

Factors associated with the practice of monkey pox preventive behaviours among health workers in Yenagoa LGA, Bayelsa state, Nigeria

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Abstract: Monkey pox (MPX), endemic in Nigeria, is a life threatening diseases that has record of about 40 suspected and 13 confirmed cases reported in Yenagoa, Bayelsa State and among the confirmed cases, 2 health workers were involved. Till date, monkey pox still remains a threat among the residents as 50 persons are being actively followed at different locations in the state. Studies on MPX have been undertaken in many aspects but there seem to be limited information in literature on the factors associated with the practice of the MPX preventive behaviours. It is in view of the above that this work was conducted to determine the factors associated with the practice of MPX preventive behaviours. The aim of this study was to determine the association between socio-demographic characteristics, awareness of MPX, perception about MPX and cues to action relating to MPX among health workers in Yenagoa, Bayelsa state, Nigeria. This study employed a descriptive cross-sectional study to elicit information from 400 health workers (nurses and doctors) working in health facilities located in Yenagoa LGA. A well-structured questionnaire was used to collect data and the data was analyzed using chi-square. The study showed that out of the 400 participants (261 nurses and 139 doctors), 250(62.5%) were females and 150(37.5%) males. 282 (70.5%) of the participants had a high level of awareness of MPX while 118(29.3%) had a low level of awareness. Also, all the participants 400(100%) had a positive perception about MPX after a cut-point for perception score was established. Cues to action relating to MPX was relatively high as 335(83.8%) of the participants reported that their awareness about MPX has increased their taking preventive actions against the disease and 312(78.0%) reported that the disease has increased their feeling of susceptibility. There was also a significant relationship between cues to action relating to MPX, awareness of MPX, perception about MPX and the practice of monkey pox preventive behaviours. It was observed that some of the participants were practicing the non-recommended preventive behaviours and the reason was associated to inadequate information or lack of educational programmes on MPX. Hence, this study concluded that wrong practices of monkey pox preventive behaviours shows the inadequate awareness on the disease, positive perception shows the willingness to take preventive action and a high cues to action indicate readiness toward promotion of good health and prevention of further spread of monkey pox disease. Therefore, there is need to expand the current strategies employed in the prevention of MPX disease to include health educational programmes on MPX in all health facilities emphasizing on appropriate preventive behaviours for the prevention of MPX disease.

Keywords: Monkey pox; Preventive behaviors; Awareness; Cues to action; Perception

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I. Introduction

The outbreak of the monkey pox (MPX) in west and central African, which was first discovered in Zaire in 1970, was one of the largest and most complex infectious disease outbreaks in history. Monkey pox is an infectious disease caused by the monkey pox virus that can occur in certain animals including humans. Monkey pox may spread from handling bush meat, an animal bite or scratch, body fluids, contaminated objects, or close contact with an infected person. It is a zoonotic virus with primary transmission believed to occur through direct contact with infected animals or possibly by ingestion of their inadequately cooked flesh. Inoculation may be from cutaneous or mucosal lesions on the animal, especially when the skin barrier is compromised secondary to bites, scratches, or trauma. Transmission can also occur from animal reservoirs from Western Africa (prairie dogs, rabbits, rats, mice, squirrels, dormice, monkeys, porcupines, gazelles). Additionally, direct cutaneous (skin-to-skin) or respiratory contact with an animal or person who is infected can transmit the infection.

There are measures that can be taken to prevent infection with monkey pox virus. The practices of preventive measures of monkey pox have made individuals live longer than they used to [4]. These preventive measures are regarded as preventive behaviours such as avoidance of contact with animals that could harbour the virus (including animals that are sick or that have been found dead in areas where the disease occurs), avoidance of contact with any material such as bedding, that has been in at risk of infection, practice of good hand hygiene after contact with infected animal or human (washing of hands with soap and water or using an alcohol-based hand sanitizer) and use of personal protective equipment when caring for patients [3]. Other preventive behaviours include; staying at home when there are signs and symptoms of an infection, avoidance of sharing personal items, travelling wisely, and practice of safer sex [11].

According to WHO [12] the Bayelsa state government has inaugurated a 12 member rapid response team comprising top medical professionals to prevent the spread of the suspected monkey pox disease, a viral epidemic that has infected 13 persons in the state. Besides the 12 members, who make up the core team, other sub-teams to carry out contact tracing of patients has also been set up. This is in order to quickly detect any new cases following exposures to suspected cases. WHO [12] reported 50 persons being actively followed at different locations in Bayelsa state and they concluded that the situation is not beyond control but that there is need for people to observe the simple hygiene of washing hands. New suspected cases are being reported every day in the state, the situation could get out of hand if critical measures are not quickly put in place. This is why it is expedient to inform the public and alert the health worker on their own role to play to stop the spread of the disease.

