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Article · April 2023

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Influence of socio-cultural factors on hepatitis B infection in Mombasa County, Kenya

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Received: 16 February 2023

Revised: 17 March 2023

Accepted: 18 March 2023

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ABSTRACT

Background: The hepatitis B virus (HBV) is responsible for causing a communicable liver disease that can be prevented through vaccination. Although the HBV vaccine was introduced in Kenya's expanded immunization program in 2003, the incidence of HBV remains high in the country, especially among IDUs. Objective was to investigate the influence of socio-cultural factors on HBV infection in Mombasa County, Kenya.

Methods: The study utilized a cross-sectional analytical design. The study was purposely conducted in Mombasa County because the area is highly prevalent with drug users and people with hepatitis B. There are eight treatment centers in the county, 4 public and 4 privates where stratified random sampling was used. The sample size was proportionately distributed across the selected treatment centers. The study employed a mixed method of data collection, involved; self-administered questionnaire to the IDU's, key informant interviews and focused group discussion with treatment care managers.

Results: The prevalence of hepatitis B was 22%; with male (77.1%) most affected than women (22.9%). Bivariate analysis show that a history of drug abuse was significantly associated with prevalence of hepatitis B ($\chi^2=2.485$, $df=1$, $p=0.046$).

Conclusions: The prevalence of hepatitis B is on the increase among injecting drug users. Having a history of drug abuse was a significant predictor to the prevalence of hepatitis B among injecting drug users in this study. Cultural practices such as piercing and tattooing were observed among study participants were established as a risk factor to hepatitis B infection among injecting drug users.

Keywords: Hepatitis B, Injecting drug users, Prevalence, Socio-cultural

INTRODUCTION

Hepatitis B is a viral infection of the liver that leads to acute as well as chronic diseases. Acute hepatitis B occurs within six months after exposure to the Hepatitis B virus, while chronic HBV can last for six months or become a lifelong disease. In the long run, chronic HBV can cause serious health complications such as liver damage, cirrhosis, hepatocellular carcinoma, and even death.¹ Approximately 15-40% of HBV infected individuals die from serious complications.²

Even after the HBV has been outside the body for up to 7 days, it can still cause an infection when it gets access to the body, especially if someone hasn't been vaccinated. Incubation periods for HBV range from 30 to 180 days.

Blood tests for HBsAg (hepatitis B surface antigen), which detects the virus at its active stage, can be used to detect HBV between 30 to 60 days after being infected. Without treatment, this can lead to chronic HBV which can be life threatening.³ Hepatitis B is very contagious diseases in which the infected are often asymptomatic for

a very long time and may unknowingly pass the disease to their partners via maternal transmission; percutaneous transmission, such as unsafe injection, open wounds, and sexual contact with HBV infected individuals. A positive HBsAg test is normally detected in the blood serum of an infected individual and is used as a marker for diagnosing acute or chronic hepatitis B infection.⁴

The World Drug Report suggests that 35 million people use drugs worldwide. There are approximately 12 million individuals who use injecting drugs (IDUs), 5.6 million of whom are infected with HBV. Out of these, 7.5% of the IDUs have chronic HBV.³ Eighty percent or more of IDUs injecting for more than ten years were observed to be infected with HBV. Approximately 28 million drug users are in Africa, and around 37,000 individuals die yearly from complications related to illicit substances.⁵ Injecting drug users are at risk of HBV infection if they share needles and drug paraphernalia, as well as engage in unsafe sex.

The geographic prevalence of this infection also varies widely, based on the different modes of transmission. Prior to the introduction of universal vaccination for hepatitis B, the prevalence of HBsAg (hepatitis B surface antigen) ranged between 2% and 20% worldwide. HBsAg prevalence was estimated to be 3.61% based on data published from 161 countries between 1965 and 2013, dominated by rates in Africa (8.82%) and the Western Pacific regions (5.26%). WHO territories showed prevalence's ranging from 0.20% (Mexico) to 13.55% (Haiti) in the Americas, 0.48% in the Seychelles, and 22.38% in the African (South Sudan) region.⁶ Based on these populations combined, they translated to 248 million people globally in 2014.⁷

Hepatitis B virus (HBV) prevalence rose to 3.9% globally in 2016 (95% confidence interval, 3.4 to 4.6%), which is equivalent to 292 million people, showing no signs of declining prevalence. However, only 29 million (10%) of those individuals were infected. Moreover, only 4.8 million (5%) of those eligible for treatment had actually undergone treatment.⁸ Recent reports have noted other recent changes in the global HBV situation. Based on a study of 44,026 HBV patients from the United States, researchers found that among those with HBV, the median age increased from 48 years in 2006 to 52 years in 2015. Due to the aging population, non-liver-related comorbidities have also increased, and this in conjunction with HBV has increased the disease burden of HBV.⁹ In real-world studies, it has also been reported that there is an increase in liver comorbidities, increased costs of HBV and increased utilization of health care by individuals with HBV.^{9,10}

