

Internet-Mediated Aids Denialism, Youth Exposure and Aids Beliefs: The Proselytizing Scenario

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Abstract- This paper deals with the problem of AIDS denialism mediated over the Internet in student communities in Nigeria. The Internet plays host to different shades of information and opinions. Since the suggestion of HIV as the cause of AIDS by Dr. Robert Gallo in the early 80s and the counter position by notable virologist, Dr Peter Duesberg, that HIV cannot cause AIDS, there have been issues around HIV & AIDS. One of such issues is AIDS denialism – the opinion held by some medical experts, professionals and organizations that HIV is not the cause of AIDS. Today, unlike years before, this opinion finds a free course on the Internet; with the potential for followership. This study, therefore, sought to determine whether Nigerian university students (classified in this study as youths) were exposed to Internet-mediated AIDS denialist arguments; and whether being exposed was a determinant influence on their AIDS beliefs. A survey was conducted among a sample of 398 university students drawn from five universities in southeast Nigeria. Findings show that exposure to AIDS denialism on the Internet was a major predictor of AIDS beliefs and response to HIV & AIDS communication among 30% (n=118) of the university students that were studied. Though no generalization, beyond the sample utilized, was intended, this figure was deemed significant enough to warrant broader studies along the line of the investigated theme, for wider generalizations.

Index Terms- AIDS Denialism, AIDS beliefs, denialist communications, AIDS Deniers, HIV & AIDS communication

I. INTRODUCTION

The Internet medium offers the platform for the free course of information. Ideas and opinions that find their way on the Internet could be accessed by a little above 2.4 billion users worldwide. [1] A large percentage of these Internet users are youths. [2]

Nigeria has a population of over 160 million people, according to the 2006 national census, which is still extant data source. Youths below the age of 25 years, comprise one third of this population. Between year 2000 - 2012, Internet penetration in Nigeria grew from 0.06 percent to 34 percent. Presently, about 56 million Nigerians use the Internet, making Nigeria the largest market in Africa; and, the hope for the sustenance of this market lies in this large population of Internet users being youths. [3]

By implication, the foregoing statistics would suggest that the Nigerian youth is a prime market for the Internet. Youth exposure to the Internet could carry with it the potential consequence of these youths coming under the influence of negative materials like pornography, hate messages, doctrinaire messages or even the AIDS denialist ideas, which Smith and Novella [4] tell us are largely propagated through the Internet rather than scientific literature.

The consensus opinion held by the scientific community is that the Human Immuno-deficiency Virus (HIV) causes Acquired Immune Deficiency Syndrome (AIDS). [5] But AIDS denialists or deniers reject this “conventional wisdom”. AIDS denialism is mainly anchored on the belief that HIV does not cause AIDS. [6][7] Dr. Peter Duesberg, a notable AIDS “denialist”, had hypothesized from the outset of the AIDS crisis in 1987, that drugs used for recreational purposes such as alkyl nitrates (“poppers”) were the cause of AIDS and not HIV as was being widely promoted. [8] Furthermore, AIDS denialists hold the views that: HIV has not been scientifically isolated [9]; test for HIV is highly inaccurate [10]; malnutrition, recreational drugs and antiretroviral drugs indeed cause AIDS [11]; and that, AIDS is international conspiracy. [12]

Although AIDS denialism seems to have plateaued in the 80s and 90s, there is the view among AIDS researchers that the shadow of AIDS denialism still looms large – and the denialist message is still making some impact. [8]

II. AIMS OF THE STUDY

The main aim of this study was to ascertain whether the youth members (the youth meant here are university students, between 16-30-plus years) of the Nigerian society, who are Netizens (individuals who spend a lot of time on the Internet) are exposed to AIDS denialism published on the Internet; and, if such exposure exerts a proselytizing effect on their AIDS beliefs. The study therefore sought answers to the following questions:

1. How accessible is the Internet to university students in Nigeria?
 2. Who among these students is a Netizen?
3. What number among these students regards Internet communications as credible?
4. Who among these students has come across AIDS denialist communications on the Internet?
4. Have their beliefs regarding HIV & AIDS been influenced in any way by exposure to, and acceptance of AIDS denialists' position?

