Economic Burden of Mpox Infection on Households in South West Nigeria: Capturing MSM and Sex Workers Perspectives[1]

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Abstract

Background*:* Mpox is a zoonotic disease, conventionally transmitted from animals to human, and endemic in parts of Central and West Africa. The July 2022 global re-emergence of Mpox zoonotic disease, resulted in the WHO declaring the Mpox outbreak a public health emergency of international concern (PHEIC). The economic burden of Mpox on households is multifaceted, encompassing direct healthcare costs, loss of income, and other broader impacts, with households in lower-income settings bearing significant financial hardships. These hardships are exacerbated by the loss of income, medical expenses, and the psychological and social effects of stigmatization. Addressing the economic burdens of Mpox on MSM and sex workers requires comprehensive public health strategies that focus on reducing stigma, improving access to care, and providing financial support to affected individuals.The global spread of Mpox in 2022 underscored the importance of understanding the broader economic burden consequences of the disease to better design interventions and support systems for affected populations, including MSM and SW.

Methods: Economic burden relates to the financial and welfare strains that the emergence of a disease constitutes on households. The burden is captured by the cost implications to the household, which could be direct or indirect. The research designs of the study adopted a mixed-methods approach. Cost estimations were conducted using the cost of illness approach, accounting for both direct and indirect costs. The study relied on snowball sampling to reach potential participants, who had experienced episode of Mpox reported and confirmed cases in year 2022.

Findings The study revealed that more than two-third of the respondents are within the peak of working age (21-50years), which means the most economically productive (youths) members of society are affected by the disease, and has implication on productivity loss over the period of Mpox infection. Generally, both direct and indirect costs and their components happen to be highest for the MSM, and least for other respondents. The larger burden of cost born by the MSM is largely connected with the stigmatization and prohibition by law of such sexual behaviour. These do cause hesitation and delay in presenting self for diagnosis and treatment on the part of the MSM. Element of stigmatization equally holds the SW back in coming forth to seek care from the appropriate quarters.

Conclusion: There are no strong evidences to indicate that the sexual orientation of the MSM and SW contribute more to the incidence of Mpox infection transmission in Nigerian case. The human-to-human transmission hinges on physical contact as the primary mode of transmission. However, the stigmatization and illegality surrounding MSM and SW activities in Nigeria do cause delay in access to care and increase their economic burden. It must also be stated that enquiry about the sexual orientation of patients is not part of basic information collected from patients by health facilities before healthcare service is given. To ensure effective control of Mpox infection among the populace, there is need to consider some form of incentive that will encourage potential victims to present themselves for confirmatory diagnosis.

Background

Mpox, previously known as monkeypox, is a zoonotic disease caused by the Mpox virus, a member of the Orthopoxvirus genus, closely related to smallpox and cowpox, conventionally transmitted from animals to human. While Mpox has been endemic in parts of Central and West Africa, its recent outbreaks, particularly the 2022 global epidemic, have expanded its reach to countries outside the virus's traditional endemic tropical zones. The disease, which typically causes fever, rashes, and lesions, has garnered attention for its public health and socio-economic impact. The global re-emergence of the zoonotic viral disease, in July 2022, resulted in the WHO declaring the global 2022-2023 Mpox

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outbreak a public health emergency of international concern (PHEIC) after recording more than 16,000 cases and five deaths (WHO, 2022), and again redeclared in August 2024, as a PHEIC.

The initial detection of monkeypox in Nigeria was in 1977, affecting a four-year-old girl and her mother (Ogoina, 2022). A substantial resurgence in 2017 marked the most severe outbreak since the disease's discovery. Since then, Nigeria has recorded 4,685 suspected cases, with 1134 (24.2%) confirmed cases, predominantly affecting males (NCDC, 2024), with significant morbidity and mortality rates. The accepted position that Mpox is a zoonosis disease, with animal-to-human transmission, became challenged with the 2022-2023 Mpox global outbreak, in which human-to-human mode of transmission turned out to be widespread affecting mostly gay, bisexual and other men who have sex with men (MSM). There are evidences to support the twist in the epidemiological course of Mpox, with 96% of cases in the 2022-2023 multi-country outbreak occurring among gay, bisexual, and other men who have sex with men networks and lesion-to-skin contact being a standard mode of transmission (Lane et al., 2022; and Sukhdeo et al., 2022).

