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Hepatitis B in Ghana's upper west region: A hidden epidemic in need of national policy attention



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ARTICLE INFO

Article history:

Received 5 October 2012

Received in revised form

17 May 2013

Accepted 2 June 2013

Available online 12 June 2013

Keywords:

Public perceptions

Hepatitis B

Disease spread

Political ecology

ABSTRACT

Like many countries in Sub-Saharan Africa, Hepatitis B virus (HBV) is highly prevalent in Ghana. Using qualitative methods, this paper draws from the political ecology of health theoretical framework to examine perceptions and understandings of HBV in the Upper West Region of Ghana. The findings reveal that extremely low levels of knowledge and pervasive lay misconceptions about the disease within this geographic context are shaped by large scale structural influences. Furthermore, in this context there is essentially no access to HBV immunizations, testing or treatment services which reinforces potential routes for the spread of HBV. An explosive spread of HBV is brewing with the potential to diffuse across space and time while, within the institutional contexts, it is the HIV epidemic that is largely consuming both policy attention and intervention.

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1. Introduction

This paper examines local perceptions and understandings of Hepatitis B virus (HBV) in the Upper West Region (UWR) of Ghana. Hepatitis B is an infection (inflammation) of the liver caused by HBV (Candotti et al., 2007). The disease is found throughout the world, although prevalence rates vary in space and time (Zahn et al., 2008; Hoffmann and Thio, 2006). The disease is spread mainly by exposure to body fluids such as blood, semen, or vaginal discharge (Lee, 1997), and studies also indicate saliva to be source of infection, albeit a less potent one (Mahboobi et al., 2012). Sexual contact is an important means of transmission (Candotti et al., 2007), although contaminated needles, razors, shared tooth brushes and exposure to potentially contaminated blood through non-intact skin or mucous membranes can also transmit HBV. Within the African context, research suggests transmission often occurs horizontally between family members, hypothesized to occur through the sharing of chewing gum or partially eaten candies, sharing of dental cleaning materials and biting of fingernails in conjunction with scratching the backs of a carrier (Martinson et al., 1998; Dumpis et al., 2001). Early symptoms of HBV tend to be non-specific, including fever, a flu-like illness, and joint pains. Symptoms of acute hepatitis may include: fatigue, loss of appetite, nausea, yellowing of the skin and eyes (jaundice), and pain in the upper right abdomen (Glebe, 2007). Failure to treat the virus

leads to development of chronic infection, which can result in liver damage (Burnett et al., 2005). The virus is 50 to 100 times more infectious than HIV, and it is preventable by vaccination (World Health Organization, 2012).

Despite having a relatively low HIV/AIDS prevalence of around 2% (GDHS, 2008), Ghana is a country where HBV is highly endemic (e.g., Zahn et al., 2008; Merrill and Hunter, 2011). Although nationwide data are unavailable due to lack of routine screening, even for blood donors (Allain et al., 2003), globally Ghana is considered to be in the highest category for prevalence of HBV infection (CDC, 2008; Merrill and Hunter, 2011). Recent studies, though limited in geographic range and precision, provide a general foundation for concern at the depth of HBV in Ghana. For example, the prevalence rate of HBV in the city of Kumasi, Ghana's second largest urban center is estimated at 17% (Geretti et al., 2010), and among the country's prison population, prevalence of HBV is estimated to be as high as 25% among the country's prison population, especially those located in northern regions of the country (Adjei et al., 2006). Studies conducted among pregnant women have reported prevalence rates ranging from 10% to 16% (Candotti et al., 2007; Damale et al., 2005), similar to findings of those who live in northern rural areas (Nkrumah et al., 2011). These figures are generally consistent with unofficial estimates, which indicate that about 4 million of Ghana's 24 million people have HBV (Ghana Web, 2010), with prevalence rate of 18.5% in the UWR (Ghana News Agency, 2006). Due to limited availability of data, these figures can only point to trends, and are not attune to the presumably wide variations in geography and social terrain.

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While not exhaustive, these studies illuminate the heavy burden and distribution of HBV in Ghana. However, no studies have yet examined the wider political, social and cultural factors that underpin the continuing spread of the disease in the country. In order to prevent further spread of the disease, a clearer understanding of the political, social and cultural factors that interact to set the context for HBV spread is urgently needed. Focused on the Upper West Region of Ghana, this study addressed three objectives: to examine public perceptions of HBV; to explore their understandings about how the disease is spread, and to identify the strategies that may be used to solve to curb HBV spread.