II. Materials And Methods

The descriptive cross-sectional study was carried out on doctors and nurses working in all levels of health facilities of both private and public hospitals in orthodox health care delivery located in Yenagoa, Bayelsa state, Nigeria. The study was conducted in 10 public primary health centre, 3 public secondary hospital, 7 private secondary hospital and one public tertiary hospital (as it is the only tertiary hospital located in the state) in Yenagoa, Bayelsa state, Nigeria. A total of 400 adult subjects were used in the study (both males and females). The study lasted from August 2018 to January 2019

Study design: Descriptive cross-sectional design and a multi-staged sampling technique

Study location: This was a descriptive study done in 21 hospitals (in the above mentioned) located in Yenagoa, Bayelsa state, Nigeria.

Study duration: August 2018 to January 2019

Sample size: 400 respondents (doctors and nurses)

Sample size calculation: The sample size was calculated using Taro Yamane formula with 95% confidence level. The target population from which we randomly selected our sample size was considered 3.552. The sample size actually obtained for this study was 19 respondents for 20 hospitals each and 20 respondents for one hospital to make up the 400 respondents for the 21 hospitals selected.

Ward A – (19 respondents) – 2 public primary health center and 1 public secondary hospital (3)

Ward B – (20 respondents) – 2 public health centers, public tertiary hospital, a private and public secondary hospital (5)

Ward C – (19 respondents) – 2 public primary health centers, a public and private secondary hospital (4)

Ward D – (19 respondents) – 2 public primary health centers, 2 private secondary hospitals (4)

Ward E – (19 respondents) – 2 public primary health centers and 3 private secondary hospitals (5)

Inclusive criteria:

1. Doctors and nurses only.
2. Either sex
3. Aged ≥ 20 years
4. Doctors and nurses working in Yenagoa LGA, Bayelsa state, Nigeria.
5. Doctors and nurses working in both private and public health facilities located in Yenagoa LGA, Bayelsa state, Nigeria.
6. Practice of monkey pox preventive behaviours
7. Socio-demographic characteristics, Awareness of monkey pox, perception about monkey pox, cues to action relating to monkey pox.

Exclusive criteria:

1. Non health worker
2. Doctors and nurses not working in Yenagoa LGA, Bayelsa state, Nigeria.
3. Medical laboratory scientist

4. Environmental health officer.
5. Hospital attendant.

Procedure methodology

After a written informed consent was obtained, a self-well- structured questionnaire was used to collect the data of the sampled doctors and nurses. The questionnaire included socio-demographic characteristics such as age, gender, years of service, professional discipline, awareness of monkey pox, perception about monkey pox and cues to action relating o monkey pox. Prior to data collection, approval to carry out this study was gotten from Head of administration and Head Department of Health, Yenagoa LGA, Bayelsa State. Directives were also given to Head management of the selected health facilities for permission and assistance to the researcher. They were also briefed with regards the significance of the study. Prior to data collection, oral consent was obtained from the nurses and doctors that were on duty during morning duty. The copies of the filled questionnaire were collected at the end of the morning duty.

Statistical analysis:

The data was analyzed using Statistical Packages for Social Sciences (SPSS) version 22.0. Descriptive statistics was used to analyze the data and the results were presented in tables and charts using Microsoft Excel 2010. Chi square was used to determine the association between the independent and the dependent variables. For perception about monkey pox, the highest point (5) was attached as 'strongly agree', 4 as 'Agreed', 3 as 'Indifference', 2 as 'Disagree' and 1 as 'Strongly disagree'. Each frequency was multiplied by the corresponding score point and divided by the total number of the participants to arrive at the average score for the variable assessed. To establish the cut off, the score point 1-5 were added and divided by 5 (number of Likert scale) to obtain 3 which was used as the cut-off point. There is a positive perception, if the average is ≥ 3 and negative perception if the average is < 3 . Also, to establish an overall awareness level for monkey pox, the highest frequency for each statement were added and divided by the total number of the statements to get the total number of the participants having high level of awareness on MPX out of 400 participants and the remaining as those having low level of awareness on MPX.

III. Result

The socio-demographic Characteristics of the Health Workers in Yenagoa LGA of Bayelsa State are shown in in table no 1. 50(12.5%) were 60years and above, 60(15.0%) were 50-59 years, 70(17.5%) were 40-49 years, 120(30%) were between 20-29 years and 100 (25%). On the same table, the highest percentages (62.5%) of the health workers were female while 37.5% were male. Majority 261(65.3%) of health workers were nurses, followed by doctors with 139(34.7%) and no response to other specialties.