Since the emergence of Mpox in humans, particularly in Central and West Africa, there have been increasing concerns about its economic impact on individuals, households, and communities. Apart from the general population affected by the virus, two key population affected by the Mpox outbreaks are men who have sex with men (MSM) and sex workers (SW), who are considered at heightened risk due to the nature of sexual transmission and the socio-economic vulnerabilities they experience. The global spread of Mpox in 2022 prompted increased interest in understanding its broader economic impact, including the household-level burden. Compared to other infectious diseases, the literature surrounding the economic impact of Mpox on individuals and households, as well as peculiar population groups like MSM and sex workers is limited. The economic burden on MSM and sex workers is compounded by their social marginalization, the additional healthcare risks they face, and the financial instability exacerbated by Mpox infection. The disease's outbreaks have been associated with various economic consequences, especially in terms of healthcare costs, loss of income, and other indirect effects such as reduced productivity.

In several studies conducted in sub-Saharan Africa, where Mpox is endemic, households faced substantial costs related to health care. According to the World Health Organization (WHO, 2023), outbreaks of zoonotic diseases like Mpox further exacerbate the vulnerability of these populations, especially in low-income countries. Severe cases of Mpox, which may require hospitalization or isolation, result in higher healthcare costs, further intensifying the financial burden on these vulnerable groups. In Central African Republic, out-of-pocket expenditures for medical treatment of Mpox were found to be significant, with many households unable to afford the care they needed, forcing households to often resort to borrowing or selling assets to cover the costs of healthcare services (Dabrowski et al, 2013.

The economic burden of Mpox on households is multifaceted, encompassing direct healthcare costs, loss of income, and the broader socio-economic and psychological impacts. While the literature on Mpox's economic consequences is still emerging, studies indicate that households in affected regions, especially in lower-income settings, bear significant financial hardships. In a study conducted during the 2017 outbreak of Mpox in Nigeria, Njoku et al. (2020) found that households faced challenges due to disrupted economic activities, as workers had to quarantine for the duration of the illness. Infected individuals were often unable to return to their jobs until they fully recovered, leading to a delay in financial recovery and further debt accumulation for many households. Furthermore, members of family who serve as caregivers do also take time off work to care for infected individuals. In many cases, households face additional economic burdens due to the need to hire external help or make accommodations to continue daily functions. The loss of income due to caregiver responsibilities, coupled with the inability to work or engage in normal economic activities, amplifies the negative economic consequences of Mpox. Addressing the economic burdens of Mpox on MSM and sex workers requires comprehensive public health strategies that focus on reducing stigma, improving access to care, and providing financial support to infected individuals. The global spread of Mpox in 2022 underscored the importance of understanding the broader economic burden consequences of the disease to better design interventions and support systems for affected populations, including MSM and SW. The

associated morbidity and mortality with Mpox have far reaching economic consequences on the households, who are compelled to develop coping mechanisms to reduce the impact. Currently, there is very little knowledge about the economic burden of Mpox on households generally, and on infected MSM and SW in Nigeria, nor about the proportional cost composition among MSM and SW, necessitating this comprehensive analysis to inform effective policy responses. Despite the existence of extended epidemiology studies of communicable diseases in Nigeria, little is known about the economic burden of Mpox in the country. The most abundant literature is on the economic impact of other communicable diseases such as COVID-19, Lassa fever, Malaria, etc., while studies focusing on Mpox are mostly epidemiological. This research study attempts to explore the peculiarities of the economic burden of Mpox infections shouldered by MSM and Sex Workers relative to other infected population, focusing on healthcare costs, direct and indirect financial burdens implications.