2. Political ecology of health

This study draws on disciplinary perspectives from political ecology of health (PEH). Underpinned by theoretical conceptualizations of political ecology (Peet and Watts, 2004; Bebbington and Batterbury, 2001), PEH examines how historical large-scale social, economic and political influences shape contemporary patterns of health and well-being, with explicit focus on the role of power relations as a source of environmental debate (Mayer, 1996; Kalipeni and Oppong, 1998; King, 2010). While broadly consistent with other analytical frameworks that focus on economic, social and environmental determinants of health, such as the population health perspective (Poland et al., 1998), the PEH framework comes with an additional analytical strength by virtue of its emphasis on politicized environments (King, 2010). This framework extends the growing discourse on the political ecologies of health through the exploration of large-scale social, economic and political influences that shape local context. In this regard, rather than exclusively focussing on how socioeconomic forces support or constrain health, the political ecology of health framework provides a lens through which patterns of health and behavior are shaped by political forces at the local, national and international levels, including factors such as poor access and utilization of health services and resources in relation to disease epidemics, policy development, and practices that shape responses to those diseases in specific places (McLafferty, 2010).

Since Mayer's (1996) call for increased uptake of political ecology frameworks in concert with population health discourses (originally termed 'political ecology of disease' framework) other studies have drawn from political theory to conceptualize wider, more inclusive notions of health and wellbeing. Similar to the philosophical shift that occurred within the wider discipline of health geography (e.g. from biomedical understandings of health to incorporate more cultural, social and place-based understandings of health), PEH recognizes that health and wellbeing are complex and highly dependent on the larger structural elements, as mentioned above. For example, Richmond et al. (2005) used a PEH framing to examine First Nations perceptions of the aquaculture industry. Their findings suggest that community perceptions of health and wellbeing are inter-related with political autonomy, as well as use and enjoyment of environmental resources, economic choice and opportunity. Similarly, King (2010) promotes use of the PEH framework for being able to "reveal the ways in which health vulnerabilities and the opportunities for healthy decision-making are socially produced over time" (45). These studies underscore the utility and adaptability of the PEH framework for contextualizing the ways in which the health and sociocultural well-being of populations can be impacted by political-environmental struggles.

King's (2010) framework also identified the need for research to more fully elucidate the ways in which structural forces and existing *sociocultural knowledge* regimes may be shaping how health manifests itself in particular places (emphasis added).

According to King, an examination of the political and structural dimensions intrinsic to health should also involve an interrogation of official discourses and institutional practices so that a more critical appreciation of how policy narratives, or lack thereof, shape lay understandings of disease; the manner in which disease epidemics are conceived; how causal arguments are advanced; and policy responses framed by government and other relevant actors, may be achieved. To this end, policy narratives are understood as a key influence on disease origin and spread, which can have dramatic results on population health. Institutional discourses and practices tend to shape policy responses, which in turn determine the manner in which diseases are handled in practice, thus influencing both expert and lay understandings of disease. In this study, we draw on a PEH framework to broadly examine the ways in which HBV spread can be understood within the context of the politicized environment of Ghana's UWR, with special attention paid to the ways local and expert knowledge interact with other structural forces, such as poverty, to influence policy response to the disease.

3. The study context

The UWR (Fig. 1) spans an area of 18,476 km² and accounts for 7.7% of the total land area in Ghana. The region has a total population of 618,730 people marking it with a relatively lower population density when compared to other regions in the country. The sex ratio is 92 males to 100 females, with an average household size of 7.2 persons (Ghana Statistical Service, 2008).

The UWR is one of the least developed regions in Ghana, with 17.5% of the total population characterized as urban, compared to national average of 51% (Ghana Statistical Service, 2010). Only 5% of residents have attained any form of post-secondary education (Adjasi and Osei, 2007). It is estimated that 69.8% of residents aged six years or older have never attended school, compared with the national average of 38.8%. Low levels of education have a cascading effect on the rate of unemployment in the region. Many decades of political inattention toward the region partly explain why the region's literacy rates continue to be dramatically lower than the national rate (Anyinam, 1994; Konadu-Agyemang, 2000). This reinforces high levels of poverty in the region, including health and nutritional status which are the lowest in the country. For example, while 39.5% of Ghanaians live below the poverty line (defined as 90 Ghana cedis annual income or approximately \$46 USD), in UWR it is 79–96%, and in its rural areas, 96–99% (Ghana Statistical Service, 2005). This widespread poverty, livelihood insecurity and internal distress migration to southern Ghana stand in stark contrast to chronic abundance and extensive consumption of high potent, locally distilled liquor called *akpeteshie* (see Luginaah, 2008). *Akpeteshie* is typically distilled from sugar cane, and has alcohol content ranging from 40% to 50% per volume (Zakpaa et al., 2010). Distillers in Ghana are middle class businesspersons who produce the drink for consumption, primarily by the poor.

