FACTORS ASSOCIATED WITH ATTITUDES REGARDING THE EBOLA VIRUS DISEASE AMONG MEDICAL AND NURSING STUDENTS IN A NIGERIAN TEACHING HOSPITAL

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ABSTRACT

Background: In recent times the Ebola Virus Disease has been a major source of public health concern. The 2014 West African outbreak affected several Health Care Workers (HCW) and this has negatively affected their attitudes towards the disease.

Materials and Methods: This cross-sectional study was done at the University of Maiduguri Teaching Hospital (UMTH), Nigeria and involved 423 under-graduate medical and nursing students. Multi-stage stratified random sampling was used and data was collected using a pretested structured self-administered questionnaire. Data analysis was done using IBM-SPSS version 22. Association between two categorical variables was done using Chi-square test, while Spearman’s correlation was used for correlation between two continuous as well as ordinal variables. The predictors of attitude were analyzed using Multiple Logistic Regression.

Result: The mean attitude score was 83.9 ±9.8, about 51.8% had good attitude. Predictors of attitude were age (AOR = 1.099, 95% CI = 1.019 - 1.184), field of study (AOR = 1.953, 95% CI = 1.142 – 3.334) and fifth year of studies (AOR = 1.993, 95% CI = 1.081 – 3.677).

Conclusion: Negative attitudes still exist such as fear of infection as well as stigmatization of EVD patients and survivors. There is need for government intervention through funding to improve the situation.

Keywords: Attitudes, Ebola, Medical and Nursing students, Nigeria
1.0 Introduction

The Ebola Virus Disease (EVD) in recent times has been a major source of public health concern. The 2014 West African outbreak affected several Health Care Workers (HCW) resulting high fatality rates (Fasina et al., 2015) which have negatively affected their attitudes towards the disease (Rosenbaum, 2008). The initial discovery was in 1976 in the African continent (Matua, Van der Wal, & Locsin, 2015). Since then, the virus has been involved in over 25 outbreaks with death rates amounting to the thousands (Lefebvre et al., 2014; World Health Organization WHO, 2015). These events have cumulatively resulted in global fear and panic even amongst HCW (Rajak, Jain, Singh, Sharma, & Dixit, 2015).

The high virulence of the organism makes it easily transmissible especially among small communities through contact with infected individuals which either be living or dead (Shears & O’Dempsey, 2015). The initial clinical features are constitutional such as fever, headaches, and malaise among others (Wong & Wong, 2015). At the later stages of the disease, bleeding manifestations start to evolve coupled with multiple coagulopathy leading to multiple organ failure and death in about 60%-90% of patients (Sousa, 2014). There is still no cure nor vaccine for this virus which makes it a major public health problem considering its high fatality rates (Ohimain, 2015).

HCW are more at risk of infection and death from the virus compared to the general public (Fasina et al., 2015). As reported from Guinea, the incidence rate of EVD among HCW is as high as 104.5 per 10,000 when compared to 3.3 per 10,000 for non-HCW (RR=42.2; 95% CI= 36.0-49.5). A study in Sierra Leone also reported similar findings that there exists a 103-fold higher incidence rate of the EVD among HCW when compared to the general public; it was also reported that doctors and nurses make up a major proportion of this vulnerable group (Center for Disease Control CDC, 2015a, 2015b). Besides the higher risk of infection from EVD among HCW, the risk of death from the disease is also high as fatality ratios of up to 50% among this population have been recorded in the recent outbreak (Fasina et al., 2015).

Cumulatively these have negatively affected the attitudes of HCW towards the disease resulting in fear (Rosenbaum, 2008), lack of confidence (Tarantini et al., 2015) and stigmatization towards survivors of the disease by members of the community (Ministry of Health Liberia, 2015; Monasch, 2014). Medical and nursing students as future HCW often perform minor procedures on infectious diseases patients during the clinical course of their training which exposes them to a risk of infection. The potential risk of infection results in fear (Rosenbaum, 2008) which may affect their attitudes in a similar manner to already practicing HCW. The aim of this study was therefore to determine the factors associated with attitude regarding the Ebola virus disease among medical and nursing students in University of Maiduguri Teaching Hospital.

