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STRATEGIES TO CONTROL HEPATITIS B: A POLICY INSIGHT AND EPIDEMIOLOGICAL ANALYSIS FROM THE KINGDOM OF SAUDI ARABIA

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ABSTRACT

Background: This is a review paper focusing on the policies and strategies to control hepatitis B in the Kingdom of Saudi Arabia. A variety of preventive measures and disease control activities have been performed through the community in primary health care centers, schools and hospitals by the ministry of health and other government sectors for combating hepatitis B virus. **Methods:** Sixty suitable literatures and government reports were identified from several literature and public databases out of which only forty were relevant after reading the abstract and finally twenty-six relevant papers from the literature search and one more additional paper from the references were included in the review. **Results:** The inclusion of Hepatitis B Vaccine in the Immunization schedule was a very effective preventive measure against hepatitis B virus over the last decades. However, more strategies and policies by the government and the Ministry of Health, as well as effective cooperation with other sectors are needed. **Conclusion:** Upgrading the existing health care system in the country will prevent the hepatitis B infection, research and community participation will further reduce the cases of hepatitis B in the kingdom of Saudi Arabia.

INTRODUCTION

In general, health issues in developing countries differ from those in developed countries, as they typically cause higher mortality and morbidity rates, and occur in different demographic groups. These differences require different healthcare approaches, for which the causes and the nature of health problems need to be understood in order to provide effective healthcare policies. Health policies could be defined to be those decisions that have been authorized or have been made within a government structure with the intention of having a direct influence on certain behaviors or actions [1]. Policies especially when you come to the health care sector they could either be regulatory or allocative. The aspect of the policies being regulatory means that they regulate all the activities that are being undertaken. When the policy is allocative it means it has the capability of allocating resources to dedicate them to an individual event. Hepatitis B infection is a major public health problem as nearly 240 million individuals are chronically infected worldwide [2]. It has been estimated that 73% of primary liver cancer death worldwide are due to hepatitis B and hepatitis C Virus infection [3].

Hepatitis B is a disease whose cause is an infection resulting from the Hepatitis B virus. The virus has been a serious problem in many countries, and Saudi Arabia is not exceptional as it has also been affected. It is anticipated that 240,000 Saudis are chronically infected with hepatitis B virus, and most of them may still be undiagnosed [4].

The hepatitis virus could be attributed to lead to other infection like cirrhosis, hepatocellular carcinoma, and chronic hepatitis. The spread of the disease is known to rely on risk factors that act for the virus. Numerous studies have been done in Saudi Arabia, and these studies show that the prevalence of the virus has been reducing with time [5-7]. It has been estimated that this decline in hepatitis prevalence has been happening in the last two decades, and this decrease could be attributed to the reduction in epidemiological factors that are involved in the virus spread and infection. Jeddah region in Saudi Arabia is one area that has been noted to have a high prevalence of the hepatitis B virus by 793 reported cases out of 4327 cases in 2016 [8]. HBV has been known to be transferred through semen, blood, and vaginal fluids and some other risk factors include unprotected sex with infected persons, direct contact with the blood of someone who is infected and touching infected open wounds [9]. An infection could also happen at childbirth and managing of HBV infection during pregnancy is difficult due to several peculiar and somewhat controversial aspects [10]. This paper aimed at describing the history, policies, epidemiology and the challenges of Hepatitis B in the Kingdom of Saudi Arabia.

MATERIALS AND METHODS

A literature search was conducted to find the published papers, government reports and other related publications on history, policies and epidemiology related to hepatitis B and the strategies to control the hepatitis B in Kingdom of Saudi Arabia. Google Scholar, PubMed, Saudi Arabia Ministry of Health Database, World Health Organization Database and several other public health databases and websites were used to access the data and peer reviewed scholarly articles. The search was limited to the English language only. The articles were selected by reviewing their titles, abstracts and in some articles the full texts were read. Sixty suitable literatures and government reports were identified from several literatures and public databases out of which forty were relevant after reading the abstract. Twenty six relevant papers were selected from the literature search and one more additional paper from the references was included [Fig.1]. Cross-sectional, Descriptive studies on hepatitis B, review and systematic review on hepatitis B and national & international governmental and non-governmental organization reports on

KEY WORDS

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hepatitis B were included in the review. Purely interventional, experimental and qualitative studies were excluded.