Also, three research hypotheses were formulated for the study. These are:

Research Hypothesis 1: The university students in southeast Nigeria who own or have access to Internet-enabled PCs, laptops and phones are more likely to be Netizens.

Research Hypothesis 2: The university students in southeast Nigeria, who are Netizens, are more likely to be exposed to AIDS denialist communications on the Internet more than their colleagues who are occasional visitors on the web or non users of the Internet.

Research Hypothesis 3: The university students in southeast Nigeria, who are Netizens, and who perceive Internet communications as credible, are more likely to subscribe to the AIDS denialist position.

III. METHOD

Our study was designed as a survey. A pre-coded 50-item questionnaire was used as the data collection instrument. These 50 items addressed variables directly related to the research questions and hypotheses that have been developed for the study. The survey questions were in regard to the respondents' ownership/access to Internet-enabled PCs, laptops and mobile phones; their status as Netizens; their perception of Internet materials; their exposure to Internet AIDS denialist communications; and their beliefs regarding HIV & AIDS.

Nigeria comprises six geopolitical zones: The Southeast; South-south; Southwest; North central; Northeast and Northwest. The study was purposefully set in Nigeria's southeast. The idea was to explore a regional situation which could serve as a basis for further studies in the other regions and beyond.

The population for this study comprises all university undergraduate students, numbering about 134,919 in five randomly selected universities in southeast Nigeria: Nnamdi Azikiwe University, Awka [35,646]; Abia State University Uturu [20,389]; Federal University of Technology Owerri [20,246]; Ebonyi State University, Abakaliki [23,437] and University of Nigeria, Nsukka [35,201]. These undergraduates, age 16-34, are classified as youth, and were purposively chosen because of their inclination towards using the Internet. A sample of 398 was drawn from the study population of 134,919, using Taro Yamane's formula for determining sample size: $n = N / (1 + N(e)^2)$.

The multi-stage sampling procedure was used to select 398 respondents, proportionally, from the study population of 134,919.

IV. RESULTS

Our study had five specific objectives: 1) to establish Internet access among university students in southeast Nigeria; 2) to establish these student's 'Netizenship'; 3) to establish how credible these students deem Internet materials; 4) to establish who among these students is exposed to AIDS denialist communications on the Internet; 5) to establish these student's beliefs about HIV & AIDS. The five research questions posed in this study revolved around these objectives.

The gender distribution in our sample was 51 percent male and 49 percent female. More than half (58%) of the students surveyed were within the 22-27 age bracket. The remaining 40 percent fell within the 28-33 age bracket, while two percent abstained from indicating their age bracket. The majority of the students (82%) live on campus, while 18 percent live off campus.

4.1 Analysis of Research Questions

The first research question of this study sought to determine how many among the undergraduate students in Southeast Nigeria own or have access to Internet-enabled PCs, laptops and mobile phones. Our findings are provided in Table 1.

Table 1: Respondents who own or have access to ICT devices

Variables	Have access to PCs	Own/have access to laptops	Own mobile phones
Yes	92.1%	87.9%	99.2%

No	7.9%	12.1%	.8%
Total	100% (N=380)	100% (N=373)	100% (N=380)

On the average, over 90 percent of the respondents own ICT devices like PCs, Laptops and mobile phones. This led to the preliminary conclusion that a greater number among the undergraduate students studied own or have access to Internet-enabled PCs, laptops and mobile phones.

The second research question sought to know the Netizens among the respondents. The idea of establishing Netizenship was informed by the assumption that regular use of the Internet could predispose the students to chance upon volumes of information which might include denialist communications; than when they are occasional users or non users. Analysis of the respondents' use of the Internet, as shown in figure 1, indicates that over 85 percent regularly use the Internet; 10 percent occasionally while five percent were noncommittal.

