

Impact of Socio-Demographic Characteristics on Acquiring HBV Infection Among Village Midwives in Khartoum State, Sudan, 2014

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Abstract: Background: WHO estimated that 500 000–700 000 people died due to HBV related diseases per year. Objective: To determine the impact of socio demographic characteristics on occurrence of HBV markers among Village Midwives in Khartoum State, Sudan, 2014. Method: It is a cross-sectional survey. Three hundred thirty five village midwives were studied. Demographic data were collected through a close end questionnaire. Sera were examined, using Eliza, for HBV markers. Statistical package of social sciences (SPSS) version (16) and Chi-Square test were used. Selected level of P value is 0.05. Result: Marital status was: married (61.8%), widow (16.4%), divorced (11.3%) and single (4.8%). Level of education: university graduate (0.9%), secondary certificate (9.8%), intermediate (14.2%), primary (50.2%), Quranic School (1.9%) and illiterate (23%). About 65.8% of participants were in age group (30–49), 29.5% in age group of more than 50 years, and 4.6% in age group <30 years. One hundred and thirteen (34%) were positive Anti-HBcore (IgG) reflecting past or on going infection. Fifty seven (57%) of infected respondents were positive HBsAg indicating carrier rate. The overall immunity measured by HBsAb was 8.4%. The tested samples were negative for both HBeAg and Anti-HBcore (IgM). With an exception of the statistical association of duration of work to HBsAb, there is no statistical association between socio-demographic and seroprevalence of HBV markers. Conclusion: Apart from the statistical relation of duration of work to HBsAb, there is no statistical association between seroprevalence of HBV markers and socio-demographic of village midwives in Khartoum State, Sudan.

Keywords: HBV, Village Midwives, Socio Demographic Characteristics, Khartoum State, Sudan

1. Introduction

1.1. Background Information

WHO estimated that the cause of death of about 500 000–700 000 people is due to HBV related diseases per year. Ninety four percent of deaths related to chronic HBV infection complications [1, 2]. More than 75% of the world's chronic HBsAg carriers are of Asian and African origins [3]. The range of infection rate (positive Anti-HBcore) of HBV in Sudan is 47% to 78%. While carrier rate (positive HBsAg)

6.8% to 26%. So, Sudan considered as one of the countries with a high endemicity [4]. HBV infection is an important occupational hazard for village midwives. They are illiterates and a few of them have basic school education. To our knowledge, in Sudan up to now, there is no published study about seroprevalence of HBV infection specifically among this group. The risk of HBV infection is basically related to the degree of contact with infected blood and body fluids in the workplace and also to the hepatitis B-e antigen (HBeAg) status of the source person. The hepatitis B virus is 50 to 100 times more infectious than HIV. [5]. There is a relationship

between the endemicity and the age of acquiring HBV infection. About 70-80% occurs perinatally [6]. In a study done in Iran, there is no significant statistical association between HBsAg and age, education, place of residency, and duration of work (7). Place of original residency, marital status and age group (30-49) of HCWs are statistically associated with HBV markers. (8). There is a statistical significant relation between hazards of occupation and HBV markers. (9). Duration of work together with sharp instrument injury are occupational hazards (10). In the centre of Sudan 70% of women in the age of child bearing were positive HBsAg [11]. In a study conducted among HCWs in Public Hospitals in Khartoum State, Sudan, prevalence of Anti-Hcore total, HBsAg, and HBeAg in obstetric department is 17.4%, 17.7% and 20.7% respectively. (12)

1.2. Objective

To determine the impact of socio demographic characteristics on occurrence of HBV markers among Village Midwives in Khartoum State, Sudan, 2014.

2. Materials and Methods

2.1. Study Design

It is a comparative cross-sectional survey.

2.2. Study Area

The study was done in Khartoum State, Sudan. It consists of seven localities, which are: Bahri, Sharg-Anil, Khartoum, Jabal awlia, Omdurman, Ombeda, and Karari.

2.3. Study Population

They are village midwives who were trained for provision of reproductive health services and licensed their bags in Khartoum State, Sudan, 2013.

2.4. Sample Frame

It consists of all village midwives who are providing reproductive health services, for at least the last one year, in Khartoum State, Sudan.

Table 1. Sample Frame of village midwives in Khartoum State, Sudan; 2014.

| LOCALITIES | No. of VMW |
|------------|------------|
| BAHRI | 217 |
| SHARG-ANIL | 480 |
| KHARTOUM | 68 |
| ABAL AWLIA | 293 |
| OMDURMAN | 165 |
| OMBEDA | 390 |
| KARARI | 235 |
| TOTAL | 1848 |

2.5. Sampling Technique

Stratified, systematic random sampling

2.6. Sample Size

It was calculated using the formula:

$$n = \frac{N}{(N-1)d^2 + 1} = \frac{1848}{1847 \times 0.0025 + 1} = 329$$

n=sample size

N=Total number of VMWs in Khartoum State, Sudan

d= 5%= 0.05desired margin of error

NRR = Non-response rate = 1.8%

So, n = 329 + 6 = 335

The sample was distributed among the seven localities proportionately according to the number of village midwives in each of them, as shown in Table 2 below:

Table 2. Distribution of the Sample Size among Khartoum State Localities, Sudan, 2014.

| Locality | No. of VMW | Sample Size |
|-------------|-------------|-------------|
| BAHRI | 217 (11.6%) | 39 |
| SHARG-ANIL | 480 (26.0%) | 87 |
| KHARTUOM | 68 (3.9%) | 13 |
| JABAL AWLIA | 293 (15.8%) | 53 |
| OMDURMAN | 165 (9.0%) | 30 |
| OMBEDA | 390 (21.2%) | 71 |
| KARARY | 235 (12.5%) | 42 |
| TOTAL | 1848 (100%) | 335 |

2.7. Data Collection

- Study variables are:
 - A. Independent variables:
 1. Locality.
 2. Age.
 3. Marital status.
 4. Level of education.
 5. Duration of work.
 - B. Dependant variables:
 1. Anti-HBcore (IgG)
 2. Anti-HBcore (IgM)
 3. HBsAg
 4. HBeAg.
 5. Anti-HBsAg
- Tools of data collection:
 - Questionnaire
 - Blood sample for investigation for HBV markers.

2.8. Data Analysis

Using Eliza sera of all participants were tested for Anti-HBcore (IgG and IgM), and HBsAb. Positive samples for Anti-HBcore were tested for HBsAg. Positive samples for HBsAg were tested for HBeAg. Data was analyzed using statistical package of social sciences (SPSS) version (16). Chi-square test was used. P value equal or less than 0.05 was considered statistically significant.

3. Ethical Consideration

Ethically it was approved by the Sudan Medical

Specialization Board; then from the Ministry of Health of Khartoum State. At the end each respondent gave a written consent.

4. Results

A total of three hundred and thirty five participants were studied. Their distribution among localities of the state is as follow: Bahri (11.6%), Sharg-Anil (26.0%), Khartoum (3.9%), Jabal awlia (15.8%), Omdurman (9.0%), Ombeda (21.2%), and Karari (12.5%). Regarding marital status it was found to be: married (61.8%), widow (16.4%), divorced (11.3%) and un-married (4.8%). The level of education was

university graduate (0.9%), secondary certificate (9.8%), intermediate (14.2%), primary (50.2%), Quranic School (1.9%) and illiterate (23%). About the age 65.8% of participants were in the age group (30-49), 29.5% in the age group of more than 50 years, and 4.6% in the age group of <30 years. One hundred and thirteen (34%) of the examined population were positive Anti-HBcore (IgG) reflecting past or on going infection. Fifty seven (57%) of the infected respondents were positive HBsAg indicating carrier rate. The overall immunity measured by HBsAb was 8.4%. The tested samples were negative for both HBeAg and Anti-HBcore (IgM).

Table 3. Socio-demographic characteristics of VMWs and HBV markers, Khartoum State, Sudan; 2014.

| Demographic factors | Test | P- value | Conclusion |
|---------------------|-------------------|----------------------------|---------------|
| Localities | Anti-HBcore (IgG) | 0.097 | Insignificant |
| | Anti-HBcore (IgM) | No statistics are computed | |
| | HBsAg | 0.216 | |
| | HBeAg | No statistics are computed | |
| | HBsAb | 0.842 | |
| Original Residency | Anti-HBcore (IgG) | 0.07 | Insignificant |
| | Anti-HBcore (IgM) | No statistics are computed | |
| | HBsAg | 0.089 | |
| | HBeAg | No statistics are compute | |
| | HBsAb | 0.259d | |
| Age | Anti-HBcore (IgG) | 0.210 | Insignificant |
| | Anti-HBcore (IgM) | No statistics are computed | |
| | HBsAg | 0.132 | |
| | HBeAg | No statistics are computed | |
| | HBsAb | 0.408 | |
| Education | Anti-HBcore (IgG) | 0.266 | Insignificant |
| | Anti-HBcore (IgM) | No statistics are computed | |
| | HBsAg | 0.473 | |
| | HBeAg | No statistics are computed | |
| | HBsAb | 0.632 | |
| Marital status | Anti-HBcore (IgG) | 0.881 | Insignificant |
| | Anti-HBcore (IgM) | No statistics are computed | |
| | HBsAg | 0.928 | |
| | HBeAg | No statistics are computed | |
| | HBsAb | 0.273 | |
| Duration of work | Anti-HBcore (IgG) | 0.414 | Insignificant |
| | Anti-HBcore (IgM) | No statistics are computed | |
| | HBsAg | 0.837 | |
| | HBeAg | No statistics are computed | |
| | HBsAb* | 0.01 | Significant |

* Result is significant at P value < 0.05 according to Chi-Square test.

Findings in Table 3 indicated that seroprevalence of all HBV markers was statistically insignificant with demographic factors, except for the relation between HBsAb and the duration of work ($P < 0.05$).

