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Research Article

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Assessing the Prevalence of Hepatitis B Surface Antigen in the Northern Brong Ahafo Region of Ghana: Locus of Intervention Model

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Abstract

Background: *Scarcely was found any data on the prevalence of hepatitis B surface antigen in the Brong-Ahafo Region of Ghana. This study was conducted in six traditional areas in the Northern Part of Brong-Ahafo Region, to ascertain prevalence of hepatitis B surface antigen among the respondents to recommend intervention strategies for control and prevention.*

Method of data gathering: *The data was obtained from the department of Preventive Healthcare and Lifestyle Medicine at Valley View University Hospital, Techiman Campus. 444 respondents were assessed on the presence of hepatitis B surface antigen by community healthy health screening program. They were adults between 18 and 59 years old who were from Techiman, Nkoranza, Atebubu, Kwamedanso, Yeji and Kajiji traditional areas, all in the Brong-Ahafo Region, Ghana. The blood sample was collected by a finger prick.*

Sample population: *There were 444 respondents: 198 (44.5%) males and 246 (55.4%) females.*

Study design: *The study is basically cross seasonal.*
Limitations: *This paper is to assess the prevalence of hepatitis B surface antigen among the respondents. Also, serum blood sample was not taken but the whole blood from a finger prick. This study is again limited to the causes and spread of hepatitis B surface antigen since such data could be obtained from peer review journals, textbooks, and qualitative, or clinical research.*

Results: *Out of 444 respondents, 415(93.4%) were negative with hepatitis B surface antigen. 19 (4.2%) respondents tested positive. 10 (2.2%) males and 9 (2.0%) females respectively. Cumulatively, 4.2% of the sample populations were positive.*

Conclusion: *education on the awareness, mode of transmission, effects and prevention of hepatitis B surface antigen are timely needed to save several thousand from poorer health outcome and mortalities in the Brong-Ahafo Region of Ghana.*

Keywords: Prevalence, Hepatitis, Antigen, and Mortality

Review of related literature

Chronic viral hepatitis is preventable but it is extremely predominant with a significant burden to the global healthcare systems [1]. This high prevalence of Hepatitis B surface antigen is an established public health concern causing life-threatening liver disease [2]. The disease is more infectious with several complications [3,4]. Hepatitis B surface antigen is a viral infection which describes damage or injuries cause to the liver by hepatitis B virus [5].

There is a data confirming its progression globally with an estimation >250 million people carring the virus contributing to >500,000 deaths annually due to its related liver diseases and complications. [5,6].

Other findings suggests that an estimation of 350 million persons are chronically infected with hepatitis B virus (HBV), resulting in 600,000 deaths annually from cirrhosis, liver failure, and hepatocellular carcinoma [7].

Over one million Americans are infected with hepatitis B virus. The disease in most cases has no symptoms at the early stage [8]. Implementation of a national vaccination program has reduced the prevalence of hepatitis B surface antigen [7].

Less than 5% adults infected with hepatitis B virus progress to chronic infection [7]. Hepatitis B virus is an inflammation of the liver, it is caused by the hepatitis B virus (HBV), piercing the body or tattoo at poor sanitation, sharing toothbrush or razor used by infected person. Hepatitis B virus can either be acute or chronic hepatitis B during pregnancy [8].

Hepatitis B virus mostly dissipates its own within the span of 6 months [9].The most common signs and symptoms include extreme tiredness. Others are not limited to Nausea, loss of appetite, muscle

aches, fever, jaundice, or yellowed skin and eyes, dark-colored urine, belly (abdominal) pain, swelling and confusion [9].

In spite of the high rate of Hepatitis B virus infections and mortality, there is also a treatment for the virus [5]. Mode of transmission of hepatitis B virus are not limited to contaminated needles, unsafe sex, mother to infant, close contact, blood transfusion and organ transplant, and laboratory accident in hospital [5].

The rate of Hepatitis B surface Antigen prevalence among Human Immuno Deficiency Virus (HIV/AIDS) positive subjects is very high [10]. Possibility could suggest that the infection of HIV facilitate the toleration of the virus in the liver.

World Health Organization stated that, 90%infants infected with HBV within their first year of life will develop chronic hepatitis B, and 30% to 50% of children who are infected before age 6 will develop it [8].