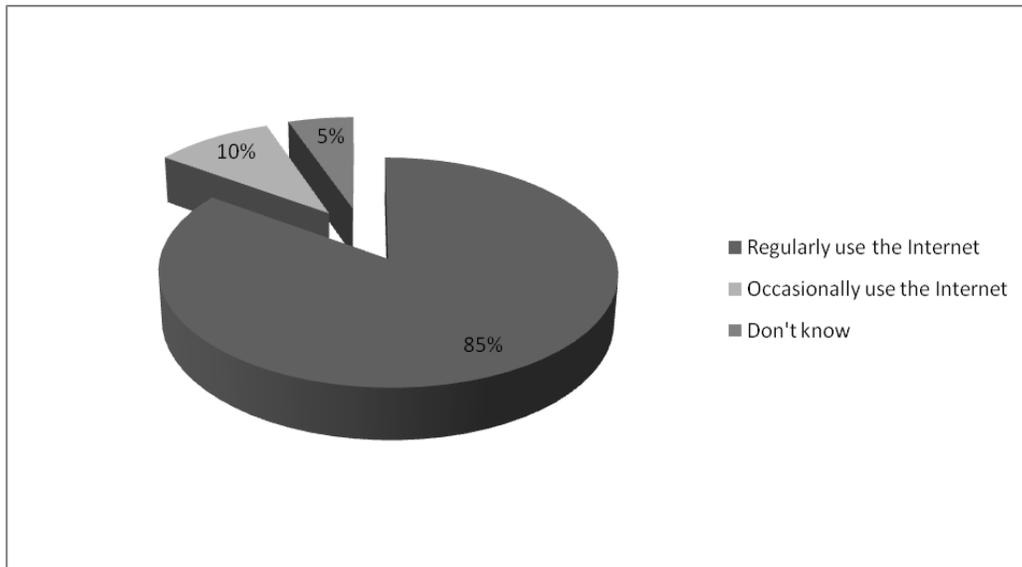


Figure 1: Respondents' frequency of Internet use

Overall, our data suggest that more of the respondents regularly use the Internet. This is simply because they own or have access to Internet enabled devices. They could therefore be described as Netizens.

Table 2: Respondents' main activities online

S/N	Variab les	Send / receiv e e- mail via Intern et- enable d device s	Chat on <i>Yahoo Messen ger</i>	Chat on <i>Skyp e</i>	Communi cate on <i>Twitter</i>	Communi cate on <i>My Space</i>	Chat on <i>Face book</i>	Chat on <i>2Go</i>	Communi cate on <i>Yookos</i>	Engag e in bloggi ng	Own <i>YouTu be</i>	Comm ent on the Internet
1	Yes	90.8%	45.9%	28.9 %	58.4%	45.3%	86.8 %	83.2 %	9.5%	40.4%	35.8%	63%
2	No	8.9%	54.1%	71.1 %	41.6%	54.7%	12.9 %	16.8 %	90.5%	59.6%	64.2%	37%
Tot al	100%	100%	100%	100 %	100%	100%	100 %	100 %	100%	100%	100%	100%

	N=345	N=379	N=380									
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Table 2 shows the students’ main activities online. Our data reveal that a little above 90 percent of the respondents engaged mainly in the exchange of mails, whereas 80 percent and more dwelt on social networking via Face book and 2Go.

The third research question asked to know if Internet materials were perceived as credible by the respondents. The logic behind posing this question is to verify the value these students placed on materials from the Internet. Most times when people give the narrative of news events and the authenticity of their narrative are queried, usually, the frequent response is: “but I heard it on the radio” or “the ‘media’ carried it”. So, that’s what makes it authentic! It’s in this same spirit that we sought to establish the value students attached to Internet materials. If the perceive Internet materials generally as credible, then there is the likelihood that they could be influenced by denialist communications to question the HIV & AIDS conventions.