Spatially uneven development has also translated into a very poor health care system in the region. Presently, the UWR has six hospitals and only 17 of the country's 881 physicians. This represents both the lowest number of doctors in total as well as per population, with a ratio of 1:40,144. This is almost 8 times worse than Greater Accra Region with one doctor per 5073 inhabitants (Ministry of Health Ghana, 2011). Three quarters of households in the UWR live outside the recommended 8 km radius to a health facility, demonstrating the severity of the challenge (e.g., walking long distances to the nearest facility) in accessing health services, including information on health promotion (Ghana Statistical Service, 2008). Health-related challenges in

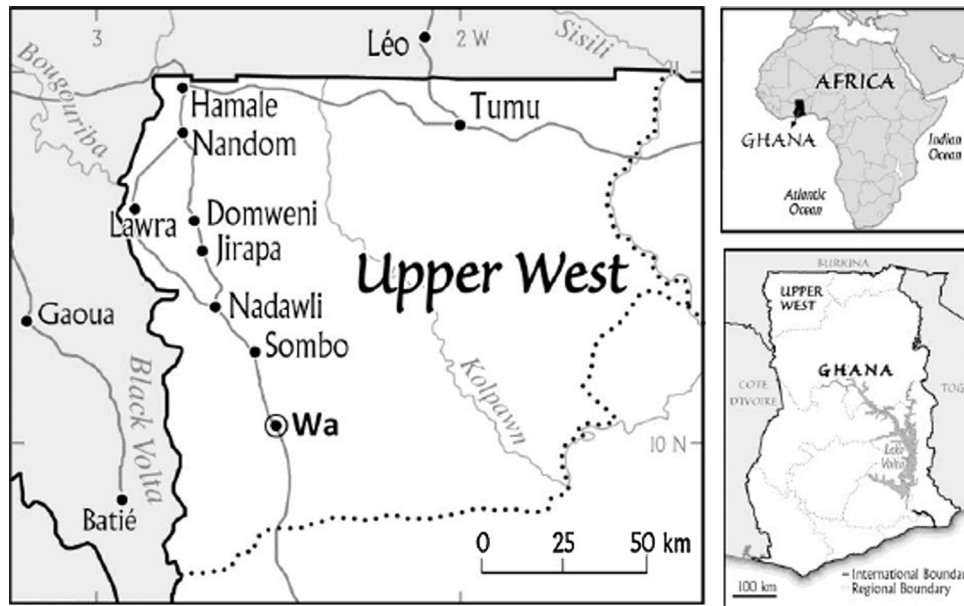


Fig. 1. Map of Ghana Showing the Upper West Region.

UWR therefore exist in concert with other important socio-economic concerns. It is within the context of existing structural inequalities and a rapidly changing environment that knowledge about HBV is examined and implications for prevention and spread explored.

4. Methodology

To examine local perceptions and understandings of HBV, we adopted an interpretive approach that included both focus group discussions (FGDs) and in-depth interviews with key informants (KIs). Nine FGDs (52 males in 5 groups, 36 females in 4 groups) were held in Sombo, Nandom and in Wa, the regional capital. To achieve maximum variation in diverse opinions, varying ages from 17 to 75 years were recruited. Recruitment included asking KIs and local elders to suggest people who had lived in the community for at least one year, and people who they felt could contribute to the objectives of the study.

All FGDs were conducted outdoors under trees, and averaged approximately two and a half hours in length. These discussions were tape-recorded, with consent of the respondents. The FGDs were led by a researcher fluent in Dagaare (the language of the focus group informants). A checklist of topics (semi-structured open-ended questions) guided the FGDs. Examples of the questions that were asked include: 'Could you explain to me what you know about hepatitis?', 'How would you describe your understanding of the causes of hepatitis?', 'Could you describe to me how hepatitis can be transmitted from one person to another?' The checklist probed participants about several different topics related to the study objectives. The checklist was designed to be flexible; new questions were added as necessary during the data collection process. In many ways, the FGD serves as a microcosm of the processes underlying successful participant education (Kidd and Parshall, 2000), as group members can ask one another questions, exchange anecdotes, and comment on one another's experiences and points of view. FGDs are particularly appropriate for facilitating the discussion of unfamiliar topics because the less inhibited members of the group often break the ice for shyer participants (Kitzinger, 1995). This was certainly the case in our

study given the lack of clear knowledge and understanding of issues related to HBV.

