Knowledge, Attitudes, and Practices Regarding Monkeypox (MPOX) Prevention and Control among Njala University Students in Sierra Leone

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ABSTRACT

Monkeypox (Mpox), a re-emerging zoonotic disease, has become a global public health concern, with the World Health Organization (WHO) declaring it a Public Health Emergency of International Concern (PHEIC) in 2022. In Sierra Leone, the emergence of Mpox presents a challenge to the healthcare system, especially in a post-COVID-19 context. This study assessed the knowledge, attitudes, and practices (KAP) regarding Mpox among undergraduate (UG) and postgraduate (PG) students at Njala University. Using a cross-sectional comparative design, data were collected from 600 students (400 UG and 200 PG) through a structured questionnaire. Results revealed that PG students' demonstrated significantly higher knowledge and more positive attitudes towards Mpox compared to UG students. However, preventive practices such as mask-wearing and hand hygiene were suboptimal in both groups. The study identified a critical gap in health awareness among undergraduates and highlighted the need for targeted health education, curriculum integration, behaviour change strategies, and vaccination awareness campaigns. These findings underscore the importance of equipping university students' as future leaders and professionals with the knowledge and tools necessary to curb the spread of infectious diseases like Mpox within and beyond academic environments.

Keywords: Mpox, knowledge, attitudes, practices, public health.

INTRODUCTION

Mpox, a re-emerging zoonotic viral disease, has recently emerged as a global public health threat because of its rapid cross-border spread. Mpox virus, a species of Orthopoxvirus related to smallpox, was historically localized within Central and West Africa where outbreaks were often linked to contact with rodents and primates (Bunge et al., 2022). However, the sudden spate of cases in non-endemic regions such as Europe, North America, and Asia led the World Health Organization (WHO) in July 2022 to declare Mpox a Public Health Emergency of International Concern (WHO, 2022). The clinical presentation of Mpox involves fever, lymphadenopathy, headache, myalgia, fatigue, and a vesiculo-pustular rash that generally starts on the face before spreading across the body (CDC, 2023). Transmission is carried by direct contact with sores, body fluids, respiratory droplets, or objects contaminated with the disease. In settings where people live and work closely together, the disease becomes particularly concerning. Mpox has emerged in Sierra Leone amid ongoing recovery from the COVID-19 pandemic. This exposure revealed weaknesses in public health preparedness, communication, and behavioural compliance and therefore the need for a comprehensive response to public health crisis-like situations (Kanu et al., 2021). Students in universities are a key group in disease prevention; their knowledge, attitudes, and practices (KAP) shape health behaviour both at universities as well as in the wider community at large (Yahia et al., 2022). Because of their more active networks, mobility, and impact they could act as agents of risk and prevention. Njala University, an institution belonging to the larger higher education sector in Sierra Leone, has a varied student body with undergraduate (UG) as well as postgraduate (PG) student presence. These groups might also vary in terms of age, health literacy, and previous exposure to health information. As an example, postgraduate students are more academically qualified and may exhibit higher risk perceptions than undergraduates (Adegboye et al., 2023). We need to be aware of these differences to inform the development of

public health interventions for different student populations. Despite the increasing worldwide significance of Mpox, little is known about KAP of students toward the disease in Sierra Leone. Evidence from other African nations e.g., Nigeria, Ghana has revealed misconceptions, inconsistent preventive practices, and varying levels of awareness among students (Ajisegiri et al., 2023; Osei et al., 2023). Given Sierra Leone's limited health infrastructure and dependence upon community-based interventions, assessing students' KAP is key for informing context-specific interventions for Mpox prevention and control. This study thus seeks to measure student knowledge, attitudes, and practices towards Mpox in Njala University students aged undergraduate to postgraduate. More precisely, it will: (1) assess students' knowledge of Mpox causes, symptoms, transmission, and prevention, (2) investigate students' attitudes about the people and the disease, (3) examine preventive and control techniques used by students, and (4) suggest feasible on-campus interventions for Mpox awareness and crisis response. The results will reduce the knowledge gap particularly critical in Sierra Leone by providing evidence that is necessary for targeted health education. Through identifying differences in KAP between student populations, the study will assist policymakers, educators, and university officials in creating contextually congruent interventions to improve outbreak readiness, surveillance, and reduce transmission of the virus in academic settings and others.