Additionally, global differences in HBV genotype distribution complicate the elimination of chronic hepatitis B.¹¹ There are currently 10 HBV genotypes, which are identified by the letters A to J, which have evolved over time as a result of genetic mutations and a

lack of reverse transcription, making their elimination challenging. Virus hepatitis was recognized as a global health problem by the World Health Organization in 2011. This organization released its first official viral hepatitis control strategy in October 2015, with the goal of reducing considerable morbidity and mortality rates associated with hepatitis B virus infections by 2030.¹²

The strategy has been endorsed by 194 governments, and includes goals such as a 90% reduction in the incidence of viral hepatitis, 80% of eligible patients receiving treatment, and 65% of deaths resulting from viral hepatitis being reduced.⁹ Due to the availability of an effective and low-cost vaccine, HBV can be eliminated within a few decades. Researchers have shown that hepatitis B vaccines prevent hepatocellular carcinoma (HCC).^{11,13}

In Kenya, A significant burden of hepatitis B infection exists among drug users and those between the ages of 18 and 30 are the most at risk. There is a large percentage of drug users in the age bracket of 10-19 years. Approximately 60% of young people between 12 and 31 years of age in Mombasa County are regular users of illicit drugs.^{3,14} Research has identified several risk factors for HBV transmission, such as sharing needles/syringes, unprotected sex, blood transfusions, long-term injection of drugs, unemployment, and homelessness.¹⁵⁻¹⁷

In order to contain hepatitis B, the following strategies should be used; making use of disinfected injectable medicine, vaccinating, screening blood transfusions, maintaining a safe sex environment, and syringes not being shared. These strategies were introduced by Kenya's government in 1982 to combat HBV infections. Despite adopting these strategies, HBV prevalence remains high in the country, particularly among IDUs.

In this context, the study aimed to determine the barriers to effective prevention of HBV infection among IDUs seeking care in selected treatment care centers in Mombasa County, Kenya.

METHODS

Research design

The study was a cross-sectional analytical design. A relationship between the variables determined within the natural framework of the study.

Selection criteria

There are eight care treatment programs in the county, which include: Coast General Hospital (Mat Clinic), Portreitz medical clinic mental and substance misuse unit, Kisauni Health Centers, Kardboy Health Center (Mat Clinic), private care treatment centers include; Mewa drop in focus, reach out medication treatment focus in

Likoni Enden house and reach out a drop-in focus in Kibokoni. Participants in the study included all injecting drug users who were undergoing treatment; methadone among others drugs available at various centres for treatment in the county.

Sampling technique

The study was purposely conducted in Mombasa County because the area is highly prevalent with drug users and people with hepatitis B. There are eight treatment centers in the county, 4 public and 4 private. Based on stratified random sampling, two treatment centers were selected from each stratum, and the selected treatment centers were Private Kibokoni Reach out Centers, Mewa Dropping Focus, Coast General Hospital (Mat Clinic), and Kisauni Health Center.

The sample size was proportionately distributed across the selected treatment centers. The first respondent was randomly selected, and systematic sampling was used to get the subsequent respondents (every third subject) until sample size was reached. Study period was January 2021 through October 2021, due to COVID-19 pandemic and strict MoH protocol on minimal interaction.

Pre-testing

This was done at Reach out drug treatment Centre in Likoni. The instruments used in research, including the HBsAg rapid test, were pre-tested before data collection began. Research questions were reviewed to check if they were clearly formulated, consistent, and appropriately done. Validity and time spent were also monitored. It was recommended that a pretest consist of at most 16 respondents (or 10% of the sample).¹⁸ This was to determine whether the proposed study was feasible and acceptable.

Testing of hepatitis B virus

All the respondents of the questionnaires were tested for HBV test (consulted before engaging into the research study and those who agreed were further engaged). The study prospectively recruited 159 IDUs in public and private reach out centers in Mombasa. The reach out centers are funded privately by global fund. The systematic administration was performed for all IDUs and questionnaire were administered for behavioral measures and blood physical examination was performed. Enzyme immunoassays (EIA) in plasma, blood or serum is used for the HBV diagnostic that is for serological detection of HBsAg.¹⁹

A standard diagnostic SD BIO LINE HBsAg WB was used in the testing of blood sample. The screening test was done by a certified clinician and a nurse. The respondent was explained the significance of the research and the benefits of the testing, hence informed consent was obtained. Afterwards the Bio LINE kit was then

opened which does not require a buffer. A 1 ml portion of blood was taken from the finger that was suitable for the collection. The respondents were assured to wait for a period of 15 minutes to wait for the result and were counselled accordingly depending on the outcome of the results.