2.0 Materials and Methods

The study location was University of Maiduguri Teaching Hospital, Nigeria where a cross-sectional study was done. This involved 423 medical and nursing students who were undergoing clinical training around the period of August to September 2015. Sample size was calculated using the Lemeshow’s formula for testing hypothesis between two proportions (Lemeshow, Hosmer, Klar, Lwanga, & WHO, 1990) where P1 and P2 where 0.27 and 0.14
respectively from a Knowledge, Attitude and Practice (KAP) study on medical and nursing students (Nawab et al., 2015). The sampling method applied was multi-stage stratified random sampling with probability proportionate to size. The respondents were initially stratified based on field of study into medical and nursing students, then secondly based on year of studies into 1st, 2nd, 3rd, 4th, 5th and 6th year students where sample selection was done by simple random sampling using the attendance rosters. The inclusion criteria was medical and nursing students during their clinical years of training as these were students who were exposed to infectious disease patients hence, 1st, 2nd and 3rd year students were nursing students and 4th, 5th and 6th year students were medical students because the 4th year is the first year of clinical training for the medical program at the study location.

After a written consent was obtained, data collection was done by the use of a pre-tested, structured, self-administered questionnaire. Socio-demographic data of the respondents was collected as well as assessment of their attitudes towards EVD such as professional obligation in treating patients, fear and risk of contracting the infection, attitude towards patients, stigmatization of survivors, willingness to treat EVD patients, changes in behaviour after the outbreak and volunteering in the case of an outbreak. These were adapted from guidelines for assessing KAP towards infectious diseases by the WHO (WHO, 2008), the attitude section of a national KAP study on the Ebola virus disease in Sierra Leone (Monasch, 2014) and guidelines for conducting KAP studies by Kaliyaperumal, 2004. The attitude questionnaire comprised of 24 structured items which were assessed attitudes using a 5-point Likert scale with responses based on level of agreement. For positive statements one (1) mark was recorded during data analysis for answering “strongly disagree” and increased by one (1) mark for each scale up to five (5) marks for “strongly agree”, while for negative statements five (5) marks were recorded during data analysis for answering “strongly disagree” and decreased by one (1) mark for each scale down to (1) mark for “strongly agree.” Attitude in this study was scored as either good or poor based on a score above or below 70% of the total marks available. This was in line with the pass grade in the study location and was also used as a cut-off point on a KAP on doctors and nurses by Mathewos et al., 2013.

The questionnaire was pre-tested to determine its validity and reliability. The validity was assessed by experts in the field. To assess reliability of the study instrument, the internal consistency method was used where 48 students who did not participate in the study were given the questionnaire to fill and the Cronbach’s α value was 0.67 which is acceptable according to Keller, Kim, Lau, Wong, & Griffiths, 2014. The software used for data analysis was IBM SPSS version 22. Normality test showed that attitude scores of the respondents were not normally distributed both statistically and graphically (Peat & Barton, 2005). During the analysis, data that were of categorical nature were analyzed for association using the Chi-square test. Correlation between two continuous and also continuous with ordinal variables was done using Spearman’s rank correlation (Mukaka, 2012). Variables with significant association as well as correlation were entered into the regression model and used to determine predictors of attitude. This was done using multiple logistic regression by the Forward Likelihood-ratio method (Forward L-R) at α <0.05 and 95% confidence interval (Peat & Barton, 2005). Ethical approval to conduct this study was approved by the Ethics Committee of the University of Maiduguri Teaching Hospital as well as the Ethics Committee for Research Involving Humans at the Universiti Putra gave ethical approval to conduct this study.
3.0 Result

3.1 Response rate

There were 423 respondents who participated in the study with a total response rate of 90.7%. The Faculty of Medicine had a response rate of 95.4% while the Faculty of Nursing had a response rate of 84.7%.

3.2 Socio-demography of respondents

In terms of socio-demography, there was a slightly higher proportion of male (52.7%) compared to female (47.3%) respondents. The age ranged from 16 to 39 with the median at 24 (IQR = 5). A higher percentage of participants were older than the median (24) age group (54.4%). There were more participants from the faculty of medicine (59.3%) compared to nursing (40.7%). According to level of studies, majority of the participants were sixth year students (27.0%), and the least were first year students (13.5%). Hausas constituted the majority ethnicity (74.9%). There were more Muslims (65.7%) than Christians (34.3%), and the vast majority were single (79.7%).

