

Determining the Seroprevalence and the Knowledge of Viral Hepatitis B Infection among Beauticians in Yenagoa LGA, Yenagoa, Bayelsa State, Nigeria

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Abstract

Cosmetology is a rapidly growing field, resulting in increasing numbers of beauty centers and beauticians. Ear piercing is a common practice in Nigeria and, in recent years piercing of other body parts has greatly increased in popularity. Beauty treatments, such as piercing, tattooing, manicuring, and barbing are used by many people. Individuals working in barber shops, hairdressing and beauty centers are likely to have contact with blood through applications such as shaving, manicure, pedicure and skin care. The aim of this study was to determine hepatitis B virus (HBV) seroprevalence in a sample of beauticians in Yenagoa local government area, Bayelsa State (Nigeria) and to assess the level of knowledge of these professionals regarding viral hepatitis. This was a descriptive cross-sectional study involving a total of 120 beauticians (hairdressers and manicurists/pedicurists) that were selected by a multistage sampling method. Data was collected by an interviewer-administered questionnaire for knowledge assessment and serum samples were tested for HBsAg positivity using commercial enzyme-linked immunoassay (ELISA) kits. Data collected were analyzed using the statistical package for social science (SPSS), version 25 software. Of the total 120 participants 16 (13.3%) were males and 104 (86.7%) were females. The prevalence of HBV infections among the respondents was 7.5%. The knowledge of beauticians on awareness of viral hepatitis B was 5.8%, and their knowledge on ways of transmission was 61.7%. **Conclusions:** the findings indicate that, due to their low level of awareness of viral hepatitis B existence, beauticians working in Yenagoa Local Government Area are in a risk of HBV infection even though the seroprevalence of HBV was low.

Keywords: Beauticians; Viral Hepatitis; Prevalence; Knowledge.

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1. INTRODUCTION

Beauticians who are comprised of barbers, manicurists/pedicurists and hairdressers are professionals that are engaged in treatment or

beautification of head, face, body, hands and feet. Procedures related to beauty treatments such as tattooing, piercing, manicuring, pedicuring, and barbershop shaving can pose important risk for viral transmission [1,

2]. The process of haircutting, shaving, manicures, or pedicures, beauticians may accidentally be exposed to their clients' blood, transmit their own infection to the client, or transmit an infection from one client to another [2, 3].

It has been reported in a number of studies that both customers and employees are under the risk of contacting certain diseases if the necessary care is not taken for individual's hygiene such as decontamination of working equipment, proper disinfection or sterilization of working equipment, proper disposal of waste and the cleanliness of the work environment [4, 5]. Blood-borne diseases impose heavy burdens on national economies and individual families due to costs arising from acute and chronic morbidity and mortality. Blood-borne viruses like HIV, HBV and HCV, infect hundreds of millions of people worldwide and their continuous spread depends on unsafe use of therapeutic injections, blood transfusions, mother to child transmission, unsafe sexual practices and beauty treatments (tattooing, piercing, manicure, pedicure and barber shop shaving) with instruments which are not properly sterilized [6].

Hepatitis is an inflammation of the liver cells and is found in all parts of the world. Acute and chronic hepatitis results in thousands of deaths annually, cirrhosis and hepatocellular carcinoma. Hepatitis B is one of the major viruses causing chronic hepatitis and hepatocellular carcinoma [7]. Over 80% of hepatocellular carcinoma worldwide is attributable to the combined effects of chronic hepatitis B and C infections. People with these infections have a 20 to 100-fold increased risk of developing Hepatocellular carcinoma relative to those without these infections [8]. Globally, 2 billion people are infected with the hepatitis B virus, of which more than 350 million have chronic infections [9].

