied with the teaching quality at the university and their ability to perform well at their jobs. However, gaps exist in infrastructure and preparation for transition to jobs. Hence, a need to improve infrastructure.

1. Background

Most countries in resource-limited settings have experienced significant population growth in the past three decades leading to a wide health professional-to-population ratio [1]. Three decades ago in Uganda, there were only two medical schools graduating about 180 medical doctors annually yet currently, there are nine medical schools in the country, graduating more than 800 doctors per year [2]. In this period, many new degree programs in the health professions have also been created in nursing, pharmacy, laboratory sciences, and physiotherapy [2]. A similar trend is observable across many other countries in resource-limited settings. To make it possible, these countries have significantly invested

in expanding the number of institutions that train health professionals.

The increase in medical schools and graduates calls for advocacy for infrastructure and optimal learning environment that truly support professional medical development across one's career are essential to realizing the full potential of medical training [3]. In Uganda, the National Council of Higher Education (NCHE) has set minimum standards on what institutions need to put in place; however, there is limited data on how the trainees consider the learning environment adequate to meet their training needs [4]. Such data can be used not only by governments to set standards but also by institutions to change how they deliver their programs within the established standards [5].

In addition to an enabling environment, training institutions should also prepare the health professional trainees to transition from school to the work environment. One approach to achieve this is to expose trainees to opportunities available for internship and employment in the job market. Institutions can also deliberately inform themselves about the skills employers need vis-a-vis those being availed to the trainees. To mitigate gaps between skills demand and supply, skills anticipation has been proposed. Skills anticipation is a strategic and systematic process through which labor market actors (such as universities) identify current gaps in skills training and prepare to meet future skills and needs [6]. One method that could inform skills anticipation is tracer studies which are designed to track graduates and collect data on their satisfaction with the training programs. However, the adoption of tracer studies is yet to be well embraced in sub-Saharan Africa as many universities have not conducted them. These studies are feasible and have potential to improve the education system [7].

In higher institutions of education in sub-Saharan Africa and Uganda, the limited data available show that there may be a mismatch between growth in the number of health professions trainees and the available facilities or resources for training [8]. The present training facilities are undermined by inadequate infrastructure, supplies, and overcrowding of students in teaching hospitals and lecture rooms [9, 10]. Data also show that there has been the establishment of duplicate courses by some institutions, affecting the skilling in the job market [11]. A survey in the USA shows that employers report challenges in filling vacancies due to a lack of appropriately skilled applicants [12, 13], but data are lacking in resource-limited settings. Gathering feedback from graduates on their experiences, as well as determining if the skills and competencies acquired from university are relevant to their current employment, is essential for institutional improvement and tailoring university education to the employers' requirements [14, 15, 16]. Therefore, the main objective of this study was to determine the level of satisfaction of health professions graduates with their learning environment, and their transition to the job market.

2. Materials and Methods

The section is stratified under the following subsections: study design, study setting, participants and study size, variables, statistical methods, and quantitative variables.

2.1. Study Design. We conducted an online cross-sectional survey among alumni of Mbarara University of Science and Technology (MUST) Medical School between February 2022 and December 2022.

2.2. Study Setting. MUST is a public university in Southwestern Uganda and is the second oldest public university in Uganda, established in 1989. It is located in Mbarara city, approximately 260 km from Uganda's capital city, Kampala. The university has six faculties: Faculty of Medicine (FoM), Computing and Informatics, Science, Applied Science and

Technology, Interdisciplinary Studies, and the Faculty of Business and Management Sciences.

The Faculty of Medicine (FoM) comprises 24 departments that offer six undergraduate programs of Medicine and Surgery, Nursing, Medical Laboratory Science, Pharmacy, Physiotherapy, and Pharmaceutical Sciences. The FoM offers 13 Master's degree programs and selected doctorate specialties. Annually, the Faculty of Medicine graduates approximately 90 doctors, 40 pharmacists, 30 medical lab scientists, 40 nurses, 30 pharmaceutical scientists, and 20 physiotherapists, collectively referred to as health professionals. Since 1995, the FOM has graduated about 10,000 health professionals.