3.3 Participants responses to attitude questionnaire

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree n (%)</th>
<th>Disagree n (%)</th>
<th>I don’t know n (%)</th>
<th>Agree n (%)</th>
<th>Strongly Agree n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Doctors are most professionally obligated in caring for patients with EVD</td>
<td>54 (12.8)</td>
<td>69 (16.3)</td>
<td>41 (9.7)</td>
<td>117 (22.7)</td>
<td>142 (33.6)</td>
</tr>
<tr>
<td>2) Nurses are most professionally obligated in caring for patients with EVD</td>
<td>44 (10.4)</td>
<td>106 (25.1)</td>
<td>42 (9.9)</td>
<td>112 (26.5)</td>
<td>119 (28.1)</td>
</tr>
<tr>
<td>3) Both doctors and nurses have equal obligations in caring for patients with EVD</td>
<td>44 (10.4)</td>
<td>95 (22.5)</td>
<td>41 (9.7)</td>
<td>136 (32.2)</td>
<td>107 (25.3)</td>
</tr>
<tr>
<td>4) Doctors are more at risk of contracting Ebola virus from infected patients</td>
<td>86 (20.3)</td>
<td>110 (26.0)</td>
<td>30 (7.1)</td>
<td>116 (27.4)</td>
<td>81 (19.1)</td>
</tr>
<tr>
<td>5) Nurses are more at risk of contracting Ebola virus from infected patients</td>
<td>32 (7.6)</td>
<td>70 (16.5)</td>
<td>34 (8.0)</td>
<td>122 (28.8)</td>
<td>165 (39.0)</td>
</tr>
<tr>
<td>6) Both doctors and nurses share equal risks of contracting EVD from infected patients</td>
<td>70 (16.5)</td>
<td>103 (24.3)</td>
<td>41 (9.7)</td>
<td>118 (27.9)</td>
<td>91 (21.5)</td>
</tr>
<tr>
<td>7) I would prefer not to treat patients with EVD</td>
<td>138 (32.6)</td>
<td>123 (29.1)</td>
<td>44 (10.4)</td>
<td>63 (14.9)</td>
<td>55 (13.0)</td>
</tr>
<tr>
<td>8) People contract EVD as a result of negligence</td>
<td>132 (31.2)</td>
<td>138 (32.6)</td>
<td>46 (10.9)</td>
<td>67 (15.8)</td>
<td>40 (9.5)</td>
</tr>
<tr>
<td>9) People who contract EVD are themselves responsible for their condition</td>
<td>179 (42.3)</td>
<td>147 (34.8)</td>
<td>36 (8.5)</td>
<td>32 (7.6)</td>
<td>29 (6.9)</td>
</tr>
<tr>
<td>10) Health workers should have a legal right to refuse treating patients with EVD</td>
<td>115 (27.2)</td>
<td>130 (30.7)</td>
<td>55 (13.0)</td>
<td>66 (15.6)</td>
<td>57 (13.5)</td>
</tr>
<tr>
<td>11) After finishing my education I</td>
<td>59 (13.9)</td>
<td>81 (19.1)</td>
<td>79 (18.7)</td>
<td>122 (28.8)</td>
<td>82 (19.4)</td>
</tr>
</tbody>
</table>
The participants were asked questions regarding their attitudes towards the EVD such as professional obligation in treating patients, fear and risk of contracting the infection, attitude towards patients, stigmatization of survivors, willingness to treat EVD patients, changes in behavior after the outbreak and volunteering in the case of an outbreak. Responses to the attitude questionnaire are presented in Table 2. A majority of the respondents (57.5%) which included both medical and nursing agreed they were professionally obligated to treat patients with the EVD. Despite the higher proportion of the total sample being medical students, the cumulative majority opinion was that nurses were more at risk of contracting the Ebola virus from infected patients (67.8%). About a quarter (29.1%) of respondents felt HCW should have a legal right to refuse treating patients with EVD and about 33% would refuse to volunteer their services in the event of an outbreak. More respondents were confident in managing EVD patients during their studies (51.1%) compared to after finishing their studies (48.2%). A majority of respondents showed changes in attitudes by engaging in health seeking behavior (WHO, 2008) after the outbreak such as frequent hand washing (69.7%). Almost half of respondents (41.9%) showed some stigmatization towards survivors as they agreed survivors of the EVD should be isolated for 21 days after discharge from the hospital before being allowed to associate with the rest of the community and about a quarter (25.5%) would avoid physical contact with them.
3.3 Association and correlation between socio-demography and attitude categories