Hepatitis B surface antigen are present largely and higher in concentration in serum blood [11]. Hepatitis B surface antigen is the first serologic marker that appears in the serum between 6 to 16 weeks after a contact with the virus. The acute infection of the hepatitis B surface antigen typically disappears between 1 to 2 months after the onset. Persistence of hepatitis B surface antigen lasting over 6 months in duration to either establish the development of chronic carrier state or chronic hepatitis B infection was identified [12].

Method of data gathering

Retrospective search was done to obtain this data from the Center of Preventive Healthcare and Lifestyle Medicine at Valley View University Hospital, Techiman Campus (CPHLM). The CPHLM screened 444 respondents through community base health screening program of adults between 18 and 59 years old.

The respondents were from six traditional areas in the Brong-Ahafo Region, Ghana. The blood sample was collected by a finger prick. Without testing blood hardly would hepatitis B surface antigen could be detested [9]. The test is used to find the presence of the virus in the blood to ascertain whether the virus recently entered the blood or there has been a long-standing infection from the hepatitis B virus in the body [8,9].

Sample population

There were 198 (45.6%) males and 246 (56.6%) females who took part in the study. Random sampling was not conducted. All those who came for the health screening program and were willing were tested.

Study design: The study is basically cross-sectional.

Results and Discussions

Out of 444 respondents, 415(93.4%) were hepatitis B surface antigen negative. 19 (4.3%) respondents tested positive; 10 (2.2%) males and 9 (2.0 %) females respectively.

Cumulatively, only 4.2% of the sample population were positive which was significant. The 4.2% prevalence rate among the sample population was on the high side which needs intervention strategy from the department of health at the Municipal and the Districts level. Failure to do so may result to more hepatitis B virus infections in the communities leading to high morbidity and mortality rates due to hepatitis B virus causing liver damages.

Hepatitis B surface antigen has been on the rise for years, from 1990 to 2005, the prevalence of chronic hepatitis B surface antigen infection decreased in most regions especially in Central sub-Saharan Africa, Tropical and Central Latin America, South East Asia and Central Europe. Notwithstanding, the decrease in prevalence was not in resonance with those who had previously affected with the virus which increased from 223 million in 1990 to 240 million in 2005 [13,14]. This decrease might be due to immunization.

The establishment is that, the most effective method to prevent the spread of hepatitis B virus is by immunization [2]. The 2.3% of this study result representing the males is alarming. It appears in other study that the presence of Hepatitis B Surface Antigen in male were slightly high, this may suggest why males are diagnosed with high rate of liver diseases [6]. Similarly, this study has also confirmed the result. The possibility could suggest that, males in some regions of the world may be less conscious of their health in the context of possible factors leading to the spread of Hepatitis B Surface Antigen virus than female.

Intervention model

The intervention model of Hepatitis B virus is complex, however, the following intervention strategies could help with the control and the prevention of the spread of the disease: Screening for the presences of hepatitis B antigen at the communities' level is paramount. Health workers are to visit the people in their communities (schools, churches, etc.) to conduct this exercise. Immunization programs of Hepatitis B Virus must be accessible and affordable. Refresher courses on the prevention of mother to child transmission of hepatitis B should be encouraged at all levels.

Awareness should be created by health educators and care providers on possible factor enhancing the spread of hepatitis B surface antigen. Vaccines must be available by the government to those living at the rural communities who cannot afford even a single short of hepatitis B vaccination.

The education on hepatitis B surface antigen must start from the childhood to adulthood as one of the components for a healthy nation to reduce huge economic cost.

HBV vaccination is simply classified into two groups; passive and active vaccinations. Passive vaccination is using hepatitis B immunoglobulin (HBIG) to provide provisional immunity, whereas active immunization by the vaccine yields long-term immunity.

In endemic areas, the key infection course is by maternal transmission, and the outcome of perinatal transmission results in a very high rate constituting 90%. At birth, the best timing of initial HBV immunization is expected to be within 24 hours, followed by subsequent doses of HBV vaccine during infancy [2]. This should not be over looked.

Conclusion

Education on the awareness, mode of transmission, effects and prevention of hepatitis B surface antigen are timely. This is needed to save several thousand from poorer health outcome and mortalities in the Brong-Ahafo Region of Ghana. Municipal and Districts

health directorates are to be proactive on the screening and the immunization programs on hepatitis B surface antigen.

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