Table no 1: Socio-Demographic Characteristics of the Health Workers in Yenagoa LGA of Bayelsa State.

Statement	Frequency (N)	Percentage (%)
Age of respondents		
20-29yrs	120	30.0
30-39yrs	100	25.0
40-49yrs	70	17.5
50-59yrs	60	15.0
60yrs and above	50	12.5
Total	400	100.0
Gender		
Male	150	37.5
Female	250	62.5
Total	400	100.0
Professional discipline		
Doctor	139	34.70
Nurse	261	65.3
Medical Laboratory Scientist	0	0.0
Environmental Health Officer	0	0.0
Hospital Attendant	0	0.0
Total	400	100.0

The distribution of the health workers by their responses to awareness of monkey pox in Yenagoa LGA of Bayelsa State is presented in table no 2 and 3. 282(70.5%) had a high level of awareness of monkey pox while 118(29.5%) has a low level of awareness. 400(100%) agreed they have heard of monkey pox and the major source of their information was through television with 106(26.5%) followed by newspaper with 103(25.8%), 88(22%) said through radio, 30(7.3%) said through internet and health facility and least 7(1.8%) said through seminar. From the result, 243(60.7%) stated that Bayelsa was one of the states that had the highest reported suspected/confirmed cases of monkey pox since 2017 followed by Plateau with 53(13.3%) and the least was found in Abuja with 20(5%). Out of 400 participants; 248(62%) knew that there was an outbreak of monkey pox disease reported in Yenagoa in 2017, 90(22.5%) said they are not aware. 282(70.5%) reported being aware that regular hand washing with water and soap/hand sanitizer is one of the preventive behaviours of monkey pox while 118(29.5%) said they were not aware. Also, 400(100%) stated that use of personal protection equipment is necessary for the prevention of monkey pox. 23.80% of the participants said MPX has a cure (which is the false statement), 28.50% said is preventable, 28.30% said is an infectious disease while 19.40% said small pox vaccine protects against the disease. Also, from the results, 87% said monkey pox is caused by a virus (which is the true statement), 12% said is caused by a bacteria and 1% said is caused by a fungal. 55.5% of the respondents reported that MPX can be transmitted through breast milk (which is the false statement), 16.3% said through animal scratches and bites, 10.8% said through animal lesions, 10% said through human respiratory droplets.

Table no 2: Distribution of Health Workers by their Responses to Awareness of Monkey pox in Yenagoa LGA of Bayelsa State.

Statement	Frequency (n)	Percentage (%)
Heard of monkey pox		
Yes	400	100.0
No	0	0.0
Total	400	100.0
Sources you got the information		
Seminar	7	1.8
Workshop	23	5.8
Newspaper	103	25.8
Television	106	26.5
Radio	88	22.0
Internet websites	30	7.5
Government agencies	13	3.3
In this facility	30	7.5
Family	0	0.0
Friends	0	0.0
During professional training	0	0.0
Total	400	100.0
Which of the States are you aware have the highest reported suspected/confirmed cases of monkey pox since 2017		
Enugu	0	0.0
Imo	0	0.0
Abuja	20	5.0
Bayelsa	243	60.7
Plateau	53	13.3
Don't know	84	21.0
Total	400	100.0
Are you aware there was an outbreak of monkey pox disease reported in Yenagoa in 2017		
Yes	248	62.0
No	62	15.5
Don't know	90	22.5
Total	400	100.0
Are you aware that regular hand washing with water and soap/hand sanitizer is one of the preventive measures of monkey pox		
Yes	282	70.5
No	118	29.5
Don't know	0	0
Total	400	100.0
Are you aware that the use of Personal Protection Equipment is necessary for the prevention of monkey pox		
Yes	400	100.0
No	0	0.0
Don't know	0	0.0
Total	400	100.0

Which of the following are you aware is not true about monkey pox		
MPX has a cure	95	23.80
MPX is preventable	114	28.50
MPX is infectious	113	28.30
Smallpox vaccine protects against MPX	78	19.40
Total	400	100.00
Which of the following are you aware causes monkey pox		
Bacteria	48	12
Fungal	4	1
Virus	348	87
Total	400	100
Which of the following are you aware does not transmits monkey pox		
Animal scratches and bites	65	16.30
Close contacts with infected person/objects	30	7.50
Animal lesions	43	10.80
Human respiratory droplets	40	10
Breast milk	222	55.40
Total	400	100

Table 3: Summary of the Distribution of Health Workers by their Responses to Awareness of Monkey pox in Yenagoa LGA of Bayelsa State.

