Knowledge of Mpox, Media Exposure, and Clinical Experience: Their Influence on Nursing Students' Preparedness for Disease Outbreaks at the University of Gitwe, Rwanda

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Abstract

Background: This study aimed to determine the predictors of nursing students' preparedness for disease outbreaks and the relationships between knowledge of Mpox, media exposure, and clinical experience, as moderated by demographic variables. One hundred respondents were selected using stratified random sampling from four academic levels at the University of Gitwe.

Methods: The study employed a Quantitative research design. The results indicated that the respondents had high knowledge of Mpox (66%), high media exposure (mean = 2.69, SD = 0.743), and substantial clinical experience (mean = 2.58, SD = 0.794). Despite facing certain challenges, there was a high level of preparedness for disease outbreaks, particularly concerning Mpox (mean = 2.77, SD = 0.73).

Findings: The study found that knowledge of Mpox had a negligible and non-significant correlation with preparedness for disease outbreaks (rho = -0.077, $p = 0.445$). Conversely, media exposure exhibited a moderate positive correlation with preparedness (rho = 0.636, $p < 0.001$), while clinical experience showed a positive but non-significant relationship ($R^2 = 0.142$).

Conclusion: The findings suggest that media exposure and clinical training programs enhance students' preparedness to manage disease outbreaks. Media exposure was identified as the most significant predictor of preparedness. Based on these findings, it is recommended to integrate media literacy, structured clinical training, and disaster preparedness workshops into nursing education curricula to strengthen students' capacity to respond to public health emergencies effectively.

Keywords: Knowledge, Mpox, media exposure, clinical experience, Rwanda

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Introduction

Nursing students' preparedness at the University of Gitwe for disease outbreaks, particularly Mpox, is influenced by their knowledge, media exposure, and clinical experience. Healthcare workers, including nursing students, often have inadequate knowledge of Mpox, with only a small percentage achieving excellent knowledge scores (Nka et al., 2024). Additionally, 65.78% of nursing staff demonstrate a poor understanding of the disease, highlighting a critical gap in preparedness (Ahmed et al., 2024). Media exposure, particularly through social media, plays a significant role in disseminating information about Mpox, with 58.7% of healthcare workers relying on this source (Nka et al., 2024).

However, reliance on the media can also lead to misinformation, increasing fear and misconceptions about the disease (Ahmed et al., 2023). Clinical experience is equally important in preparedness. Many healthcare workers had not encountered Mpox before the outbreak, leading to misdiagnoses and heightened moral distress (Edinger et al., 2023). Effective training and experience in managing similar outbreaks are essential to improve readiness (Vijaykumar et al., 2019).

Globally, many healthcare workers, including nursing students, exhibit inadequate knowledge of Mpox (Nka et al., 2024). The lack of awareness of the disease underscores the need for enhanced education regarding emerging diseases. While critical in spreading information, media vary in effectiveness and may contribute to gaps in preparedness if not supported by continuous education through formal channels such as webinars and seminars ("Mpox: Public Education," 2024). Clinical experience remains a critical factor; hands-on training during outbreaks significantly enhances preparedness for disaster management (León-Figueroa et al., 2024). The Mpox outbreak highlights the necessity of comprehensive training and support to effectively manage public health emergencies (Nka et al., 2024).

Similar challenges have also been observed in Africa. Despite the crucial role of the media in shaping knowledge about Mpox, many healthcare workers, including nursing students, possess substandard knowledge (Nka et al., 2024). The reliance on social media for information underscores its importance yet also points to the need for accurate media content and supplementary education. Clinical experiences during outbreaks, such as Mpox, reveal gaps in preparedness, with some healthcare workers initially misdiagnosing the disease, emphasizing the need for better training and support (Ajayi et al., 2023).

In Rwanda, although there is considerable awareness of diseases like Ebola, formal education is inadequate, with 80% of respondents reporting no structured training on the virus (Karuhije et al., 2023). Although 99.6% of participants are aware of Ebola, this does not translate into effective training or positive attitudes toward disease prevention. Media exposure through radio and trusted governmental sources plays a

role in disease awareness; however, gaps remain in formal training and attitudes among nursing students.