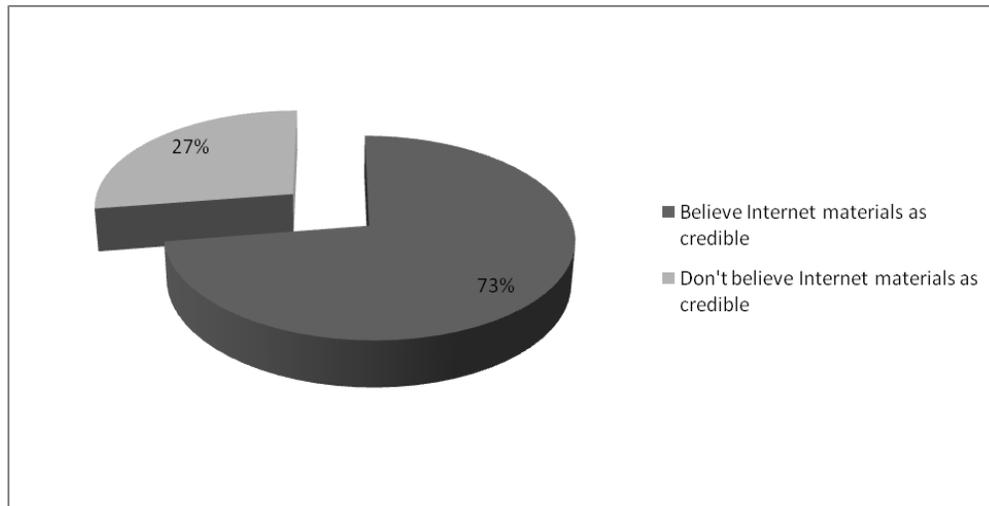


Figure 2: Respondents’ perception of Internet materials

Our findings, as shown in figure 2, show that 73 percent of the students perceive Internet materials as credible. These findings would suggest that, with this perception of Internet materials as credible, there is a veritable danger of these respondents being influenced by Internet materials such as denialist communications, which they could hold as credible.

The Fourth research question sought to ascertain if the respondents have come across denialist communications on the Internet.

Table 3: Respondents’ exposure to AIDS denialist communication via the Internet

S/N	Variables	Comments suggesting that HIV is not the cause of AIDS	Peter Duesberg’s comments	Review of the film <i>House of Numbers</i>	Review of the film <i>Dancing Naked on the Mindfield</i>	Visited <i>HealToronto.com</i> website	Visited <i>LewRockwell.com</i> website
1.	Yes	49.5%	37.5%	43.4%	48.4%	46.8%	40.3%
2.	No	50.5%	62.5%	56.6%	51.6%	52.2%	59.7%
Total		100% N=380	100% N=379	100% N=380	100% N=380	100% N=380	100% N=380

Findings from analysed data in Table 3 show that 40 percent of the respondents, on the average, were exposed to the various denialist communications. This suggests an appreciable level of exposure to AIDS denialism on the Internet. Also, findings reveal that about 40 percent of the respondents engage in blogging. This would suggest that exposure to AIDS denialism could occur during the process of blogging.

Research question five looked at the respondents’ beliefs vis-à-vis AIDS denialism.

Table 4: Respondents' beliefs regarding HIV & AIDS

S/N	Variables	HIV is not the cause of AIDS	HIV positive test is not reliable	AIDS is survivable	HIV is Western conspiracy to control Third World population	Antiretroviral drugs are poisonous and do more harm than good	AIDS is Western Conspiracy/ Profiteering
1.	True	27.1%	35.8%	25.5%	20.5%	40.9%	28.8%
2.	False	72.9%	64.2%	74.5%	79.5%	59.1%	71.2%
Total		100% N=380	100% N=380	100% N=380	100% N=380	100% N=379	100% N=378

Findings from analysed data in Table 4 show that, on the average, 30 percent of the respondents believe the various denialist communications. Since most of these respondents are exposed to AIDS denialist communication on the Internet, as established from analysed data, it could be said that this belief in AIDS denialist claims, might have been induced by exposure to such denialist claims. Implications abound for this development. One of such could be that HIV & AIDS campaigns against risky behaviour might not be taken seriously by individuals who subscribe to denialist claims, since the seriousness of the threat that the AIDS pandemic poses might seem a distant reality to them.

4.2 Hypotheses Testing

The hypotheses developed for this study were statistically tested using Bivariate correlations and *Chi-square* tests. The aim was to establish if any relationship existed between the predictor variables and the dependent variables. The key hypothesis predicted that the university students in southeast Nigeria, who are Netizens, are more likely to be exposed to AIDS denialist communication on the Internet more than their colleagues who are occasional visitors or non users. The major premise of this study was anchored on this thesis.

