

Retraction Notice

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This article has been retracted to straighten the academic record. In making this decision the Editorial Board follows [COPE's Retraction Guidelines](#). Aim is to promote the circulation of scientific research by offering an ideal research publication platform with due consideration of internationally accepted standards on publication ethics. The Editorial Board would like to extend its sincere apologies for any inconvenience this retraction may have caused.

Information Use and Knowledge of HIV/Hepatitis B Co-Infection in Lagos, Nigeria

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Abstract

Achieving the Sustainable Development Goal 3.3 is hinged on effective use of information sources for health communication interventions. This study investigated the knowledge of residents of Lagos Nigeria on HIV/HBV co-infection and the use of information sources. The study adopted the quantitative research method of survey to find out the knowledge level of residents of Lagos, Nigeria on the HIV/HBV co-infection. While the bivariate analysis presented cross tabular data on knowledge level, the multivariate was used to test highlight the hypothesis. The study indicated that more than 75% of the respondents had heard of HIV and HBV co-infection. The result established a significant relationship between the use of information sources and the knowledge on HBV/HIV co-infection. Despite the knowledge on HBV/HIV co-infection, the study concluded on the need for preventive information campaigns to create awareness to mitigate the increasing cases of HBV/HIV co-infection cum motivates individuals toward healthy lifestyle practices.

Keywords

Hepatitis B, Human Immunodeficiency Virus, Information Use, Knowledge, Nigeria

1. Introduction

The need for a new approach to public health, including endemic diseases as well as long standing infectious diseases, is seen in the declaration of the Sustainable Development Goal 3 to “Ensure healthy lives and promote well-being for all at all ages”, hence the call to end the endemic diseases of HIV, AIDS as well as hepatitis by the year 2030 [1] [2]. Globally, hepatitis B virus (HBV) and Human Immunodeficiency Virus (HIV) co-infection have exacted a high mor-

bidity and mortality beyond those caused by mono infections [3] [4] [5]. Circumstances related to HBV have become one of the leading causes of deaths in HIV infected people [6]. The world health body in response to this, recommended the testing of hepatitis B surface antigen (HBsAg) in all patients infected with HIV [7] [8].

Hepatitis B is in itself a dynamic and deadly disease with an estimate of 2 billion of the world's population having a serologic proof of past or present infection [9]. Out of this estimation, the World Health Organisation has reported, 257 million people are currently living with the chronic type of hepatitis B with cirrhosis and liver cancer effects [9]. The World Health Organisation report on regional burden classification of the disease reveals that the African region, as well as the Western Pacific Region have the greatest endemic rate with the former having 6.1% of population representing 60 million people and the latter 6.2% representing 115 million people [9].

The Human Immunodeficiency virus remains a disturbing global disease. While 35 million lives have been lost so far, the World Health Organisation has estimated 36.9 million people globally are still living with HIV [10]. The continent of Africa, the WHO has further been described as the hardest hit with 27.7 million carriers [10]. Africa by implication, therefore, shares almost two-thirds of the global new HIV infections [11] [12] [13].

Although HBV has been noted to be 100 times more infectious than HIV [14] [15] [16], however, both diseases have similar transmission routes of injection drug use, unprotected sex, sharing toothbrush with an infected person, mother to foetus, tattooing hence co-infection is high [4].

Interestingly, studies have been carried out to find out the prevalence rate of HIV/HBV co-infections in Nigeria [17] [18] [19] [20], however, there is a paucity of research on the knowledge of citizens about the co-infection in Nigeria. This study, therefore, seeks to find out the use of information source as well as the knowledge on HIV/HBV co-infection among Lagos residents, Southwest Nigeria.

1.1. Research Objectives

- 1) To investigate the use of information source of HIV/HBV co-infection by residents of Lagos, Southwest Nigeria.
- 2) To determine the knowledge of HIV/HBV co-infection by residents of Lagos, Southwest Nigeria.

1.2. Hypothesis

H1: There is a significant relationship between information sources and Knowledge on HIV/HBV co-infection in Lagos, Southwest Nigeria.