While existing studies have identified gaps in the knowledge and preparedness of nursing students regarding disease outbreaks, a critical research gap persists. This study aimed to address this gap by exploring the understanding and preparedness of nursing students at the University of Gitwe regarding Mpox. Specifically, it investigated how knowledge, media exposure, and clinical experience influenced preparedness and identified strategies for enhancing readiness. The research provided valuable insights for improving educational programs and practical training to better equip nursing students for future disease outbreaks.

Research Questions

This study aimed to determine the relationship between nursing students' knowledge of Mpox, media exposure, clinical experiences, and preparedness for disease outbreaks. Specifically, the investigation addressed the following questions:

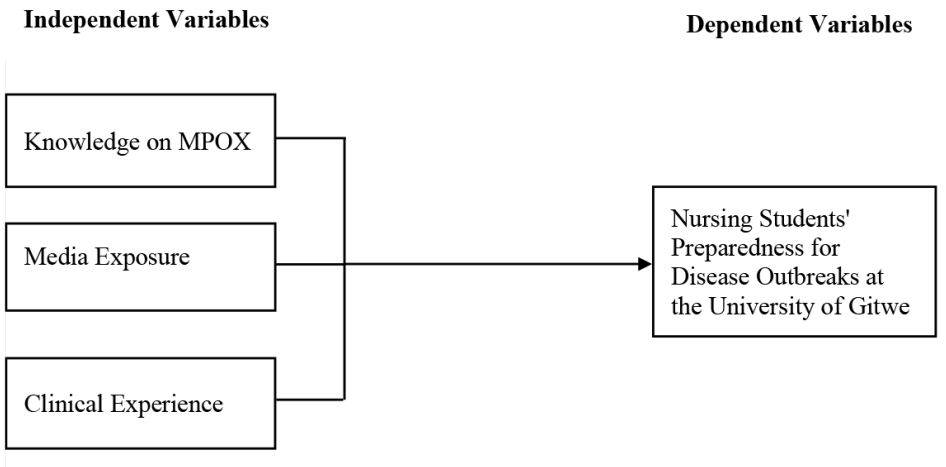
1. What is the level of respondents' knowledge regarding Mpox?
2. To what extent does media exposure influence nursing students' preparedness for disease outbreaks?
3. To what extent does clinical experience influence nursing students' preparedness for disease outbreaks?
4. To what extent do nursing students prepare for disease outbreaks related to MPOX?
5. Is there a significant relationship between the following variables and nursing students' preparedness for disease outbreaks?
    a) Knowledge on Mpox
    b) Media Exposure
6. Which of the following variables significantly predicts nursing students' preparedness for disease outbreaks?
    a) Knowledge on Mpox
    b) Media Exposure
    c) Clinical Experience

Conceptual Framework

As Figure 1 shows, this study explored the relationship between Knowledge of MPOX, Media exposure, clinical experience, and nursing students' preparedness for disease outbreaks at the University of Gitwe.

Figure 1

Research Paradigm of the Study



Method

This study used a quantitative research design to gather structured data. A sample of 100 nursing students from the University of Gitwe was selected through stratified random sampling across four academic levels to ensure comprehensive representation. Data were collected using a structured questionnaire with four sections covering Mpox knowledge, media exposure, clinical experience, and preparedness. The instrument's reliability was validated in a pilot study, achieving a Cronbach's alpha above 0.75, confirming its consistency and accuracy. Both online and in-person data-gathering methods were employed, supported by ethical measures, including informed consent and confidentiality. Data analysis used descriptive statistics, Pearson correlation, and multiple regression to examine the relationships among variables and evaluate preparedness levels for disease outbreaks.

Results and Discussion

Respondents' Level of Knowledge of Mpox

Table 1 presents the findings on the level of knowledge of Mpox among the nursing students. Eight-two percent of the respondents indicated a very high knowledge of the severe complications of Mpox, especially in immunocompromised individuals. However, fifty-three (53.0%) indicated an average level of knowledge regarding the fact that Mpox has been declared a public health emergency of international concern by the World Health Organization (WHO).