METHODS

Study Design and Setting

This study employed a cross-sectional, comparative research design aimed at assessing and comparing the knowledge, attitudes, and practices (KAP) regarding Mpox among undergraduate (UG) and postgraduate (PG) students at Njala University. The cross-sectional nature of the study allowed for the collection of data at a single point in time, enabling the researchers to identify and analyse variations in KAP levels between the two student groups. A comparative approach was essential to highlight specific differences in awareness and preventive behaviours, which can inform targeted health education interventions. The study was conducted over a two-month period between March and April 2025. Njala University, located primarily in Bo District with additional campuses in other regions, provide a diverse academic environment with students from various Schools including health sciences, education, agriculture, and social sciences and Law. Participants were selected from both undergraduate and postgraduate programs to ensure comprehensive representation across disciplines and academic levels.

The study population comprised students aged 18 years and above enrolled in undergraduate (UG) and postgraduate (PG) programs at Njala University during the 2024/2025 academic year. Eligibility criteria included active enrolment and willingness to participate in the study. Students who were absent during data collection or who declined to give informed consent were excluded. A total of 600 students were successfully recruited using stratified sampling to ensure adequate representation of both UG and PG cohorts. The sample consisted of 400 undergraduate students and 200 postgraduate students, drawn proportionally from various schools across the university campuses.

Sample Procedure

A stratified random sampling technique was employed to ensure a balanced and representative sample of both undergraduate and postgraduate students at Njala University. The student population was first stratified by academic level, with proportionate allocation used to select 400 undergraduates and 200 postgraduates, reflecting the actual student distribution. Within each group, schools and departments were randomly selected using a simple random sampling method. Student lists were then obtained from departmental heads, and participants were randomly chosen using a computer-generated number table.

Data Collection

A structured questionnaire was used to assess knowledge, attitudes, and practices regarding Mpox. The questionnaire consisted of three sections: (1) knowledge (e.g., transmission, symptoms, and prevention); (2) attitudes (e.g., perceived severity, perceived susceptibility, and willingness to get vaccinated); and (3) practices

(e.g., hygiene practices and preventive measures). The questionnaire was pre-tested with 30 students from a non-participating institution to ensure clarity and reliability.

Data Analysis

Descriptive statistics were used to summarize demographic characteristics and KAP scores. Chi-square tests were employed to compare categorical variables between UG and PG students, and independent t-tests were used to compare mean KAP scores between the two groups. Statistical significance was set at $p<0.05$.

RESULTS

Participant Demographics

Table 1: Participant Demographics

Demographic Variable	Undergraduate (UG)	Postgraduate (PG)	Total
Number of Students	400	200	600
Male Students	192	96	288
Female Students	208	104	312 (52%)
Mean Age (years)	22.4 (SD = 2.5)	28.7 (SD = 3.4)	–

Knowledge of Mpox

Table 2: Knowledge Score Comparison between UG and PG Students

Group	Mean Knowledge Score (out of 10)	Standard Deviation	p-value
Undergraduate	6.8	1.9	<0.001
Postgraduate	8.2	1.3	

Source: Field Data

Table 3: Awareness and Knowledge of Mpox by Student Group

Knowledge Indicator	UG (n = 400)	PG (n = 200)	χ^2 Value	p-value
Heard of Mpox	310 (77.5%)	185 (92.5%)	20.45	<0.001
Knows transmission routes	260 (65.0%)	180 (90.0%)	44.12	<0.001
Knows symptoms	240 (60.0%)	170 (85.0%)	39.04	<0.001
Knows preventive measures	250 (62.5%)	175 (87.5%)	37.50	<0.001

Attitudes Toward Mpox

Table 4: Attitudes toward Mpox among UG and PG Students

Attitude Indicator	UG (n = 400)	PG (n = 200)	χ^2 Value	p-value
Perceives Mpox as a serious threat	240 (60.0%)	150 (75.0%)	13.33	<0.001
Willing to receive Mpox vaccination	270 (67.5%)	170 (85.0%)	20.25	<0.001

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Preventive Practices

Table 5: Preventive Practices among UG and PG Students

Practice Indicator	UG (n = 400)	PG (n = 200)	χ^2 Value	p-value
Regular hand hygiene	190 (47.5%)	120 (60.0%)	8.91	0.003
Wears face mask in crowded areas	290 (72.5%)	160 (80.0%)	5.39	0.020

DISCUSSION

The objective of this study was to evaluate the knowledge, attitudes and practices (KAP) about Mpox among both undergraduates (UG) and postgraduate (PG) students of Njala University, Sierra Leone. Research evidence showed statistically significant differences across KAP dimensions with PG students always outperforming their UG peers. In all, 600 students participated in the study: 400 undergraduates (Male 192, Female 208) and 200 postgraduates (Male 96, Female 104). The mean age of UG students was 22.4 years (SD=2.5); the mean age for PG students was 28.7 years (SD=3.4). Females made 52% sample size. Knowledge of Mpox. The findings revealed that Mpox knowledge was significantly higher among postgraduate students than among undergraduates (mean scores: 8.2 vs 6.8, $p < 0.001$). PG students also better understood:

- Mpox transmission routes (90.0% vs 65.0%),
- symptoms (85.0% vs 60.0%),
- preventive measures (87.5% vs 62.5%).