Table 3. Association and correlation between socio-demography and attitude categories (N = 423)

<table>
<thead>
<tr>
<th>Socio-demography</th>
<th>Attitude categories</th>
<th>χ²</th>
<th>r_s</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good Attitude</td>
<td>Poor Attitude</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n(%)</td>
<td>n(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>119 (53.4)</td>
<td>104 (46.6)</td>
<td>5.948</td>
<td>0.015*</td>
</tr>
<tr>
<td>Female</td>
<td>83 (41.5)</td>
<td>115 (58.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>0.268</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Field of study</td>
<td></td>
<td></td>
<td>35.668</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Medicine</td>
<td>150 (59.8)</td>
<td>101 (40.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td>52 (30.2)</td>
<td>120 (69.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year of studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine (4,5,6)</td>
<td></td>
<td></td>
<td>-0.012</td>
<td>0.844</td>
</tr>
<tr>
<td>Nursing (1,2,3)</td>
<td></td>
<td></td>
<td>0.370</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hausa</td>
<td>152 (47.9)</td>
<td>165 (52.1)</td>
<td>0.019</td>
<td>0.889</td>
</tr>
<tr>
<td>Others</td>
<td>50 (47.2)</td>
<td>56 (52.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>127 (45.7)</td>
<td>151 (54.3)</td>
<td>1.394</td>
<td>0.238</td>
</tr>
<tr>
<td>Christianity</td>
<td>75 (51.7)</td>
<td>70 (48.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>154 (45.7)</td>
<td>183 (54.3)</td>
<td>2.811</td>
<td>0.094</td>
</tr>
<tr>
<td>Married</td>
<td>48 (55.8)</td>
<td>38 (44.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: χ², Chi-square; r_s, Spearman’s correlation; *, p<0.05

Associations as well as correlation between socio-demographic variables and attitude scores are presented in Table 3. Attitude scores were categorized into two as poor attitude for < 70% and good attitude for ≥ 70%. The mean attitude score was 83.9 ± 9.8 and cumulatively only 51.8% of the respondents had good attitude. About 160 (63.7%) of medical students had good attitude while 59 (34.3%) of nursing students had good attitude scores.

Gender was associated with attitude as males had a higher proportion (53.4%) with good attitude towards EVD compared to females (41.5%), (χ² = 5.948, p = 0.015).

There was also a weak positive correlation between the age of respondents and their attitude scores (r_s = 0.268, p<0.001). Field of study was also associated with attitude where medical students had a higher proportion (59.8%) with good attitude than their nursing counterparts (30.2%), (χ² = 36.668, df = 1, p<0.001).

There was a weak positive correlation between year of studies and attitude scores of nursing students (r_s = 0.370, p<0.001) but not for medical students (r_s = -0.012, p = 0.844). Ethnicity (p = 0.889), religion (p = 0.238) and marital status (p = 0.094) were not associated with attitude.
### 3.4 Predictors of attitude

<table>
<thead>
<tr>
<th>Variables</th>
<th>AOR</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.099</td>
<td>1.019-1.184</td>
<td>0.014*</td>
</tr>
<tr>
<td>Field of study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine</td>
<td>1.953</td>
<td>1.142-3.340</td>
<td>0.015*</td>
</tr>
<tr>
<td>Nursing(0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year of studies(3)</td>
<td>1.993</td>
<td>1.081-3.677</td>
<td>0.027*</td>
</tr>
</tbody>
</table>

Abbreviations: AOR, Adjusted Odds Ratio; CI, Confidence interval; *, P<0.05

Multiple Logistic regression analysis showed that age, field and year of studies were independent predictors of attitude. As shown in Table 4, the odds of having good attitude were higher with increasing age (AOR = 1.099, 95% CI = 1.019-1.184, p = 0.014). With regards field of study, the odds of having good attitude was almost twice higher for medical students as compared to nursing students (AOR = 1.953, 95% CI = 1.142-3.340, p<0.015) and third year students were also almost twice more likely of having good attitude (AOR = 1.993, 95% CI = 1.081-3.677, p = 0.027).

