

# Assessment of Demographic Factors in the Prevention of Ebola Virus

## RESEARCH ARTICLE

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## ABSTRACT

In this study, assessment of demographic factors in the prevention of Ebola virus was undertaken. The study adopted the correlational research design and between group design method. Questionnaires were used to collect data from respondents made up of 186(48.6%) males and 197(51.4%) females, with age range of 18-37 years. Simple regression analysis and 2-way analysis of variance were used for data analyses. Findings from the study revealed that age significantly influence attitude towards Ebola virus prevention. It also found that sex, religion and ethnicity do not influence respondents' attitude towards the virus prevention. Based on these findings, it was recommended that stake holders engage massive campaign that will help spur interest in the prevention of the virus.

**Keywords:** Ebola virus, Demographic factors, Prevention

## INTRODUCTION

Prevention typically takes its point of departure in the notion that health and disease are functions of a dynamic interplay between personal lifestyles or attitudes, living conditions and the general way society functions. In relation to health, the basic aim of prevention is to hinder the emergence and development of diseases and thereby promote well-being through such means as strengthening the individual positive attitude and health-related behaviours. Attitude which is the underlining factor in prevention and control is a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour [1]. In other words, it is a predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation or an attitude object like health challenge. Attitude influences an individual's choice of action, and responses to all kind of challenges, including a threat to healthy living.

Ebola virus disease (EVD) is one of the most common viruses in the modern world and ranked by the World Health Organization (WHO) as one of the top ten killers. The virus is responsible for 5000 confirmed cases of deaths in West Africa. With 325 cumulative survivors and 468

laboratory confirmed deaths (World Health Organization, 2014). The epidemic which has ravaged Sierra Leone, Guinea and Liberia has been characterized by WHO as one of the most challenging Ebola outbreaks to date. There have been 8,810 reported deaths, according to [2] but this is likely under-reported. The rate of death among patients treated in hospitals is 57-59 percent. Health-care workers have been hit especially hard with 816 cases and 488 deaths reported.

The persistence of infections throughout 2014 had two causes. The first was a lethal, tenacious and unforgiving virus. The second was the fear and misunderstanding that fuelled high-risk behaviors". The fear of Ebola is moving faster than the virus. This is the largest, longest, most severe, and most complex Ebola epidemic," and what began as a health crisis has become a humanitarian crisis, with social, economic, and security implications [3]. The Ebola epidemic ravaging parts of West Africa is the most severe acute public health emergency seen in modern times. Never before in recorded history has a bio-safety level four pathogen infected so many people so quickly, over such a broad geographical area, for so long [3].

With the outbreak of EVD, the attitude of people including university students in Nigeria towards the prevention of the disease in our society has been a major concern to all and sundry. The wisdom of our elders teaches that "prevention is better than cure" and that "a stitch in time saves nine". Though deadly, Ebola can be prevented by observing simple prevention procedures such as hand washing with soap, use of hand sanitizers, and avoiding contacts with infected patients or body fluids. There is however, seem to be lack of positive attitudes towards these prevention practices among university students on our campuses. Also dangerous is the fear of being marginalized or isolated which may cause students to conceal their illness which is not a positive preventive attitude. Survivors of Ebola disease in Nigeria who have had family members die, also suffer from stigma [4]. Even after they recover, the community still has a very strong stigma against them and do not want them in social places such as market, in their homes, worship places and schools. Due to this worrisome attitude towards prevention of Ebola virus, it is imperative to investigate into factors that are likely to be associated with spread of EVD with a particular focus on sex, age, ethnicity, religious practices, income and level of awareness about the disease as they affect the spread of the epidemic among students.

Demographic variables and level of awareness may have influence on attitudes towards Ebola virus prevention. Some researchers who have examined demographic variables found demographic variables to influence disease prevention. For instance, gender differences exist in disease prevention and that females are more likely than males to develop positive attitudes towards disease prevention. A possible explanation for this is the specific reactions that result from feminine characteristics to a traumatic event. Additionally, old age has been associated with an increased positive attitudes towards prevention of virus outbreak [5].

Religion is another demographic variable that may influence attitudes towards Ebola prevention among students. In Africa, religious activities, communities and beliefs form the daily behaviours and attitudes of many people including that of students towards prevention of Ebola disease. For instance, in a study from rural Mali, people who believed that diseases were punishment from God had more fatalistic attitudes [6]. The belief that prayer can cure Ebola disease may also leads to development of negative preventive attitudes. Another instance is a study on disease preventive attitude in Uganda which found that 6 out of 558 (1.2%) patients discontinued their treatment because they believed that their pastors' prayers had cured them of HIV and other kind of diseases [7]. These are indications that religious beliefs about Ebola Virus Disease can contribute to fatalistic attitudes and passive resignation, which hinders participation in preventive measures and treatment.

