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Health & Place

journal homepage: www.elsevier.com/locate/healthplace

Factors associated with voluntary testing for HBV in the Upper West Region of Ghana

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ARTICLE INFO

Keywords:

Hepatitis B virus
Voluntary testing
Primary health care
Upper West Region
Ghana

ABSTRACT

This study examined the role of health facilities on testing for Hepatitis B virus in a policy context where screening is only available at a cost. We fitted multivariate multinomial logistic regression models to cross-sectional data ($n = 1374$) collected from Upper West Region of Ghana. The analysis showed that approximately 28% of respondents reported ever testing for HBV. Although source of healthcare influenced HBV testing, traders ($RRR = 0.29$, $p \leq 0.001$) and farmers ($RRR = 0.34$, $p \leq 0.01$) were significantly less likely to test voluntarily. Wealth generally predicted voluntary testing, although less so for mandatory testing. The findings highlight the need for free HBV services targeting the very poor, especially those who use community-level health facilities as their primary source of care.

1. Introduction

Hepatitis is a global health threat, accounting for 1.4 million global annual deaths, and hepatitis B virus (HBV) alone accounts for 47% of all hepatitis-related deaths (World Health Organization, 2016). The current lack of global response to hepatitis will likely result in a cumulative death of about 20 million in the next 15 years alone, and worsen hepatitis-related poor health outcomes in the next 40–50 years (World Health Organization, 2016). In addition, about 240 million people live with hepatitis B-related chronic liver cirrhosis and liver cancer. The majority of HBV-related deaths occur in low and middle-income countries where there is low awareness of the disease, lack of access to critical health care services, and high levels of poverty and food insecurity (Candotti et al., 2007; FAO, 2016; World Health Organization, 2016). Consequently, these same factors also influence disparities in response to the HBV epidemic, which in low-income countries has largely relied on Non-Governmental Organizations (World Health Organization, 2016). As a strategy, the WHO promotes increased awareness, building attitudes, and scaling up screening to reduce the spread of the disease (World Health Organization, 2016).

HBV transmission modes vary with the level of endemicity. In high endemic zones, with more than 8% prevalence in the adult population, mother-to-child transmission is the predominant mode. However, transmission in low endemic areas is characterized by ‘horizontal

transmission’ through unprotected sex and injection drug use (Hyun et al., 2017). Other ways include unscreened blood transfusion, unsterilized use of needles, and syringes during medical procedures, blood contaminated sharp items such as razors and needles used for tattooing, body piercing or scarification (World Health Organization, 2016). Yet, because of poor disease surveillance systems, the precise national prevalence of HBV in the general population in Ghana is unknown (Ofori-Asenso and Agyeman, 2016). As such, available estimates are based on specific sub-groups. But even then the picture is troubling. For instance, the prevalence among blood donors is between 6.7% and 10% (Owiredu et al., 2012; Sarkodie et al., 2001). In addition, 6.4% of pregnant women (Candotti et al., 2007; Cho et al., 2012) and 25% of inmates in Nsawam and Accra prisons have HBV (Adjei et al., 2006). Currently, Ghana is considered one of the worst-affected countries globally, with some researchers claiming that 10–15% of Ghana's population is already infected (Ofori-Asenso and Agyeman, 2016). In fact, estimates show that the overall contribution of HBV related deaths to national mortality rate in Ghana has increased by 17.2% in the last two decades largely due to limited uptake of voluntary testing for early detection and treatment (Ofori-Asenso and Agyeman, 2016).

HBV has therefore been emerging as a major public health concern, with more than 95% of people infected with chronic HBV in developing countries not knowing their status (Painter, 2001; UNICEF, 2008). Reasons for low uptake of testing for HBV relate to lack of health

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<https://doi.org/10.1016/j.healthplace.2018.09.011>

Received 30 January 2018; Received in revised form 17 August 2018; Accepted 12 September 2018

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facilities and poor access to health information, preventive services, and curative care. Furthermore, other factors include poor knowledge of modes of transmission of the disease and risky socio-cultural practices (Mkandawire et al., 2013). In response to the increasing impact of HBV, the WHO (2016) called for early detection, diagnosis, and treatment of HBV necessary to control the spread of the disease (World Health Organization, 2016). Unfortunately, in Ghana, the National Health Insurance Scheme does not cover HBV screening and vaccination. This is largely because of competing health needs such as malaria and HIV/AIDS especially when set against limited state finances. In addition, although HBV screening costs GH¢5 (USD 1.10) and the required three doses of HBV vaccination is each priced at GH¢25 (USD 5.52), this otherwise modest cost of HBV screening is beyond the financial reach of most Ghanaians in a context where the majority of the people live on less than US\$1.25/day. Invariably, the available literature on testing from SSA largely reflects determinants of screening in a context where screening services are available free of charge to the end user. Consequently, this study aims to contribute to our understanding of the relative importance of health service programs (i.e. primary health care) and other factors associated with the uptake of HBV testing in a context where HBV testing and vaccination are not covered by the national health insurance. We hypothesize that source of health care and household wealth are important factors influencing HBV testing behaviours in the Upper West Region of Ghana.

