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Burden of Liver Diseases: A Review from Iran

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ABSTRACT

There has been an increase in the burden of liver diseases in Iran, with an increasing trend from communicable to non-communicable diseases. Almost 5400 deaths were due to chronic liver diseases in 2017. We aim to provide a concise update on the epidemiological trends of liver diseases in Iran. Estimations of deaths, disability-adjusted life years, prevalence of chronic liver diseases and cirrhosis in Iran with its common etiologies have been reported. We investigated the major causes of chronic liver diseases in Iran, we have reported our hepatology research centers, and also we have depicted the future of liver diseases in Iran. In 2017, there was a rising trend in chronic liver diseases in Iran. The most common etiologies for chronic liver disease were chronic hepatitis B, chronic hepatitis C, and non-alcoholic steatohepatitis with highest mortalities due to liver cancer and hepatitis C. The prevalence of HBV infection has decreased from 2.9% to 1.3% with effective vaccination, but new cases are still seen due to perinatal transmission. Treatment of HCV has dramatically changed with new drugs which are being produced by local pharmaceuticals at a low cost. The main obstacle in its elimination is finding patients and linkage to care. More than a third of our population have non-alcoholic fatty liver disease in which central obesity had a stronger association than weight itself. Iran has a high burden of liver diseases. The Ministry of Health has effectively controlled hepatitis B and is working towards the World Health WHO's goals for hepatitis C by 2030. This being said, non-alcoholic fatty liver disease is becoming a major threat to our nation's health and quality of life.

KEYWORDS:
Liver diseases, End-stage liver disease, Liver cirrhosis, Non-alcoholic fatty liver disease, Iran

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INTRODUCTION

Liver diseases have been increasing worldwide during the past decades, becoming one of the most common causes of morbidity and mortality. There is an increasing trend in Iran as well.[1,2] The Global Burden of Disease (GBD) project showed that almost 5400 deaths due to cirrhosis and other chronic liver diseases occurred in Iran in 2017 (8.12 age-standardized deaths per 100,000). A large number of deaths were premature: almost 20% before the age of 50 and more than half before 70 years of age In North Africa and the Middle East, Egypt has the highest rate of deaths due to cirrhosis and chronic liver disease (103.32 per 100,000). Turkey had almost the same rate as Iran in 2000 at about 8 per 100,000, but in 2017 their rate became 5.81 age-standardized deaths per 100,000. The trend of deaths due to chronic liver diseases in Saudi Arabia has shown a decline in the last 27 years, but the rates are still high (18.44 per 100,000).[2]

Even though vaccines have been very effective in controlling hepatitis B virus (HBV) [3] and direct acting antivirals are more than 95% effective in treating hepatitis C virus (HCV), the global burden of cirrhosis and liver diseases are increasing as populations grow and age, and unhealthy life style becomes prevalent.[4,5]

Studying the trend of diseases at the national level is essential for prioritizing health research and helping policy makers use the evidence based data

Table 1: Etiologies of liver diseases in Iran according to 2017 GBD report*

Type of chronic liver disease	Death rate (per 100,000)	DALYs rate (per 100,000)
Hepatitis B	2.33	57.21
Hepatitis C	3.48	86.32
Alcoholic Liver Disease	0.43	10.10
NASH	1.13	26.14
Other causes	0.75	30.11
Liver cancer	3.91	81.49

NASH=Non-alcoholic steatohepatitis
Rates are age-standardized

for appropriate prevention and treatment. Data on trend of prevalence, incidence, and mortality rates due to most causes remain sparse especially in developing countries.[6]

In this review, we aim to provide a concise update on the epidemiological trends of liver diseases in Iran. We will also discuss the main fields of research, research institutes, and pharmaceuticals for liver diseases.

Epidemiology

Despite substantial advances in major health indicators and socio-economic status in the last two decades, we observe a rise in the prevalence of cirrhosis and chronic liver diseases in Iran.[1,7]

According to the latest iteration of GBD report from Iran, the main cause of cirrhosis was NASH with a prevalence of almost 18 million cases and an age-standardized prevalence rate of 20,500 per 100,000. Cirrhosis and other chronic liver diseases accounted for 1.42% (1.3-1.52%) of total deaths in Iran in 2017. The total number of disability-adjusted life years DALYs due to cirrhosis and other chronic liver diseases were 160 thousand years.[2] Common etiologies of chronic liver diseases in Iran are listed in Table 1.