The program in pharmaceutical sciences runs for 3–4 years for undergraduate degrees in Physiotherapy, Nursing, Pharmacy, and Medical Laboratory Sciences, and 5 years for Medicine and Surgery. Undergraduate students offering medicine and surgery, pharmacy, nursing, and physiotherapy spend part of their study time in a preclinical setting and the other in a clinical setting at the Mbarara Regional Referral Hospital (MRRH), which is the primary teaching hospital for the university.

2.3. Participants and Study Size. All alumni of the FOM at MUST at the undergraduate level between 1995 and 2020 were eligible to take part in the study. The pioneer students of MUST graduated in 1995. We excluded graduates after 2020 to ensure only those graduates with at least 1 year's experience in the working environment were eligible to participate. A sample size of 385 participants was calculated using the Kish–Leslie formula, assuming that 50% of the alumni were satisfied with their learning environment. Electronic emails with a link to an online data collection tool were sent out to 1,000 alumni, whose emails were available at the Academic Registrar's office, inviting them to take part in the study. The first page of the data collection tool required participants to confirm that they had studied under the FOM at MUST and to provide electronic consent to take part in the study.

Following approval from the research ethics committee and from the university, contact information of alumni were obtained from the office of the academic registrar and the FOM. Alumni were then contacted through their emails and social media platforms such as class WhatsApp groups. We sent a link to an online data collection tool hosted by Kobo Toolbox [17]. The first page of the data collection tool included a summary of the background and significance of the study. We used a snowball technique to reach more eligible participants.

2.4. Variables. The study tool collected information on socio-demographic characteristics such as age, gender, tribe, religion, marital status, year of study, years since graduation, level of education of parents, undergraduate course, and any additional training (postgraduate degree or certificate). We also collected data on current employment status (unemployed or employed, formal employment or self-employment, private or public sector employment, country of employment, and the number of jobs since graduation). We used Likert scales to assess factors related to student learning experiences, level of satisfaction with learning environment as well as transition

to the job market. The Likert scales used in this study were adopted from the guide on conducting tracer studies by Schomburg [15].

The Likert scales comprised questions on reasons for choosing to study at MUST FOM (scale of answers from 1 being “not important” and 5 as “very important”), rating of different training conditions and provisions under MUST FOM (1 being “very bad” and 5 as “very good”), skills and competencies acquired by the alumni by graduation (scale of answers from 1 = “not at all” to 5 = “to a very high extent”), importance of these acquired skills and competencies (scale of answers from 1 = “not at all” to 5 = “to a very high extent”), usefulness of different aspects of studies (scale of answers from 1 = “not useful at all” and 5 as “very useful”), likelihood to choose the same field of study or university by the alumni, importance of different occupation aspects and current job satisfaction. Finally, we also assessed alumni mobility after graduation, including travels and employment abroad, work-related placements, and further training undertaken.

2.5. Statistical Methods and Quantitative Variables. Data from Kobo Toolbox were extracted into Microsoft Excel 2016 spreadsheet, cleaned and coded. The data were exported to R-Studio for further analysis using the R programming language. All categorical variables were summarized as frequencies and percentages, whereas numerical variables were summarized as mean (standard deviation) or median (interquartile range) for uniform and nonuniform variables, respectively. The questions on the Likert scale were analyzed as interval data, with the mean score and the percentage of respondents in agreement with the item (a score of 4 or 5 on the Likert scale) used to describe the scale. Items with a higher mean score and a higher percentage of respondents in agreement with a specific item were interpreted to represent a high level of agreement among the participants.

3. Results

3.1. Participants and Descriptive Data. We recruited 361 alumni of MUST from a response rate of 36% of all the alumni reached. The majority of the participants were male (93%) and had done a course in Bachelor of Medicine and Bachelor of Surgery (45%). Majority of the alumni are currently employed (94.2%) with most of these employed by the government or public institutions (26.6%) and the details are shown in Table 1.

3.2. Main Results. Rating of training conditions and provisions at the medical school: Among the training conditions, the quality of teaching by lecturers was rated the highest by most study participants with 76.8% rating them as either good or very good. However, alumni expressed low satisfaction with the opportunities available to influence policies (20%) and the availability of student recreational facilities on campus (20%) (Table 2).