Theoretical Framework: The theoretical underpinning of this study is the human capital and productivity framework, in which human capital is one of the significant inputs into household labour participation and productivity. Human capital has implication on productivity through different channels. Human capital theory assumes that individuals make investments that will likely increase their future productivity earnings and overall well-being. Both education and health status are the fundamental driver of the human capital potential of an individual. The framework establishes a positive association between human capital and productivity. The time spent seeking care has economic implications for both the patient and society at large. The overall economy is made to improve through interventions that safes the time patients spend on accessing care, away from their income-generating economic activities. The implication is that the higher the prevalence, the higher the patient's earnings lost to hospitalization days, translating to a higher indirect cost and greater burden of the disease. Evaluation of economic cost is essential in engineering provision of affordable healthcare intervention programmes and policies to achieve universal health coverage.

Methodology: Economic burden of disease relates to the financial and welfare strains that the emergence of a disease constitutes to households. The components of the economic burden of health conditions on households manifest in both direct and indirect healthcare costs. The direct costs are associated with seeking medical care, purchasing medications, treatment expenses, and other healthcare services. In Nigeria settings where healthcare systems are under-resourced with minimal social security, these costs can be significantly high, especially for low-income households. In the context of the 2022 global Mpox outbreak, the healthcare costs were marked by increased demand for diagnostics, treatment, and isolation measures. The cost of diagnosing and treating a case of Mpox varies depending on the healthcare system's capacity and the need for specialized care (CDC, 2022). With the cost of medical treatment in hospitalizations and isolation periods, this often leads to substantial out-of-pocket expenses for affected individuals and households.

In addition to cost of treatment, Mpox infected individuals also experience loss of income and employment. During an Mpox outbreak, individuals infected with the virus often have to take extended periods off work, resulting in loss of wages. This creates a substantial financial strain, particularly for those employed in the informal sector, such as small-scale traders, farmers, and street vendors, who are particularly vulnerable to income losses. In countries like Nigeria, the costs of diagnosis and treatment becomes a major concern, especially for populations like MSM and sex workers, who may be more reluctant to seek healthcare due to stigma and illegal context of their situation. The economic burden of Mpox on MSM and sex workers is multifaceted, encompassing direct healthcare costs, income and employment loss, and other indirect cost. According to the Centers for Disease Control and Prevention (CDC, 2022), the costs of Mpox care can vary significantly depending on the severity of the infection and the healthcare system's capacity.

The study adopts a mixed-methods research design approach. Cost estimations were conducted using the cost of illness approach, accounting for both direct and indirect costs. Direct costs include treatment costs based on disease severity, while indirect costs were calculated using the human capital approach to estimate productivity losses from workers absences due to Mpox infection. The study relied on snowball sampling to reach potential participants, who had experienced episode of reported and confirmed Mpox cases in year 2022. Local public health officials were used to identify Mpox confirmed

case index. Working with the State Epidemiologists with the collaboration of the Local Disease Surveillance Notification Officers (DSNOs) and Community Informants, we were able to locate reported confirmed Mpox cases. Written consent of potential participants were sought before participating in the research project. Data collected from respondents include, background information, occupation and income, first point of call for care and amount spent, work days/time lost to the disease, economic information about the care givers, hospitalization, feeding cost, direct and indirect treatment costs. Indirect cost was estimated based on lost productivity, income losses, and additional household expenses due to illness.

