JRHS
Journal of Research in Health Sciences
journal homepage: www.umsha.ac.ir/jrhs

Letter to the Editor

Comment on:

Epidemiology of Hepatitis B Virus Infection in Hamadan, Western Iran

Citation: Kabir A, Alavian SM. Comment on: Epidemiology of hepatitis B virus infection in Hamadan, western Iran. 2011;11(2):121-123.

Article history:
***Received**: 17 July 2011*
***Revised**: 31 July 2011*
***Accepted:** 6 August 2011*
***Available online:** 8 August 2011*

Dear Editor-in-Chief

We read with interest the published article by Poorolajal et al[1] in your journal recently. All reports from Iran confirmed that the epidemiology of hepatitis B virus (HBV) infection has been decreasing during recent years[2] to about 2% of the general population[3,4]. The infection is less in blood donors and more in intravenous drug users (IDUs)[4,5]. Hepatitis C is an emerging disease in our community due to IDUs[6]. Poorolajal et al[1] found that the prevalence of hepatitis C virus (HCV) infection was increasing, and we agree with. Authors have mentioned that they had excluded those cases whose infections were already diagnosed in previous years and those who lived in other provinces[1]. Since their data collection was based on the data registered in Hamadan Province Health Center database, and there were no such data in these centers before 2004, it is difficult to differentiate the cases detected in these years from the ones detected before 2004 that were not registered. It is important to know how they found or gathered such data. Moreover, we have temporary immigrations in our country that can affect the epidemiology of HBV infection.

HBV and HCV infected cases are usually chronic patients without symptoms and may have been infected already. They are usually diagnosed accidentally during blood donation[7], screening during pregnancy, due to a positive case in the family[8], for being hired and so on. Therefore, we are not sure that the presented data in results, tables, and figures show the incidence rate. What about the at-risk-population (the denominator of the incidence rate) if these are incidence rates? It seems that these are prevalence rates. Based on the cause of detection of the infection, these cases could be found eventually and these rates would be changed greatly. Therefore, these rates should be discussed more conservatively.

It seems that it is a cross-sectional study but not a retrospective cohort. Actually, they did not follow a group of cases to estimate the incidence rate, so they cannot conclude the results of the study as a cohort. Variability of past exposures across successive generations (birth cohorts) can distort the apparent association between age and these prevalence rates[9]. Age effect and cohort effect are mixed with the results. Therefore, we cannot necessarily conclude that there is a decreasing trend in the incidence rate of HBV infection or fluctuating trend about HCV in this study setting.

Authors have shown that the distribution of hepatitis B and hepatitis C infections are highest in the third and fourth decades of life, respectively[1]. Since data are being age-adjusted, these findings can be related to the age distribution of the residence of Hamadan Province. However, cause of detection is important as

well. Finding HBV infected cases in third decade, can be due to hiring, blood donation, and HCV cases in the fourth decade can be due to screening during pregnancy.

The finding that the HBV is more common in males is compatible with the literature but we are not sure about the higher prevalence of HCV infection in women because IDUs is the most common risk factor for transmission in Iran now and IDUs is much more frequent in males than females. Different routes of detection of viral hepatitis in males (blood donation) and females (screening during pregnancy) can affect the percentage of infection in different genders. Furthermore, males donate more than females in Iran[10]. Age distribution in different genders can also be another cause of difference between men and women for prevalence of HBV and HCV in this study. Maybe female in their 30s are more than males and vice versa for males in their 20s in Hamadan.

Authors have done many comparisons, which were not based on their main hypothesis of interest. It means that they should check the power of their statistical test specifically when they are not statistically significant. In other words, for non-significant comparison we prefer to see the power of the test. In such cases, *P*-value says nothing.

Another point to mention is the way they excluded repeated cases from the study group. They excluded the similar names, but it is possible to have different peoples with similar names. It may cause the underestimation of the real numbers and we suggest using the unique national code.

Finally, the data from private centers such as offices of physicians are not sent to the Ministry of Health. Collecting data just from the primary health care system can be another cause for underestimation of real prevalence of HBV infection in their community in Hamadan Province, Iran.

Ali Kabir (MD, MPH)[a], Seyed Moayed Alavian (MD)[b]

[a] *Department of Epidemiology; Shahid Beheshti University of Medical Sciences, and Center for Educational Research in Medical Sciences, Tehran University of Medical Sciences, Tehran, Iran*

[b] *Professor of Gastroenterology and Hepatology, Director of Baqiyatallah Research Center for Gastroenterology and Liver Disease, Tehran, Iran*

Correspondence to: *Seyed Moayed Alavian (MD)*
Baqiyatallah Research Center for Gastroenterology and Liver Disease
Tel/Fax: +98 21 88945186-8, +98 21 81262072
E mail: alavian@thc.ir