3.2.1. Rating of Items Related to Employment and Work in the Course. Most MUST FOM alumni (75%) reported that they were satisfied with their ability to perform well under pressure at work. However, fewer participants reported that the

TABLE 1: Sociodemographic characteristics of study participants.

Characteristic	N = 361
Nationality	
Ugandan	357 (99%)
Rwandan	2 (0.6%)
Kenyan	2 (0.6%)
Residence at time of study	
In Uganda	335 (93%)
Outside Uganda	26 (7%)
Gender	
Male	261 (72%)
Prefer not to respond	1 (0.3%)
Transgender	1 (0.3%)
Female	98 (27%)
Year of completion	
Before 2015	79 (22%)
After 2015	282 (78%)
Source of tuition	
Government sponsorship	126 (35%)
Self/parents	195 (54%)
Other scholarships	40 (11%)
Bachelor's degree program	
Medical laboratory sciences	91 (25%)
Medicine and surgery	161 (45%)
Pharmaceutical sciences	10 (2.8%)
Pharmacy	35 (9.7%)
Nursing science	51 (14%)
Physiotherapy	13 (3.6%)
Form of employment 6 months after graduation	
Formal employment	123 (34.07)
Self-employment	27 (7.48)
Part-time employment	38 (10.53)
Internship	225 (62.33)
Current type of employer	
International and diplomatic	9 (2.49)
NGO	32 (8.86)
Parastatal	3 (0.83)
Private	65 (18.01)
Public/government	96 (26.59)
Self-employed	8 (2.22)
Missing values	148 (41)
Embarked on further studies since graduation	
No	154 (42)
Yes	186 (52)
Yes, but on another course of study completely different from my undergraduate area of focus	21 (6)
Current employment status	
No	21 (5.82)
Yes	340 (94.18)

NGO, nongovernmental organization.

faculty supported them to seek internship (37%) or job/employment search (25.4%) and the results are shown in Table 3.

TABLE 2: General rating of participants' satisfaction with the training conditions and provisions at MUST Faculty of Medicine.

Rating of training conditions	Percentage reporting good or very good	Mean Likert score (5*)
Teaching quality of lecturers	76.82	4.02
Teaching and grading system	67.32	3.84
Internship program	59.44	3.66
Quality of classroom teaching, such as lecture rooms, tutorial rooms	57.38	3.65
Opportunity for consultation with teaching staff	54.44	3.61
Availability of technical equipment	47.63	3.40
Supply of teaching materials	44.44	3.37
Quality of technical equipment	42.46	3.31
Supply of learning materials (books, Internet access)	41.50	3.23
Quality of buildings, such as basic science laboratories	31.20	3.09
Student recreational facilities on campus	20.28	2.77
Chances for students to have an influence on medical school policies	20.06	2.62

*Higher scores indicate more satisfaction.

TABLE 3: General rating of employment and work in relation to the suitability of the learning environment at MUST Faculty of Medicine.

Items related to work performance	Percentage reporting good or very good	Mean Likert score (5*)
Ability to perform well under pressure	75.0	3.97
Subject matter and teaching contents are up to date with regard to practical requirements	73.54	3.96
Mandatory internships	70.17	3.93
Relationship between theory and practice	69.64	3.86
Practical experience of teaching staff	69.55	3.89
Practice-oriented teaching content	69.19	3.84
Preparation for work	63.28	3.74
Offers for acquisition of key competencies	61.69	3.7
Support with internship search	37.08	2.95
Support for employment or job search	25.42	2.58

*Higher scores indicate more satisfaction.

With regard to graduates' transition to employment, we assessed the following aspects which are presented in Tables 4, 5, and 6: General rating of acquired skills and competences, importance of acquired skills and competences, overall usefulness of studies offered at MUST in relation to employment and importance of different occupational aspects.

3.2.2. Rating of Different Acquired Skills and Competencies. Most respondents reported that they could work efficiently toward a goal and perform well under pressure (86%). Fewer respondents reported that they acquired skills and competencies for the economic development of the country (71%) and the results are shown in Table 4.

3.2.3. Importance of Acquired Skills and Competences. Most of the study participants reported that their professional position is appropriate to their undergraduate field of study (87%) and that the knowledge and skills acquired are utilized during their current job (85%) and the results are shown in Table 5.