RESULTS

HBV is a serious disease that threatens human life, and the death rate is very high globally. The risk of developing significant liver disease in individuals infected with HBV lies somewhere between 20% and 40% [4]. This viral disease causes significant morbidity and mortality, and imposes a great burden on the country's healthcare system. Thus there is a need for policies formulation and implementation that could attribute to the reduction in the prevalence of HBV in the Kingdom of Saudi Arabia [11]. Policies are important aspects of health care since they can be used to monitor and regulate infection. Policies could be aimed at ensuring that there is no further spread of infection or that the infected cases are regulated. Control is the key factor that drives policy formulation and implementation. Strategies to combat HBV infection include providing treatment to the chronically ill patients, vaccinating susceptible individuals and interrupting the route of transmission [12]. Amongst them, immunization is very sufficient and considered to be the most effective as it prevents individuals from contracting the infection of HBV [13].

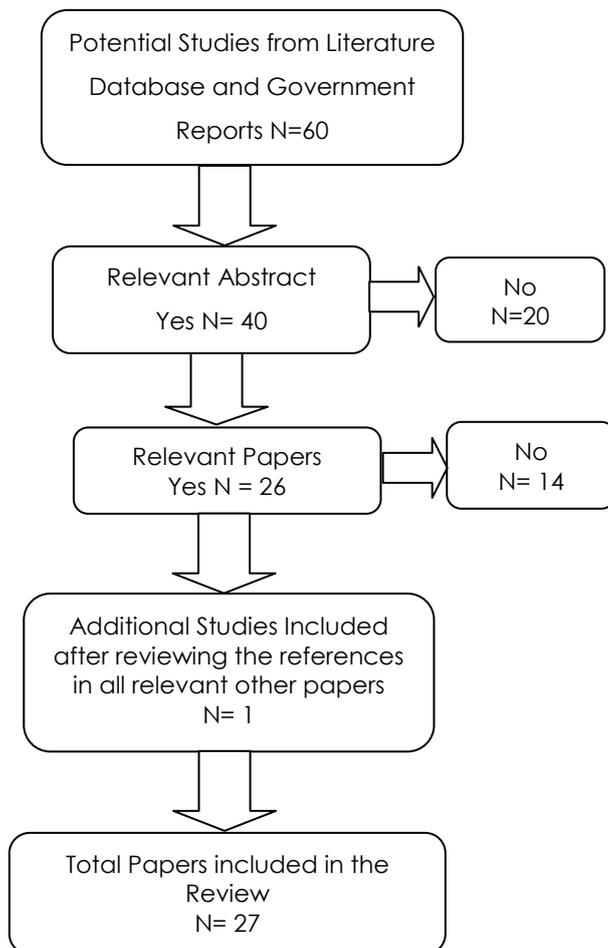


Fig. 1: Process of selection of articles to be included in the review

Improvement of health is often characterized in terms of epidemiological or health transition [14]. Between 1970 and 1980, Saudi Arabia adopted a healthcare approach based on essential health needs and health as a fundamental human right. The approach was conceptualized according to the country's social and economic factors of health in order to encompass the whole population by investing in community programs. Since 1970, the Kingdom of Saudi Arabia has achieved rapid economic growth, an associated expansion of educational attainment and development of primary health care. In the context of developing primary health care services, by the beginning of 1980s, the Saudi Arabian healthcare system had largely prioritized curative healthcare services, with an emphasis on the treatment of the health issues that already existed [15]. In 1990 the Ministry of Health strictly implemented immunization against hepatitis in all infants and all first-grade students. Ten years after vaccination, the rate of Hepatitis B infection fell to less than 1% in the under-20s age group [7]. The rate of Hepatitis B infection is still high in those over the age of 20. Nowadays, indicating the population groups who are bearing the greatest burden of disease is an easy task due to the epidemiological improvement. The recent statistics from Ministry of

Health , Saudi Arabia reports 32 cases among under 5 year old children, 28 cases among the age group between 5-14 years, 2826 cases among the age group between 15-44 years and 1437 cases among the age group of ≥ 45 years [8].