References

1. Poorolajal J, Mirzaei M, Bathaei SJ, Majzoobi MM. Hepatitis B and C Infections in Hamadan Province during 2004-2009. *JRHS*. 2011;11(1):51-7.
2. Alavian SM, Fallahian F, Bagheri-Lankarani K. The Changing Epidemiology of Viral Hepatitis B in Iran. *J Gastrointestin Liver Dis*. 2007;16(4):403-6.
3. Alavian SM, Hajariazdeh B, Ahmadzad Asl M, Kabir A, Bagheri Lankarani K. Hepatitis B Virus Infection in Iran: A Systematic Review. *Hepat Mon*. 2008;8(4):281-94.
4. Poorolajal J, Majdzadeh R. Prevalence of chronic hepatitis B infection in Iran: a review article. *J Res Med Sci*. 2009;14(3):249-58.
5. Alavi SM, Behdad F. Seroprevalence Study of Hepatitis C and Hepatitis B Virus among Hospitalized Intravenous Drug Users in Ahvaz, Iran (2002-2006). *Hepat Mon*. 2010;10(2):101-4.
6. Alavian SM, Adibi P, Zali MR. Hepatitis C virus in Iran: Epidemiology of an emerging infection. *Arch Iran Med*. 2005;8:84-90.
7. Khedmat H, Alavian SM, Miri SM, Amini M, Abolghasemi H, Hajibeigi B, et al. Trends in Seroprevalence of Hepatitis B, Hepatitis C, HIV, and Syphilis Infections in Iranian Blood Donors from 2003 to 2005. *Hepat Mon*. 2009;9(1):24-8.
8. Salkic NN. Intrafamilial Transmission of Hepatitis B: Experience and Lessons Learned in Bosnia and Herzegovina. *Hepat Mon*. 2009;9(3):169-70.
9. Szklo M, Nieto FJ. Basic study designs in analytical epidemiology. *Epidemiology beyond the basics*. 2nd ed. Massachusetts: Jones and Bartlett Publishers; 2007. p. 3-14.
10. Maghsudlu M, Nasizadeh S, Abolghasemi H, Ahmadyar S. Blood donation and donor recruitment in Iran from 1998 through 2007: ten years' experience. *Transfusion*. 2009;49(11):2346-51.

Reply

We appreciate Kabir A and Alavian SM for their attention to our paper, which is recently published in JRHS. As we stated in the method section, this study was conducted based on the data collected via surveillance system. "Surveillance is a fundamental role of public health. Much of our information about morbidity and mortality from disease comes from programs of systematic disease surveillance. Passive surveillance denotes surveillance in which either available data on reportable diseases are used. As a result, under-reporting and lack of com-

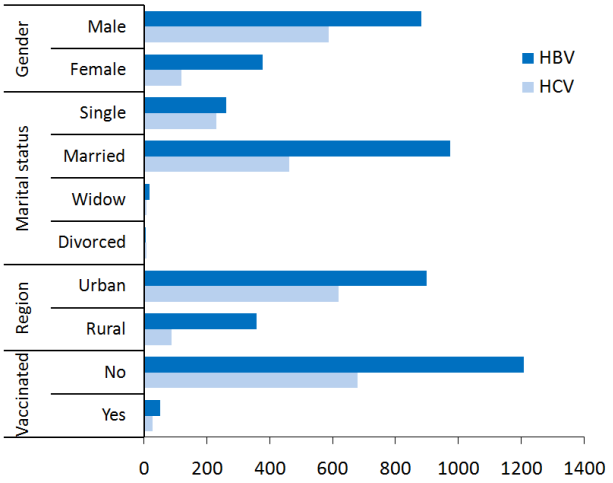
pleteness is likely"[1]. Ipso facto, in the discussion section, we stated *several* limitations for the results of this study[2], most of which are repeated in this letter. Therefore, for the sake of conciseness, we refer the readers to the discussion section of the article.

Regarding the design of the study, the whole population of Hamadan Province was considered as an open cohort and followed up retrospectively from 2004 to 2009. Indeed, we conducted a population-based retrospective cohort study. Although migration in and out of province might occur during follow-up time, however, impact of such migrations on the entire population was negligible.

Regarding the age effect and cohort effect, as it was mentioned in this letter, "variability of past exposures across successive generations (birth cohorts) can distort the apparent association between age and these prevalence rates"[3]. It is true when one wants to interpret an increasing or decreasing trend across 'age' groups based on the results of a single cross-sectional study. However, we have not reported such a trend across age groups; rather we assessed the *trend* of hepatitis B and C infection rate in whole population over successive 'years' from 2004 to 2009 but not 'age'. Such comparison is customary and frequently reported in basic epidemiology textbook (e.g. Epidemiology, Chapter 2, Figures 13, 14, and 16; Chapter 3, Figures 8 and 25; Chapter 4, Figures 2, 3, 4, 11, 12, 13, and 14)[1]. On the other hand, the odds ratio of trend mentioned in Table 1 indicates the changes in infection rate in each year versus the previous year. It may be interesting for the readers to compare this result with the results of dummy variable analysis in which the rate of infection in the first year (2004) was considered as reference and the rates of infection in the subsequent years were compared with the reference.

Figure 2 and 3 indicate the absolute and relative distribution of hepatitis B and C infections. The absolute distribution depends on the age distribution of Hamadan Province as mentioned in the letter while the relative distribution denotes the high-risk groups irrespective of age distribution.

As mentioned in the letter, HCV infection is more common in males than in females with which we agree. A mistransposition of data has occurred during preparation of Figure 1. The correct form of the figure is as follows:



Regarding the power of the statistical test, we mentioned in the introduction that "the purpose of the study was to determine the incidence rate of HBV and HCV infections over six successive years in Hamadan Province"[2]. Accordingly, reporting the rate of HBV and HCV infection was the main purpose of this study, which was presented and compared perfectly in Table 1. The power of the test were assessed and stated in the table as well.

To detect and exclude the repeated cases from the database, we verified the first and second names as well as the age and residence of the patients. Although it was much better to check the unique national code for this purpose, however, the national codes of the patients were not available.

Jalal Poorolajal (MD, PhD)
Research Center for Health Sciences and Department of Epidemiology & Biostatistics, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran
E-mail: poorolajal@umsha.ac.ir

References

1. Gordis L. *Epidemiology*. 4th ed. Philadelphia: Saunders; 2008.
2. Poorolajal J, Mirzaei M, Bathaei SJ, Majzoobi MM. Hepatitis B and C Infections in Hamadan Province during 2004-2009. *JRHS*. 2011;11(1):51-57.
3. Szklo M, Nieto FJ. *Epidemiology beyond the basics*. Massachusetts: Jones and Bartlett Publishers; 2007.