Interviews with KIs ($n=14$) were used to further clarify and delve into some of the issues that were raised during the focus groups. KIs were residents believed to be able to provide valuable insight with regards to broader processes that shaped perceptions and knowledge around HBV. These included local chiefs, village elders and health workers. The duration of interviews lasted between 45 minutes and 2 h, and all the interviews were recorded with participants' permission.

4.1. Analysis

The data were transcribed verbatim first in the Dagaare language, and subsequently translated into English. Subsequent analysis was conducted using NVivo qualitative data analysis software (Bazeley, 2007). A thematic analysis of the data was guided by our research objectives and theoretical constructs on infectious disease spread, transmission and risky behavior. Following Strauss and Corbin (1990), we conducted line-by-line coding to produce textual elements that provided a means for explaining the data. The key categories under each theme were reviewed several times to ensure that concepts pertaining to the same phenomena were coded in the same category. The transcripts from both FGDs and interviews were analyzed using the same coding scheme, thereby allowing for the identification of similarities across and differences between groups.

We took a number of steps to ensure a consistent analysis of the data (Kidd and Parshall, 2000; Patton, 1987), including the use of a topic list. Two investigators independently coded portions of the transcripts, and compared and discussed discrepancies in the coding process. We used member checking to ensure the validity of the results, whereby participants were asked to verify whether the translated transcripts represented their views (Krefting, 1991).

The analytic strategy focussed on establishing areas of consensus and differences amongst FGD respondents and key informants on their understanding of issues related to HBV. Hence, our particular interest was not just in the emerging views relating to HBV in the UWR, but as well the inconsistencies, challenges and need for policy intervention. Ethical approval for the study was obtained from the Non-medical Research Ethics Board of Western University.

5. Results

The results are organized around three main themes that emerged from the study: perceptions about HBV; factors inflaming the spread of HBV; and perceived strategies to increase public awareness and reduce the spread of HBV. Direct quotations from the transcripts of the interviews and focus groups are used to punctuate these themes and contextualize participants' responses. The participant's gender (M=Male, F=Female), and whether a FGD participant or KI, are provided at the end of each quotation. Table 1 provides a summary of the coded responses that were generated from the analysis.

5.1. Perceptions about HBV: lay and expert understandings

Significant differences were noted between lay and expert knowledge about HBV. The vast majority of lay respondents had very little knowledge and were unable to explain what hepatitis is:

Hepatitis B...ummm...hepatitis B, I have never heard of it. I can't say what it is. I don't know how people get it. I don't have any idea about it...I don't know how it is transmitted. I could not even provide a guess. (F, FGD)

Some participants confused HBV with other diseases, such as malaria and yellow fever:

It's some sort of malaria? I hear you get fever, joint pains, vomit or abdominal discomforts, loss of appetite. It is the disease that gives you typhoid? (M, FGD)

Lack of understanding of the disease was also manifest in respondents' attempts to explain how HBV is transmitted:

If someone has hepatitis and eats food [from the same bowl] from someone of the same blood group, that person will also contract the disease... (F, FGD)

I think it spreads like HIV, through sexual contact or through blood. It is just like HIV. The person with HBV looks unhealthy and skinny. They look lean and tired like an AIDS person... (F, FGD)

Related to this widespread lack of understanding of the disease, several respondents relied on local and cultural conceptualizations to understand HBV. For example, some people associated HBV symptoms with witchcraft or poisoning:

...people here don't have the knowledge base to link what we think is hepatitis from the medical point of view. For example, severe liver problems or jaundice have erupted over the past 5 to 10 years, but the majority still think it's witchcraft or poisoning... (Local Chief, M, KI)

Of the 72 lay participants, only seven participants identified sexual intercourse and exchange of body fluids as a means of HBV transmission. The overall low level of awareness and misconceptions about HBV affect the way respondents seek preventive measures, thereby leading to an increased likelihood of disease spread. On the other hand, KIs were able to identify modes of transmission especially through unprotected sexual contact and exchange of body fluids (Table 1). The notable difference in the knowledge about HBV between the two sets of respondents

Table 1
Summary of Responses from FGDs and IDIs.