5. Discussion

Hepatitis B virus is one of the blood borne viruses that infect the liver leading to a range of liver damage, ending by cirrhosis and hepatocellular carcinoma. Village Midwives, during their routine work, expose to blood and other body fluids by which HBV can be transmitted. Three hundred and thirty five participants were surveyed in this study. Past or ongoing infection among the study group, measured by Anti-

HBcore (IgG), was 34% which was less than that found in other study among Sudanese population [4]. This may be explained by the health education offered to village midwives during their training program. Infection rate of 57% was mentioned among HCWs in Public Teaching Hospitals in Khartoum State, 2011; in a study of a socio-demographic characteristics and hazards analysis within departments and occupations of them showed 73.3% among midwives, such difference may be related to that deliveries at home associated with limited exposure to body fluids. Village Midwives work at home with limited exposure because they only provide services to those live in their catchment's area, in comparison to those working in hospitals where they handle much more clients [8, 12]. In this study, with an

exception of the statistical relation of duration of work to HBsAb, there is no statistical association between socio-demographic of village midwives and seroprevalence of HBV markers. This does not coincide with a study done among HCWs in Khartoum State, Sudan; where there is a significant statistical association between HBV markers and socio-demographic characteristics [8]. This may be explained by the fact that village midwives are less expose to HBV than HCWs who work in hospitals.

6. Conclusion

Anti-HBcore (IgG) and HBsAg positively levels are high. The overall immunity measured by HBsAb is low. There is no high infectious or acute infection measured by HBeAg and Anti-HBcore (IgM) respectively among respondents. Apart from the statistical relation of duration of work to HBsAb, there is no statistical association between seroprevalence of HBV markers and socio-demographic of village midwives in Khartoum State, Sudan.

References

- [1] Mohsni E. Speeding up prevention and control of HBV and HCV in the eastern Mediterranean region. Viral hepatitis prevention board meeting. November 2009 Istanbul, Turkey.
- [2] Goldstein ST, Zhou F, Hadler SC, et al. A mathematical model to estimate global hepatitis B disease burden and vaccination impact. *Int J Epidemiology*. 2005; 34(6): 1329-1339.
- [3] Olusegun Adekanle, Dennis A. Ndububa, Samuel Anu Olowookere, Oluwasegun Ijarotimi, and Kayode Thaddeus Ijadunola. Knowledge of Hepatitis B Virus Infection, Immunization with Hepatitis B Vaccine, Risk Perception, and Challenges to Control Hepatitis among Hospital Workers in a Nigerian Tertiary Hospital. *Hepatitis Research and Treatment*; Volume 2015, Article ID 439867, 6 pages <http://dx.doi.org/10.1155/2015/439867>.
- [4] Mudawi HM. Epidemiology of viral hepatitis in Sudan. *Clinical and Experimental Gastroenterology J*, 2008; 1: 9–13.
- [5] Lavanchy D."Hepatitis B virus epidemiology, disease burden, treatment, and current and emerging prevention and control measures: a review." *Journal of Viral Hepatitis*.2004; Vol. 11, No. 7, P: 97–107.
- [6] VIRAL HEPATITIS Published by the Viral Hepatitis Prevention Board (VHPB) Published by the Viral Hepatitis Prevention Board (VHPB)Vol. 15 - 1 December 2006.
- [7] Leila Kheiri (MSC), Somayeh Makvandi (PhD) The Prevalence of Hepatitis B Surface Antigen (HBsAg) and its Influencing Factors in Pregnant Women Referring to Healthcare Centers of Dehloran, Iran in 2011-2012. *J Midwifery Reprod Health*. 2015; 3(3): 424-429.).
- [8] Elmukashfi, T. A., Ibrahim, O. A., Elkhidir, I. M., Bashir, A. A., & Elkarim, M. A. A. Socio-Demographic Characteristics of Health Care Workers and Hepatitis B Virus (HBV) Infection in Public Teaching Hospitals in Khartoum State, Sudan. *Global Journal of Health Science*; Vol. 4, No. 4; 2012 ISSN 1916-9736 E-ISSN 1916-9744.
- [9] Elmukashfi, T. A., Ibrahim, O. A., Elkhidir, I. M., Bashir, A. A., & Elkarim, M. A. A. Occupational Hazards and HBV infection among health care workers in Public Teaching Hospitals in Khartoum State, Sudan: A multiple Discriminant Analysis. *Sudan JMS* Vol. 7, No. 1. Mar 2012.
- [10] Hunt, Richard (2007-11-21). "Hepatitis viruses". University of Southern California, Department of Pathology and Microbiology. Available from: <http://pathmicro.med.sc.edu/virol/hepatitis-virus.htm>.
- [11] Mudawi HM. Epidemiology of viral hepatitis in Sudan. *Clinical and Experimental Gastroenterology J*, 2008; 1: 9–13.
- [12] Elmukashfi, T. A., Ibrahim, O. A., Elkhidir, I. M., Bashir, A. A., & Elkarim, M. A. A. Analysis of Hazards for Hepatitis B Virus, Across Departments and Occupations, Among Health Care Workers in Public Hospitals in White Nile State, Sudan,2013. *American Journal of Health Research*2016; 4(5): 117-120 <http://www.sciencepublishinggroup.com/j/ajhr>. doi: 10.11648/j.ajhr.20160405.11. ISSN: 2330-8788 (Print); ISSN: 2330-8796 (Online).