The first hypothesis formulated for this study states that:

The university students in southeast Nigeria, who own or have access to Internet-enabled PCs, laptops and phones are more likely to be Netizens.

This hypothesis might appear a given, but the essence of posing it and subsequently subjecting it to test is to establish, in an empirical sense, Internet usage in the sample studied; rather than banking on assumptions based on the idea that it is a “given” that students use the Internet.

Table 5: Bivariate correlation matrix for ownership of Internet-enabled devices and Netizenship variables

Variables	Frequency of sending and receiving e-mails through Internet-enabled mobile phones	Frequency of chatting on Yahoo Messenger	Frequency of sending and receiving e-mails through Internet-enabled PCs
Ownership of Internet-enabled Mobile phones	.121*	-	-
Ownership of Internet-enabled Laptops	-	.171**	-
Ownership of Internet-enabled PC	-	-	.164**

Correlation is significant at the 0.05 level (2-tailed)

** . Correlation is significant at the 0.01 level (2-tailed).

The results of Bivariate Correlations show a statistically significant correlation between the respondents who owned Internet-enabled mobile phones and their frequency of sending and receiving e-mails through such phones ($r=.121$). This correlation is significant at 0.05 level. Also, there was a statistically significant correlation at 0.01 level, between respondents who owned Internet-enabled laptops and the frequency of their chats through yahoo messenger ($r=.171$). Similarly, the correlation ($r=.164$) between respondents who owned PCs and their frequency of sending and receiving e-mails through PCs was statistically significant at 0.01 level.

These statistically significant readings resonate with analysed data which revealed that 80 percent of the respondents own Internet-enabled devices, like PCs, and laptops while 90 percent owned mobile phones. Also, these readings are in accord with the findings from analysed data which suggest that a little lower than 50 percent regularly go online.

Overall, results of statistical analyses would suggest that the undergraduate respondents own Internet-enabled ICT devices and this appears to predispose them to ‘reside’ online, as Netizens. Therefore, the findings of this study support the first hypothesis. The second hypothesis of this study states that:

The university students in southeast Nigeria, who are Netizens, are more likely to be exposed to AIDS denialist communications on the Internet more than their colleagues who are occasional visitors on the web or non users of the Internet.

Results from the cross tabulation of frequency of Internet use (Netizenship) variables and exposure variables show significant relationships. These are depicted in contingency Tables 6-13.

Table 6: Relationship between the tendency to post comments on the Internet and exposure to Internet-based reviews of the film, *House of Numbers*

Variables	Exposure to Internet-based reviews of the film, <i>House of Numbers</i>		Total
	No	Yes	
Tendency to post comments on the Internet			
Regularly	11.1%	9.7%	20.9%
Occasionally	22.6%	21.4%	44.0%
Don't Know	23.1%	12.0%	35.1%
Total	56.8%	43.2%	100.0% N=(359)

$\chi^2=6.567;df 2;p<.0.03$

Table 7: Relationship between the tendency to post comments on the Internet and visit to the website *Healtoronto.com*

Variables		Visit to the website <i>Healtoronto.com</i>		Total
		No	Yes	
Tendency to post comments on the Internet	Regularly	9.7%	11.1%	20.9%
	Occasionally	21.2%	22.8%	44.0%
	Don't Know	22.6%	12.5%	35.1%
Total		53.5%	46.5%	100.0% N=(359)

$\chi^2=9.150;df 2;p<.0.01$

Table 8: Relationship between the tendency to exchange communications on YouTube and exposure to Internet-based reviews of the film, *House of Numbers*

Variables		Exposure to Internet-based reviews of the film, <i>House of Numbers</i>		Total
		No	Yes	
Tendency to exchange communications on <i>YouTube</i>	Regularly	5.4%	4.5%	9.9%
	Occasionally	12.5%	14.7%	27.2%
	Don't Know	38.2%	24.6%	62.9%
Total		56.1%	43.9%	100.0% N=(353)