Data: Of the six geopolitical zones in Nigeria, the South West region accounted for over 38 percent of the confirmed cases of Mpox in Nigeria between 2022 and 2023. A total of 158 participants from the region drawn from Lagos, Ogun and Oyo States were surveyed in the study. All information regarding the cost burden to the patients and the caregivers were obtained from the patients, as the respondent, except in the cases of children where the questions are directed at the caregiver. Information on patients' health seeking behaviour prior to presenting self to the facilities was separately obtained along with the spending that characterized it. Also, the patients' health facility-based treatment's spending incurred to receive services relating to transportation, consultation, laboratory diagnosis, prescribed medications. were obtained directly from the patients to determine the direct cost.
Since patients either procured their medications from pharmacies within or outside the hospital, drug cost is obtained as the amount paid in purchasing the medication. Cost of laboratory test is captured as all spending on prescribed diagnostic tests. Transportation cost was captured as the fare paid for to and fro trip to the health facility for the number visits made. Based on the period over which both the patient and the caregiver were absent from work to seek care and to care for the patient, respectively with daily average income loss, cost of feeding while on admission in the hospital over the episode period, were used to estimate indirect costs. The Nigerian currency Naira was used to estimate all the cost, converted to American Dollar ($) equivalent applying the 2022 exchange rate of N461.5 to $1.

Results: The socio-demographic characteristics of the respondents is presented in Table 1. The participants include 13 self-identified MSM, 24 SW, and 121 other respondents. With growing evidence and hypothesis of human-to-human transmission, through physical contact and sexual relationship, the study attempted to pay particular attention to MSM and Sex workers to ascertain if the severity of their households' economic burden is significantly different.
The results revealed that more than two-third of the respondents are within the peak of their economic productive age (21-50years), which has implication on productivity loss over the period of Mpox infection. Apart from the MSM and SW who male and female, respectively, a greater proportion of the respondents are male, which means the most economically productive (youths and males) members of society are affected by the disease. More than half of the respondents have secondary education, while more than 80 percent are gainfully employed (public, private, or self-employment sectors), making the opportunity cost of their being ill and unable to work to be significantly different from zero. At the unset of the Mpox infection, most of the victim health seeking behaviour was to approach pharmacies to access perceived medication to address the observed symptoms, after which regular health facilities are contacted at the persistence of the symptoms.

Table 1: Respondents' Socioeconomics and Demographic Characteristics. N = 158

Characteristics/Sexual Orientation Respondents	**MSM (13 Respondents)**	**Sex Workers (24 Respondents)**	**Others Respondents (121 Respondents)**	**Total (%)**
Age: 0-10 years	0	0	13	13(8.2)
11-20 years	1	3	17	21(13.3)
21-40 years	8	13	35	56(35.4)
41-50 years	4	8	38	50(31.7)
51-60years	0	0	14	14(8.9)
>60 years	0	0	4	4(2.5)
Gender: Male	13	0	72	85(53.8)
Female	0	24	49	73(46.2)
Marital Status:				
Married	0	0	55	55(34.8)
Widow/widower	0	2	07	9(5.7)

Separated	0	6	11	17(10.8)
Single	13	16	48	77(48.7)
Education:				
Primary education	0	6	25	31(19.5)
Secondary	5	13	64	82(51.9)
Tertiary	8	0	23	31(19.6)
No formal education	0	5	9	14(8.9)
Occupation:				
Govt employed	3	0	32	35(22.2)
Private sector employed	5	0	41	46(29.0)
Self-employment	4	18	26	48(30.4)
Unemployed (incl. students)	1	6	22	29(18.4)
First point of call for healthcare:				
Pharmacy	9	14	61	84(53.1)
Govt health facility	0	1	10	11(7.0)
Private health facility	3	3	18	24(15.2)
Traditional Healers	1	6	32	39(24.7)
Average of Monthly Income of Patients (Nigeria Naira, and Dollars) Standard Deviation	191,095.83 ($414.00) (68,689.1)	173,697.22 ($376.31) (49,520.2)	114,224.50 ($247.46) (63,728.8)	
Average of Monthly income of Caregivers (Nigeria Naira and Dollars) Standard Deviation	113,646.15 ($246.21) (34,623.8)	91,158.33 ($179.49) (20,360.8)	64,656.55 ($140.08) (14,642.4)	