Response	Number of mentions (number of participants)	
	Focus group discussion (n=78)	In-depth interview (n=14) ^a
Perceptions and understandings of HBV		
Have no idea what HBV is	156(71)	–
Incorrect perception—it's like malaria	87(58)	–
The same as HIV/AIDS	67(24)	–
It caused by poisoning	149(65)	3(2)
It is through witchcraft	86(46)	–
Sexually transmitted disease	11(7)	56(13)
Transmitted through exchange of body fluids	3(2)	41(13)
Destroy liver and causes cirrhosis	–	37(11)
Chronic Hepatitis frequently untreated in the area	–	21(9)
Little knowledge of disease at local level	–	18(7)
Growing epidemic/problem	4(2)	61(14)
Factors Inflaming the HBV Epidemic in the UWR		
Communal and shared living	165(76)	93(14)
Alcohol consumption	25(7)	62(13)
Risky sexual behaviors	11(3)	59(13)
Lack of public health personnel	9(4)	81(14)
Lack of HBV testing and screening facilities	63(57)	73(13)
Lack of Health Insurance Coverage	49(38)	26(8)
Political neglect of the region	59(45)	36(11)
Lack of policy awareness and interest by government	–	23(13)
Strategies to increase public awareness and reduce the spread of HBV		
HBV awareness campaigns	78(33)	54(14)
Increase attention by the Ministry of Health	69(27)	29(13)
Intense broadcast through radio	65(37)	36(11)
Include HBV as topic in school curriculum	47(29)	28(13)
Educate akepteshie sellers about transmission of HBV and hygiene at their bars	43 (22)	21(11)
Use local markets for HBV campaigns	39(21)	19(13)

^a The numbers reflect the different issues that were talked about by the local residents and key informants.

signaled the gaps in preventive policy. Simply put, the knowledge of health experts had no mode of translation across to the lay public due to the lack of formalized policy initiatives.

5.2. Factors inflaming the spread of HBV in the UWR

The perceived factors influencing the spread of HBV in the UWR include: excessive drinking of *akpeteshie* with the associated risky sexual behaviors, poor access to HBV care as a result of a lack of facilities, and a lack of coverage under the National Health Insurance Scheme (NHIS).

5.3. Alcohol consumption and risky sexual behaviors

As indicated in the comment below, alcohol consumption and its associated risky sexual behavior emerged as one of the major ways that HBV is spread in the UWR.

To our dismay, there has been an alarming increase in alcohol consumption by both men and women and this leads to indiscriminate sex...we have situations where sex and *akpeteshie* go together... this is no good for disease transmission... (Health Worker, M, KI)

Consequently, drinking places themselves have become landscapes for the spread of disease, mirroring findings from other Sub-Saharan African countries (Mkandawire et al., 2011). It was thus reported that widespread consumption of *akpeteshie* especially by the youth amidst joblessness and poverty generally resulted in unsafe sex and fueled the spread of HBV. Overall FGD and KI respondents lamented that the problem of hard drinking and all its associated negative impacts could somehow be reduced if young people in the area had 'something to do' as many of these youth reported engaged in binge drinking of *akpeteshie* out of frustration:

There is nothing for young people to do after they complete their education. Most of them just roam around the village and drink *akpeteshie* every day. The problem is that *akpeteshie* is very powerful and once they take *akpeteshie* they become uncontrollable. These days it is common to find boys impregnating girls even from their own village which was unheard of in the past. All this contributes to the rapid spread of HBV... (Health Worker, F, KI)

Participants also talked at length about how sexual promiscuity among frequent migrants to the farming and mining areas of Ghana who, while also generally poor, tend to have a bit of money. These people were reported to be contributing to the spread of HBV in the UWR:

Seasonal migrants who go to the southern regions to work may end up having sexual relationships... Some of these people have wives and girlfriends back home, and when they return, they sleep with their wives and thereby can spread all sorts of sexually transmitted diseases... (Local Chief, M, KI)

The links between migrant work, excessive drinking, and HBV as highlighted in the above quote should be understood within the larger context of recent changes in livelihoods in UWR (Kuuire et al., in press.). Internal migration is intensifying in Ghana as evident by a growing number of people leaving their homes on seasonal basis and relocating to agriculture rich areas further south where they engage in migrant farming or work in mines.

