Original Article

Assessment of the core functions of hepatitis B surveillance system in the southeastern Iran: a qualitative study

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Abstract

Introduction: Viral hepatitis has been declared as one of the major health problems by World Health Organization. Hepatitis B surveillance system is one of the most important tools for managing the disease and achieving the targets of disease elimination. Despite its high efficiency, hepatitis B surveillance system has always been faced with many challenges. Therefore, the present study aimed to investigate the core functions of the hepatitis B surveillance system in southeastern region of Iran.

Method: Semi-structured in-depth interviews were conducted with 14 hepatitis B surveillance experts in five counties of Sistan and Baluchestan Province, southeast Iran. The data were analyzed using content analysis method, based on the structure of the disease surveillance system. Purposeful sampling method was carried out and continued until saturation of the themes was achieved.

Results: The main studied themes were case finding, case reporting, case registration, and case confirmation, data analysis, sending feedback, and implementing interventions. The results of this study showed that all of the core functions of the hepatitis B surveillance system were running in the studied counties, although they did not meet the relevant standards in some cases.

Conclusion: It seemed that, despite the numerous efforts and activities, it was still far from reaching the targets of the program. Considering the goal of World Health Organization to eliminate hepatitis B by 2030, it is essential to address these challenges and make attempt to overcome them.

Key words: public health surveillance; Iran; hepatitis B

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1. Introduction

Viral hepatitis has been declared by World Health Organization (WHO) as one of the world major health problems and challenges, with a significant contribution to mortality, disability, and economic burden (1). According to the WHO 2017 report, deaths due to viral hepatitis in 2015 were about 1.34 million cases, which is roughly equivalent to those of tuberculosis, and also AIDS and malaria. While mortality from tuberculosis, malaria, and AIDS have declined globally in recent years, viral hepatitis mortality has increased by 22% since 2015, compared to 2000.

Hepatitis B is one of the most important causes of viral hepatitis, which is considered as a major health problem globally, due to the widespread prevalence, the course of the disease and its complications, as well as the rising trend of its mortality worldwide (1-3). Global estimates in 2015 showed that 257 million people had chronic hepatitis B (3.5% of the population). According to the goals of WHO, hepatitis B can be eliminated by 2030, when it will no longer be a health threat (1).

Hepatitis B Surveillance System (HBSS) is one of the most important tools for the disease management, providing applications like monitoring of the disease trend, identifying epidemics, identifying risk groups, prioritizing the disease problems, and evaluating the progress of interventions and problems (4). The core functions of HBSS include reporting, case finding, case confirmation, data analysis, data registration, preparing and sending statistical feedback (as a result of data analysis), and making interventions (4-6).

Given the high prevalence of hepatitis B in the southeastern Iran, this study was conducted to assess the core functions of HBSS in five counties of Sistan and Baluchestan, southeast of Iran. Qualitative method was used to study different aspects of the subject using the experts' experience. The results of this study can be used as one of the prerequisites for planning and guidance in achieving the goal of hepatitis B elimination by 2030.

2. Materials and Methods

This qualitative study investigated the status of HBSS, based on the surveillance structure of WHO, by using content analysis method. For this purpose, in-depth interviews, using a semi-structured questionnaire, were used in five counties in southeastern Iran.

In order to design the questionnaire, the literature was reviewed. Pertinent specialists were also consulted with. The prepared questionnaire was evaluated by a number of experts and finalized in two sessions.

The target population in this study was experts in HBSS in the studied counties. In order for data collection, in-depth interviews were carried out with a sample of 14 experienced health professionals who had been responsible for managing HBSS at the provincial and county health centers during the last four years.

The interviews were conducted using the in-depth interview technique and continued until information saturation was achieved. In general, the purpose of the interviews was to examine the views of the experts on the core functions of HBSS.

The place of the interview was selected by the interviewees to be in office environment. In the interview process, as much as possible, the interview was conducted unofficially, without judgment and avoiding any comments by the researchers. After receiving informed

consent of the interviewees, the interviews were thoroughly recorded while taking notes of the important points. At the end of the interview, the important points extracted from the interview were shown to the interviewees to be corrected or confirmed.

Content analysis was used to analyze the data (7). The interviews were reviewed several times and the extracted concepts for each of the core functions of HBSS were identified and ultimately classified. Data analysis was carried out from the first interview through to the last.