Important factors contributing to HBV spreads include the unsafe use of therapeutic injections, blood transfusion, shaving from barbers, tattooing, piercing, pedicure, manicure and other beauty treatments, mother to child transmission and unsafe sexual practices [10, 11]. Razor sharing and shave from the barbers has been identified as a key risk factor for the spread of HBV in Italy and for HCV among psychiatric patients in Japan, Egypt and Pakistan [3, 12]. In developing countries, HBV and HCV infections have been implicated as an occupational hazard of the barbers. Occupational exposure to blood-borne viruses such as HBV, hepatitis C virus (HCV), and human immunodeficiency virus (HIV) may result from sharp injury and blood contact with non-intact skin [13]. Therefore, rigorous sterilization procedures are essential to avoid any contamination of blood-borne viruses of therapeutic and beauty instruments particularly, because HBV is not easily inactivated by drying, simple detergents or alcohol [14]. Exposure to HBV during beauty procedures,

including the role of hairdressers, is a risk reported also in industrialized countries. In Italy, the National Epidemiological Surveillance System for Acute Viral Hepatitis (SEIEVA) has shown an association between acute viral hepatitis B infection and barber shop shaving and between acute viral hepatitis [1]. Previous studies have indicated that in developed countries, certain beauty treatments play an important role in the spread of HBV infection among barbers and their clients [15]. In fact, Manicurists and pedicurists also remove their own cuticles, becoming themselves the gateway to possible infectious agents by contact with the blood from customers, apart from the risk of infecting their customers. Thus, these professionals are at risk of both being infected and infecting their clients [16].

Yenagoa Local Government is one of the eight local government's areas that made up Bayelsa state and it is the host local government area of the Bayelsa state headquarters' city (Yenagoa). It is occupied by both indigenes and foreigners.

2. MATERIALS AND METHOD

Yenagoa Local Government Area lies beside the East-West road, between Delta state and Rivers state in the south of the area at 4°55'29''N 6°15'51''E. The LGA has an area of 706 km² and a population of 352,285 at the 2006 census. It is a commercial city, its inhabitants are both indigenes and foreigners, and it serves as the host to the only two major hospitals, the Federal Medical Centre (FMC) and the Niger Delta University Teaching Hospital (NDUTH) in the state, and a lot of other private and government-owned smaller hospitals.

The local government area is in very close proximity to the only two major universities in the state, the Niger Delta University (NDU) and the Federal University of Otuoke (FUO) and serves as a choice location for students and staff who choose to stay off campus. This was a Local Government Area of interest for this study because it contains lots of people within the target population for this study.

This was a descriptive cross-sectional study involving 120 participants, carried out in an urban city Yenagoa, Bayelsa state, Nigeria. The target population for this study was beauticians working in beauty centers at the time of this research and who have been in this profession for at least one. This study lasted for three months (April 2020 to June 2020).

Demographic data was collected with the use of an interviewer-administered questionnaire, which was pre-tested among a randomly sampled population in a neighbouring local government area within the state that share the same demographic features as Yenagoa Local Area.

The questionnaire used for this study was grouped into two parts: the first section was structured to

elicit information concerned with demographic characteristics (such as age, gender, education level) and risk factors for viral hepatitis (i.e., blood transfusion, surgery, acupuncture, hemodialysis) were also collected. In addition, a series of questions were asked regarding the respondents' knowledge about hepatitis, mode of transmission, infectious risk associated with blood exposure in the hairdressing sector.

With the assistance of laboratory workers, a blood sample (5ml) was taken from each subject by venipuncture using a vacutainer device. The sample was allowed to clot naturally to separate the serum for analysis and was stored upright in an ice box at 20°C until sent to a lab for analysis. Serum samples were tested for anti-HCV antibodies and HBsAg, using commercial enzyme-linked immunoassay (ELISA) kits according to the manufacturer's guidelines. Samples found to be negative on the preliminary screening were considered seronegative. Samples that initially tested borderline or positive were retested using ELISA to confirm the results.

3. DATA ANALYSIS

Statistical analysis was performed with SPSS software 25 vision.

All descriptive analysis was presented in tables as frequencies and percentages. The inferential statistics used included the chi-square test of difference in association. The prevalence of hepatitis B among beauticians was presented as frequencies and percentages. To assess the knowledge of ways of transmission and prevention of hepatitis B and to assess the risk of perception, items were summed up to generate a total score for each respondent; which were transformed into a multinomial variable (good knowledge, fair knowledge and poor knowledge).