Table 1

Respondents 'Level of Knowledge of Mpox

NO.	Knowledge of Mpox	Frequency of Correct Answer	Percentage of Correct Answers	Qualitative Descriptor
1	Mpox is caused by a virus that primarily spreads from animals to humans.	63	63.0%	High
2	Human-to-human transmission of Mpox can occur through respiratory droplets and close contact with infected individuals.	63	63.0%	High
3	Mpox is commonly transmitted through contaminated food and water sources.	54	54.0%	Average
4	The most common symptoms of Mpox include fever, rash, and swollen lymph nodes.	66	66.0%	High
5	Mpox can be prevented through the same vaccination used for smallpox.	56	56.0%	Average
6	Mpox outbreaks have only occurred in Africa and do not pose a global health risk.	68	68.0%	High
7	Mpox is most commonly transmitted through mosquitoes.	63	63.0%	High
8	Mpox can lead to severe complications, especially in immunocompromised individuals.	82	82.0%	Very High
9	There is no specific treatment available for Mpox, and management focuses on symptom relief.	73	73.0%	High
10	Mpox is a zoonotic disease, meaning it can be transmitted from animals to humans.	75	75.0%	High
11	Proper use of personal protective equipment (PPE) can reduce the risk of Mpox transmission in healthcare settings.	72	72.0%	High
12	Mpox has been declared a public health emergency of international concern by the World Health Organization (WHO).	53	53.0%	Average
13	Healthcare workers and nursing students do not need additional training to handle Mpox outbreaks as it is a rare disease.	70	70.0%	High
	Average	**66**	**66.00%**	**High**

Legend:*0-20= Very Low;21-40=Low,41-60=Average,61-80=High;81-100= Very High*

Respondents' Extent of Media Exposure on MPOX

Table 2 presents the grand mean of media exposure on Mpox, which is *2.69,* with a standard deviation of *0.743*. Based on these results, it is generally observed that the respondents experience *a high level of agreement regarding their media exposure to Mpox and its influence on their preparedness for disease outbreaks.*

The highest mean score was recorded for *Item 10* (*mean = 2.79, SD = 0.715*), which stated that respondents agree that *the media provides adequate coverage of Mpox and its potential impact on public health in Rwanda*. This high mean suggests that students heavily rely on media as a valuable source of information and that they perceive media to be effective in disseminating critical information about Mpox, which enhances their overall awareness.

Conversely, Item 12 recorded the lowest mean score *(mean = 2.60, SD = 0.804),* which stated that respondents disagreed with the statement, *"My preparedness for Mpox has been negatively affected by misinformation on social media platforms, causing confusion among nursing students."* This lower score suggests that, while students acknowledge the presence of misinformation, it does not significantly impact their preparedness for Mpox as much as other factors.

Table 2

Respondents' Extent of Media Exposure on Mpox

No.	Media Exposure on MPOX	Mean	SD	Scale Response	Qualitative Descriptor
1	I regularly use social media platforms to stay informed about disease outbreaks such as Mpox.	2.71	0.743	Agree	High
2	I feel more prepared to handle disease outbreaks due to the information I get from the media about Mpox.	2.69	0.761	Agree	High
3	My awareness of my responsibilities during health crises has increased through media exposure.	2.73	0.709	Agree	High
4	I trust the media to provide accurate and reliable information regarding disease outbreaks.	2.67	0.726	Agree	High
5	I believe that media coverage during the COVID-19 pandemic enhanced my preparedness for other disease outbreaks like Mpox.	2.70	0.718	Agree	High
6	I think media exposure alone is insufficient to fully prepared me for managing disease outbreaks.	2.72	0.697	Agree	High
7	I feel that the use of social media to disseminate health information often leads to confusion and misinformation.	2.63	0.734	Agree	High
8	My perception of my role as a future nurse during health crises has been influenced by media narratives about previous outbreaks like Ebola.	2.72	0.697	Agree	High
9	I feel more confident in responding to disease outbreaks due to positive portrayals of healthcare professionals in the media.	2.72	0.753	Agree	High
10	I believe the media provides adequate coverage of Mpox and its potential impact on public health in Rwanda.	2.79	0.715	Agree	High
11	I rely on media updates as one of my primary sources of knowledge about Mpox.	2.69	0.775	Agree	High
12	My preparedness for Mpox has been negatively affected by misinformation on social media platforms, causing confusion among nursing students.	2.60	0.804	Agree	High
13	My clinical experience has helped me better understand the information shared through media about Mpox.	2.70	0.772	Agree	High
14	I believe that combining media exposure with formal disaster preparedness training would improve my readiness for disease outbreaks.	2.60	0.804	Agree	High
Grand mean		**2.69**	**0.743**	**Agree**	**High**