Data collection instruments

Questionnaires

A structured interview questionnaire was employed by the researcher as a tool to collect quantitative data. In order for the study to achieve its goals; Research assistants were present to assist the principal investigator during the CHV activity. Various thematic sections were included in the researcher instruments according to the study's focus. The research instruments were all, translated first into Kiswahili, and then back into English to ensure accuracy of the questions. In order to eliminate language perception issues, variations, and issues related to the research instruments, these were then amended. HBsAg (hepatitis surface antigen) rapid tests were performed on respondents who gave consent to be tested for HBV infection.

Key informant interviews

Qualitative in-depth interviews with key informants are conducted with those who know what is happening in the community. Data from a wide set of individuals were collected regarding the extent of hepatitis B infection, route of transmission, and prevention measures. In order to determine the current management and control strategies for HBV, county health officials were also interviewed.

Focus group discussion

Six (FGDs) were used to gather information, with 8-10 participants in each facilitated by a moderator. Discussions were guided by an FGD guide. In the research, data was collected on HBV transmission, prevention methods, and transmission methods.

Statistical method and tools

The data was analysed descriptively using frequencies and percentages. Bivariate test was performed to test the association between shaving practices at the barber and the prevalence of hepatitis B infection.

Moreover, ordinal logistic regression, was employed to assess the influence of the independent factors on the dependent variable. This was because the data was found not to be normally distributed and the odds were proportional. For the qualitative data, the report was reported in narrative form.

RESULTS

Predisposing Socio-cultural practices to Hepatitis B infection

Traditional shaving using a razor was the most practiced socio-cultural practice among 56.6% of study participants; a third (30.8%) pierced their ears or noses. Only 12.6% of respondents tattooed.

Table 1: Proportionate (%) of respondent on predisposing socio-cultural practices to hepatitis B infection.

| Predisposing socio-cultural practices | N | % |
|---------------------------------------|----|------|
| Piercing nose/ears | 49 | 30.8 |
| Tattooing | 20 | 12.6 |
| Traditional shaving using racer | 90 | 56.6 |

Shaving practices at barbers

The lack of sterilization facilities at their respective barbers was reported by 51.6% of study participants and was a risk factor to getting hepatitis B virus; 69.2% said not changing blades or razors was an observed practice at the preferred barbershop and was a risk factor to getting infected (Table 2).

Table 2: Proportionate (%) of respondent on shaving practices at barbers.

| Risk factors | No (%) | Yes (%) | Total |
|----------------------------------|-----------|------------|-------|
| Lack of sterilization facilities | 77 (48.4) | 82 (51.6) | 159 |
| Not changing blades /razors | 49 (30.8) | 110 (69.2) | 159 |

Test of associations and convergence of qualitative findings

The test of associations was performed for all the independent variables of the study vis-à-vis the dependent variable. This test was to check whether or not there was any association between the socio-cultural factors on the prevalence of hepatitis B.

Socio-cultural practices and the prevalence of hepatitis B

Bivariate association between shaving practices at the barber and the prevalence of hepatitis B infection shows ($\chi^2=5.545$, $df=1$, $p=0.019$) in Table 3.

Needle syringe program mechanism among other groups since they relatively mix. The NEP was realigned to needle syringe program (NSP) where the reach out centers perform syringe assessment of each IDUs and they are supplemented with the syringes. A follow up was done on the IDUs where the reach out administration organizes for picking of the used syringes from the

beneficially. The recruitment of the IDUs is based on the donor funding that determines the capacity and the resources available for the program.

The program majorly recruits heterosexuals and those within the county.

Table 3: Test of association between socio-cultural practices and the prevalence of hepatitis B.

| Cultural and traditional activities | Prevalence of hepatitis B | | | | χ^2 (p) |
|----------------------------------------|---------------------------|------|----------|------|----------------------|
| | Positive | | Negative | | |
| | N | % | N | % | |
| Traditional shaving using racer | 23 | 65.7 | 65 | 52.4 | 1.578 (2), $p=0.454$ |
| Tattooing | 3 | 8.5 | 19 | 15.3 | |
| Piercing nose/cars | 9 | 25.8 | 40 | 32.2 | |
| Shaving practices at the barber | | | | | |
| Not changing blades/razors | 20 | 24.5 | 46 | 37 | 5.545 (1), $p=0.019$ |
| Lack of sterilization facilities | 15 | 9.1 | 78 | 63 | |

Table 4: Test of association between socio-cultural practices and the prevalence of hepatitis B.

| Cultural and traditional activities | Quote |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Family promises | “I am a drug user and born in a family where there are more promises for good job and later find out that was false hopes, promises and expectations.” |
| Availability of the drugs | “The family setup where I was introduced by the relatives close to me and availability.” |

Logistic regression analysis

Those with a history of drug use had a 35-fold higher risk of contracting hepatitis B than those without (AOR=35.223, $p=0.003$).