Awareness level	Frequency	Percentage
High	282	70.5
Low	118	29.5
Total	400	100

The distribution of the health workers by their responses to cues to action relating to monkey pox in yenagoa LGA of Bayelsa state is presented in table no 4 presented cues to action relating to monkey pox disease; 150(37.5%) reported they have seen a person infected with monkey pox disease while 250(62.5%) said no to that idea. from the result, 218(54.5%) could recognize the signs/symptoms of monkey pox disease, 99(24.8%) said no while 83(20.8%) reported that they don't know. Also, 161(40.3%) reported they have attended educational programme on monkey pox, 239(59.8%) said no to that idea, 335(83.8%) of the participants reported that their awareness about monkey pox has increased their taking preventive actions against monkey pox disease. on the same note, 154(38.5%) have been involved in the management of a person suffering from monkey pox disease while 246(61.5%) said they have not and 312(78%) said their contact with monkey pox disease has increased their feeling of susceptibility and 88(22%) disagreed to that.

Table no 4: Distribution of Health Workers by their Responses to Cues to Action Relating to Monkey Pox in Yenagoa LGA of Bayelsa state.

Statement	Yes		No		Don't know		Total
	N	%	N	%	N	%	
Have you ever seen a person infected with monkey pox disease	150	37.5	250	62.5	0	0	400
Can you recognize the signs/symptoms of monkey pox disease	218	54.5	99	24.8	83	20.8	400
Have you attended any educational programme on monkey pox	161	40.3	239	59.8	0	0	400
Has awareness about monkey pox increased your taking preventive actions against monkey pox disease	335	83.8	65	16.3	0	0	400
Have you been involved in the management of a person suffering from monkey pox disease	154	38.5	246	61.5	0	0	400
Do you think that contact with monkey pox disease would increase feeling of susceptibility	312	78.0	88	22.0	0	0	400

The distribution of the health workers by their responses to perception about monkey pox in Yenagoa LGA of Bayelsa State is shown in table no 5 and 6 presented perception of health workers about monkey pox and the summary respectively; 268(67%) strongly agreed that not taking appropriate preventive actions against monkey pox disease will expose someone to higher risk of the disease, 122(31%) agreed to that, 7(1.8%) were indifference and 3(0.8%) disagreed to that idea. Recovery from monkey pox takes more time than someone will

desire to be ill, 114(29%) agreed to that, 61(15.3%) were indifference, 64(16%) disagreed and 12(3%) strongly disagreed. Monkey pox infection is not easy to control; 112(28%) strongly agreed, 194(49%) agreed to that, 72(18%) were indifference and 22(6%) strongly disagreed to that idea. Scared of being isolated while sick, 89(22%) strongly agreed that someone can be isolated while sick, 116(29%) agreed to that, 139(34%) were indifference and 56(14%) disagreed to that idea. Monkey pox treatment is very expensive, 214(54%) strongly agreed, 107(27%) agreed, 50(13%) were indifference and 29(7%) strongly disagreed. All the participants 400(100%) said that prevention is better than cure. In summary, there was a positive perception among the participants when scored.

Table no 5: Distribution of Health Workers by their Responses to Perception about Monkey Pox in Yenagoa LGA of Bayelsa State.

Statement	SA	A	I	D	SD	Total
Not taking appropriate preventive actions against monkey pox disease will expose you to higher risk of the disease	268(67%)	122(31%)	7(1.8%)	3(0.8%)	0	400
Recovery from monkey pox takes more time than I will desire to be ill	149(37%)	114(29%)	61(15.3%)	64(16%)	12(3%)	400
Monkey pox infection is not easy to control	112(28%)	194(49%)	72(18%)	0	22(6%)	400
Scared of being isolated while sick	89(22%)	116(29%)	139(34%)	56(14%)	0	400
Monkey pox treatment is very expensive	214(54%)	107(27%)	50(13%)	0	29(7%)	400
Prevention is better than cure	400(100%)	0	0	0	0	400

Strongly agree (SA), Agree (A), Indifference (I), Disagree (D) and Strongly disagree (SD)

Table no 6: Summary of the Distribution of Health Workers by their Responses to Perception about Monkey Pox in Yenagoa LGA of Bayelsa State.