### 4.0 Discussion

The recent EVD outbreak has been accompanied by a great level of panic and fear both in HCW and the general public (Shittu, 2015). The high proportion of HCW who have been infected with the virus overtime without doubt have raised concerns and resulted in a negative change in attitude in this population manifesting in ways that both directly and indirectly affects their duties (Rosenbaum, 2008). With these problems in mind, this study set out to assess the attitude of medical and nursing students of UMTH towards EVD in aspects such as professional obligation in treating patients, fear of contracting the infection, stigmatization of survivors and volunteering in the event of an outbreak. The results showed that like previous studies only half of the respondents in this study had good attitude. Fear and risk perception were still existent and a certain degree of stigmatization towards survivors was noticed as well.

The heightened fear accompanied by the recent outbreak, as well as an increased risk of death and infection among HCW (CDC, 2015a, 2015b; Fasina et al., 2015) might explain why only about two-thirds of respondents in this study agreed they were professionally obligated to treat EVD patients. About one-quarter also felt they would rather avoid treating them, and further agreed that legal rights should available to support this. This shows that although some HCW might be willing to offer their services, the recent trend of events is not very encouraging and may frustrate efforts in mobilizing HCW to combat future outbreaks should they occur.

Despite there being more medical compared to nursing students in this study, the opinion of the majority of respondents was that nurses were more at risk of contracting the EVD. Nursing care for patients with hemorrhagic fevers has also been reported to be associated with high risk of infection and a relative risk of 2.93 compared to other HCW (Ftika & Maltezou, 2013). A study in France also reported that nurses were least confident compared to other
HCW in handling EVD patients due to the high risk associated with their profession (Tarantini et al., 2015). These are in line with findings in this study, and could be due to the job specifications of nurses as nursing care generally entails close contact with patients in order to cater for them and provide their every need.

The fatality rate when infected with EVD among HCW is about 50% (Rosenbaum, 2008). This could explain why only half of respondents in this study would willingly volunteer their services during an outbreak. HCW were highly infected by the Ebola virus during the 2014 outbreak mostly due to lack of funding (WHO, 2014). This may be related to why respondents in this study felt more confident attending to patients while studying where poor funding is associated with less morbidity compared to post-graduation and practice out on the field (Fasina et al., 2015). This fear and feeling of vulnerability existing in young HCW needs to be addressed in order to improve the situation and build their confidence as well as encourage volunteering their services when called upon.

In Liberia almost everybody reported some form of behavior change after the 2014 outbreak (Ministry of Health Liberia, 2015). In this study the most common change in behavior was more frequent hand washing which was similar to a study in Sierra Leone (Monasch, 2014) but differed from another in Nigeria (Oguntimehin et al., 2015). Poor attitudes related to misconceptions however still exist as one-fifth of respondents engaged in the common myth of bathing with salt and hot water to prevent or cure the disease. A possible explanation for engaging in this is that although health care students are professionals in the making, they associate with the community as well. These are a young population and therefore would only be natural that they could emulate some of these behaviors if portrayed by other members of the community such as parents or siblings.

Survivors of the EVD have been plagued with discrimination and stigmatization in recent times (Ministry of Health Liberia, 2015; Monasch, 2014). After a preceding horrific experience of surviving a deadly disease, they would expect to be welcomed back to the community with cheers and open arms. However, this has not been the case. Studies in Liberia and Sierra Leone have reported some form of stigmatization and discriminatory behavior by as high as 98% of respondents (Ministry of Health Liberia, 2015; Monasch, 2014).

Although findings in this study show some level of improvement compared to these earlier studies, these negative attitudes still exist. About half of respondents in this study felt survivors should isolated for 21 days after being discharged from the hospital, another one-quarter thought they are still infective and therefore would avoid physical contact with them. The role of survivors in the transmission of the Ebola virus is still debatable and yet to be proven (CDC, 2015c) therefore, this attitude may be viewed by some as precautionary rather than discriminatory. But nevertheless, these are negative attitudes which should not exist in young HCW whom may soon be offerings their services and expertise both medically and emotionally to this same group of people.