Generally, the monthly average income of patients is relatively higher than the average monthly income of caregiver. On the average monthly income of MSM is highest at #179,296.15, equivalent to $388, followed by the SW at #173,697.22, equivalent to $376.30, and least for other respondents at #112,729.80, equivalent to $244.22. Unlike as applicable to other respondents, almost all the respondents in the MSM and SW categories are within the economic prime age of their lives. A similar order of pattern is also applicable to the average monthly income of caregivers, at #102,416.67 ($221.88), #91,158.33 ($179.49), and #66,390.91 (143.83), for MSM, SW, and other respondents, respectively. This monthly average excludes those who are either unemployed or students, especially those at tender age. It was observed that quite a number of the Mpox infected patients did not report engaging the services of caregivers. This more or less explain why the economic burden in terms of opportunity cost is highest for MSM, followed by SW, and least for other respondents.

The cost components, and patients and caregivers' productivity loss estimates for different groups of respondents are presented in Table 2. The duration of a Mpox infection episode on the average is not significantly different for MSM, SW, and other respondents. For both MSM and other respondents, a Mpox infection episode lasts on the average for around 8days, while for SW, it lasts for 7.5days. Despite the relative delays exercised by MSM and SW in seeking healthcare arising from stigmatization.

Direct cost and indirect costs of Mpox infection to the patient and the caregiver is presented in Table 2. The indirect cost is consistently more than the direct cost for the three sexual orientation groups covered by this study. The direct cost ranges from #67,811 ($146.90 equivalent) for MSM to #53,084 ($115.01 equivalent) for SW, to #51,327 ($111.20 equivalent) for other respondents, while indirect cost ranged from #109,097 ($236.40 equivalent) for MSM to #102,684 ($222.50 equivalent) for SW, to #68,422 ($148.26 equivalent) for other respondents. Out of the total cost, direct cost accounted for between 34.1% ($115.01 out of $337.51 total cost) for SW and 42.9% ($111.20 out of $259.46 total cost) for other respondents, while indirect cost accounted for between 57.1% ($148.26 out of $259.46 total cost) for other respondents and 65.9% ($225.50 out of $337.51 total cost) for SW.
Medications and hospitalization are the two leading cost components that dominate the direct cost. Both accounted for more than 61%, 62%, and 68% of total direct cost for SW, MSM, and other respondents, respectively. The initial care cost preceding when patients present themselves for proper diagnosis is also substantial. However, it differs from $14.59 (13%) for other respondents to $22.78 (20%) for SW, and $27.53 (19%) for MSM.

Table 2: Direct and Indirect Costs of Mpox Infection to Respondents

Cost/Sexual Orientation Categories of Respondents	**MSM (13 Respondents)**		**Sex Workers (24 Respondents)**		**Others Respondents (121 Respondents)**	
DIRECT COST	Mean (#)	Mean ($)	Mean (#)	Mean ($)	Mean (#)	Mean ($)
Initial care cost	12,709 (5,361.3)	27.53	10,515 (2,413.4)	22.78	6,736 (8997.2)	14.59
Laboratory Test	4,881 (2,531.8)	10.57	4,327 (2,263.5)	9.37	2,556 (2,352.0)	5.54
Consultation fees	715 (351.4)	1.55	650 (164.2)	1.41	498 (202.5)	1.08
Treatment (Drug/Medication)	20,260 (6,149.2)	43.89	18,203 (3,802.3)	39.44	19,373 (13,138.1)	41.97
Hospitalization	21,949 (4,341.6)	47.55	13,970 (3,783.1)	30.27	15,606 (4,340.1)	33.81
Transportation cost	7,297 (1,630.3)	15.81	5,419 (3,727.4)	11.74	6,558 (2,024.6)	14.21
(Sub-Total)	**67,811 (38.3%)**	**146.90 (38.3%)**	**53,084 (34.1%)**	**115.01 (34.1%)**	**51,327 (42.9%)**	**111.20 (42.9%)**
INDIRECT COST						
Patient Feeding	14,541 (3,044.2)	33.09	18,117 (5,189.3)	39.26	12,676 (10,644.4)	25.45
Patient's Productivity loss	57,538 (26,410.7)	124.68	53,354 (28,307.7)	115.61	34,514 (15,237.4)	74.79
Caregiver work absence (productivity loss)	36,287 (11,152.6)	78.63	31,213 (9,141.5)	67.63	22,163 (6,617.1)	48.02
(Sub-Total)	**109,097 (61.7%)**	**236.40 (61.7%)**	**102,684 (65.9%)**	**222.50 (65.9%)**	**68,422 (57.1%)**	**148.26 (57.1%)**
Grand Total	**176,908**	**383.30**	**155,768**	**337.51**	**119,749**	**259.46**
Treatment duration (days)	7.8 (1.5)		7.5 (2.1)		8.0 (2.4)	
Caregiver time (days)	8.7 (2.0)		8.7 (2.3)		4.5 (2.4)	