Ethnicity may also predict attitudes towards Ebola prevention. Cultural traditions associated with ethnic group may have effect on Ebola virus prevention due mainly cultural practices [8]. Not all cultural practices relating to health are bad. Some facets of culture, such as regular washing of hands before eating are good, and should be promoted. But some primitive

traditional cultural values and practices are highly. For this reason, this study aims to assess some demographic factors in the prevention of Ebola virus.

## EXPERIMENTAL PROCEDURES

This study adopted a correlational research design. The study is built on correlational and between groups designs. Correlational design allows for determination of the relationship between the independent variable and dependent variable. Meanwhile, between-groups design is use to compare the mean scores of respondents on dependent variable.

The study variables of demographic factors are independent variables, while attitudes towards prevention of Ebola virus are the measured as the dependent variable.

### Participants

The participants used in this study were drawn from among undergraduate students of Benue State University. From this population of 15,212, a representative sample was drawn to represent the total population. The participants were selected to include all gender, age category, religion, income status, ethnicity, etc. The Taro Yamen's formula for sample size determination was used in determining the number of participants. Based on the formula, a total of 389 respondents were selected to partake in the study. Out of the 389 copies of questionnaire distributed to participants, 383 were returned signifying that 383 undergraduate students took part in the study. Their age ranged from 18-37 years. Participants sex indicate that males were 186 (48.6%) while females were 197 (51.4%) signifying that more female undergraduates participated in the study than male undergraduates. Participants' religious affiliation indicates that Christians were 350 (91.4%), Islam was 21 (5.5%), and traditional religion was 12 (3.2%). This means that Christians participate more in the study than other religions. Respondents' ethnic group showed that Tiv were 146 (38.1%), Idoma 161 (42.0%) and others 76 (19.8%) implying that Idoma undergraduate students participated more in the study.

### Sampling

Simple random sampling technique was used to sample participants for the study. In determining the sample size, Taro Yamen's formula was employed. The formula is stated as:

$$n = \frac{N}{1 + N(e)^2}$$

Where: n=sample size required, N=population size e=level of significance 1 and 2 are constant

When applied to the population size we have:

$$\begin{aligned} n &= \frac{15,212}{1+15,212(0.05)^2} \\ n &= \frac{15,212}{1+15,212(0.0025)} \\ n &= \frac{15,212}{1+38.03} \\ n &= \frac{15,212}{39.03} \\ n &= 389 \end{aligned}$$

### Instruments

Data for this study were collected using two standardized structured questionnaires called Attitudes towards Ebola Prevention Schedule (AEPS). The AEPS is a 13-item questionnaire to measure attitudes towards prevention of Ebola among the general population. It is scored on a 4-point Likert-type responses of Strongly Agree = 4, Agree = 3, Disagree = 2 and Strongly Disagree = 1. All the items are directly scored except items 3, 4, 6, 7, 8 and 9 which are scored in a reverse order. AEPS has a reliability coefficient of .87 which showed that the instrument is reliable.

### Procedure

The sampling technique adopted for this study is a combination of multi-stage sampling and simple random sampling techniques. Multi-stage sampling is a technique by which a researcher selects groups of participants in stages before arriving at individual respondents. In this study, five faculties were selected out of the nine faculties in the university using random sampling technique. Then from each faculty, three departments were also selected using random technique. A total of 15 departments were selected and respondents were sampled from the 15 departments. In selecting the faculties and departments, the researcher wrote names of each faculty and department and put them in a container from which these ballots papers were picked at random. Only the selected faculties and departments were considered for the study. Thereafter, the selected departments were visited and after obtaining informed consent of the students, questionnaires were administered to students.

To administer questionnaire to students, the researcher with three of her assistants visited lecture halls and to ensure that the scientific method was used in administering the questionnaires, the researcher wrote "Yes and No" on pieces of paper and dropped in the basket. The researcher with her assistants took the baskets round and any student who picked a piece of paper that had the inscription "Yes" was automatically qualified for the study provided that respondents agreed to respond to the questionnaires while those that picked "No" did not participated in the study. It took the researcher two days to administer copies of the questionnaire to students.

### Data Analysis

Data for this study, the Two -Way Analysis of Variance was used to test if religious and ethnicity had an influence on attitudes towards prevention of Ebola Virus.