Sixteen items were used to assess the knowledge of transmission of hepatitis among the respondents. For each item, a three point scale was used to measure level of knowledge, including True, false or Not Sure. A score of 1 was given to True, while false and Not sure were given a score of 0. Sum of highest

responses was aggregated to 16 and lowest would be 0. These scores were converted to percentage. Respondents who scored 75% to 100% were classified as having Good Knowledge; 50% – 74.9% were classified as Fair while respondents with scores lower than 50% were classified as having Poor knowledge.

4. RESULTS

The descriptive analysis of the socio-demographics variables showed that, of the 120 beauticians included in this study 16 (13.3%) and 104 (86.7%) were males and females respectively. Most of the respondents in this study were hairdressers 105 (87.5%). Of the total, 60 (50.0%) of the participants were single while 35 (29.2%) of them were married. Seventy-four (61.7%) of the respondents had secondary education while just 11 (9.2%) had attained tertiary education, 57 (47.5%) of them had less than 10years working experience while the rest had 10years 35 (29.2%) and above 10years 28 (23.3%). A large number of the respondents were within the age range of 30 to 39years (52.5%) with the mean age of 32.97±675.

Table 1 showed that the seroprevalence of hepatitis B among beauticians (hairdressers and manicurist/pedicurist) in Yenagoa local government area is 7.5% (9/120).

Table 2 presents beauticians' knowledge of the ways of viral hepatitis transmission and prevention. As shown in table 2, majority of respondents knew that viral hepatitis can be transmitted through blood transfusion from an infected person 100 (83.3%) while 20 (16.7%), and through unprotected sex with an infected person 69 (57.5%), through sharing of contaminated sharp instruments, such as, pliers, razors, needles etc 94 (78.3%). However, less than 50% reported that Hepatitis B can be transmitted during child birth from an infected mother 50 (41.7%). Regarding ways of prevention, majority stated that viral hepatitis can be prevented through vaccination 101 (84.2%), appropriate disposal of sharp objects 113 (94.2%), if sharps objects are not shared 114 (95.0%), and if sharp working tools are sterilized before reused 117 (97.5%)

Table 1: Prevalence of Hepatitis B

Variable	Frequency (n=120)	Percent (%)
HBsAg		
Positive	9	7.5
Negative	111	92.5

Table 2: Knowledge of Ways of Transmission of Hepatitis B

Variable	True	False	Not Sure
	n (%)	n (%)	n (%)
Hepatitis B can be transmitted through blood transfusion from an infected person	100 (83.3)	0(0.0)	20 (16.7)
Hepatitis B can be transmitted through unprotected sex with an infected person	69 (57.5)	31 (25.8)	20 (16.7)
Hepatitis B can be transmitted during child birth from an infected mother	50 (41.7)	55 (45.8)	15 (12.5)

Variable	True	False	Not Sure
	n (%)	n (%)	n (%)
Hepatitis B can be transmitted through sharing of contaminated sharp instruments, such as, pliers, razors, needles etc.	94 (78.3)	0(0.0)	26 (21.7)
Hepatitis B can be transmitted through kissing an infected person	64 (53.3)	36 (30.0)	20 (16.7)
Hepatitis B can be transmitted through hand shake with an infected person	7 (5.8)	69 (57.5)	44 (36.7)
Hepatitis B can be transmitted through eating in same plate with an infected person	57 (47.5)	34 (28.3)	29 (24.2)
Hepatitis B can be transmitted through wearing same clothes with an infected person	11 (9.2)	86 (71.7)	23 (19.2)
Hepatitis B can be transmitted through sharing room/bus with an infected person	8 (6.7)	96 (80.0)	16 (13.3)
Hepatitis B can be transmitted through mosquito bite	35 (29.2)	79 (65.8)	6 (5.0)
Hepatitis B can be transmitted through breast feeding	56 (46.7)	41 (34.2)	23 (19.2)
Hepatitis B can be prevented through vaccination	101 (84.2)	14 (11.7)	5 (4.2)
Hepatitis B can be prevented through appropriate disposal of sharp objects	113 (94.2)	2 (1.7)	5 (4.2)
Hepatitis B can be prevented if people undertake a routine Hepatitis B screening	51 (42.5)	14 (11.7)	55 (45.8)
Hepatitis B can be prevented if sharps objects are not shared	114 (95.0)	2 (1.7)	4 (3.3)
Hepatitis B can be prevented if sharp working tools are sterilized before reused	117 (97.5)	1 (0.8)	2 (1.7)

