

at which an individual acquires the infection is the major determinant of the incidence and prevalence rate (WHO, 2015).

The prevalence HBsAg in relation to sex history showed that those with a previous sexual history had the highest prevalence of 14.3% as against those that had no previous sexual history with 6.1% prevalence. The prevalence rate of Hepatitis B Viral infection observed among those with previous sex history could be attributed to unprotected sexual activities which might have exposed them to the infection as compared against those who had no previous sex history had lower prevalence despite the fact that they are more in number.

The prevalence rate in relation to the use of sharps indicated that those who had history of injuries sustained from sharps recorded the highest prevalence of 7.3% compared to those who have never been exposed to sharp objects who recorded a lower prevalence of 6.5%. This could be that the objects exposed to could have been pre-contaminated with the virus.

The prevalence of HBsAg based on alcohol consumption; showed, the highest prevalence of 13.6% for those who are into alcohol consumption as against 6.2% for those who do not take alcohol. These can be due to the effect of alcohol on the behavior of a person that lead to some abnormal behaviours such as fighting, gangsterism and sexual promiscuity which can predisposed them to the infection.

The distribution of HBsAg in regards to history of blood transfusion indicated that those who had a history of blood transfusion recorded no evidence of HBsAg, this could be due to guidelines for safe transfusion of blood and blood products, as against those who had never been transfused who recorded a high prevalence of 7.7%. The high prevalence among those with no history of transmission indicated that they might have been infected through other risk factors.

The prevalence based on the history of sharing of toiletries showed a slight variation as those who share toiletries had a prevalence of 6.9% as against those who do not share toiletries (7.4%).

A comparative study of the work to other studies within the country showed a prevalence of 31.5% among Students of Federal Polytechnic Mubi (Tulsa *et al.*, 2015), 9.2% among Students of Ahmadu Bello University, Zaria (Isa *et al.*, 2015), a prevalence of 18.4% was reported by Ndako *et al.*, (2011) among secondary school Students in North-central Nigeria. Odusanya *et al.*, 2007, reported a prevalence of 3.2% among medical students in the South-western region of the country. Ugwuja *et al.*, (2008), reported a prevalence of 3.9% among secondary school students in Abakaliki. A prevalence of 12% was reported by Edia-Asuke *et al.* (2015) among public tertiary institution in Kaduna State, Nigeria.

This variation is possibly due to increase awareness and vaccination against the viral infection. It could also be attributed to differences in the study selection. This study was carried out among apparently healthy school children, whereas others were carried out among patients and other groups.

Considering the result of the positive cases, 12 samples were HBsAg positive, which affirmed a viral infection, but 11 samples were HBeAg positive. This is an indicator of the active replication of the DNA of the virus and is a mark of the infectiveness of the virus (Liang, 2009).

Conclusion

The result of this research work bring to limelight the endemicity of HBsAg among the students of Nasarawa State University. This may not be unconnected to low level of awareness on the route of transmission, youthful exuberances, prevention and control of the viral infection as well as poor vaccination coverage among the age group.

The study also show that majority of the study population were unaware of their HBsAg status. This study has provided additional information on the burden of HBV infection to the existing data in Keffi, Nasarawa State, Nigeria.

Vaccination and prevention of infection still remain the hallmark of activities in the prevention of the transmission of the infection. However, adolescents are usually not targeted for vaccination programmes and coupled with their high risk behaviour such as lack of awareness, increase unprotected sexual activities, sharing of razor blades, tattooing e t c.

Recommendations

Based on the findings of the study, there is need for intensive public sensitization campaign on the routes of transmission, prevention and control of this silent killer disease among students of this school and environs. Thus, the Nasarawa State Government through the Ministry of Health should consider wide vaccination coverage and treatment that will include students in schools, so as to curtail the vast spread of the virus among others due to close personal contact. There should also be special programme as regards to this disease to monitor the success and implementation of measures aimed at achieving a maximum success in the prevention, control, management and treatment of the infection just as in the case of HIV.