## RESULTS

Table 1 presents the general characteristics of the sample respondents. Participants sex indicate that males were 186 (48.6%) while females were 197 (51.4%) signifying that more female undergraduates participated in the study than male undergraduates. Participants' religious affiliation indicates that Christians were 350 (91.4%), Muslims were 21 (5.5%), and traditional religion were 12 (3.2%). This means that Christians participated more in the study than other religions. Respondents' ethnic group showed that theTivs were 146 (38.1%), Idoma 161 (42.0%) and others 76 (19.8%) implying that Idoma undergraduate students participated more in the study. The results are presented in Table 1.

Table 1: Characteristics of respondents

S/No	Participants	Frequency	
1.	Sex		
	Male	186 (48.6)	
2.	Religious affiliation	Female	197 (51.4)
		Christians	350 (91.4)
		Islam	21 (91.4)
3.	Ethnic group	Traditional	12 (3.2)
		Tiv	146 (38.1)
		Idoma	161 (42.0)
		Others	76 (19.8)

**Table 2: Multiple Regression Results showing Age as a predictor of Attitudes towards Ebola Virus Prevention**

Variables	R	R <sup>2</sup>	F	$\beta$	t	P
Constant	.151	.223	8.560		17.377	.000
Age				.151	2.926	.004

**Table 3: A Summary of Analysis of Variance on Attitudes towards Ebola Virus Prevention, Religion, Ethnicity and Sex**

Source of variance	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	748.777 <sup>a</sup>	17	44.046	1.463	.106
Intercept	34321.894	1	34321.894	1140.162	.000
Religion	237.649	3	79.216	2.632	.050
Ethnicity	19.133	2	9.567	.318	.128
Sex	15.706	1	15.706	.522	.471
Religion * Ethnicity	83.806	5	16.761	.557	.733
Religion * sex	41.420	2	20.710	.688	.503
Ethnicity * sex	93.787	2	46.894	1.558	.212
Religion * Ethnicity * sex	50.383	1	50.383	1.674	.197
Error	10505.828	349	30.103		
Total	397567.000	367			
Corrected Total	11254.605	366			

Keys:

\* =  $P < .05$

\*\* =  $P < .01$

Table 3 is a summary of 2-way analysis of variance (2-way ANOVA) showing the influence of three independent variables: religion, ethnicity and sex on attitudes towards Ebola Virus prevention. The result of the analysis of variance on Table 3 shows one main effect was significant. Two way and three way interaction were not statistically significant. The result shows that religion has no significant influence on attitudes towards Ebola Virus prevention ( $F = 2.632 = 3, 349, P > .05$ ). Therefore, hypothesis 2 of the study which predicted a significant influence of religion on attitudes towards Ebola Virus prevention was rejected. This means that there is no significant difference between the religious group – Christianity, Islam, traditional and others on attitudes towards Ebola Virus prevention. It also implies that religion has no significant role to play in attitudes towards Ebola Virus prevention.

The test for hypothesis 3 which examine gender difference in attitude towards prevention of EVD among undergraduates in Benue State University was also not significant ( $F = .522, 1, 349, P > .05$ ). This means that male and female undergraduates do not differ on attitude towards prevention of Ebola Virus Disease. Both males and females exhibit same level of attitude regarding Ebola Virus prevention.

The result from Table 3 also shows that ethnicity is not a factor in attitude towards prevention of Ebola Virus ( $F = .318, 2, 349, P > .05$ ). This means that Tiv, Idoma and other tribes do not differ on attitudes towards Ebola Virus among undergraduates in Benue State University. Therefore, the result of hypothesis 4 was rejected. From the results on Table 3, there was no interaction effect of religion and ethnicity on attitudes towards Ebola Virus prevention ( $F = .557, 5, 349, P > .05$ ). This means that religion and ethnicity do not combine to influence attitudes towards Ebola Virus prevention. Also, there was no interaction effect of religion and sex ( $F = .688, 2, 349, P > .05$ ) and ethnicity and sex ( $F = 1.558, 2, 349, P > .05$ ) on attitudes towards Ebola Virus prevention among undergraduate students of Benue State University. Also, there was no three way interaction effect of religion, ethnicity and sex ( $F = .688, 2, 349, P > .05$ ) on attitudes towards Ebola Virus prevention among undergraduate students of Benue State University.

## RESULTS

The quest to find out the influence of socio-demographic factors and awareness as predictors of attitudes towards prevention of Ebola Virus has shown that other demographic variables beside age that are studied here do not significantly predicted attitudes towards prevention of Ebola Virus. This by explanation means that an individual's willingness to modify their behaviours to match required behaviours that are necessary for prevention of Ebola Virus is dependent on their age and awareness regarding Ebola. In other words, age enable individuals to behave in a way that will enable stay health Findings of the study also indicate that age predicts attitudes towards prevention of Ebola Virus.