Note: Standard deviation in parenthesis.

Discussion

Majority of the correspondents are in their prime economic age, as more than 67% are within the ages of 21-50years. This age bracket also corresponds to active sexual age, which is not limited to the MSM and the SW alone, but generally applicable to other correspondents, signifying promotion of the human-to-human transmission hypothesis. The dominance of pharmacies has the first point of call of patients for access to care is not unconnected with the level of education which has great impact on patients' knowledge about and attitude toward health-seeking behaviour.

With one-third of the respondents engaged in self-employment mainly in the informal sector, the households' dependent on daily or seasonal work for income, results in huge income loss to the households. This is buttressed by Petersen et al. (2022) who established in African settings, that the median period of illness from Mpox symptoms to recovery can last up to three weeks, during which time individuals may be unable to engage in income-generating activities. There are indications that the sexual disposition of respondents affects their health seeking behaviour in terms of the type of facility they visit and the implication of economic burden on the households, but not necessarily the severity of their experiences of the Mpox episode. Due to stigmatization MSM and SW often delay disclosure of their health issues, while engaging in initial self-medication until it gets out of hand or improvement is unnoticed. There is the notion that costing health programmes or interventions could be largely under-estimated if the indirect cost is not captured. Tracking indirect cost of Mpox to the patients assist in capturing the full economic burden of the infection. Absence of indirect cost consideration in heakth programmes, has the implication of limiting the uptake of such intervention, since the patients and households end up internalizing the indirect cost that may serve as a disincentive. Generally, both direct and indirect costs and their components happen to be highest for the MSM, and least for other respondents.

The indirect cost proxy by the opportunity income/wage cost for the period the patients or the caregiver is prevented from engaging in productive activities turned out to be higher than the direct cost across different sexual orientation groups of correspondents. For sex workers, the disruption of their work during an Mpox infection can be even more significant, as they may face not only a loss of income due

to their illness but also due to potential public health measures that limit contact or patronage during an outbreak. In a similar instance, Kline et al. (2023) reported that sex workers in the United States reported substantial financial losses during the 2022 Mpox outbreak due to a combination of self-imposed isolation and government-imposed restrictions, while sex workers in low-income settings faced even greater challenges, as their capacity to recover financially following a period of illness is often severely limited. For these individuals, the economic burden of Mpox goes beyond the direct costs of healthcare; it includes the financial instability caused by disrupted work. MSM in areas where Mpox outbreaks have been particularly pronounced face indirect consequences as well. MSM often face difficulties in accessing healthcare or employment opportunities due to the stigma, which can result in a reduction in work opportunities, making it harder for individuals to recover financially from the outbreak (Zablotska et al., 2022).

Researchers have found that MSM and sex workers affected by Mpox often experience difficulty re-entering the workforce after recovery due to both the psychological effects of the disease and the stigma associated with being a part of an at-risk population (Adams et al., 2023), Though, the cost implications of Mpox infection on patients are different across the sexual orientation groups, the difference cannot be adjudged to the significantly different. This is more so in the face of limited number MSM and SW correspondents included in the study. The larger burden of cost born by the MSM is largely connected with the stigmatization and prohibition by law of such sexual behaviour. These do cause hesitation and delay in presenting self for diagnosis and treatment on the part of the MSM. Element of stigmatization equally holds the SW back in coming forth to seek care from the appropriate quarters. The resultant effect of the delay is the complications and increased severity of the infection before treatment procedure commences, which makes required treatment depth and costs to be higher than regular.