Since when infected it is hard to get rid of the virus completely from the body, I therefore recommend that more researchers should develop interest in this research area to explore more ways the virus can be managed and possibly be eradicated.

The government and the NGOs should create more awareness on the ways of prevention and control of the viral infection. They can also subsidize the cost of treatment to these individuals.

Individuals should be advised to go for the screening to know their status; this will greatly reduce the mortality and other medical complications caused by this virus.

REFERENCES

- Alao, O., Okorie, F. (2008). Seroprevalence of Hepatitis B Surface antigen among prospective blood donors in urban areas of Benue state. *The International Journal of Hematology* 5(2):29–33.
- Alter, H.J., Blumberg, B.S. (1966). Further studies on a new human antigen precipitin system (Australian antigen). *Blood*. 27(3): 297-309.
- Aminu, M., Okachi, E., Sani, M.A., Abdullateef, Y. (2013). Prevalence of hepatitis B surface antigen among healthy asymptomatic students in Nigerian University. *Ann Afr Med*. 12(1):55-56.
- Arauz-Ruiz, P., Norder, H., Robertson, B.H., Magnus, L.O. (2002). Genotype H: a new Amerindian genotype of hepatitis B virus revealed in central America. *J. Gen. Virol.* 83(8):2059-2073
- Arnold, J. L. (1992). *Viruses*. Scientific American Library: A division of HPHLP New York. P (177–192)
- Atmore, C., Milne, A., Pearce, N. (1989). Mode of HBV transmission in New Zealand. *New Zealand Medical Journal*. vol. 14;102(869):277-280.
- Baumert, T.F., Meredith, L., Ni, Y., Felmle, D.J., Mckeating, J.A., Urban, S.S. (2014). Entry of hepatitis B and C viruses—recent progress and future impact. *Current Opinion Virology*. 4:58-65.
- Beck, J., Nassal, M. (2007). Hepatitis B virus replication. *World J. Gastroenterol*. 13(1): 48-64.
- Bello, R.H., Obot, E., Oladobe, H.O.K. (2012). Seroprevalence and risk factors association with hepatitis B surface antigen among patient in Biu, Borno state. *Journal of Public and Epidemiology*. 3(10): 448-453.
- Bernard, N. F., David, M. K., Peter, M. H., Robert, M. C., Joseph, M., Thomas, P. M., Bernard, R., Stephen, E. S. (1996). *Fields Virology* 3rd edition, Lippincott–Raven Publishers.
- Blumberg, B.S. (2003). *Hepatitis B: the hunt for the killer virus*. 2nd edition. Princeton University press, New Jersey.
- Bogomin, P., Magid, K., (2015). Prevalence of hepatitis B virus infection among Makerere university Medical Students; *Afr. Health Sci*. 5(2):92-98.
- Center for Disease Control and Prevention. (2016). Department of Health and Human services Hepatitis B General Information fact sheet. www.cdc.gov/hepatitis. Retrieved November 18th, 2018.