In order to achieve trustworthiness, the research team maintained long enough engagements with the participants. In the process of data collection and analysis, the views of academic professors and experts were used. It was also attempted to provide objective and transparent descriptions of the environment, participants, and the research process. It should be said that all details of the research were recorded, and an external observer was used to increase the reliability of the data (8, 9).

Considering research ethics, the confidentiality of the participants' names and information, the possibility of leaving the study, and obtaining consent to record interviews were applied.

3.   Results

The age of the participants were between 35 and 50 years, and their years of service ranged from 9 to 28 years. The duration of each interview was, on average, 60 to 90 minutes. The studied themes were case reporting, case registration, case finding, case confirmation, data analysis, sending feedback, and implementation of interventions.

Based on HBSS, all levels of the health system (public and private) are required to report any suspected cases of hepatitis B to the higher-ranking officials. At the first level of the health system, any suspected cases must be registered in the integrated health system. Hepatitis B (confirmed) cases, detected at this level, are to be reported to the county health center at the end of each month, through the hepatitis B investigation forms. The county health center, in turn, registers the confirmed cases in a special system related to the center for communicable disease management, called "portal system", which in fact, is considered as reporting to the higher level (Medical University). Once this data has been approved by the university expert, it will automatically be sent to the national level. The results of the current study showed that only a small number of the suspected cases were reported through the integrated health system. Monthly reports of some confirmed cases were not complete, and the county health centers reported some cases with delay.

Based on these results, under-reporting seemed probable. On the other hand, the registration and reporting process was not actively evaluated by different levels of the health system, and no feedback was sent to the reporting centers. It was found that registration in two separate systems (the portal system and the integrated health system) was one of the problems in data registration.

Case finding for hepatitis B should be done according to the standard definitions of the disease in the designated target groups. These definitions are a tool to increase the susceptibility of the disease surveillance system for finding the maximum number of cases. According to the results, case finding of blood donors, admitted job descriptions, self-referrals, a number of pregnant women, and the symptomatic cases in the

patient's family were carried out. Screening in the prisons was not conducted in a targeted manner. Regular and clear case finding process was not considered for all the HIV infected cases, and the status of a number of people with HIV infection in relation to hepatitis B infection was unclear. The results of the present study showed that except for the few cases, there was almost no active case finding for intravenous drug abusers, whether in harm reduction centers or in hangouts. There was also no definite plan to find sex workers in order to perform active case finding.

In the study area, the referral of pregnant women to test for hepatitis B is not promising. All the pregnant women were not tested and there was no definite and standardized process in some of those who were examined.

In order to confirm the suspected cases, the existence of an extensive laboratory network as well as a process to actively examine all the suspected cases is a necessity. The feasibility of hepatitis B testing is only possible at the central labs of the counties. The lack of active follow-up of the suspected cases and the limited network of labs were among the problems regarding the case confirmation.

Data analysis in HBSS should be based on a systematic and targeted process in order to design and implement the proper interventions, as the main goal of HBSS is to use the results of data analysis, which is expressed as "Information for Action". According to the results of the study, it is not clear how and at what time, each level of the health system period will analyze the data and send statistical feedback.

On the other hand, there is no clear and regular process at the national level for data analysis and sending feedback to the medical universities. In addition, the health experts do not have the skills to analyze the data. It is also not clear as to whom and at which levels the provided feedback should be sent.

The determination of the test result of the suspected cases was subject to the arbitrary return of the patients or pregnant women to the relevant center, otherwise most often, there was no active follow-up. A timely report of the occurrence of several suspected cases in an area is of great importance in timely detection of a possible outbreak. In none of the investigated counties, simultaneous incidence of several cases was detected and reported. In order to prevent the vertical transmission, if the pregnancy was confirmed promptly, the treatment started for the mother, and then the treatment measures, needed for the infant, took place after delivery. This requires the care of pregnant women during pregnancy, delivery in childbirth centers, and laboratory follow-up of the infant during certain months. There was no specific action in case of delivery in villages covered by mobile health teams by rural untrained midwives.

4. Discussion

The results of this study showed that all of the core functions of HBSS were being carried out in the studied counties; however, it was still far from the relevant standards and needed to be amended.

According to the results, the coverage and quality of hepatitis B reports were defective at various levels of the health system. Not all of the suspected cases were registered in the integrated health system. On the other hand, registration of the confirmed cases in the portal system were either incomplete or delayed, and for the registered cases, there was no specific warning in the system to determine the necessary actions.