Conclusion: Though the cost components for different sexual orientation groups covered in the study are different, there are no strong evidences to indicate that the sexual orientation of the MSM and SW contribute more to the incidence of Mpox infection transmission in Nigerian case. The human-to-human transmission remain hinge on physical contact as the primary mode of transmission. It must also be stated that enquiry about the sexual orientation of patients is not part of basic information collected from patients by health facilities before healthcare service is given. The need for ongoing monitoring and possible follow-up care further increases the healthcare expenses associated with Mpox. To ensure effective control of Mpox infection among the populace, there is need to consider some form of incentive that will encourage potential victims to present themselves for confirmatory diagnosis.

Ethical Consideration/Approval

Approval to conduct this study was obtained from the National Health Research and Ethics Committee, Abuja. NHREC Protocol Number NHREC/01/01/2007-13/09/2021; NHREC Approval Number NHREC/01/01/2007-26/09/2022. Written informed consent was obtained from the patients/caregivers before recruiting into the study.

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Appendix 1: Structured Questionnaire

Healthcare Services Questionnaire on the Economic Burden of Mpox Infection on Households in South West Nigeria

We would appreciate your time in filling out this questionnaire to better understand healthcare access and usage patterns for incidence of Monkeypox episode. Your responses will remain confidential. You are at liberty to decline filling of this questionnaire or discontinue at any point you are not comfortable with the process.

Do you agree to participate in responding to the content of this questionnaire? Yes [ ]; No [ ]

Instruction: Please, tick [√] the appropriate option applicable to you.

A. General Information

a) **Which of the following do you affiliate with**? MSM [ ], Sex Workers [ ], None [ ]

b. Age (in years): 0-10 [ ]; 11-20 [ ], 21-40 [ ], 41-50 [ ], 51-60 [ ] , >60 [ ] ,

c) **Sex**: Male [ ] , Female [ ]

d) **Marital Status**: Married [ ], Widow/widower [ ], Separated/Divorced [ ], Single [ ]

e) **Educational Qualification**: Please select [√] the highest level of education you have completed:
Primary [ ], Secondary [ ], Tertiary [ ], No formal education [ ]

f) **Occupation**: Please select [√] your current occupation:
Govt Employed; [ ], Private sector employed [ ], Self-employment [ ], Unemployed (incl. students[ ]

B. Healthcare Behaviour of Respondents:

g. When you had or diagnosed to have Mpox infection and need healthcare service, where do you first seek assistance?
Pharmacy [ ], Govt/Public Health facility [ ], Private Health facility [ ], Traditional healers [ ]

h. On average, how long do you typically receive treatment for the Mpox infection you had before you feel it has been resolved or improved? ----------Days

C. Personal Cost for Accessing Healthcare Services

i. How much did it cost for the following categories of payment made while seeking for healthcare service for the Mpox episode you had? Specify to the nearest Naira.

S/N	Type of Service paid for	Amount (#)
1.	Initial care	

2.	Laboratory test	
3.	Consultation fees	
4.	Treatment (Drug/Medication)	
5.	Hospitalization	
6.	Transportation	
7.	Feeding while in hospital	

j. What is your average income from labour/employment engagement? #----------

k. Was there any caregiver or member of family accompanied you to point of care access? Yes [ ], No [ ],

l. On average, how long did the caregiver provided care for you over the period the infection lasted? ----------Days

m. If Yes in Question (k), what is the average labour/employment income of the caregiver? #----------

Thank you for completing this questionnaire. Your responses are valuable and will assist us in addressing the burden of Mpox infections on the society.