3.2.4. Rating of the Overall Usefulness of Studies in Different Aspects. Participants reported that their studies under MUST FOM were useful in fulfilling their current professional tasks

(87.5%) and for future professional development careers (86.15%). However, fewer felt that their studies were useful in supporting the country's economic development, as shown in Table 6.

3.2.5. Rating of Different Occupational Aspects. Alumni from the MUST FOM reported that possibilities for further professional advancement (88.92%) and interesting work tasks (88.64%) were the most important aspect of an occupation. A challenging job was the least important occupational aspect (71.47%), as shown in Table 7.

4. Discussion

The purpose of this study was to determine the satisfaction with the learning experiences of graduates of a medical training institution in a resource-limited setting as well as examine their transition to the job market. Overall, the quality of teaching by lecturers and the grading system was rated highly by graduates of the medical school. Out of the 361 graduates who responded to the survey, more than half were satisfied with the quality of teaching at medical school. However, only about one-third were satisfied with the state of the infrastructure at the university. On a positive note, more than three

TABLE 4: General rating of acquired skills and competences during training.

Skills and competencies	Percentage reporting good or very good	Mean Likert scores (5*)
Ability to work efficiently toward a goal	86.43	4.27
Ability to perform well under pressure	86.43	4.32
Ability to organize my work processes efficiently	85.32	4.25
Ability to adapt to changing conditions	84.17	4.26
Analytical thinking	80.61	4.12
Willingness to question my and others' ideas	80.61	4.15
Mastery of my field subject-specific knowledge	77.84	4.02
Ability to mobilize the capacities of others	77.29	4.01
Ability to assert my authority	71.19	3.93
For the economic development of your country	63.16	3.71

*Higher scores indicate higher rating of item.

TABLE 5: Importance of acquired skills and competencies.

Items on acquired skills and competencies	Percentage reporting good or very good	Mean Likert scores (5*)
To what extent is your professional position appropriate to your course of study?	86.98	4.40
To what extent are the knowledge and skills you acquired during study utilized in your current job?	84.76	4.32

*Higher scores indicate more satisfaction.

TABLE 6: The overall usefulness of training offered by the medical school.

Usefulness of training	Percentage reporting good or very good	Mean Likert scores (5*)
For fulfilling your present professional tasks	87.53	4.39
For your future professional career development	86.15	4.41
For finding an adequate job after finishing your studies	83.38	4.31
For the development of your personality	77.84	4.14
For the economic development of your country	75.35	4.11

*Higher scores indicate more satisfaction.

TABLE 7: Importance of different occupational aspects.

Occupational aspects	Percentage reporting good or very good	Mean Likert scores (5*)
Possibilities for further professional advancement	88.92	4.53
Interesting work tasks	88.64	4.33
Possibilities to do something useful for the general public	88.64	4.47
Good career advancement prospects	87.81	4.43
Good conditions for managing both work-related and family-related issues	85.60	4.34
Sufficient time for activities	80.61	4.19
Possibility of social influence	77.29	4.11
High salary	75.62	4.16
To have a challenging job	71.47	3.94

*Higher scores indicate more satisfaction.

quarters utilized the knowledge and skills acquired at university in their current job or were satisfied with their ability to perform well under pressure.

Our findings of a high rating on quality of teaching are in contrast to those of a tracer study done among medical graduates in Tanzania in which the graduates rated teaching poorly [18]. The findings in the Tanzanian study were attributed to the use of a knowledge-based curriculum, shortage of faculty, and a poor teacher–student relationship. Previously, the high rating of teachers by students in medical school has been attributed to the ability to properly organize and summarize lectures, the ability to incorporate active communication, and the use of clinical cases during teaching to ensure understanding by students [19].

The high rating of teaching at Mbarara University Medical School could be attributed to multiple factors. First, the medical school usually retains the best-performing medical students with special qualifications, competences, and skills as teaching assistants before actively taking up a faculty role after training in health education [20]. It is possible that a number of staff in this category have a stronger understanding of the subject matter, translating into high-quality information transfer to students, and high-quality teaching. Additionally, faculty members who directly participate in teaching also undergo annual pedagogical training sessions to improve their capacity for research and ensure current knowledge is incorporated into their teaching [21]. To ensure further improvement in the education quality, there are plans to establish a continuous medical education program for faculty members to ensure that they have up-to-date information. This continuous quality improvement (CQI) has been reported to be associated with significant improvement in student learning environments and medical education [22].