The prevalence of hepatitis B surface antigen (HBs Ag) and anti-hepatitis B core antibody (HBc Ab) in Iran was estimated to be 2.6% and 16.4% in 2006, respectively. Predictors were older age, education less than a high-school diploma, living in a rural area, and a family history of liver disease.[8] HBV vaccination has been part of the national immunization program for 25 years and teenagers have been recruited in the program since 2006, with a good coverage and efficacy.[3] The prevalence of HBV infection in Iran's general population was 2.9% (95% CI: 2.5% - 3.4%) before 2010 and 1.3% (95% CI: 0.9% - 1.7%) afterwards, with the highest prevalence being in Golestan province and the lowest reported from Kermanshah, 8.9% and 0.7% respectively.[5] Thus, HBV vaccination has effectively decreased the incidence of new cases in Iran, with a primary failure rate of only 5%.[9] Even though, we are still seeing new cases of HBV, mainly due to perinatal transmission. Infant prophylaxis and early childhood vaccination along with Hepatitis B immunoglobulin (HBIG) can prevent this type of transmission, but the latter is expensive and not always available.

The rate of chronic HCV in Iran is estimated to be about 3-5 patients per 1,000 general population.[10,11] WHO has set goals for 2030: diagnosing at least 90% of patients with viral hepatitis, treating 80%, and reducing its mortality by 65%. To date, we have only been able to diagnose a third of our patients and we have treated merely 3%. In 2014, over 186,000 Iranians had HCV, and with the current diagnosis and treatment levels we expect the number to rise above 210,000 by 2030.[11] Treatment of HCV has dramatically changed after the introduction of direct acting antivirals (DAAs) in 2011, making sustained viral response (SVR) a reality in over 95% with few adverse effects. Currently, local pharmaceuticals are producing DAA with a similar SVR and at a very low cost (less than 100 US$ for a 3-month treatment). The main obstacle in reaching HCV elimination in Iran seems to be finding patients and providing appropriate care and treatment for them. People who use drugs (PWUD) have the highest rates of HCV, 50% in people who inject drugs (PWID) and 12% in those who used drugs within the previous year.[12]

Non-alcoholic fatty liver diseases (NAFLD) has recently become a relatively common cause of chronic liver disease in Iran. A cluster random sampling approach showed a 35.2% prevalence of NAFLD in Iranian adults and central obesity had a stronger association with NAFLD than BMI per se.[13] Increased caloric intake and a sedentary lifestyle are the main risk factors, although genetic variations have been accounted for in almost half of the patients, especially those with lean NAFLD. We estimate that more than a third of the general population have probable NAFLD, being more common in obese, diabetics, and those with the metabolic syndrome.[14,15] To date, no FDA approved treatment is available for this growing disease.[16]

Alcohol consumption is prohibited by Islam and also by the law, but it is available in the black market. In 2012, the Ministry of Health estimated the rate of alcohol use to be above 2% in the general population and 5% of the young used alcohol for at least once in the preceding year.[17] Therefore, when we

encounter a patient with liver disease, we should always keep alcoholic hepatitis in mind.

Hepatology Research Institutes in Iran

The Iranian Association of Gastroenterology and Hepatology (IAGH) has more than 1000 members and is a formal member of the World Gastroenterology Organization (WGO) and holds an annual international congress every autumn.

There are 11 established gastroenterology and hepatology research centers throughout the country. Hepatology is one of the most active fields of medical research in Iran, in which scientific output has increased from five papers per year in 1996 to more than 50 in 2007 and over 100 in 2018. Research has mainly been in the fields of viral hepatitis (HBV and HCV), non-alcoholic fatty liver disease, autoimmune liver diseases (autoimmune hepatitis, primary sclerosing cholangitis, and primary biliary cholangitis), liver transplant, and stem cell therapy in chronic liver diseases. We were able to collaborate with major universities and the results have been high impact publications in prestigious journals.

Future of Liver Diseases in Iran

Iran is the second most populous country in the region with a high burden of liver diseases. Following the impressive efforts to contain HBV and HCV infections by the Ministry of Health, viral hepatitis has been largely controlled. However, NAFLD has emerged as a major threat to health and quality of life in Iran and worldwide.

Due to the growing demand for liver disease research, the scientific association of gastroenterology and hepatology in Iran is planning to make substantial contribution in the field of hepatology with the help of research centers and institutes, to train young scientists, to develop novel drugs, and to establish global collaborations.

ETHICAL APPROVAL

There is nothing to be declared.

CONFLICT OF INTEREST

The authors declare no conflict of interest related to this work.

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