Table 3: Composite Assessment of Knowledge of Hepatitis B Transmission

Variable	Frequency (n=120)	Percent (%)
Knowledge of Hepatitis Transmission		
Good knowledge	7	5.8
Fair Knowledge	74	61.7
Poor Knowledge	39	32.5
Total	120	100.0

In table 3, the findings show that the respondents with Good knowledge constituted 5.8% and those with poor knowledge constituted 32.5%.

Table 4: Bivariate Analysis between Knowledge of Preventive Measures and Hepatitis B

Variable	HBsAg	Test of Association	Variable
Knowledge of Preventive Measures	Positive(n=9)	Negative(n=111)	p-values
Good knowledge	2 (28.6)	5 (71.4)	
Fair knowledge	5 (6.8)	69 (93.2)	0.139
Poor knowledge	2 (5.1)	37 (94.9)	

Table 4 show that, present the association between Knowledge of preventive measures was not statistically significant with HBsAg, which generated a p-value = 0.139

Table 5: Bivariate Analysis between Socio-Demographic Characteristics and HbsAg

Variable	HBsAg		Test of Association p-values
	Positive(n=9)	Negative(n=111)	
Sex			
Male	2 (12.5)	14 (87.5)	0.343
Female	7 (6.7)	97 (93.3)	
Age (in years)			
20 – 29	0 (0.0)	34 (100)	
30 – 39	5 (7.9)	58 (92.1)	0.042
>39	4 (17.4)	19 (82.6)	
Marital Status			
Single	3 (5)	57 (95)	
Married	4 (11.4)	31 (88.6)	0.534
Separated	2 (8)	23 (92)	
Education Level			
None	1 (8.3)	11 (91.7)	
Primary	3 (13.0)	20 (87.0)	0.503
Secondary	4 (5.4)	70 (94.6)	

Variable	HBsAg		Test of Association
	Positive(n=9)	Negative(n=111)	p-values
Tertiary	1 (9.1)	10 (90.9)	
Expertise (Multiple response, n= 203)			
Hair dressing	7 (6.7)	98 (93.3)	
Manicure	5 (10.2)	44 (89.8)	0.827
Pedicure	5 (10.2)	44 (89.8)	
Work Experience			
Less than 10 years	5 (8.8)	52 (91.2)	
10 years	2 (5.7)	33 (94.3)	0.907
Above 10 years	2 (7.1)	26 (92.9)	

Table 5 shows the association between socio-demographic characteristics with hepatitis B, there was no statistically significant relationship except the age, though the table reveals that females had 77.8% positive cases, the age bracket above 39 years and married respondents had 44.4% positive cases respectively. Respondents that had less than 10 years job experience had 55.6% positive cases.

5. DISCUSSION

5.1 Prevalence of Hepatitis B among Beauticians

There have been several studies on viral hepatitis with focus on the prevalence, knowledge, practices, and risk factors among beauticians. The purpose of this study was to determine hepatitis B virus (HBV) seroprevalence in a sample of beauticians and to assess their level of knowledge regarding viral hepatitis B infection. The study revealed that the prevalence of HBV infection among beauticians in this the popular is 7.5%. The HBV prevalence from this study was lower than that previous reported among the general population in Nigeria by Musa *et al.*, [17], in their study on systematic review and meta-analysis that, in Nigeria the prevalence of hepatitis B viral infections spans within 11.5% to 17.5%, depending on the subgroup under study and the type of the screening method used. And it was also lower than that reported by Olusola *et al.*, [18] in a similar study population. However, WHO classified Sub-Saharan Africa and Far East regions as high HBV endemic regions with a prevalence of over 8%. These indicate that Yenagoa falls in the region of high-intermediate level of HBV infection (5–8%), based on WHO classification.