Statement	SA	A	I	D	SD	Average score	%
Not taking appropriate preventive actions against monkey pox disease will expose you to higher risk of the disease	1340	488	21	6	0	4.64	+ve 18.2
Recovery from monkey pox takes more time than I will desire to be ill	745	456	183	128	12	3.81	+ve 15.0
Monkey pox infection is not easy to control	560	776	216	144	22	4.30	+ve 16.9
Scared of being isolated while sick	445	464	417	112	0	3.50	+ve 13.8
Monkey pox treatment is very expensive	1070	428	150	0	29	4.19	+ve 16.5
Prevention is better than cure	2000	0	0	0	0	5	+ve 19.7

≥ 3+ (+ve) and <3(-ve)

The Distribution of the health workers by their responses to the practice of monkey pox preventive behaviours in Yenagoa LGA of Bayelsa State is shown in table no 7 presented the practice of Monkey pox preventive behaviours among the health workers; 355(88.8%) reported they use personal protective equipment when handling all patients while 45(11.3%) reported when handling only infected/sick patients. The table also revealed 150(37.5%) reported that they prevent the further spread of monkey pox infection through vaccination, 100(25%) said through local herbs, 81(20.3%) reported through avoidance of contact with infected person and 69(17.3%) said through isolation of infected person. The best time you wash hands; 190(47.5%) said before and after glove use, 92(23%) said in contact with excretion, 18(4.5%) said before any invasive procedure and 100(25%) said in between different care episodes on same patient. 145(36.3%) reported that the best material they use for washing hands is with water and soap, 18(3.5%) said only water, 40(10%) said water and any alcohol-based hand sanitizer, 150(37.5) said water and alcohol-based hand sanitizer and multiple responses had 47(11.8%).

Table no 7: Distribution of the Health Workers by their Responses to the Practice of Monkey pox preventive Behaviours in Yenagoa LGA of Bayelsa State.

Statement	Frequency (n)	Percentage (%)
The best time you use personal protective equipment is		
When handling all patients	355	88.8
When handling only infected patients	44	11.0
When handling only sick patients	1	0.3
Total	400	100.0

How do you prevent the further spread of monkey pox infection

Vaccination	150	37.5
Local herbs	100	25.0
Avoid contact with infected person	81	20.3
Isolation of infected person	69	17.3
Total	400	100.0

When is the best time you wash hands

Before and after glove use	190	47.5
In contact with excretion	92	23.0
Before any invasive procedure	18	4.5
In between different care episodes on same patient	100	25.0
Total	400	100.0

What is the best material do you wash hands with

Water and soap	145	36.3
Water	18	4.5
Water and any hand sanitizer	40	10.0
Water and alcohol- based hand sanitizer	150	37.5
Multiple responses	47	11.8
Total	400	100.0

The following PPE are used for the prevention of monkey pox except

Mask	0	0.0
Hand gloves	0	0.0
Eye protective	289	72.3
Ear protective	111	27.8
Body protective	400	100.0
Total		

The distribution of the association between socio-demographic variables and the practice of monkey pox preventive behaviour among health workers in Yenagoa LGA of Bayelsa State is presented in table no 8. The highest number 120 (30%) who reported that the best time they use PPE is when handling all patients for the prevention of monkey pox were between the age of 20-29years while 50 (12.5%) reported when handling only infected/sick patients and Likelihood ratio Chi-Square (LR^2) test showed significant relationship ($LR^2 = 327.913^a$; $df = 10$ at $p < 0.05$). 205(51.3%) were female who reported they use PPE when handling all patients, 45(11.3%) were also female who reported when handling infected/sick patients while 150 (37.5%) were male who said when handling all patients and Likelihood ratio Chi-Square (LR^2) test showed significant relationship ($LR^2 = 30.423^a$; $df = 2$ and $p < 0.05$). 261(65.3%) were nurses who reported that the best time they use PPE is when handling all patients for the prevention of monkey pox and 139 (34.8%) were doctors who reported when handling all patients and Likelihood ratio Chi-Square (LR^2) test showed significant relationship ($LR^2 = 439.915^a$; $df = 8$ at p -value < 0.05). 56(14%) that had 11-15 years of experience said the best time they use PPE is when handling all patients for the prevention of monkey pox, 54(13.5%) said when handling all patients, 50(12.5%) with 1-5years and 26-30 years of experience said when handling all patients,44(11%) with 1-35years and above experience reported they also use PPE when handling all patients while 2(2.0%) with above 35years of experience said when handling infected /sick patients and Likelihood ratio Chi-Square (LR^2)test showed significant relationship ($LR^2 = 390.202$; $df = 14$ and $p < 0.05$).

Table no 8: Distribution of the Association between Socio-Demographic variables and the Practice of Monkey Pox Preventive Behaviour among Health Workers in Yenagoa LGA of Bayelsa State.