These results showed that further that there is no significant difference between Christians and Muslims on attitudes towards prevention of Ebola Virus, no difference between males and females undergraduates' attitudes towards prevention of Ebola Virus. Furthermore, no two way interaction effect was found between religion and sex, religion and ethnicity, and sex and ethnicity on attitudes towards prevention of Ebola Virus. Similarly, there was no three way interaction that is religion, sex and ethnicity did not produce a significant effect on attitudes towards prevention of Ebola Virus.

In hypothesis one of the study, it was found that age significantly influence attitudes towards prevention of Ebola Virus. This means that as an undergraduate's age increases so does his or her preventive behaviour, such an undergraduate will engage in attitudes and behaviours which are capable of preventing and spreading Ebola virus and are also necessary for the prevention of other diseases. Undergraduates who are advanced in age have appropriate appreciation for preventive behaviour put in their best in ensuing positive and effective attitudes that will lead to prevention of diseases. In this regard, results from the current study align with those of previous studies and indicate that age is associated with attitudes towards Ebola Virus prevention. That is, individuals who have more of a sense of responsibility will develop attitudes that will lead to prevention of Ebola virus. In a related development, findings by [9] also supported the finding presented here. This finding is also consistent with those of [10].

The result of hypothesis 2 shows that religion has no significant influence on attitudes towards Ebola Virus prevention. This means that hypothesis 2 of the study which predicted a significant influence of religion on attitudes towards Ebola Virus prevention was rejected. This implies that there is no significant difference between the religious group – Christianity, Islam and traditional on attitudes towards Ebola Virus prevention. It also implies that religion has no significant role to play in attitudes towards Ebola Virus prevention. This finding does not agree with those of [11] who probed associations between religious beliefs and Ebola stigma, disclosure, and attitudes toward treatment and shame-related Ebola stigma to be strongly associated with religious beliefs such as the belief that Ebola are punishments from God or that people living with Ebola have not followed the word of God. They found that respondents' hypothetical willingness to begin prevention and treatment was not significantly associated with the belief that prayer could cure Ebola or with other religious factors. Refusal of treatment was instead

correlated with lack of secondary schooling and lack of knowledge about treatment methods. The decision to start treatment hinged primarily on education-level and knowledge about treatment rather than on religious factors. Similarly, [4] found religious belief to be related to attitudes to prevention of Ebola.

In hypothesis 3, it was found that there is no significant gender difference in attitude towards prevention of Ebola Virus Disease among undergraduates in Benue State University. This means that male and female undergraduates do not differ on attitude towards prevention of Ebola Virus Disease. Both males and females exhibit same level of attitude regarding Ebola Virus prevention. However, it should be noted that, irrespective of the male/female ratio of cumulative cases, any strategies to stem the epidemic require a gender nuanced approach that addresses the differing needs and vulnerabilities of the women, men, boys and girls of the affected population. Also, the finding do not corroborate with that of [12] which estimated that women are more infected than men.

The finding of hypothesis 4 showed that ethnicity is not a factor in attitude towards prevention of Ebola Virus. This means that Tiv, Idoma and other tribes do not differ on attitudes towards Ebola Virus among undergraduates in Benue State University. The hypothesis 4 was rejected. This finding do not tallies with those of Chao, the author [3] who found ethnicity to be a significant predictor of attitudes towards Ebola virus prevention. Also, the author in [13] found factors such ethnicity to be associated with greater attitudes towards Ebola virus prevention. In line with this finding, [14] in their study to evaluate the knowledge, attitude and practice towards prevention of Ebola virus disease found in a cross-sectional study that ethnicity to have a significant influence on Ebola virus prevention.

## CONCLUSION

Based on the findings of the study, it was found that age significantly predict attitudes towards Ebola virus prevention among undergraduate students of Benue State University. Also, religious affiliation was not found to influence attitudes towards Ebola virus prevention among undergraduate students of Benue State University. Additionally, no significant differences were observed between Christians, Islam and traditional religion.

The study concluded based on the findings that sex does not influence attitudes towards Ebola virus prevention among undergraduate students of Benue State University and also there was no difference between males and females on attitudes towards Ebola virus prevention among undergraduate students of Benue State University. Moreover, ethnicity was also not found to influence attitudes towards Ebola virus prevention among undergraduate students of Benue State University.

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