Comparing HBV the seroprevalence in this study with studies among beauticians in other countries and locations, this study population had a higher HBV seroprevalence than studies from in Iran (1.1%) [19], Morocco [12], Turkey (2.2%) [20] and Brazil (0%) [13] but a lower prevalence than that from Ghana (14.5%) [21]. these differences were not surprising because, the rates of HBV infection vary markedly from one country or region to another and also depend on host characteristics and environmental conditions [22]. Also, different HBV prevalence rates between countries could be due to differences in underlying HBV rates in the different population [23]. Nevertheless, when compared

with other studies among beauticians within the country surprisingly, the prevalence from this study was far lower than that in others. A study conducted in Ibadan Nigeria, reported hepatitis HBV prevalence of (13.0%) among beauticians [18]. The reason for the lower prevalence recorded in this study is not well understood but it might be explained by the following reasons, this study participants were in an urban area, and most of them were in their young age group with relatively moderate educational level, implying that they could easily access health information and had higher health literacy, and conveniently receive medical services. It could also be due to the inclusion of hairdressers that are less exposed to blood or to the low frequency of risk behaviors observed, such as blood transfusion, acupuncture etc. Another good reason could be geographical variations; this study took place in Yenagoa, a much smaller city in the south-south of Nigeria while Olusola's [18] study took place in Ibadan, a city in the south-west and one of the biggest cities in the country with high socioeconomic activities. Also, his work cut across four local government areas in the state while this work was within one local government areas.

5.2 level of Knowledge and the Ways of Transmission and Prevention of Hepatitis B among Beauticians

The results of this study showed that the concept of infectious risk associated with blood was not well understood by many hairdressers in Yenagoa Local Government Area. The knowledge of the existence of viral hepatitis B was poor (5.8%). However, very surprisingly, most of the participants seem to have generally fair knowledge (61.7%) of the mechanisms by which beauty treatments, including hairdressing, might transmit and prevent haematic pathogens, this could be probably due to the national media campaigns carried out on HIV/AIDS in the last years in the country. A good level of knowledge of blood borne diseases among beauticians could contribute to improve knowledge among their clients and in turn help prevent the spread of these infections through beauty treatments. Poor knowledge and lack of awareness of the general public about HBV is the main cause of the rapid spread of these infections in developing countries compared with developed ones [24, 25]. The observed low level of knowledge among beauticians about hepatitis B in this study was in contrast to other similar studies by carried

out by Almeida *et al.*, (2014) [26], Shalaby *et al.*, (2010) [27] and several others. However, it was in agreement with studies by Chaudhry *et al.*, (2010) [28], Murtagh *et al.*, (2004) [5] and others. Despite the low level of knowledge observed in this study, the generally fair knowledge of beauticians recorded in the study was still higher when compared with that reported by Olusola *et al.*, (2017) [18] among beauticians in Ibadan, Nigeria. The reason could not be far-fetched; it is most likely due to the health campaigns carried out on TVs, radios and hospitals between his time of study and now in this country. Because there were some high levels of knowledge recorded regarding the routes of transmission. About 83.3% of the respondents knew that blood-borne diseases like Hepatitis B infection can be transmitted through blood transfusion, 57.5% knew that Hepatitis B can be transmitted through unprotected sex, and 78.3% knew that Hepatitis B can be transmitted through sharing of contaminated sharp instruments. The most important reason behind this finding likely was a lack of information about disinfection/sterilization processes. This could increase the probability of viral hepatitis transmission in this setting. All participants who were positive for HBsAg were asymptomatic, with a lack of awareness about their infections, which makes them high-risk candidates for chronic disease and disease transmission in society. Likewise, the knowledge on vaccination among the population too was very poor which posed a big matter of concern. Therefore, the struggle against hepatitis B disease should include all transmission routes, not only to those institutions that provide health care, but also to barbing and hairdressing salons where transmission is likely to occur.

6. CONCLUSION

The seroprevalence of HBV infection among beauticians in the study was fair enough (7.5%) when compared to similar studies, however, the knowledge of the beauticians on the existence of HBV infections was relatively low and the risk perception of the study participants was also significantly low. These showed that, beauticians working in Yenagoa Local Government Area are in a risk of HBV infection even though the seroprevalence was fair.

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