5.4. Poor access to HBV care: lack of testing and screening facilities

The lack of screening facilities and health personnel in the UWR was widely regarded as one of the main structural hurdles to fighting the spread of HBV:

We cannot test for HBV here. We have no laboratory facilities in our hospitals. Can you believe that a regional hospital cannot test for HBV? We send them elsewhere such as Accra. And then someone has to go there to physically bring the results... and because we also don't have a car we use public transport, so we can only go on such trips maybe every couple of months. (Health Worker, M, KI)

...no HBV vaccination has ever taken place here ...not even children are vaccinated... I have never even heard about someone discussing anything related to vaccine or treatment of HBV... The government has no policy on HBV vaccination. (Health Worker, F, FGD)

In addition to a lack of screening facilities, the comments below sum up the challenges of health care provision in the UWR:

The health care system in this region is completely broken down...sometimes when you go to a hospital, they can admit you there and then ask you to go to another hospital to conduct a lab work... For example, Nadowli hospital will tell a very sick person to travel to Jirapa or Wa to do a lab work before they can proceed to diagnose and treat them. It is really so bad, this is why diseases like HBV are killing so many people. (M, FGD)

5.5. Poor access to HBV care: lack of health insurance coverage

Participants also talked at length about the inability of many residents in the UWR to afford the 12–14 Ghana *cedis* annual enrollment into the NHIS, and to maintain coverage with required annual payments. Besides the inability of many people in the area to enroll into NHIS (Dixon et al., 2011), even more important was the narrow range of health services covered under the scheme:

Even though we've educated them to pay for the health insurance, I am told that hepatitis B vaccine and treatment is still not covered by NHIS. It costs 17 or 20 Ghana *cedis* for one dose of HBV vaccine, and I hear you need three. Sixty Ghana *cedis* for a farmer here... where will they get this money? (Local Chief, F, KI)

With the lack of HBV treatment and vaccination programs, one would have expected aggressive public health awareness programs to minimize the spread of HBV, but such programs are non-existent. The participants discussed potential ways this infection could be controlled in the UWR.

5.6. Strategies to increase public awareness and reduce the spread of HBV

The strategies that were mentioned included awareness campaigns similar to and with the same aggression as those that were used for HIV and AIDS. The high level of HIV/AIDS and malaria awareness amongst participants was credited to the large number of Non-Government Organizations (NGOs) presently working in the region:

They (NGOs) talk about HIV and malaria all the time... but I have never heard any NGO talk about Hepatitis during a presentation in our community... (M, FGD)

Overall, the participants agreed that if the same attention that has been given to HIV were also given to HBV, it would go a long way towards minimizing the spread of the disease.

The NGOs have worked so hard to create HIV awareness, but they should also turn their attention to this explosive epidemic that nobody is talking about... (Health Care Worker, KI)

Participants also suggested that awareness campaigns should emphasize the role that sharing razor blades, unsafe sex and *akpeteshie* consumption can play on the spread of HBV. With the radio as the primary source of broadcasting information within the region, many were of the view that radio messages should be used for educating people about HBV:

Most people here listen to the radio... We hear a lot about malaria and HIV/AIDS, and why is there no mention of the disease we are talking about? (M, FGD)

There was also consensus that health programs in schools currently focus on exclusively on HIV/AIDS with nothing in the curricula on HBV:

I have been in this district for long as a teacher and on our curriculum we mainly teach about HIV/AIDS. But with hepatitis, people haven't got any ideas about it, including myself. And so if you ask me to teach it...I can't do it. (Local Elder, KI)

I don't think this has ever been mentioned in our school. Everybody talks about HIV/AIDS, nobody ever mentions HBV. (F, FGD)

Residents suggested that practical initiatives can be implemented to increase local knowledge about the disease, including placing posters at *akpeteshie* bars, educating alcohol sellers and local church leaders on this relatively unknown disease. Educational and awareness programs at various market places were also proposed. While the spread of HBV in the region continues to be ignored by health policy makers, especially at the national level, an immense interest was displayed during this study, signaling that the people are willing not only to learn about HBV, but also how to limit the spread of the disease in the region.