2. Literature Review and Theoretical Framework

The prevalence of chronic HBV HIV co-infection differs among regions as well as risk based groups [21]. Several studies have been conducted in Europe on the

prevalence rate of HIV/HBV co-infection (where are the several studies). In Italy, for instance, out of the 175 HIV patients, 27 cases representing 15.4% were co-infected with HBsAg [22]. Result from France indicates a frightening situation as 45% out of the 383 sampled HIV patients had evidence of HBV [23]. Currently what's happening?

The epidemiology of HIV/HBV co-infection in Countries in America shows a higher prevalence rate though it has low HBV cases. In Atlanta for instance, a study was carried out among 2818 people living with HIV and it was revealed that 59.8% of the sampled population had HBV traces [24]. A study carried out in Brazil by Monteiro, *et al.* [25], indicates a high prevalence rate of 51% co-infection among a sample size of 406 HIV infected people.

The Asian continent has been characterized by a high prevalence of HBV [9] [26], principally in the South Eastern region [27]. According to a study carried out in China, 29.34% of 92 patients infected with HIV were also co-infected with HBV [28]. A similar study was conducted in China by Maimaiti, *et al.* [29] shows a 6.7% prevalence rate of HIV/HBV co-infection in a study carried out among 395 HIV patients. In a study carried out among a population in Iran, the result revealed a 28.6% co-infection rate. In their study among 394 HIV infected homosexual men living in Japan, Fujisaki, *et al.* [30] revealed that 7.9% had HBsAg.

Studies have revealed that Africa, especially the Western and Southern regions, have the highest prevalence rate of HIV/HBV co-infection in the world [3] [31]. The HIV/HBV co-infection rate in Africa is attributed to the 60 million prevalence rate of hepatitis B [9] [32]. A study conducted among 115 HIV infected pregnant women in Borkina Faso by Ilboudo, *et al.* [33] shows a 12.17% prevalence rate. South Africa according to a study carried out among 537 patients living with HIV has 20% co-infection rate [34]. Rouet, *et al.* [35] in their study conducted in Abidjan among 499 pregnant women infected with HIV revealed a 9.01% co-infection rate.

The peculiarity of Nigeria as the largest population in the continent of Africa has attracted the attention of scholars to find out the HBV-HIV co-infection rate. Results from such studies have revealed a very high prevalence rate. A study conducted by Otegbayo, *et al.* [36] on a large sample size of 1779 HIV infected patients reveal a 11.9% rate of co-infection. Furthermore, according to a study conducted among 102 HIV infected persons in Lagos, comprising of 32 males and 70 females, it was discovered that 29 patients representing 28.4% of the recruited sample were co-infected with HBsAg [37]. According to a comprehensive meta-analysis by Owolabi, *et al.* [19] of HBV/HIV co-infection of studies in the six geopolitical zones of Nigeria, there was an overall 15% prevalence rate.

This study is anchored on the health belief model. Originally developed in the 1950s by social psychologist to find out the reason for the resentment and apathy of people towards health programs on diseases such as tuberculosis and cancer [38] [39] [40]. The model states that the possibility of an individual adhering to specific preventive health behavior is predicated on the subjective perception

and evaluation of the cost and the benefits of the actions. The elements of the evaluation include perceived susceptibility, perceived severity, perceived benefit perceived barrier and cue to action.

The perceived susceptibility is an individual's risk judgment of contracting a disease, in the context of this study HBV/HIV co-infection. Perceived severity describes the seriousness of the disease in areas as medical effect, pain, disability and death as well as the impact of the disease on the life style of an individual. Perceived benefits further describe the importance of adopting a course of action to prevention.

Perceived barriers explain difficulties that could affect course of health activities such as cost, side effect, time effect and inconvenience [40]. Cue to Action: This HBM component deals with motivating factors that influences the adoption of particular health practice. Such motivating factors are internal and external [39] [40] [41] [42]. The internal motivations are generally personal symptoms and internal feelings [40], while the external cues are health messages made available by mass media such as television, radio, newspapers articles as well as interpersonal communication made available by health professionals, non-governmental organizations, disease control and prevention agencies.