	The best time you use personal protective equipment is		Total	LR^2	ρ
	When handling all patients	When handling only infected/sick patients			
Age of respondents	20-29yrs	120(30%)	0(0%)	120	
	30-39yrs	100(25%)	0(0%)	100	
	40-49yrs	70(17.5%)	0(0%)	70	
	50-59yrs	30(7.5%)	30(7.5%)	60	
	60yrs and above	0(0%)	50(12.5%)	50	
Total	320	70	400	327.913	0.05
Gender of respondents	Male	150(37.5%)	0(0%)	150	
	Female	205(51.3%)	45(11.25%)	250	

Total		355	45	400	30.423	< 0.05
Professional Discipline	Nurse	261(65.3%)	0(0%)			26
	Doctor	139(34.8%)	0(0%)			13
	Total					9
		400	0	400	439.915	0.000
Years of Service as a Health worker	1-5yrs	50(12.5%)	0(0%)			50
	6-10yrs	48(12.0%)	0(0%)			48
	11-15yrs	48(14%)	0(0%)			56
	16-20yrs	54(13.5%)	0(0%)			54
	21-25yrs	52(13%)	0(0%)			52
	26-30yrs	50(12.5%)	0(0%)			50
	31-35yrs	44(11%)	0(0%)			44
	Above 35yrs	44(11%)	2(0.5%)			46
Total		398	2	400	390.202	< 0.05

The distribution of association between awareness of monkey pox and the practice of monkey pox preventive behaviours among health workers in Yenagoa LGA of Bayelsa State is represented in table no 9. 355(88.8%) of the participants reported that the best time they use personal protective equipment is when handling all patients and 44(11%) said the best time they use it only when handling infected/sick patients as a preventive behaviours for the prevention of monkey pox and Likelihood Ratio Chi-Square ($LR\chi^2$) test showed significant relationship ($LR\chi^2= 400.00$; $df = 2$ and $\rho <0.05$) between awareness of monkey pox by the health workers and the practice of monkey pox preventive behaviours.

Table no 9: Distribution of Association between Awareness of Monkey Pox and the Practice of Monkey Pox Preventive Behaviours among Health Workers in Yenagoa LGA of Bayelsa State.

		The best time you use PPE is		Total
		Yes	No	
Practice of monkey pox preventive behaviours	When handling all patients	355(88.8%)	0(0%)	355
	When handling only infected/sick patients	45(11.3%)	00(0%)	45
Total		400	0	400

Likelihood Ratio Chi-Square($LR\chi^2$)= 400.00; $df = 2$ and $\rho <0.05$

The distribution of association between cues to action relating to monkey pox and the practice of monkey pox preventive behaviours among health Workers in yenagoa LGA of Bayelsa State is presented in table no 10. Majority 161(40.3%) reported that the best time they use Personal protective equipment is when handling all patients while 238(59.5%) said the best time they use personal protective equipment is when handling only infected/sick patients for the prevention of monkey pox and Likelihood Ratio Chi-Square ($LR\chi^2$) test showed significant relationship between cues to action relating to monkey pox and the practice of monkey pox preventive behaviours ($LR\chi^2= 34.156$; $df = 2$ and $\rho <0.05$).

Table no 10: Distribution of Association between Cues to Action Relating to Monkey Pox and the Practice of Monkey Pox Preventive Behaviours among Health Workers in yenagoa LGA of Bayelsa State.

Practice of monkey pox preventive behaviours	Total
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	When handling all patients	When handling only infected/sick patients	
Cues to action relating to monkey pox	Yes 161(40.3%)	0(0%)	161
	No 0(0%)	238(59.5%)	239
Total	161	238	1 400

Likelihood Ratio Chi-Square ($LR\chi^2$) = 34.156; df = 2 and $\rho < 0.05$

The distribution of the association between perception of health workers about monkey pox and the practice of monkey pox preventive behaviours in Yenagoa LGA of Bayelsa State is presented in table no 11. 268(67%) strongly agreed on when handling patients as the best time they use personal protective equipment as a Preventive behaviour for the prevention of monkey pox, 87(21.8%) agreed on when handling infected persons while 35(8.8%) agreed when handling only infected /sick patients as the best time to use personal protective equipment for the prevention of monkey pox. Likelihood Ratio Chi-Square ($LR\chi^2$) test showed significant relationship ($LR\chi^2$) = 544.977; df = 8 and $\rho < 0.05$).