X=6.156;df 2;p<.0.04

Table 9: Relationship between the tendency to exchange communications on My Space and exposure to comments suggesting that HIV is not the cause of AIDS

Variables	Exposure to comments suggesting that HIV is not the cause of AIDS		Total	
	No	Yes		
Tendency to exchange communications on <i>My Space</i>	Regularly	6.5%	7.5%	14.0%
	Occasionally	17.4%	21.8%	39.3%
	Don't Know	28.0%	18.1%	46.1%
Total	52.3%	47.7%	100.0% N= (321)	

X=7.991;df 3;p<.0.04

Table 10: Relationship between the tendency to exchange communications on Twitter and exposure to comments suggesting that HIV is not the cause of AIDS

Variables	Exposure to comments suggesting that HIV is not the cause of AIDS		Total	
	No	Yes		
Tendency to exchange communications on <i>Twitter</i>	Regularly	7.3%	10.4%	17.7%
	Occasionally	14.3%	15.5%	29.9%
	Don't Know	30.5%	22.0%	52.4%
Total	52.1%	47.9%	100.0% N=(328)	

X=5.859; df 2;p<.0.05

Table 11: Relationship between the tendency to exchange communications on Twitter and exposure to Internet-based reviews of the film, *House of Numbers*

Variable	Exposure to Internet-based reviews of the film, <i>House of Numbers</i>		Total	
	No	Yes		
Tendency to exchange communications on <i>Twitter</i>	Regularly	9.5%	8.2%	17.7%
	Occasionally	13.7%	16.2%	29.9%
	Don't Know	33.5%	18.9%	52.4%
Total	56.7%	43.3%	100.0% N=(328)	

X=8.576;df 2; p<0.01

Table 12: Relationship between the tendency to exchange communications on Twitter and exposure to the reviews of the film, *Dancing Naked on the Mindfield*.

Variable	Exposure to Internet-based reviews of the film, <i>Dancing Naked on the Mindfield</i>		Total
	No	Yes	
Tendency to exchange communications on <i>Twitter</i>	Regularly	7.0%	10.7%
	Occasionally	12.8%	17.1%
	Don't Know	31.4%	21.0%
Total	168	160	100% (N=328)
	51.2%	48.8%	

X=11.015;df 2;p<.004

Table 13: Relationship between the tendency to exchange communications on Twitter and visiting the website *HealToronto.com*

Variable	Visit to the Website <i>HealToronto.com</i>		Total
	No	Yes	
Tendency to exchange communications on <i>Twitter</i>	Regularly	6.7%	11.0%
	Occasionally	14.0%	15.9%
	Don't Know	32.6%	19.8%
Total	53.4%	46.6%	100% (N=328)

X=122.583;df 2; p<.002

There was a significant relationship at .03 level between the tendency to post comments on the Internet and the chance of exposure to the review of the film, *House of Numbers* (Table 6). The import of this relationship suggests that those respondents who post comments could be eager to read comments and therefore are predisposed to read reviews such as those on *House of Numbers*.

Table 7 shows that the relationship between the respondents' tendency to post comments on the Web and visiting the website *HealToronto.com* was significant at 0.01 level. The picture here is that posting comments has something to do with visiting websites. Since the respondents claim to post comments more or less regularly or occasionally, it appears a possibility that they could chance upon the denialist website, *HealToronto.com*.

The relationship between the respondents exchanging communications on *YouTube* and their chancing upon the review of the film, *House of Numbers* was significant at 0.04 level (Table 8). The reviews of *House of Numbers*, which is meant for the Cyber community, usually come in form of *YouTube* video communications. It would therefore not come as a surprise that those respondents who more often than not communicate on *YouTube*, could come across reviews of *House of Numbers*.

Table 9 presents data suggesting a significant relationship between the tendency to exchange communications on *My Space* and the possibility of stumbling on comments suggesting that HIV is not the cause of AIDS. This relationship is significant at 0.04 level. The implication of this significance could be that more about HIV and AIDS are usually discussed on *My Space* by participants. Therefore, those respondents logging on to *My Space*, almost always, stand the chance of coming in contact with some form of AIDS denialist communication.