Table 5: Logistic regression analysis.

| Study variables | 95% CI for EXP (B) | | | |
|----------------------------|--------------------|-------|--------------|--------------|
| | Coeff. | Sig. | Exp. (B) Ref | Lower Upper |
| Shaving practices | | | | |
| Not changing blades | | | | |
| Lack of sterilization | 1.313 | 0.073 | 3.717 | 0.885 15.604 |
| Constant | -5.143 | 0.004 | 0.006 | |

DISCUSSION

The present study quantitatively examined socio-cultural attributes that may be a risk factor to hepatitis B. The study also examined practices that involve skin piercing. The descriptive statistic illustrates that traditional shaving using a razor was the common mode that could be a risk factor to HBV among the sampled study participants. A third either pierced their nose or ears, while only a few had tattoos. This survey established a statistical significance between cultural practices and prevalence of hepatitis B.

A survey in Iran among tattooed patients at a health facility showed a prevalence of 6.3%. Sharing of needles while injecting drugs and also tattooing across several client increases the risk of transmission. Similar event is seen in women and girls while piercing their nose and ears they too share their needles.²⁰

Study participants reported of lack of sterilization or lack of change of blades at beauty parlours such as barbers and saloons. To reduce blood-borne infections such as hepatitis B, there is a need to ensure that needles used for tattoo procedures are used and disposed of appropriately while blades are sterilized before and after every shave.

A study in Tehran revealed that 2.1% of IDUs were HBsAg positive, and 28% were HBcAb positive. Study results indicate the same rate of HBsAg positivity as those found in previous studies.²¹ Studies carried out in other areas of Iran have reported a lower incidence of HBV, possibly due to vaccination. Iran's national immunization program now includes HBV vaccination, resulting in a decrease in HBV prevalence nationwide. An Iranian harm-reduction program introduced in 2005 may also explain the lower rate.^{22,23}

Qualitative findings among treatment care managers show that injecting drug users are inject themselves to be accepted among peers. They further report that the shortage of drugs and the prices of medicines drive them to share needles. Additionally, family structure among the people living in the study area contributes to the sharing behavior.²⁰

The findings of the study did not represent the entire population of Mombasa since it was performed in four treatment care centers. In fear that the researcher was to break confidentiality, the respondent might have constrained from providing information, which could potentially lead to them being victimized. Time as a factor was limiting in achieving the target sample size since the IDUs were not consistently attending the reach out centers. Some respondents asked for motivation money since they thought that the research was funded by the IDUs reach out donors. The study conducted basic HBV testing hence for those who were positive not much could be done since the study could not perform further genetic analysis in determining the genotypes and sub-

genotypes. Once a client test positive there was no after care available since no drugs are available to cure the HBV except for counselling and managing the symptoms.

CONCLUSION

Cultural practices such as piercing and tattooing were observed among study participants. This is a predisposing factor to Hepatitis B infection among injecting drug users. The study recommends that there is a need for the county government through department of health to continuously scale-up screening services among injecting drug users through its harm reduction programs. Health facility managers and health care workers, there is a need to educate injecting drug users to identify signs and symptoms of hepatitis B and encourage screening among IDUs who have not been screened and lastly, the county government needs to trace other injecting drug users in the community to embrace harm reduction interventions.

ACKNOWLEDGEMENTS

I would like to thank Kenyatta University fraternity, Department of Community of Health, my supervisors, Dr. Syprine Otieno, Dr. George Orinda, as well as Dr. Harun Kimani for their collaboration, insightful advice, and support that led to the successful completion of my thesis. To Nicolous Njoroge, my research assistant and classmates have been supportive during this journey as well.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: For the study to be conducted in Mombasa County, a permit was obtained from NACOSTI. Mombasa County's Department of Health and Sub-County Public Health Office provided the approval

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Cite this article as: Ndunda JM, Kimani H, Orinda G, Otieno S. Influence of socio-cultural factors on hepatitis B infection in Mombasa County, Kenya. *Int J Community Med Public Health* 2023;10:1322-7.