3. Data and Methods

The study adopted the quantitative research method of survey to find out the knowledge level of on the HIV/HBV co-infection among residents of Lagos, Nigeria.

3.1. Data Measurements

The instrument for data collection was the questionnaire. The questionnaire was created as a KAP Survey, to elicit responses on the knowledge, attitude and practice of HIV and HBV co-infections. The questionnaire was divided into four major areas: Demographic data, knowledge data, attitudinal data and health practice data for this study. The instrument further captures the elements of the health belief model, which are; perceived susceptibility, perceived severity, perceived barriers, perceived benefit and cues to action.

3.2. Sample

In this study, sample size was selected consisting of 200 residents in Lagos State. Wimmer and Dominick [43] observed that a sample size ≤ 200 is fair while 300 - 500 as good but 1000 or above is excellent. Thus, a sample size of 200 was appropriate for this study. This study also adopted two major levels of descriptive analyses, namely: Bi-variate and multivariate analyses. The bivariate analysis presented cross tabulation data on the knowledge of HIV and HBV co-infection among residents in Lagos State. The study adopted multivariate analyses to test a hypothesis: To confirm whether there is a significant relationship between use of information sources on hepatitis B HIV co-infection management and the knowledge of residents in Lagos, Nigeria.

4. Results

Research Objective 1

The attrition rate for the questionnaire was 6.5% while 93.5% were returned and processed. **Table 1** shows that more than 75% of the respondents had heard of HIV and HBV co-infection. It also shows that 50% of the respondents indicated that they seek information about HIV/HBV co-infection from the media.

Table 1 also shows that internet, neighbors and health workers are the predominant sources of health information on HIV/HBV co-infections among Lagos residents. Thus, a majority of respondents had heard of HIV/HBV co-infection. It can be inferred that a significant number of persons were aware of HIV/HBV co-infection in Lagos State, Nigeria.

Research Objective 2

Knowledge of HIV/HBV Co-Infections

The detailed assessment of responses on knowledge of residents of Lagos Nigeria on HBV/HIV co-infection is presented in **Table 2**. The knowledge of residents of Lagos Nigeria on HBV/HIV co-infection were tested using five Likert scales. This helps in determining the respondents' view and the extent to which they agree to the items presented in the research instrument. The likert scale is represented as: Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD).

Table 1. Awareness and use of information sources on HIV/HBV.

Selected variables	Yes (%)	No (%)	Total (%)
I have heard about HIV/HBV co-infection	77.4	22.6	100
I seek information about HIV/HBV co-infection from the media	50	50	100
Information sources			
Television	79.4	20.6	100
Radio	95.5	4.5	100
Newspaper	93.3	6.7	100
Internet	100	0	100
Friends	81.3	18.8	100
Colleagues	80	20	100
Relatives	50	50	100
Spouse	66.7	33.3	100
Neighbours	100	0	100
Counselor	50	50	100
Health workers	100	0	100
Others	29.4	70.6	100

Source: Authors' computation (2018).

Table 2. Descriptive statistics on knowledge of HIV/HBV co-infection.

Selected Variables (Knowledge of Co-Infection)	N	SA	A	U	D	SD	Mean	SD
HBV/HIV co-infection are caused by virus	161	40 (21.4)	70 (37.4)	36 (19.3)	22 (11.8)	15 (8.0)	2.46	1.194
HBV/HIV co-infection affect liver functioning	171	31 (16.6)	59 (31.6)	59 (31.6)	22 (11.8)	11 (5.9)	2.58	1.093
HBV/HIV co-infection transmittable from mother to foetus	162	33 (17.6)	56 (29.9)	53 (28.3)	20 (10.7)	22 (11.8)	2.68	1.232
HBV/HIV co-infection transmittable through infected sharp objects	173	54 (28.9)	61 (32.6)	42 (22.5)	16 (8.6)	7 (3.7)	2.23	1.2805
HBV/HIV co-infection causes liver cancer	174	27 (14.4)	47 (25.1)	80 (42.8)	20 (10.7)	4 (2.1)	2.59	.954