Another reason that might explain high rating of the learning environment is that the medical school has established external partnerships and collaborations [23] that routinely support training, teaching, and research, further exposing the students to high-quality learning material. Such partnerships have previously been described as essential to improving the learning experience for students in medical schools in developing countries [24, 25]. To further support our findings and identify any other gaps in the teaching process, qualitative insight into different aspects of teaching and learning with graduates would be helpful.

Pertaining to the overall usefulness of their studies, most MUST health professions graduates (87%) reported that they acquired the competencies and skills to fulfill their present professional tasks and future career development. We hypothesize that this could result from the current mode of information delivery at the Faculty of Medicine, including a mandatory community-based education (CBE) program for all medical students. As part of CBE, all medical students are periodically placed in the communities to explore and understand the community challenges and identify solutions to them, enhancing their basic professional skills. Community-based education programs (CBE) have been deployed in other medical schools across Africa [26] and the globe [27, 28]. The

CBE program is essential in supporting medical students to develop basic professional skills such as leadership, teamwork, and collaboration and allows students to interact with diverse patient populations, providing an opportunity for immersive and contextual learning [29, 30]. This further enhances the ability of graduates to fit in different education environments, evidenced by the majority of MUST graduates agreeably reporting that they were in a position to work under pressure and easily fit into different working environments. Further research should explore the influence of CBE on the competencies and skills obtained by medical students.

The university's infrastructure, including the lecture rooms, laboratories, and student recreational centers, was rated poorly in regard to their contribution to their experiences during school. The deficiency and need for strengthening of infrastructure in African medical schools has previously been emphasized [31]. With supporting evidence highlighting a significant impact of the school structural design on the learning process [32], prioritization by stakeholders to facilitate the establishment of a quality learning environment and other university-level infrastructure is highly recommended to ensure good optimization of the education process. Faculty can eventually exploit high-quality learning structures and spaces to ensure practical and impactful learning by their students. Additionally, addressing infrastructural challenges will significantly improve the number of health professions graduates, thereby addressing the current shortage in human resource for health in the country.

The opportunity for medical students to influence medical school policy was also poorly rated. The opportunities for influencing medical school policies included inclusion on key governance committees of the medical school and the university such as welfare, student affairs committees. Regulated incorporation of students in the policy-making process as a form of ensuring student centeredness has to be prospectively realized. This enables students to share their experiences in the learning process and support the formulation of policies tailored to prevailing conditions. Previous literature has stressed the importance of student participation in governance, citing benefits such as enhanced planning, career enhancement (especially for students interested in health policy), and provision of an inclusive and equitable learning experience for all students, resulting in improved learning outcomes for students [33, 34]. The contribution of student participation especially in formulating guidelines related to academics and essential campus services should therefore be prioritized despite challenges that might be faced [35]. This may improve the academic quality of life and overall development in the form of skills at their workplace [34].

Graduates also reported that the FOM needs to support their search for employment opportunities. The establishment of alumni networks to partly address this challenge would provide long-term value to members by enabling them to stay in contact and share skills and connections to different job opportunities through organizing networking events. Alumni can therefore receive career information or job search advice from other alumni. Also, by helping the

institution become bigger through fundraising and donations [36], and marketing it via social and professional networks, they also benefit by enhancing their own degree of qualification and status [37] especially during job searching.

Possibilities for further professional advancement were reported to be an essential aspect of occupation in terms of work orientation. Studies have previously reported the tendency of employers to fill capability deficits in their employee's performance by facilitating further training not limited to work-based learning [38] but also offering tuition assistance and study leaves [39] for continuing education courses or degrees. It has been realized that the young generation of employees is more likely to be retained in organizations that allow them to be engaged in their career development plan, as this directly contributes to their job satisfaction. This presents an opportunity for current healthcare professional employers and policymakers to update current employment policies to ensure better job satisfaction.

Our study has important strengths. It is among the few that provide important insights for the improvement of the learning environment within health professions programs in Uganda and elsewhere with similar settings. The study recommends increased attention to infrastructural development, more involvement of students and alumni in decision-making processes, and revision of university internship policies to enhance support for students in that area. These recommendations are intended to better prepare future graduates for the demands of their professional work environments.