The relationship between the various public and private health centers, from the point of view of case reporting and follow-up, although theoretically defined, was problematic and difficult to coordinate and function in practice. In addition, lower levels of the health system do not usually receive any feedback on their reporting quality and quantity. In disease surveillance system, under-reporting is a common phenomenon which has been mentioned in several studies (10, 11); for example, in Lotfi et al. study, the degree of completeness of reporting in HBSS was estimated to be 77% in Hamedan Province, Iran (5). Klevens et al. showed that for each reported case of hepatitis B, there were 6.5 infected cases in the population (12).

Nevertheless, if the collected data are accurate enough over time, they will have the necessary credibility and usefulness. On the other hand, the use of two reporting systems will lead to a low probability of reporting and loss of some data. The study of new hepatitis B cases in neonates in the United States, through two pathways of the vaccination program and the National Disease Control System, showed that only 84% of the cases were reported jointly from both paths (13). If the private and public sectors provide reporting based on standard definitions through an integrated reporting system, as well as receiving periodic feedback, improvements in reporting performance at different levels of the health system will occur. In order to improve the reporting of hepatitis surveillance system, Tosti et al. recommended the use of Internet-based systems, involvement of all relevant centers, sending feedback, and sharing the results of the hepatitis surveillance system (14).

Sending a follow-up feedback to all of the reporting centers (hospitals, health centers) will play an important role in the continuity of collaboration and increased case reporting in these centers, because many of the staff in these centers view reporting as purely administrative, time-consuming, and fruitless. In the study of Hosseiny et al., the staff's lack of knowledge, high work load, and multiple responsibilities (including disease reporting) were the reasons for not sending feedback to the reporting centers (15).

According to the results, the case finding was not desirable. Lack of awareness of the involved personnel of the standard definitions, and the type of actions that can be taken in relation to any suspected case were issues that affected the quality of case detection of hepatitis B (4, 16, 17). According to the study by Phalky et al. on disease surveillance system in the state of Maharashtra in India, the standard definitions of diseases were rarely *observed* at the peripheral level (18).

The lack of active follow-up of the suspected cases was another problem of the hepatitis B case detection. On the other hand, high laboratory costs made it difficult to conduct active case detection in the target groups. Moreover, medical students' deficient training caused many graduates not to have a proper knowledge of the surveillance system and its functions. In the study of Kolahi et al., the cases of doctors who significantly used the standard definitions of diseases in the office more often were reported (19). Considering the dispersion of the population and the vast area of the region, expanding the laboratory network to test for hepatitis B will help to detect more cases of the disease. Active follow-up of all the suspected cases alongside the appropriate laboratory structure will also increase the ability of HBSS to detect and confirm cases.

The study by Adokiya et al. in Ghana indicated that one of the challenges facing disease surveillance system was low number of laboratories and functionality, especially in the newly established counties (20). In the study of surveillance system in the State of Maharashtra, only 53% of the counties in the State were able to confirm the laboratory findings of the suspected cases (18).

According to the findings of the study, the data generated in the HBSS were not sufficiently analyzed and used. The lack of proper use of surveillance data (including lack of quantitative data analysis as well as failure to send feedback) has been mentioned in numerous studies (18, 21, 22). According to a number of these studies, data analysis and use at the district and facility level was not appropriate (18, 23).

In this regard, it needs to be determined that what analyses are needed at a given level of the health system, and at what time periods this analysis should be performed. The results of the present study showed that the HBSS did not have the ability to detect the outbreaks. The lack of active follow-up of the suspected cases as well as poor performance in timely case finding of the patients' family were found to be among the causes of this issue. In an efficient surveillance system, all suspected cases are detected, tracked, and reported in a timely manner, and the probability of case detection is increased. In line with the findings of the current study, the study of Maharashtra showed that inability of the surveillance system to detect and control the outbreak was one of the problems (18).

5. Conclusion

It seems that the HBSS, despite numerous efforts and activities, faces serious challenges in its core functions. Considering the implementation of the health reform in Iran, which is based on comprehensive coverage of essential health services, moving towards eliminating these challenges is necessary. The goal of the World Health Organization to eliminate hepatitis B by 2030 and the high prevalence of the disease in the southern part of Iran are among other important issues in this regard, which highlight the need to intervene and improve the HBSS.

Conflicts of interest

 The authors declare that they have no conflicts of interest.

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