The mean score, if after combining all the responses of the respondents' falls between 0 and 2.4, then on the average, the knowledge of residents of Lagos Nigeria on HBV/HIV co-infection is insignificant. If it, however, falls between 2.5 and 4.4, it shows that the knowledge of residents of Lagos Nigeria on HBV/HIV co-infection is high and between 4.5 and 5 shows that knowledge of residents of Southwest Nigeria on hepatitis B is very high.

In an attempt to find out if HBV/HIV co-infection is caused by a virus, 40 (21.4%) of the respondents in Lagos Nigeria strongly agreed with the statement, 70 (37.4%) agreed that HBV/HIV co-infection is caused by a virus. Meanwhile, 36 (19.3%) of the respondents were indifferent about the statement. Also, 22 (11.8%) disagreed while 15 (8.0%) strongly disagreed that Hepatitis B is caused by a virus with mean score of 2.46 and standard deviation of 1.194. On average, most of the respondents were of the opinion that on HBV/HIV co-infection is caused by a virus.

To find out if HBV/HIV co-infection affect proper functioning of the liver, 31 (16.6%) of respondents strongly agreed while 59 (31.6%) agreed that on HBV/HIV co-infection affect proper functioning of the liver. 59.6 (31.6%) of the respondents cannot really say whether on HBV/HIV co-infection affect proper functioning of the liver or not while, 22 (11.8%) and 11 (5.9) shared the contrary opinion with mean score of 2.58 and standard deviation of 1.093. This implies that on the average, respondents agreed that HBV/HIV co-infection affect proper functioning of the liver, hence they have high knowledge.

It was also in the interest of the researchers to find out if on HBV/HIV co-infection can be transmitted from mother to foetus. The descriptive statistics as depicted in **Table 2** shows that 33 (17.6%) of respondents strongly agreed with the statement, 56 (29.9%) agreed with the statement, 53 (28.3%) of respondents were indifferent, 20 (10.7%) disagreed while 22 (11.8%) strongly disagreed with mean score of 2.68 and standard deviation of 1.232. On average, most of the

respondents were of the opinion on HBV/HIV co-infection can be transmitted from mother to foetus.

In order to find out if HBV/HIV co-infection can be transmitted through the use of infected sharp objects, 54 (28.9%) of respondents strongly agreed with the statement, 61 (32.6%) agreed with the statement, 42 (22.5%) respondents were indifferent with the statement, 16 (8.6%) disagreed with the statement while 7 (3.7%) strongly disagreed with mean score of 2.23 and standard deviation of 1.093. This implies that on the average, the knowledge of respondents on the transmission of HBV/HIV co-infection through the use of infected sharp objects is insignificant.

It was also in the interest of the researchers to find out if HBV/HIV co-infection can cause liver cancer. The descriptive statistic shows that 27 (14.4%) of respondents strongly agreed with the statement, 47 (25.1%) agreed with the statement, 80 (42.8%) respondents were indifferent, 20 (10.7%) disagreed with the statement while 4 (2.1%) strongly disagreed with mean score of 2.59 and standard deviation of 0.954. On average, most of the respondents were of the opinion that Hepatitis B can cause liver cancer.

Hypothesis

Relationship between Information Sources and Knowledge on HIV/HBV

A bivariate analysis was carried out to establish the nature and strength of relationship between the use of information sources and knowledge on HIV/HBV co-infection. This type of analysis provided data evidence on the application of information sources as health communication interventions for HIV/HBV co-infection. A correlation test was used to confirm the relationship that exists among variables. **Table 3** indicates a correlation matrix data on the use of information sources as it predicts knowledge about HIV/HBV co-infection. **Table 3** further shows there is a positive relationship at 0.000 among the variables. Importantly, there is a positive relationship between the two variables.