There are a number of reasons for this contrast. First, postgraduate students are generally older and, as a result of general life and academic experience, possess larger social and academic exposures that would be better suited to critical health information engagement. Second, postgraduate study is commonly characterised by more research involvement and greater access to academic literature, which could facilitate students to acquire more current information about emerging infectious diseases. Such findings are in line with prior research which finds that education level and academic maturity are significantly associated with health literacy and disease awareness (Khasawneh et al., 2020). Attitudes toward Mpox. PG students also had greater proactivity attitudes on this problem, as they rated Mpox as a dangerous health threat (75.0% vs. 60.0%) and were more likely to be vaccinated (85.0% vs. 67.5%). This mindset discrepancy can be explained by higher risk perceptions observed among older students, which might have a greater amount of previous exposure to public health campaigns or similar health crises such as Ebola and COVID-19. In addition, PG students may possess superior critical thought skills for understanding the potential consequences of infectious diseases, resulting in greater readiness to engage in measures of prevention. The results are consistent with the Health Belief Model, through which knowledge, perceived susceptibility and willingness to change behaviours are the main drivers of health behaviours. Preventive Practices. Regarding practices, PG students were more likely to perform routine hand hygiene (60.0% vs. 47.5%) and wore masks in crowded environments (80.0% vs. 72.5%). Increased health consciousness, better operationalisation of knowledge into behaviour and previous experience with institutional health policies during postgraduate training can all have an influence on those practices. In contrast, undergraduate students, typically being younger and more socially engaged, may be less consistent with keeping on prevention behaviours, as they may not have an optimistic risk perception, academic or social interests could take precedence or have lower access to relevant health information. Implications of the Findings. To conclude, the large disparity between UG and PG students clearly demonstrate gaps in Mpox preparedness. These disparities could hinder effective outbreak control if unchecked, and put undergraduates, who comprise most of the student population, at greater risk. The findings indicate a clear requirement for targeted interventions targeting undergraduates' awareness and behaviour change. Strategies like peer educational programmes, hands-on seminars, posters and posting on social media can reach younger students who are more educated about the concept. In addition, incorporating public health education in university curricula at undergraduate and postgraduate levels would aid to cultivate a durable preparedness and response capacity. Specialised interventions that consider age, academic level, and

access to information need to be implemented to address KAP disparities and promote disease surveillance and infection risk reduction in university environments and in the community.

CONCLUSION

These findings, the study identified significant disparities in knowledge, attitudes, and practices towards Mpox among undergraduate and postgraduate students at Njala University, with lower degrees of knowledge and proactivity among undergraduates on Mpox. This means prioritizing targeted health education campaigns for undergraduates about transmission, symptoms, and preventive measures. Incorporating public health education into the curriculum and using engaging platforms such as peer education, seminars, and social media can strengthen awareness and promote sustained preventive behaviours.

RECOMMENDATIONS

The current study emphasized the urgency of health education campaigns; that is, targeted for both undergraduate students and postgraduate students to bridge the knowledge and practice gap identified between undergraduate and postgraduate students. However, campaigns should focus on raising awareness of topics such as how Mpox is transmitted, its symptoms, prevention strategies, and vaccination on accessible mediums which could include seminars, posters, social media platforms, and peer-led discussions.

To reinforce those long-term preparedness measures, public health and emerging infectious diseases such as Mpox needs to be the focus of common topics in the overall education curriculum in all fields. Partnering with the Ministry of Health and Sanitation, universities could implement peer education programs by developing postgraduate students as health mentors for undergraduates, which would mean cost-effective and sustainable access to new knowledge. Universities and ministries, too, could act together to direct campus vaccination campaigns through the establishment of temporary clinics, availability and disclosure of vaccine safety information and by connecting students with appropriate vaccination sites.

Behaviour change communication (BCC) strategies can be used to convert the knowledge to preventive practice. Personal anecdotes, visual demonstrations and behavioural cues can aid in the reinforcement of hand hygiene, mask wearing and appropriate healthcare seeking. On-going health campaigns run by university health services in concert with student unions and departments will also further solidify these practices.

Last, but not least, future research should adopt both multi-university and longitudinal methods and longitudinal design to monitor the evolution of knowledge, attitudes and actions and measure the impact of intervention. Such evidence is paramount in shaping educational strategies and national policy on the prevention of communicable disease in higher education.

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