1.1. Uptake of HBV testing - voluntary and mandatory

Over the years, counseling and testing has proven to significantly reduce the spread of epidemics such as HIV/AIDS and cancer (McPhail and Campbell, 2001; Hutchinson and Mahlalela, 2017; UNICEF, 2008). Testing for HBV involves the individual receiving information about the disease, including ways of prevention and available treatment options. If positive, the individual undergoes further assessment, treatment and counseling on risk and prevention. If negative, the individual still receives counseling but they also get vaccination. Thus, testing promotes positive behavior change that can reduce the further spread of HBV (De Cock et al., 2002). However, despite the benefits, barriers such as poor knowledge about HBV, cultural and health beliefs, and lack of testing facilities prevent people from testing (Adjei et al., 2006; Hu et al., 1991; Mkandawire et al., 2013). Unlike voluntary testing, mandatory testing is driven by reasons such as the need to donate blood; during antenatal; or as requirements for marriage/employment or entry into a professional institution. Therefore, to influence positive health behavior, emphasis should be placed on voluntary testing.

Despite being different, both voluntary and mandatory testing behaviours however relate to financial and physical cost. Educated and/or financially secure people, for instance, or those in formal employments are more likely to test (Obermeyer et al., 2013; Parkhurst, 2010). Similarly, demographic factors such as religion, marital status and ethnicity can influence testing. For instance, most Christian groups in SSA including Ghana expect 'would-be' couples to screen for HIV/AIDS and other sexually infectious diseases including HBV prior to marriage (Luginaah et al., 2005). While not exhaustive these examples demonstrate socioeconomic and sociocultural factors associated with testing.

2. Study context

2.1. Primary health care in Ghana

Ghana adopted the Primary Health Care (PHC) approach following the 1978 Alma-Ata Declaration. The Declaration has three key principles: 1) that health is a fundamental human right, 2) that health care delivery should be participatory, and 3) that health care services must be practical, socially acceptable, scientifically sound (World Health Organization, 1978). Thirty years after becoming a signatory to the Declaration, Ghana can boast a measure of success in primary health

care service delivery, including the integration of health promotion into Ghana's PHC service (Nyonator et al., 2005). Maternal and child mortality rates have also reduced significantly over the years (Boateng et al., 2014). The number of health facilities in rural areas has increased compared to the late 80s and 90s, although most of them provide basic health care services and do not offer HVB testing (Mkandawire et al., 2013).

Currently, health care delivery in Ghana is organized into five levels of administration. The Health Post, centered on the concept of a Community based Health Planning and Services (CHPS), is the first point of contact for primary care. Health Centers and clinics are the second levels that supervise and accept referrals from the CHPS. This is followed by the district hospitals, regional and tertiary/teaching hospitals which provide curative services and serve as major referral centers for the lower level facilities.

2.2. The Upper West Region

The Upper West Region (UWR) of Ghana, where this study was conducted, occupies 18,476 km², representing 12.7% of Ghana's total land mass. The region is predominantly rural with a population of 702,110 (2.8% of national population). The major ethnic groups are the Dagaaba, Waala, and Sissala. Illiteracy is high, at 51%, more than double that of the national average of 23% (Ghana Statistical Service, 2012). The UWR is also the poorest of the 10 regions in the country, and 71% of people live on less than USD 1.25 a day (Ghana Statistical Service, 2015). Out-migration is a major pathway through which people in the Region cope with high poverty, making the region a major source of cheap labour for other areas in Ghana (Kuuire et al., 2013).

The high levels of poverty in the UWR can be traced to colonial policies, which left parts of northern Ghana, especially UWR highly deprived and this neglect has been continued to some degree by successive post-colonial governments (Songsore and Denkabe, 1995). Because of extreme poverty, the northern territories were used as a constant supply of labour for farms, factories and mines located in the southern part of the country (Abdul-korah, 2008). At a certain level one would argue that this chronic policy neglect represents a way of entrenching UWR's disadvantageous position as supplier of manual labour within Ghana's political economic landscape. As noted by Bening (1990), the first public school in northern Ghana was established after over hundred years of quality education in southern Ghana, and successive post-colonial governments have done little if any to correct this colonial legacy (Songsore and Denkabe, 1995).

It is therefore not surprising that health care infrastructure in UWR is weak and fragmented compared to other regions in the country, and the doctor-patient ratio has been one of the worse in the country. For instance, while a doctor in the region serves over 30,000 residents (1:30,601) in UWR, the doctor to population ratio in Accra, the national capital, is 1:3186, and the national ratio is 1:8953 (Ghana Health Service, 2015). The UWR in 2014 had only 6 hospitals, 15 clinics, and 176 CHPS compounds (Ghana Health Service, 2015). Access to health care is limited, as about 80% of residents in the region walk more than 8 km to access health care services (Ghana Health Service, 2015). This makes UWR particularly vulnerable to epidemic outbreaks (Mkandawire et al., 2013; Ghana Health Service, 2017).

3. Methodology

3.1. Data collection

The analysis used data from a cross-sectional survey of males and females 18 years and older (n = 1374) in the UWR of Ghana conducted from June to August 2017. Adopting the multi-stage sampling technique used by the Ghana Statistical Service, we drew our districts at random from the eleven districts in the Region in the first stage of sampling and then randomly sampled electoral areas from which we

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