- Center for disease control and prevention. (2010). Division for Viral Hepatitis, are at risk, publication No.21-1074. www.cdc.gov/hepatitis. Cited September 21st, 2018.
- Center for disease control and prevention. (2012). Infectious disease related to travel/Hepatitis B. Cited September 18th, 2018.
- Center for disease control and prevention. (2013). Hepatitis B: communicable Disease management protocol. Cited September 18th, 2018.
- Centre for Disease Control (2015). Division of viral Hepatitis global of Hepatitis B virus infection: Prevention strategies in the united state, USPHS Symposium Atlanta. <http://www.cdc.gov/hepatitis/abc/index.htm>.
- Charles Daniel. (2018). How is hepatitis B transmitted. www.verywellhealth.com. Retrieved february28, 2019.
- Cheesbrough, M. (2006). Medical laboratory science theory and practice 6th edition, Tata McGraw Hill Publishing Company limited, New Delhi 863, 1195, 1198.
- Daniel, G., Robert, T., Hubert, E.B. (2011). HBV life cycle and novel drug target; *International Journal of Hepatology*. 5(2):644-653.
- Elizabeth, W., Hwang, M.D., Ramsey, C. (2011). Global epidemiology of hepatitis B virus (HBCV) infection. *New American Journal of Medical Science*: 4(1):7-13.
- Emechebe, G.O., Emodi, I.J., Ikefuna, A.N., Ilechukwu, G.C., Igwe, W.c., Eiofor, O.S., Ilechukwu, C.A. (2009). Hepatitis B virus infection in nigeria-a review. *Nigerian Medical Journal*. 50:18-22
- European Association for the Study of the Liver (EASL) EASL Clinical Practice Guidelines: management of chronic hepatitis B. *J Hepatol*. 2009; 50(2):227–242.
- Ezegbudo, C.N., Agba, M.I., Agbonlahor, D.E., Nwobu,G.O., Igwe, C.O. (2004). Seroprevalence of hepatitis B surface antigen and human immunodeficiency virus among pregnant women in Anambra State Nigeria. *Shir E-Med J*; 5:20-22.
- Gambo, I. M., Rabi, A. M., Muhammad, M. B., Shugaba, A. I. (2012). Seroprevalence of HBsAg among Fulani Normads in Toro, North-Eastern Nigeria. *Journal of Medicine and Medical Sciences*. 1(8):214-217.
- Gebere, M.A., Gelaw, A., Moges, F. (2013). Seroprevalence of hepatitis B virus infection among healthy workers at the Bulle Hora Woreda Government Hospital Institutions Southern Oromia, Ethiopia. *J Environ Occup Sci*, 2(1):9-14
- Gerlich, W.H. (2013). Medical virology of hepatitis B: how it began and where we are now. *Virol J*. 10:239.

- Hepatitis Australia (2015). Transmission of hepatitis B (www.hepatitisaustralia.com).
- <http://web.standard.edu> cited. Cited, February 6th, 2019. <http://www.hepmag.com> . Cited, January 17th, 2019.
- I.O Okonko., A.O Udeze. (2011). Detection of hepatitis B surface antigen among pregnant Women attending Antenatal clinic at O.L.A catholic Hospital, Oluyoro, Idadan, Oyo State, South Western Nigeria. *Nature and Sci*, 9(11):54-60.
- James, A. Ndako., Josephine, O. A., Deddy, T.O, Tabitha, A. Akande. (2013). Hepatitis B virus infection among alcoholic consumers at a local community, North-East Nigeria. *Journal of Natural Sciences Research*.3(13), ISSN 2224-3186.
- Jawetz, E., Melnick, J. L., Adelberg, E. A. (2013). Medical Microbiology. 26th edition, Lange medical publishers, USA.
- Jinlin, H., Zhihua, L., Fan, G. (2005). Epidemiology and prevention of Hepatitis B virus infection Review, *International Journal of Medical Science*.2(1); 50–57.
- Joahnah, I., Henry, O., Iwasam, E., Yeonum, O., Ekong, U., Emmanuel, O. (2016). The prevalence of hepatitis B virus in Nigerian children prior to vaccine introduction into the national programme on immunization schedule. *Pan Afr Med J*. 23:128.
- Jombo, G.T., Egah, D.Z., Banwat, E.B. (2005). Hepatitis B infection in a rural settlement of a northern Nigeria. *Nigerian Journal of Medicine*. 14 (4): 425-428.
- Kurbanov, F., Tanaka, Y., Mizokami, M. (2010). Geographical and genetic diversity of the human hepatitis B virus. *Hepatology research: the official journal of the japan society of hepatology* 40 (1):14-30.
- Li, W., Miao, X., Qi, Z., Zeng, W., Liang, J., Liang, Z. (2010). Hepatitis B Virus X protein unregulates HSP α expression via activation of c-Myc in human hepatocarcinoma cell line, ‘HepG2’. *Virology*. 7:45.
- Liang, T.J. (2009). Hepatitis B: the virus and disease. *Hepatology* (Baltimore, Md) 49 (5 suppl):s13-21.
- Maddrey, W.C. (2000). Hepatitis B an important public health issue. *Journal of medical virology*. 61(3):62-63.
- Magnius, L. Norder. (1995). Subtypes, genotypes and molecular epidemiology of the hepatitis B virus as reflected by sequence variability of the S-gene. *Intervirology* 38 (1-2):24-34.
- Martin-ancel, A., Cacas, M., Bonet, B. (2004). “implication of post vaccination hepatitis B surface antigenemia in the management of exposures to body fluid”. *Infectious*