6. Discussion and conclusions

Overall, there is a low level of awareness of HBV within the general population of the UWR despite a high prevalence of the disease. The key findings of this study suggest that the political ecology of HBV spread in UWR is shaped in powerful ways, primarily by a clear absence of interventions aimed at combating the disease, as indicated by the key informants. Furthermore, this situation is perceived to be compounded by a number of other large scale structural influences (e.g., poverty, lack of health care, poor health information and lack of a national policy), which together work to influence local level health knowledge and the spread of disease. Without formalized policy interventions, the knowledge of health experts about HBV have no route to reach the local public and the population is left unaware of most aspects of the disease. This gives great cause for public health concern, as the current prevalence rate of HBV in the UWR is estimated as high as 18.5% (Ghana News Agency, 2006), and this trend shows no signs of slowing down. Perhaps the most compromising of these large-scale structural forces relates to the tremendous focus on HIV/AIDS over the past few decades. Combined, NGOs and the Ghanaian government have succeeded in making the Ghanaian public knowledgeable about HIV/AIDS, including its method of spread. However, the extreme policy emphasis on HIV appears to be having a cascading effect of leaving other significant, and equally

deadly, infectious diseases such as HBV hidden from the policy arena.

When contextualized within a rapidly changing socioeconomic and cultural landscape, the low HBV awareness in UWR may have potentially detrimental effects on the disease's spread in the region and in Ghana more generally. Ultimately, the spread of the disease occurs at the individual level, and through an individual's behaviors such as high rates of alcoholism and other risky behaviors. Yet *akpeteshie* consumption in this context remains a growing problem and public health concern (Luginaah, 2008). Worsening economic prospects are leading to an increasing number of marginalized people, who in their distress turn to alcohol consumption as an escape route, which exacerbates their vulnerability of HBV infection. On the ground level, a growing culture of alcohol consumption, combined with growing HBV spread demonstrates a very worrying trend; the results of this research suggest there is a lack of knowledge of HBV and its risk factors, one we argue is a direct manifestation of the context of peoples' everyday environments in UWR. Considering the strong similarities of the social, cultural and economic contexts of many communities in the northern regions of Ghana, these findings may be generalizable to these impoverished regions, and in some cases, to other rural and impoverished areas in Africa.

We draw from our findings to inform a conceptual framework demonstrating the political ecology of HBV spread in Ghana's UWR (see Fig. 2). As conceptualized within the wider PEH literature, we reiterate that individual health behaviors must be understood within the broader context that shapes them. In line with King (2010), we argue that the large-scale structural forces coincide simultaneously with existing sociocultural knowledge regimes to shape the current spread of HBV. For instance, despite participants' enthusiasm to learn more about HBV, our findings reveal important structural barriers that act to limit channels of health information (such as lack of official communication interventions and regionally high rates of illiteracy), thereby undermining correct knowledge and perpetuating poor understandings about the disease. Additionally, the factors influencing the spread of HBV are deeply rooted within a larger context characterized by uneven development of Ghana (Konadu-Agyemang, 2000), and widespread livelihood collapse as a result of increasing deprivation,

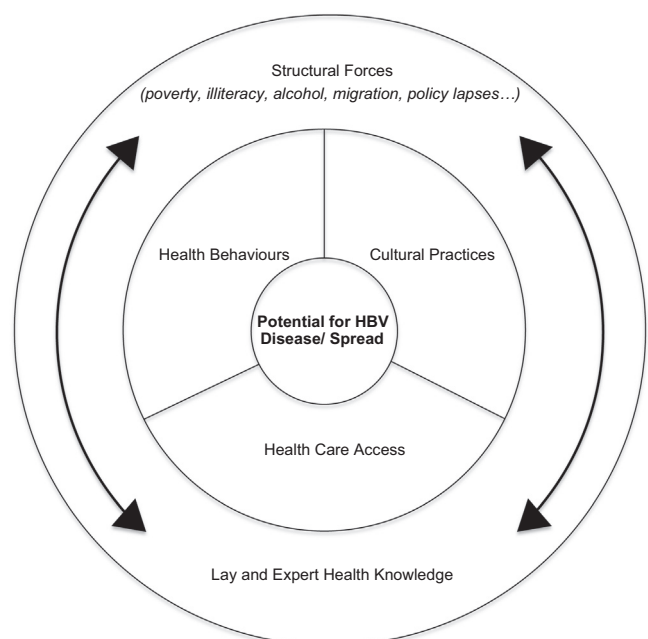


Fig. 2. Political ecology of HBV spread in Ghana's UWR.

that are resulting in shifting patterns of internal migration from the UWR to the southern parts of Ghana. Already beset by poor knowledge about the disease, migrants' prolonged separation from their spouses coupled with the socially impoverished conditions of migrant settlements can propel them into high-risk sexual encounters thereby feeding the impetus for the HBV spread.