Most vaccinations take place in primary health centers which are now providing both preventive and curative services, referring the cases that require more advanced healthcare to public hospitals (the secondary level of healthcare), while the cases that need more complex levels of healthcare are transferred to central or specialized hospitals (the tertiary level of healthcare). The total number of PHC centers provided by the MOH increased by 14.5%, i.e. from 1,986 centers in 2008 to 2,325 centers in 2016 [8]. The MOH is promoting quality assurance and improvement through the use of standard operating procedures and accreditation of healthcare facilities. Efforts are being made to improve patient safety in both public and private health care facilities. Moreover, maternal and child healthcare, including immunization against major infectious diseases including HBV, has improved over the last two decades. Comprehensive primary healthcare starts with building a community infrastructure of accessible health care centers staffed with well-trained health care workers, based on community involvement, responsive to the community needs, and dedicated to building on community strengths and resilience [16]. In any healthcare program or strategy, the successful implementation of PHC must be guided by the following principles: political commitment, equity, accessibility, affordability availability, effectiveness, efficiency, and integration of promotive, curative, preventive and rehabilitative healthcare services [17]. These are principles that should guide every PHC program in the world towards success. As a result of the constant delivering of integrated and comprehensive healthcare services, the recent statistics of MOH [8] revealed that, the incidence of HBV among Saudi reduced from 15.79 cases /100,000 population in 2012 to 13.63 cases / 100,000 population in 2016. Also, the rate of infant mortality in 2016 was 4.82 cases per thousand live births, compared with 16.2 deaths per thousand births in 2012 while the rate of deaths of children under the age of 5 also reduced to 8.05 cases per thousand live births in 2016 compared with 12.7 deaths per thousand live births during 2012 [18, 8]. The average life expectancy after birth increased to 75 years in 2016, compared with 73.8 years in 2012 and 71 years in 2006 [8,19,20] .

This decreases in mortality and morbidity rates and the increase in life expectancy in Saudi Arabia evident the epidemiological transition. This improvement is a direct effect of the national healthcare development plans, investment in education of medical staff and healthcare accessibility and quality, as well as a political shift towards raising awareness of health as a fundamental human right [21]. Similarly, the causes of illnesses and premature death are being increasingly addressed through intervention, education of the public, community programs and research for prevention of hepatitis B. There has been a remarkable development of the healthcare system for combating HBV, which has been accompanied by an improvement of the quality of healthcare, polices, especially in preventive treatment and curative medicine. Several strategies have been formulated to manage HBV starting by the expanded program of immunization which is stepping forward. There is a drop in the incidence of some vaccination preventable diseases due to the high immunization coverage achieved during this decade. The immunization coverage of Hexa Vaccine which also includes Hepatitis B was 98.5 in 2016 [8]. Immunization has been defined to be one of the most powerful tools that coils be utilized in prevention and control of this menace [22].

According to the rules and regulations that have been clarified in Saudi Arabian hospital, practice is that a HBV vaccine is compulsory in the childhood immunization schedule. The inclusion of the HBV vaccine in childhood vaccination programs is a positive step and a workable idea because most people tend to ignore or forget to immunize their kids or don't even have any reason for doing so. The Saudi government has been taken as an example to be applied in other countries in terms of the intensity of procedures and attention to vaccinations, which are typically mandatory for citizens and residents. A temporary birth certificate for one year duration is issued for the newborn and after one year and the completion of the medical vaccinations; the birth certificate of the newborn is issued [23].

The first dose of hepatitis B vaccine is given at birth, second dose administered at 2nd month, the third dose is needed at 4th month while the forth dose is given at 6 months [8]. At the age of six children can't enroll into schools unless completion of all vaccinations [24]. Not only MOH established a service to remind parents of the deadlines of the basic vaccinations against diseases but also, it performs home visits for providing vaccination for children. Furthermore, another preventive method is the inclusion of hepatitis B testing into the mandatory premarital screening test due to the transmission of diseases from contaminated blood and sexual contact, which consequently lead to the transmission of the disease to newborns. A cross-sectional study done in Jazan, Saudi Arabia by Hussein et al found a statistical correlation between the dental procedure and the hepatitis B infection [25]. Another study in Jazan relieved a positive correlation between the age and the hepatitis B infection [26].

DISCUSSION

Even though the statistics from research work are suggesting that HBV prevalence is reducing, but it remains to be a national menace. It is scientifically proven, that virus keeps changing their definition and form, so it's just a matter of time before the hepatitis virus evolves and causes significant morbidity and mortality. The decreasing prevalence of the HBV infection has been noted in Saudi Arabia. However, high prevalence of the hepatitis B virus recorded in west regions including Jeddah, Makkah and Taif by 793, 580,408 reported cases respectively out 4327 cases in 2016 [8]. It worth investigating the cause of high