control of hospital epidemiology: the official *journal of the society of Hospital epidemiologist of America*; 25 (7):611-613.

- Mustapha, A.I., Hauwa, S., A. Mustapha, Hassan, M. (2015). Prevalence of hepatitis B Virus among students attending university of Maiduguri clinic, Borno, Nigeria. Research gate 2019. (www.researchgate.net).
- Mustapha,S.K., Jibrin, Y.B. (2004). The prevalence of hepatitis B surface antigenemic in patient with human immunodeficiency virus infection in Gombe. *Nigeria. Ann Afri Med.* 4:10-1.
- Odusanya, O.O, Meurice, F.P, Hoet, O. (2007). Nigerian medical students are at risk for hepatitis B infection. *Trans R. soc. Trop.Med Hug.* 101(5):465-468
- Okonko, I., Okerentugba, P., Innocent-Adiele, H. (2012). Detection of hepatitis B surface antigen (HBsAg) among children in Ibadan, south western Nigeria. *The Internet Journal of Infectious Disease.* 10:1
- Ouattara, A., Constant A., Dramane, S., Emile, A., Marie, J.L., Benoit, M.C. (2019). Seroprevalence of viral hepatitis B markers in secondary school in Abidjan: Advocacy for a catch up vaccination. *OJGas*:9(1):7-12.
- Pennap, G.R., Yakubu A., Oyige O., Forbi, J. (2010). Prevalence of hepatitis B and C virus infection among people of a local community in Keffi, Nigeria. *African Journal of Microbiology Research.* 4 (4):274-278.
- Scheafer, S. (2007). Hepatitis B virus taxonomy and hepatitis B genotypes. *World Journal of gastroenterology.*13(1):14-21
- Shibayama, T., Masuda, G., Ajisawa., Hiruma, K., Tsuda, F., Nishizawa, T., Takahashi, M., Okamoto, H. (2005). Characterization of seven genotypes (A-E, G and H) of hepatitis B virus recovered from a Japanese patient infected with HIV type 1. *J. Med. Virol.* 76(1):24-32 .
- Tanko, R., Mohamed, M., Kwaku, K., Elliot, D. (2014). The prevalence of hepatitis B virus among Ghanaian blood donors. *Pan Afr J.* 17:53.
- Ugwaja, E, Ugwu, N. (2008). Seroprevalence of HBsAg and liver function test among adolescents in Abakaliki, South-western, Nigeria. *Internet J . Trop. Med.* [internet].Vol.6(1). <http://www.ispud.com>
- Ugwuja, E., Ugwu, N. (2010). Seroprevalence of hepatitis B surface antigen and liver function test among adolescence in Abakaliki, south eastern Nigeria. *The international*
- Vandamme, P., Van Herck, K. (2007). A review of long-term protection after hepatitis A and B vaccination. *Travel Medicine and Infectious disease.* 5 (2):79-84.

World Health Organization (2015). Guideline for the prevention, care and treatment of persons with chronic hepatitis B infection. *Medscape*. Cited September 26th, 2018.

Zoulim, F. (2006). New nucleic acid diagnostic test in viral hepatitis. *Seminar in liver disease*. 26 (4):309-317.

Zuckerman, A.J. (1996). Hepatitis virus. In Baron's Medical Biology (Baron S *et al.*, eds). (4th ed). University of Texas Medical Branch. ISBN 0-9631172-1-1.

© GSJ

© GSJ