Legend: *0.5-1.5 = Strongly Disagree; 1.51-2.5 = Disagree; 2.51-3.5=Agree; 3.51-4.00 = Strongly Agree*

Respondent's Extent of Clinical Experience

Table 3 reveals that the grand mean of student nurses' perceptions of clinical experience as it relates to their preparedness for disease outbreaks is *2.72* with a standard deviation of *1.128*. Based on the results, it is generally observed that respondents experience a high level of agreement regarding the influence of clinical experience on their preparedness for managing disease outbreaks.

The highest mean score was recorded for items 7 and 8, both with a mean of *2.74 (SD = 0.705)*, reflecting high agreement. This indicates that the respondents had significant confidence in their ability to manage the psychological demands of health crises and recognized the impact of access to health facilities on their preparedness. Similarly, item 4, *"My clinical placements have increased my confidence in dealing with real-world health crises,"* had a mean score of *2.57 (SD = 0.820)*, highlighting the importance of hands-on clinical experience in building self-efficacy among nursing students.

Conversely, item 5, "I feel that the absence of hands-on experience during virtual learning negatively impacted my preparedness for disease outbreaks," had the lowest mean score of *2.46 (SD = 0.834)*, indicating that respondents generally *disagreed* with the notion that virtual learning was sufficient to prepare for real-world scenarios. This finding suggests that, while virtual learning is valuable, it may not fully equip nursing students with the practical skills needed for effective disease outbreak management.

Table 3

Respondents' Extent of Clinical Experience

No.	Clinical Experience	Mean	SD	Scale Response	Qualitative Descriptor
1	I feel that my clinical experience has adequately prepared me to manage disease outbreaks such as Mpox.	2.58	0.843	Agree	High
2	My clinical exposure has helped me to better understand the application of infection control practices during pandemics.	2.59	0.805	Agree	High
3	I believe that clinical experience is more effective than theoretical knowledge in preparing nursing students for disease outbreaks.	2.52	0.759	Agree	High
4	My clinical placements have increased my confidence in dealing with real-world health crises.	2.57	0.820	Agree	High
5	I feel that the absence of hands-on experience during virtual learning negatively impacted my preparedness for disease outbreaks.	2.46	0.834	Disagree	Low
6	I believe that clinical simulations have significantly contributed to my preparedness for handling disease outbreaks.	2.51	0.810	Agree	High
7	My clinical experience has helped me develop emotional resilience when managing the psychological demands of health crises.	2.74	0.705	Agree	High
8	I feel that inadequate access to health facilities during clinical placements has limited my preparedness for disease outbreaks.	2.67	0.697	Agree	High
9	I believe that structured clinical training programs have enhanced my preparedness for disease outbreaks like Mpox.	2.70	0.785	Agree	High
10	I feel that clinical experience in past disease outbreaks such as COVID-19 has improved my response capabilities for future outbreaks.	2.59	0.818	Agree	High
11	My clinical experience has not significantly contributed to my knowledge of infectious diseases such as Mpox.	2.55	0.821	Agree	High
12	I think that continuous exposure to real-world clinical settings has allowed me to apply my theoretical knowledge effectively during disease outbreaks.	2.56	0.820	Agree	High
13	I believe that combining my clinical experience with formal disaster preparedness training has enhanced my readiness for health emergencies.	2.61	0.827	Agree	High
14	I feel that my institution's support, in terms of clinical training, has been crucial in preparing me for disease outbreaks like Mpox.	2.52	0.785	Agree	High
Grand Mean		**2.58**	**0.794**	**Agree**	**High**