As demonstrated in Fig. 2, we argue here that the structural influences that are central to the PEH framework must be understood to be in dialect with both lay and expert health knowledge. Institutional discourses (or lack thereof) shape policy responses, which determines the real world management influencing both expert and lay understandings of disease. This in turn feeds back into structural factors, for example potentially exasperating poverty situations and creating an environment where HBV is under the public radar and there is no pressure on political officials to deal with this disease. It is this broader environment that sets in motion a cascading spread of HBV.

For HBV knowledge diffusion, most participants indicated that radio may be the easiest way to get messages across to the general population. However, poorly communicated health messages may not only result in inaccurate knowledge, but can also be potentially harmful as such misinformation can lead to poor health-seeking practices. The chronic lack of effective health information, communication and education systems as evident from the findings is especially relevant structural condition and policy failure in the context of UWR, where a legacy of low educational attainment means that a large section of the population does not possess a high enough level of health literacy to accurately discern the contents of HBV messages, or be connected to social networks that properly understand and can pass on the correct information (Andrzejewski et al., 2009). In the absence of correct preventive health information, the underlying sociocultural belief system will tend to provide the basis for conceptualizing health issues related to an unknown disease.

Furthermore, government inaction in the realm of HBV, and institutional bias towards HIV/AIDS, may be helping to reinforce a perception that HBV was a disease of lesser public health threat, leading to muted public concern despite the widespread existence of the disease. The irony is that HBV rates in Ghana are estimated to be five to ten times higher (prevalence estimates between 10–20% in many areas) (Geretti et al., 2010; Adjei et al., 2006) than the current HIV prevalence of 2% (GDHS, 2008). Yet there is no sustained government policy effort to tackle this hidden and potentially costly disease. This policy laxity presents a formidable structural barrier and sets an important context for understanding the vulnerability of people in UWR to HBV because it can lead to a distorted sense of susceptibility to the disease, and undermine appropriate individual as well as collective health behavior change in a poorly resourced setting. We argue here that if the same intensity with which NGOs and government used to educate the public on HIV/AIDS is also directed for HBV, Ghana will certainly make progress in getting the public aware about the menace of HBV.

Examples from other countries demonstrate that government policy can very effectively bring down the prevalence of HBV (e.g., Stroffolini et al., 2000). However, Ghana in contrast, the difficulty in accessing proper healthcare to detect and help treat individuals with HBV and the resulting potential for further spread of the disease in the UWR is closely linked to the lapses in government policy. In particular, while Ghana boasts the relatively progressive NHIS, coverage is still often out of reach for the poor. Notably, a recent study found that while poverty inhibits enrollment throughout the entire country, this barrier is even more pronounced in the northern regions of the country, including the UWR (Dixon et al., 2011). Thus, those that stand to benefit the most from accessing healthcare when sick are in fact, the least able

to. As evident from the findings, even for those that can afford enrollment, policy gaps such as the lack of coverage for HPV testing, vaccine and treatment means that only symptoms of the disease are being addressed. Together, this has profound implications for disease spread.

In conclusion, these findings provide a starting point for acknowledging the problem and developing prevention programs. HBV knowledge dissemination may be improved through reliance on emerging technologies and portable devices such as cell phones to reach vulnerable groups such as young people (see Kahn et al., 2010; Krishna et al., 2009). While mobile technologies are currently used extensively for marketing sport, entertainment and other business products in Ghana and other Sub-Saharan African countries, these tools could also be tapped to reach out to the large number of users on disease preventive behaviors. These technologies can be relied upon for mass education of the general public and at local community levels.

Government response to HBV must go beyond efforts to resuscitate the health infrastructure in UWR. HBV testing and preventive programs are needed not only in the UWR, but also in Ghana as a whole. Any attempts to stop the spread of the HBV will have to confront some of these deep-seated issues such as widespread poverty, a culture of alcohol consumption, underdeveloped health infrastructure, and a realignment of policy attention.

Acknowledgments

We wish to thank the Chiefs and people of Sombo, Nandom and Wa, in the Upper West Region, for participating in this research. This study was supported by funds from the Canada Research Chairs Program to Isaac Luginaah. We would also like to thank the anonymous reviewers for their extremely useful comments and suggestions.

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