prevalence rates in the above stated regions as many people pass by Jeddah and Taif cities when they visit Makkah for Hajj and Omara gathering. Saudi Arabia hosts large mass gathering events in Makkah attracting more than 3 million people from more than 183 countries annually. These gatherings pose a variety of health risks including infectious diseases, such as seasonal, respiratory, foodborne and other gastro-intestinal illnesses, skin diseases and injuries. To address such risks, Saudi Arabia has put in place an advanced healthcare system infrastructure that includes 177 primary medical clinics and 27 hospitals in the immediate vicinity of the pilgrimage areas [27]. HBV incidence among Saudi was 15.79 cases / 100,000 population during 2016 while it was 7.91 cases / 100,000 population among Non-Saudi [8]. This difference may be due to the effectiveness of pre-medical checkup of expatriates which requires absence of infectious diseases such as hepatitis and AIDS before entering the country. Policy formulation and implementation could be used as a tool for decision making and combating the national menace at the same time. PHC centers should perform general checkup including test for HBV for each patients on regular basis and advise the virus holder to check with the specialist every month for the necessary tests and treatment. Early diagnosis and treatment of the virus is required as the infection takes a very aggressive pathway (hepatitis, or immunodeficiency). On the other hand, treatment of chronic diseases may be necessary to reduce the risk of liver cirrhosis and liver cancer. Examination of the liver of both children at birth and pregnant women is necessary to ensure that they are free from this disease. Implementation of good policies will ensure that everything is running smoothly as expected.

Furthermore, it's required to build more equipped PHC centers to handle such cases. Moreover, accessibility to healthcare services, cost-effectiveness and equity also form an integral part of PHC provision. The improvement of accessibility to healthcare services requires equity in the distribution of healthcare facilities throughout the nation as well as equity of access to health care professionals, including transport to health care providers [28]. A comprehensive surveillance program is needed to provide data on a scientific basis, and enable the relevant authorities to recommend a comprehensive national plan for improving the detection and combating all the cases of infection. Surveillance is a crucial monitoring tool for evidence-based decision making about public healthcare [29].

The current study shows a significant association between the dental procedures and the hepatitis B and this finding is supported by a study conducted in Brazil as a multicentric study by Pereira et al [30]. This study showed the prevalence rate of hepatitis B increases with age and this result is in concurrence with the previous study conducted by in Saudi Arabia by Mehdi et al [31].

CONCLUSION

As Saudi government noted that childhood cases are directly infected due to the emerging of infectious diseases, policies were formulated and implemented effectively. The government's assistance has greatly improved the Saudi healthcare system at a primary, secondary and tertiary level. The policy of having the mandatory HBV vaccine in the immunization program for kids has proven to be more than effective due to reducing number of new infections among children. The population has significantly improved health-wise due to the MOH reforms in healthcare services and substantial attention to PHC, which is vital for every healthcare system. PHC centers have become fully equipped, and are able to perform a variety of advanced treatments. The government is also considering investing more in the research sectors where it will provide the financial means to all the research institutions that are concerned with the virus infection and spread. Financial help will ensure that more research is done to improve the current situation. Government investment in research centers and policy formulation will be a road map for reducing the incidence and prevalence of hepatitis B.

CONFLICT OF INTEREST

There is no conflict of interest.

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None

REFERENCES

- [1] Mufti MH. [2000] Healthcare development strategies in the Kingdom of Saudi Arabia. New York: Kluwer Academic/Plenum.
- [2] Zeisel MB, Lucifora J, Mason WS, et al.[2015] Towards an HBV cure: state-of-the-art and unresolved questions—report of the ANRS workshop on HBV cure. *Gut*. 64(8):1314-1326.
- [3] Ott JJ, Ullrich A, Mascarenhas M, Stevens GA.[2010] Global cancer incidence and mortality caused by behavior and infection. *Journal of Public Health*. 33(2):223-233.
- [4] Abdo AA, Sanai FM, Al-Faleh FZ.[2012] Epidemiology of viral hepatitis in Saudi Arabia: Are we off the hook? *Saudi journal of gastroenterology: official journal of the Saudi Gastroenterology Association*. 18(6):349.
- [5] Al-Faleh FZ, Ayoola EA, Arif M, et al.[1992] Seroepidemiology of hepatitis B virus infection in Saudi Arabian children: A baseline survey for mass vaccination against hepatitis B. *J Infect*, 24: 197-206. 10.1016/0163-4453(92)93006-C.
- [6] Al-Faleh FZ, Ayoola EA, Al-Jeffry M, Al-Rashid RS, Ramia S. [1993] Integration of hepatitis B vaccine into the