Legend: *0.5-1.5 = Strongly Disagree; 1.51-2.5 = Disagree; 2.51-3.5=Agree; 3.51-4.00 = Strongly Agree*

Respondent's Extent of Preparedness for Disease Outbreaks Related to Mpox

Table 4 presents the extent of nursing students' preparedness for Mpox-related disease outbreaks. The grand mean is *2.77* and the standard deviation is *0.73*. The results reveal that the overall respondents' preparedness for disease outbreaks, particularly Mpox, was high. Specifically, the highest mean *(Mean = 2.96, SD = 0.618)* was from item 7, "I believe my nursing education adequately prepares me for managing disease outbreaks." This was followed by item 3, "I have received adequate training in infection control protocols related to Mpox," with a mean of *2.89 (SD = 0.634).* The third among the options was item 5, "I am confident in my ability to educate others about Mpox," with a mean of *2.84 (SD = 0.801),* followed by item 14, "I believe that nursing students play a critical role in managing disease outbreaks," with a mean score of *2.84 (SD = 0.775).*

Next, the items 4 (My clinical experiences have prepared me to respond effectively to disease outbreaks), 6 (I often seek out additional information on emerging infectious diseases), 10 (I feel that my peers are well-informed about the management of Mpox), and 13 (I have a good understanding of the mental health implications of disease outbreaks on patients) were nearly similar, with mean values of *2.75 (SD = 0.796), 2.79 (SD = 0.820), 2.78 (SD = 0.690), and 2.79 (SD = 0.729)* respectively. Two items showed similar mean values: item 1, "I feel knowledgeable about Mpox and its transmission methods," with a mean of *2.75 (SD = 0.687),* and item 8, "I have participated in workshops focused on Mpox," with a mean of *2.72 (SD = 0.712).*

Item 9— "I have participated in seminars focused on Mpox," had a mean score of *2.72 (SD= 0.766).* Finally, the lowest score was for item 11, "I think that my age affects my preparedness for disease outbreaks," with a mean score of *2.62 (SD = 0.776).*

Table 4

Extent of Nursing Students' Preparedness for Disease Outbreaks Related to Mpox

No.	Preparedness For Disease Outbreak	Mean	SD	Scale Response	Qualitative Descriptor
1	I feel knowledgeable about Mpox and its transmission methods.	2.75	0.687	Agree	High
2	My exposure to media has provided me with relevant information on disease outbreaks like Mpox.	2.73	0.723	Agree	High
3	I have received adequate training in infection control protocols related to Mpox.	2.89	0.634	Agree	High
4	My clinical experiences have prepared me to respond effectively to disease outbreaks	2.75	0.796	Agree	High
5	I am confident in my ability to educate others about Mpox.	2.84	0.801	Agree	High
6	I often seek out additional information on emerging infectious diseases.	2.79	0.820	Agree	High
7	I believe my nursing education adequately prepares me for managing disease outbreaks.	2.96	0.618	Agree	High
8	I have participated in workshops focused on Mpox	2.72	0.712	Agree	High
9	I have participated in seminars focused on Mpox	2.72	0.766	Agree	High
10	I feel that my peers are well-informed about the management of Mpox.	2.78	0.690	Agree	High
11	I think that my age affects my preparedness for disease outbreaks.	2.62	0.776	Agree	High
12	I am aware of the current public health guidelines regarding Mpox.	2.69	0.734	Agree	High
13	I have a good understanding of the mental health implications of disease outbreaks on patients.	2.79	0.729	Agree	High
14	I believe that nursing students play a critical role in managing disease outbreaks	2.84	0.775	Agree	High
	Grand Mean	**2.77**	**0.73**	**Agree**	**High**

Legend: *0.5-1.5=Very low, 1.51-2.5=low, 2.51-3.5=High, 3.51-4.0=Very High*

Relationship Between Knowledge of Mpox and Nursing Students' Preparedness for Disease Outbreaks

As shown in Table 5, knowledge of Mpox had no significant relationship with nursing students' preparedness (rho = -0.077, p = 0.445). According to Schober et al. (2018), a rho value of -0.077 falls within the range of negligible correlation (absolute value between 0.00 and 0.10). This implies that, while there is some statistical computation of association, the strength of the relationship between the two variables is effectively nonexistent or very weak. Furthermore, the lack of statistical significance ($p > 0.05$) indicates that this negligible correlation could have

occurred by chance and does not represent a reliable association in the population studied.