There was an association between gender and attitudes among participants in this study as males had a higher proportion with good attitude as compared to their female counterparts. After multivariate analysis however and controlling for other variables this relationship was not significant. This is similar to what was reported in a study from Iran (Doosti Irani, Hashemi Shahraki, Ghaderi, Nasehi, & Mostafavi, 2015), but different from another study in
Fiji (Lui, Sarangapany, Begley, Coote, & Kishore, 2014) where gender was not associated with attitude.

Age of respondents in this study positively correlated with attitude scores; this meant that attitude scores coincidently improved along with increasing age. Age was also a predictor of attitude after controlling for other variables as the odds of having good attitude was also higher with increasing age. This was similar to findings from a study in Saudi Arabia (Abolfotouh, Al Saleh, Mahfouz, Abolfotouh, & Al Fozan, 2013) but but was different from others in Germany (Rübsamen et al., 2015) and Malaysia (Al-Dubai, S. A., Ganasegeran, K., Mohanad Rahman, A., Alshagga, M. A., & Saif-Ali, 2013). A possible explanation for this is that with increasing age comes more experience and therefore more understanding of the scenario leading to a more positive attitude.

Field of study was another predictor of attitude as medical students were more likely to have good attitude compared to nursing students. More than half of medical students in this study also had good attitude in contrast to only about one-third of nursing students. This was similar to a study on hemorrhagic fevers in Iran (Rahnavardi et al., 2008) and on HIV in Saudi Arabia (Abolfotouh et al., 2013) but differed from another study in Fiji (Lui et al., 2014).

From the findings in this study, it shows that medical students have a more positive attitude towards EVD patients compared to nursing. This problem needs to be further investigated and addressed. Nurses may feel they have the closest contact with such patients and therefore are more at risk of infection (Tarantini et al., 2015) which might affect their attitudes. If this is the case then urgent attention needs to be given to the plight and needs of this group of HCW. Year of studies positively correlated with attitude scores of nursing students thus meaning attitude performance correspondingly improved with increasing year of studies. Fifth year students were also more likely to have good attitude compared to other students after controlling for other variables. This association between attitude and year of studies was similar to a study among dental students in Croatia (Brailo et al., 2011) and medical students in Sweden (Brorsson, Hellquist, Björkelund, & Råstam, 2002). EVD is initially taught to medical students in their fifth year of studies at UMTH; this might provide a possible explanation for the association between this year and good attitude as an improved understanding of the dynamics of this newly learned disease could translate to the positive attitude associated with this stage.

5.0 Conclusion and recommendations

Findings in this study show there still exists poor attitudes regarding the EVD. These attitudes directly or indirectly are bound to affect their professionalism which in turn affects the quality of their work. Medical and nursing students are future HCW and as professionals HCW should be able to confidently carry out their duties with minimal fear, risk perception and total absence of stigmatization towards patients. In this study the factors shown to determine the attitude of medical and nursing students towards the EVD were age, year and field of studies which are in line with previous studies. However, this study is limited by its cross-sectional nature in that data was collected at only one point in time. The self reported nature of the data may also serve as a limitation as students may sometimes report attitudes that are deemed socially acceptable to beautify the image of their institution.
A few suggestions to help improve the attitude of medical and nursing students in the near future is firstly both government and senior HCW who are role models to this young population of HCW should help to allay fear and risk perception that currently exists. As the University of Maidauguri Teaching Hospital is a fully government owned and funded intuition, direct intervention by improved funding and provision of the necessary equipment can allay feelings of fear and risk perception. Guidance and counseling services by senior HCW should always be available especially for the young inexperienced HCW who may soon be on the field and therefore have many questions and concerns needing answers. Part of the curriculum that teaches about ethics in clinical practice could do with an improvement; the duties and requirements of these young HCW should be clearly spelled out to encourage compliance and dedication even when the temptation exists not to as a result of fear of infection.

The government can also restore confidence in it by HCW through adequate protection and support such as insurance policies that are clear and have adequate compensation to provide the much-needed incentives for HCW reluctant to volunteer services in the event of an outbreak.

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Declaration of interest

The author(s) declare no conflicting interest during the course of conducting this study.

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