Table no 11: Distribution of the Association between Perception of Health Workers about Monkey Pox and the Practice of Monkey Pox Preventive Behaviours in Yenagoa LGA of Bayelsa State.

	Practice of monkey pox preventive			Total
	When handling all patients	When handling only infected/sick patients	only	
Strongly agree	268(67%)	0(0%)		268
Agree	87(21.8%)	35(8.8%)		122
Perception of health workers about monkey pox	Indifference	0(0%)	7(1.8%)	7
	Disagree	0(0%)	2(0.5%)	2
	Strongly disagree	0(0%)	1(0.25%)	1
Total	355	45		400

Likelihood Ratio Chi-Square ($LR\chi^2$) = 544.977; df = 9 and $\rho < 0.05$

IV. Discussion

The study showed that the age group that had the highest percentage in response to the practice of MPX preventive behaviours were young health workers (20-29yrs) and the age group with the lowest percentage was older health workers (50-59 and 60years and above). According to Muhausser[9] the young age people (15-26) were described as an age group to target behavioural change in a society. This shows that behaviour change or modification can be captured easily with young aged people. To the researcher's opinion, young health workers practice the MPX preventive behaviours more than their old counterparts and this could be as a result of the young people's ability to learn and retain new information faster and easily compared to older people. This aligns with Cutler [5] study that says flexibility of an individual declines throughout the lifespan due to decline in energy, decline in memory tissue, decline in the ability to process information making incorporation of new information difficult as life progresses, it also added that the sociological influence an individual experiences while young has a profound impact on his thinking. Therefore, younger health workers processes, retains and make proper use of any new information they receive on disease prevention than their old counterparts. To the researcher's opinion, it is expected that older health workers should be able to adopt and practice these preventive behaviours more than the young ones considering their longer experience in healthcare system. Therefore, the study revealed that age of the health workers impacts on their perceived threat of monkey pox which in turn trigger the willingness to take preventive actions against monkey pox. Also, from the findings of the study, female health workers were seen practicing the MPX preventive behaviours more than their male counterparts. Although, the result showed that some of the health workers were practicing the non-recommended MPX preventive behaviours such as; reporting the use of PPE when handling only infected/sick patients (while it should be used when handling all patients for the prevention of the disease especially when there is an outbreak or an areas where the disease has been reported) and washing of hands with the use of only water/any hand sanitizer and as health care providers who are seen as professionals, such is not expected of them. To the researcher's opinion, this study shows that female health workers practice the preventive behaviours of MPX because they are more concerned about their health than their male counterparts. This study is in line with Soyeon[10] study which aimed at determining the relationship between socio-demographic factors and the practice of risk preventive behaviours, their study revealed that females practice these preventive behaviours more than males. In addition to that, the study also aligns with Muhausser[9] study that says females

are more likely to seek healthy behaviours than males. However, this study is against a study carried out by Lindo[8] study which says female health workers are less concerned about their health compared to male health workers and their reason was due to their nurturing duties at home. To the researcher's opinion, the study was against this study because the study assessed the barriers and challenges caused by the health worker's working experience and the culture of their profession which often leads to physical and mental illness. There was a significant relationship between socio-demographic variables of the health workers and the practice of monkey pox preventive behaviours. 11-15years of service were practicing the preventive behaviours of MPX and professional discipline that had greater percentage in respect to the practice of monkey pox preventive behaviours were nurses compared to doctors. To the researcher's opinion, such is expected of them as today nurses does all the invasive procedures and care episodes in health facilities when compared to doctors. To the best of the researcher's opinion, there are no studies relating variables such as professional discipline and years of service to the practice of MPX preventive behaviours as to relate this study with. Therefore, socio-demographic variables impacts on perceived threat of monkey pox disease which in turn impacts on behavioural choices of the health workers in taking preventive actions against the disease.