Table 3 confirms that uses of information sources significantly affect the knowledge about HIV/HBV co-infection at 0.329 and 0.269. Thus, use of information sources was statistically significant among the variables at $p > 0.05$.

4.1. Discussions

The prevalence of HBV/HIV co-infection in Nigeria is a serious public concern. Hepatitis B and Human Immunodeficiency Virus co-infection have exacted a high morbidity and mortality rate in many parts of South-Western Nigeria. This data-based study examined the influence of information sources for sustainable health knowledge on HIV/HBV co-infection. The summary of the findings of this study indicated that more than 75% of the respondents had heard of HIV and HBV co-infection. **Table 1** also shows that 50% of the respondents indicated that they seek information about HIV/HBV co-infection from the media. Interestingly, the result indicates that shows that the internet, neighbors and health workers are the predominant sources of health information on HIV/HBV

Table 3. Correlation test.

Response		how frequently do you seek information about HBV/HIV co-infection from information	HBV/HIV co-infection is caused by a virus	HBV/HIV co-infection can be transmitted through the use of infected sharp objects
how frequently do you seek information about HBV/HIV co-infection from information sources	Correlation Coefficient	1.000	0.329**	0.262**
	Sig. (2-tailed)	-	0.000	0.001
	N	187	187	187
HBV/HIV co-infection is caused by a virus	Correlation Coefficient	0.329**	1.000	0.814**
	Sig. (2-tailed)	0.000		0.000
	N	187	187	187
HBV/HIV co-infection can be transmitted through the use of infected sharp objects	Correlation Coefficient	0.262**	0.814**	1.000
	Sig. (2-tailed)	0.001	0.000	-
	N	187	187	187

co-infections among Lagos residents. In essence, the new media and interpersonal networks serve as potent information sources for health communication interventions [44]. It is this type of thinking that made [45] to assert the media and interpersonal networks have been recognized and acknowledged as health communication channels for creating awareness of diseases in developing countries [46].

Interestingly, this result indicates that a significant number of respondents had sufficient knowledge about HIV/HBV co-infection. From the findings, the mean score, if after combining all the responses of the respondents' falls between 0 and 2.4, then on the average, the knowledge of residents of Lagos Nigeria on HBV/HIV co-infection is insignificant. If it, however, falls between 2.5 and 4.4, it shows that the knowledge of residents of Lagos Nigeria on HBV/HIV co-infection is high and between 4.5 and 5 shows that knowledge of residents of Southwest Nigeria on hepatitis B is very high.

For the hypothesis testing, the result confirmed that there is a significant relationship between the use of information sources and the knowledge on HBV/HIV co-infection. This result supports the positions of [47], they maintained that information sources serve as potent health communication interventions for creating awareness and knowledge about diseases in high and low resource setting countries. Thus, information sources such as newspapers, magazines, television, Internet and interpersonal networks serve as veritable platforms to enlighten and educate individuals about HIV/HBV co-infections [48]. Interestingly, a tenet of the diffusion of innovation theory places information sources at the centre for the diffusion of knowledge on health related matters.

4.2. Conclusion and Recommendation

Although prevalence of HBV/HIV is much in Nigeria, the findings of this study have revealed an average knowledge level of the HBV/HIV among residents of Lagos Nigeria. This might not be unconnected to the urban, commercial nature as well the information exchange created by the presence of both traditional and social media platforms. In essence, if the momentum of such knowledge creation and exchange can be spread and maintained across all others states, then the vision of eliminating either the mono-infection or co-infection of HBV and HIV will be achieved earlier than the 2030 set target. Importantly, this study has several implications for sustainable health development. First, the government and non-governmental agencies must identify and utilize information sources for the purpose of creating knowledge about HBV/HIV co-infection in line with SDG (3.3). Second, there is a dire need for information campaigns to create awareness of the increasing cases of HBV/HIV co-infection as well as motivate individuals towards healthy lifestyle practices.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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