Table 5

Relationship Between Knowledge of Mpox and Nursing Students' Preparedness for Disease Outbreaks

Variable	Spearman's rho	df	P-value	Interpretation
Knowledge of MPOX	-0.077***	98	0.445	Negligible Correlation

Legend: *0.00-0.10 = Negligible; 0.10 -0.39 = weak Correlation ;0.40-0.69= moderate Correlation ;0.70-0.89 = strong correlation;0.90-1.00= Very strong correlation*

Relationship Between Media Exposure and Nursing Students' Preparedness for Disease Outbreaks

Table 6 presents a correlational analysis to determine the relationship between media exposure and nursing students' preparedness for disease outbreaks. Table 6 shows a moderately significant relationship (Schober et al., 2018) between media exposure and preparedness for disease outbreaks among nursing students *($p < 0.001$, rho = 0.636***).*

Table 6

Relationship Between Media Exposure and Nursing Students' Preparedness for Disease Outbreaks

Variable	Spearman's rho	P-value	Decision	Interpretation
Media Exposure	0.636***	P<0.001	Rejected	Moderate Correlation

Legend: *0.00-0.10 = Negligible; 0.10 -0.39 = weak Correlation ;0.40-0.69= moderate Correlation ;0.70-0.89 =strong correlation;0.90-1.00= Very strong correlation*

Predictors of Nursing Students' Preparedness for Disease Outbreaks

Table 7 illustrates that, through the multiple regression method, knowledge of Mpox *($P = 0.247$, $R^2 = 0.00209$)*, media exposure *($P < 0.001$, $R^2 = 0.460$)*, and clinical experience *($P = 0.420$, $R^2 = 0.142$)*, only media exposure is a significant predictor of nursing students' preparedness for disease outbreaks. The remaining variables (knowledge of Mpox and clinical experience) did not show significance.

Table 7

Predictors of Nursing Students' Preparedness for Disease Outbreaks

Predictor	Estimate (β)	SE	T	P	R^2 change
Intercept	0.9924	0.2426	4.091	<.001	
Knowledge_Var	-0.1733	0.1489	-1.164	0.247	.00209
Media Exposure_Var	0.6628	0.0857	7.734	< .001	.460
Clinical Experience_Var	0.0551	0.0681	0.809	0.420	.142

Legend: *P-value < 0.05*

Conclusion

This study indicates that students demonstrate high levels of preparedness, collectively contributing to their overall readiness for disease outbreaks. However, correlation analysis revealed that media exposure significantly enhances preparedness, as shown by a moderate positive relationship (rho = 0.636, P < 0.001). By contrast, clinical experience also positively impacts students' readiness, though it was not statistically significant as a predictor. Knowledge of Mpox showed a negligible and non-significant relationship with preparedness.

The study concludes that effective preparedness is achieved through an integrated approach that combines media exposure and clinical training; however, continuous access to accurate information, structured clinical training programs, and disaster preparedness initiatives are essential for equipping students with the tools necessary to respond effectively to outbreaks. This suggests that educational programs need to balance these elements to ensure that nursing students are fully prepared for public health emergencies.

Recommendation

Based on these findings, the study recommends that nursing education be enhanced through integrating structured clinical training programs and incorporating media literacy education into the curriculum. Such initiatives would enable students to critically analyze and verify health information, particularly during public health crises where misinformation may be prevalent. Additionally, formal disaster preparedness training and workshops focused on outbreak preparedness and disease management are crucial to strengthening students' readiness.

Further recommendations include strengthening health information systems to deliver real-time, evidence-based updates on emerging diseases. This could involve creating a centralized digital platform to provide accurate and timely resources for healthcare professionals,

including students. The study also suggests that additional research should be conducted on factors such as the impact of interdisciplinary collaboration, cultural competence, and mental health resilience as these may further bolster students' preparedness in managing future health crises.

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