All the participants reported to be aware of MPX disease and its recent outbreak in their locality. Majority of them were also aware of regular hand washing with water and soap/alcohol-based hand sanitizer and the use PPE as one of the preventive behaviours of the disease. However, during introduction, it was observed that some of the health workers were not aware of the disease on study but on the questionnaire, all of them reported otherwise. Of course such is expected as they would feel ashamed reporting not being aware as professionals in their field of study. Some of the health workers reported the use of only water/any hand sanitizer which raises an eyebrow because this is unbecoming for a health professional. To the opinion of the researcher, the cause of this could be as a result of carelessness while filling the report, lack of information due to lack of awareness, or even forgetfulness. Even though the health workers all showed a high level awareness about MPX, their awareness did not translate to all of them practicing the preventive behaviour of the disease, this could be as a result of lack of educational programmes or awareness campaigns on MPX during or after the outbreak of the disease or even lack self of acquired knowledge on the disease. Researches have shown that fairly knowledgeable people about a disease are less likely to practice preventive behaviours of that disease [6]. The study therefore shows that more knowledge or awareness about an infectious disease correlates significantly with the risk perception of that disease and this disagrees with Elizabeth [6] study that says they do not correlate significantly. The reason for this might be because the study assessed the 'practicing' of preventive behaviours for disease prevention while their study assessed on 'promoting' the prevention of disease. The study revealed that the health workers had a high level awareness of monkey pox and this accounts for people's readiness to take preventive actions against the disease. According to HBM, prior knowledge about a condition impacts on perceived threat which also impacts on behavioural choices that activates readiness and stimulates overt behaviour. In a study carried out by Amira [1] to assess the effectiveness of awareness of monkey pox prevention in the Congo Basin. The study was aimed to improve the understanding of monkey pox symptoms, transmission and prevention by residents of the Republic of the Congo (ROC) who are at risk for disease acquisition and the study was similar to this study where majority were able to understand and recognize the symptoms of the MPX disease. The study also showed a significant relationship between awareness and the practice of monkey pox preventive behaviours which means that the likelihood that the health workers will practice MPX preventive behaviours for its prevention is caused or affected by their level of awareness of the monkey pox disease. The cues to action relating to monkey pox disease were relatively high as a good number of the participants reported that they have seen a person infected with monkey pox disease, managed a MPX and could recognize the signs/symptoms of monkey pox disease. They also reported that their contact with monkey pox disease has increased their feeling of susceptibility and that it has increased their taking preventive actions against the disease. With this, it agrees with the HBM as it shows that the health workers will take the preventive actions for the prevention of the disease. Cues to action was added to activate readiness and is been regarded as a better predictors and an important behavioural determinant. with the cues to action relating to monkey being high, it shows the health workers has been seen reasons to take preventive actions and are also willing and read to take the actions for the prevention of the disease. The study also showed that there was a significant association between cues to action and the practice of Monkey pox preventive behaviours meaning that the likelihood that the health workers will practice MPX preventive behaviours is affected or caused by the internal or external trigger they experience.

There a positive perception among the health workers after the score and cut-point was established. A good number of the health workers (64%) stated that not taking appropriate preventive actions against monkey pox disease will expose one to higher risk of the disease, half of them said they believe the disease is expensive also, all of them reported that they belief prevention is better than cure. This shows the willingness to practice the preventive behaviours of the disease so as to reduce their risk of contacting the disease. The study agrees

with study carried out by Figueira and Alves study [7] that say positive perception drives behaviour and motivate action. This shows that all the health workers were motivated by their threat perception about MPX to take preventive actions. There was a significant relationship between the perception of the health workers about MPX and the practice of monkey pox preventive behaviours showing that perception impacts on behavioural choices of the health workers and that the likelihood that these health workers are going to practice the disease preventive behaviours is driven by their degree of threat perceived by the them about MPX disease. A study carried out by Andrea [2] that investigated the use of HBM to understand whether perception play a role in patient involvement in healthy practices, the study aimed at knowing if perception can be influenced to improve patient engagement in promoting safer health care. It aligns with this study as perception being one of the HBM constructs was used to explain the health worker's involvement in the practice of the MPX preventive behaviour and that perception can be influenced to improve the health worker's engagement in promoting preventive health care.

V. Conclusions and Recommendations

Based on the findings of the study, it was observed that not taking appropriate preventive actions against monkey pox disease by the health workers will expose them to a higher risk of contacting the disease. It also showed that although the health workers had a positive perception and a high level of awareness about monkey pox, this did not translate into all of them practicing appropriate preventive behaviours of the disease. Minority of health workers in this study were observed using the non-recommended PPE and hand washing recommended for MPX prevention. This calls for concern and need for additional information with the view to find out the reasons behind the wrong practice of the preventive behaviours within this occupational group to avoid further spread and reoccurrence of the MPX disease. Therefore, In conclusion, there is a significant association between socio-demographic variables of the health workers, awareness on monkey pox, cues to action relating to monkey pox, perception about monkey pox and the practice of monkey pox preventive behaviours. Therefore, health practitioners should initiate non-governmental programmes to modify preventive behaviours of health care providers with the view to achieve a reduced risk of the disease, health workers should be subjected to regular training about monkey pox diseases and encouraged to carry out screening test to the rural people for prevention of the disease and the Federal Ministry of Health and Partners should deliberate on conducting a national survey of monkey pox screening and more awareness campaign about the disease.

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