5. Limitations

Although this study is among the first in the country to offer valuable information on the training and preparation of health professions students for the workforce, it is not without limitations. A response rate of less than 40% introduces the possibility of nonresponse bias, particularly if nonparticipation is related to satisfaction with training. Moreover, the limited scope of our study, which included only 1,000 alumni whose email addresses were available from the academic registrar's office, raises concerns regarding the representativeness of the sample. Furthermore, the use of Likert scales in this study was based on guidelines from Schomburg [40] for conducting tracer studies and had not been validated previously in our context, potentially impacting the generalizability of our findings.

6. Conclusion

The results showed that the quality of teaching by lecturers was highly rated, which can be attributed to the school's policies and partnerships with other institutions. Most graduates reported acquiring the competencies and skills necessary for their current professional tasks and future career development. However, areas for improvement were also identified, such as the university's infrastructure and opportunities for students to influence medical school policy. The need to incorporate students in key governance committees in the medical school was suggested as pivotal in their contribution to influencing medical school policies. There is a

need for the institution to continue optimizing the skills training since the skills obtained are relevant to their professional tasks. The institution also needs to actively advocate and allocate resources for improved infrastructure to facilitate conducive learning and instruction. The specific areas of needed support highlighted included the need to have formal mentor-mentee engagements and periodical trainings on soft skills while still in the medical school. Further research on the impact of infrastructure provision on the learning of healthcare professional students in Uganda is recommended. I recommend that a longitudinal study is carried out to provide deeper insights into the evolution of relevance of training and job satisfaction levels.

7. What Is Known about This Topic

- (1) Tracer studies are feasible and have the potential to improve the education system.
- (2) Skills anticipation is a strategic and systematic process through which labor market actors identify current gaps in skills training and prepare to meet future skills and needs.
- (3) Tracer studies designed to track graduates and collect data on their satisfaction with the training programs can be used to inform skills anticipation.

8. What This Study Adds

The study adds to the body of knowledge regarding teaching quality, satisfaction with the teaching quality, and utilization of the skills acquired at the university. The following four areas emanate from the study:

- (1) The quality of teaching by lecturers and the grading system was rated highly by alumni of the medical school.
- (2) More than half of the respondents were satisfied with the quality of teaching at medical school.
- (3) More than three-quarters of alumni utilized the knowledge and skills acquired at university in their current jobs or were satisfied with their ability to perform well under pressure.
- (4) Fewer alumni were satisfied with the state of the infrastructure at the university and the opportunities available to influence medical school policy.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Ethical Approval

Ethical approval of this study was sought from the Mbarara University of Science and Technology (MUST) Research Ethics Committee.

Consent

Informed consent with details on the study's purpose, the participant's rights, and the benefits of participation were added to the first page of the online questionnaire. All study participants were required to provide approval before filling in the rest of the questionnaire. No personal identifiers were collected during the course of this study.

Disclosure

A preprint has previously been published [41] in Research Square (<https://www.researchsquare.com/article/rs-3054697/v1>). This is because when I first submitted the manuscript to *Pan African Medical Journal (PAMJ)*, the preprint was posted on Research Square. The manuscript took about 11 months without being reviewed and Joseph Ngonzi requested to withdraw the manuscript and submit it to another journal. However, the preprint still exists in Research Square. The sponsors had no role in study design, data collection, analysis or interpretation, writing the report, or decision to submit the article for publication.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

Joseph Ngonzi, Timothy Mwanje Kintu, and Raymond Bernard Kihumuro contributed to conceptualization. Timothy Mwanje Kintu and David Jolly Muganzi contributed to data curation and formal analysis. Joseph Ngonzi contributed to funding. Timothy Mwanje Kintu, David Jolly Muganzi, Tonny Kyagambiddwa, Raymond Bernard Kihumuro, Lorna Atimango, and Francis Bajunirwe contributed to writing of the original draft. Joseph Ngonzi and Francis Bajunirwe contributed to reviewing and editing. All the authors have read and agreed to the final manuscript. Joseph Ngonzi and Timothy Mwanje Kintu contributed equally to this work.

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