- extended program on immunization. The Saudi experience. *Ann Saudi Med.* 13: 231-236.
- [7] Al-Faleh FZ. [2003] Changing pattern of hepatitis viral infection in Saudi Arabia in the last two decades. *Ann Saudi Med*, 23 (6): 367-371.
- [8] Ministry of health [2017] Schedule Basic Vaccination Accessed on 2nd November, 2017 <https://www.moh.gov.sa/eclinic/medicalhealth/vaccination/pages/001.aspx>.
- [9] Aljarbou AN. [2013] The Emergent Concern of Hepatitis B globally with special attention to Kingdom of Saudi Arabia. *International journal of health sciences.* 7(3):333.
- [10] Borgia G, Carleo MA, Gaeta GB, Gentile I. [2012] Hepatitis B in pregnancy. *World Journal of Gastroenterology: WJG.* 18(34):4677.
- [11] Lundy KS, Janes S. [2009] *Community health nursing: caring for the public's health.* Sudbury, Mass.: Jones and Bartlett Publishers.
- [12] Kao JH, Chen DS. [2002] Global control of hepatitis B virus infection. *The Lancet infectious diseases.* 2(7):395-403.
- [13] Chen DS. [2009] Hepatitis B vaccination: the key towards elimination and eradication of hepatitis B. *Journal of hepatology.* 50(4):805-816.
- [14] Carpenter M. [2000] Health for some: global health and social development since Alma Ata. *Community Development Journal,* 35:336-351.
- [15] Al Mazrou Y, Al-Shehri S, Rao M. [1990] *Principles and practice of primary health care,* Riyadh, Saudi Arabia, Ministry of Health.
- [16] Fran B. [2007] *Health for All Now! Reviving the spirit of Alma Ata in the Twenty-first century: An Introduction to the Alma Ata Declaration.* *Social Medicine,* 2:34.
- [17] Dennill, K, King, L, Lock, M & Swanepoel, T 1995, *Aspects of primary health care,* Southern Book Publishers.
- [18] Ministry of Health, [2014] *Health Year Book, Kingdom of Saudi Arabia* Accessed on 2 November 2017 <http://www.moh.gov.sa/Ministry/MediaCenter/News/Documents/healthybook.pdf>.
- [19] World Health Organization. [2013] *World Health Statistics 2013,* WHO Press, Geneva Accessed on 20 October 2017, http://www.who.int/gho/publications/world_health_statistics/2013/en/.
- [20] World Health Organization, 2006, *World Health Statistics 2006,* WHO Press, Geneva Accessed on 28 October 2017, <http://www.who.int/whosis/whostat2006/en/>.
- [21] McKeown RE. [2009] *The Epidemiologic Transition: Changing Patterns of Mortality and Population Dynamics.* *American Journal of Lifestyle Medicine,* 3:19S-26S.
- [22] Sebai ZA. [2014] *Health in Saudi Arabia Volume Two: Second Edition.* Singapore: Partridge Publishing Singapore.
- [23] Ministry of Interior (2017) Civil status department, birth registration Accessed on 2nd November, 2017 https://www.moi.gov.sa/wps/portal/Home/sectors/civilaffairs/contents/lut/p/z0/04_Sj9CPykssy0xPLMnMzOvMAfIjo8ziDTxNTDwMTYy8LUwC3AwcA428nB2dPY3cfc31gxOL9L3Oo_ArApqSmVYGOwoH5Wcn1eS WIGiH5GcWZaZo5CYIpaYWVSsaoDCVUgsUjUoTiOqy0xOLV Yw1C_Idg8HAM6dTIw!/.
- [24] Ministry of Education [2017] *Directory of Admission and Registration in General Education.* Accessed on 2nd November, 2017 <https://www.moe.gov.sa/ar/Documents1/Admission%20registration%20guide.pdf>.
- [25] Ageely H, Mahfouz MS, Gaffar A, et al. [2015] Prevalence and Risk Factors of Hepatitis B Virus in Jazan Region, Saudi Arabia: Cross-Sectional Health Facility Based Study. *Health,* 7: 459-465.
- [26] Saleh Mohammed Abdullah. [2013] Prevalence of Hepatitis B and C in Donated Blood from the Jazan Region of Saudi Arabia. *Malays J Med Sci.* Mar-May 2013; 20(2): 41-46.
- [27] Memish ZA. [2011] Patient leaflets on the hajj Saudi Arabia has several strategies to care for pilgrims on the Hajj. *British Medical Journal,* 343.
- [28] Robinson M [2007] Does decentralization improve equity and efficiency in public service delivery provision?, *IDS bulletin,* 38(1): 7-17.
- [29] World Health Organization. [2015] *Global status report on non communicable diseases 2014.* WHO Press, Geneva. Accessed on November 3, 2017 from http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854_eng.pdf?ua=1.
- [30] Pereira LM, Martelli CM, Merchán-Hamann E, et al. [2009] Population-Based Multicentric Survey of Hepatitis B Infection and Risk Factor Differences among Three Regions in Brazil. *The American Journal of Tropical Medicine and Hygiene,* 81:240-247.
- [31] Mehdi SR, Pophali A, Al-Abdulrahim KA. [2000] Prevalence of hepatitis B and C among blood donors. *Saudi Med J.* 21(10):942-944.