There was a significant relationship, at 0.05 level, between the tendency to exchange communications on *Twitter* and the possibility of coming across comments suggesting that HIV is not the cause of AIDS (Table 10). A little above 45 percent of the respondents, who either regularly or occasionally twitted, found themselves exposed to comments suggesting that HIV is not the cause of AIDS. AIDS denialists could be using all available space in cyberspace to try to get their message through; this could be why denialist communications are on twitter, making those who twitted liable to being exposed to such communication.

Table 11 reveals a statistically significant relationship between exchanging communications on *Twitter* and coming in contact with the reviews of the film, *House of Numbers*. This significance is at 0.01 level. Here, tweets on the review of *House of Numbers* could be the reason why those respondents who exposed themselves to reviews of *House of Numbers* did so.

The relationship between the tendency to communicate through *Twitter* and the possibility of being exposed to the review of the film, *Dancing Naked on the Mindfield* was statistically significant at .004 level (Table 12). It could be that tweets of the reviews of the film, *Dancing Naked on the Mindfield* were largely responsible for the exposure of the respondents to this denialist communication. This appears a possibility, particularly, with those respondents who are Netizens.

statistically significant relationship at .002 level, between the tendency among the respondents to communicate via *Twitter* and their visiting *HealToronto.com* website, was established (Table 13). Here, again, tweets from the hosts of this denialist website could be responsible for the inclination of those respondents, who often communicated on twitter, visiting this website.

Overall, these chi-square tests show significant relationships between the Netizenship variables and exposure to Internet mediated AIDS denialist communications variables at $p < 0.03$, $p < 0.01$, $p < 0.004$, $p < 0.04$, $p < 0.05$, $p < 0.01$, $p < 0.004$ and $p < 0.002$. Our findings, therefore, support the second hypothesis

third hypothesis sought to statistically test the likelihood that the Internet usage among the respondents and their perception of Internet sources as credible, could lead to their subscribing to the AIDS denialist position.

In line with the foregoing, the third hypothesis states that:

The university students in southeast Nigeria, who are Netizens, and who perceive Internet communications as credible, are more likely to subscribe to the AIDS denialist position.

Table 14: Bivariate correlation matrix for respondents' perception of the credibility of Internet materials and beliefs about HIV and AIDS vis-à-vis AIDS denialism

Variables	Respondents who would be readily opinionated based on exposure to "enlightening" materials on the Internet	Respondents who believe that HIV is not the cause of AIDS	Respondents who believe that HIV Positive test is not reliable	Respondents who believe that AIDS is survivable	Respondents who believe that HIV is conspiracy by Western Powers to control Third World population	Respondents who believe that antiretroviral drugs are poisonous and do more harm than good	Respondents who believe that AIDS is simply Western profiteering
Respondents who think Internet sources are credible	.211**	.043	-.033	-.100	.021	-.044	-.029

** . Correlation is significant at the 0.01 level (2-tailed).

Table 14 presents bivariate correlations suggesting a statistically significant correlation between the respondents' perception of Internet materials as credible and the inclination to be opinionated based on "enlightening" materials from the Internet ($r = .211$). This correlation is statistically significant at 0.01 level.

Juxtaposing this result with earlier findings, it would appear that those respondents, who are Netizens, are more inclined to perceive Internet materials as credible. And, this inclination could predispose them to be readily opinionated in line with the AIDS denialist communications they are exposed to. In the light of this, the findings of our study support the third hypothesis.

V. CONCLUSION

Data obtained from 398 university students spread across five universities in southeast, Nigeria, show that over 40 percent of the respondents are Netizens by virtue of the regularity of their online activities. Also, 40 percent of the respondents, on the average, are exposed to AIDS denialist communication on the Internet. About 30 percent of the respondents, on the average, believe the denialists' lines about HIV and AIDS. This leads to the conclusion that Netizenship could predispose individuals to being exposed to AIDS denialist communication. Also, exposure to such denialist lines could have a potential proselytizing effect on Netizens' beliefs about HIV & AIDS.

These generalizations are limited to the sample studied. It is our belief that further studies could lend a confirmatory weight to this study whereby wider generalizations would become applicable.

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