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Review Paper

Prevalence of hepatitis C virus infection among high-risk groups in Iran: a systematic review and meta-analysis



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ABSTRACT

Objectives: Determination of the true burden of hepatitis C virus (HCV) infection among high-risk groups relies heavily on occurrence measures such as prevalence, which are vital for implementation of preventive action plans. Nevertheless, up-to-date data on the prevalence of HCV infection remain scarce in Iran. This study aimed to review the relevant literature systematically and determine the pooled prevalence of HCV infection among high-risk groups in Iran.

Study design: Systematic review & meta-analysis.

Methods: In 2016, electronic scientific databases including PubMed, Scopus, Web of Science and local databases were searched using a detailed search strategy with language restricted to English and Farsi. The reference lists of the studies included in this review were also screened. Data were reviewed and extracted independently by two authors. A random effects model was used to estimate the pooled prevalence. Sources of heterogeneity among the studies were determined using subgroup analysis and meta-regression. **Results:** In total, 1817 records were identified in the initial search, and 46 records were included in the meta-analysis. The overall prevalence of HCV among high-risk groups was 32.3%. The prevalence was 41.3% in injection drug users (IDUs), 22.9% in prisoners, 16.2% in drug-dependent individuals and 24.6% in drug-dependent prisoners. Subgroup and meta-

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regression analyses revealed that geographical location and year of publication were the probable sources of heterogeneity.

Conclusion: This meta-analysis found a high prevalence of HCV among high-risk groups in Iran, particularly among IDUs. There is a need for prevention strategies to reduce the burden of HCV infection among high-risk groups, particularly IDUs.

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Introduction

Hepatitis C virus (HCV) infection is a major global health issue and led to 54,000 deaths and 955,000 disability-adjusted life years worldwide in 2013. Evidence indicates that three to four million people become newly infected each year, and 170 million people with chronic infection are at risk of developing cirrhosis and liver cancer.¹ HCV is transmitted extensively through injection drug use; however, unsafe medical injections and transfusions are the predominant routes of transmission in developing countries.² Despite the high prevalence and transmissibility of viral hepatitis, HCV infection has received little attention. HCV is introduced as an infection with fragmented control efforts and without any comprehensive strategy by the World Health Organization. There is consensus regarding a resolution to establish ‘goals and strategies for disease control, increasing education and promoting screening and treatment’ of people infected with HCV.³

The increasing trend of injecting illicit drugs is an additional menace to blood-borne diseases such as HCV. Injection drug users (IDUs) have specific high-risk behaviours, such as needle sharing, that play a crucial role in the transmission of blood-borne infections. Global estimates suggest that the highest proportion of IDUs with viral hepatitis (e.g. hepatitis B and C) live in Eastern Europe, East Asia and Southeast Asia, of whom nearly 10 million are infected with HCV.⁴ More specifically, the prevalence of HCV infection among IDUs in Iran has been reported from 50% to 75%, depending on the area of study.⁵ Targeting IDUs has become a milestone in international prevention and control strategies for blood-borne infections.³ However, implementation of these strategies may represent a challenge for the health authorities in Iran. Drug injection is defined as a misdemeanour in the Iranian justice system leading to incarceration; this subsequently increases the probability of high-risk behaviours and transmission of blood-borne infections such as HCV in prisons.⁶ Compared with the general population, criminalisation of IDUs could impose a disproportionately greater burden of infectious diseases, including HCV, in prisons.⁷

While injection drug use is the main driver of HCV transmission, other routes such as per mucosal transmission of HCV in high-risk sexual intercourse, especially among female sex workers (FSWs), have been well documented.⁸ HCV infection in FSWs is typically a result of having sexual intercourse with multiple partners, irregular condom use and co-infection with sexually transmitted infections, mainly human immunodeficiency virus (HIV).⁹ Estimation of the burden of HCV infection in high-risk groups in Iran is a prerequisite for effective and efficient preventive programmes for HCV infection. Despite the existence of a few studies on the prevalence

of HCV infection in Iran, they were either undertaken in the general population^{10,11} or in special facilities such as detention centres.¹² Furthermore, despite extensive implementation of HIV screening programmes for high-risk groups, programmes for hepatitis viruses have been neglected. Therefore, there is a need to address the magnitude and severity of viral hepatitis infection in marginalised populations.¹¹ Accordingly, the objective of this systematic review was to review the literature on HCV infection in Iran with a focus on marginalised subgroups of the population and to estimate the prevalence of HCV infection in Iran to contribute to promotion of HCV prevention programmes.

Materials and methods

Search strategy

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was used as a guide to enhance the quality of reporting in this review.¹³ A comprehensive literature search was undertaken using PubMed, Scopus, Information Sciences Institute (ISI) and national databases (Magiran, Iranmedex and SID) from 01 January 2000 to 30 December 2016 for English databases and from 20 November 2000 to 20 November 2016 for Farsi databases. In addition to the previously mentioned databases, the library resources and a manual search were performed to identify additional records.

Key search terms included terminology for ‘prostitute’, ‘FSW’ or ‘sex worker’, ‘intravenous drug users’, ‘drug addicts’, ‘IDU’ or ‘injection drug users’, ‘prisoner’, ‘jail’, ‘inmate’ or ‘prison’, ‘HCV’ or ‘hepatitis C’ or ‘blood borne infection’ and ‘Iran’. Studies were conducted in 2000–2016, and all articles published in English and Persian conducted in Iran were included in this review.

Sex work was defined as exchanging sex for money, drugs or goods.¹⁴ An IDU was defined as an individual who used intravenous injection of narcotic substances with a hollow needle and a syringe.¹⁵ Only studies that used a laboratory-confirmed definition of HCV infection according to country guideline definitions were included in this review.³ Duplicate or multiple publications from a single original population and articles that did not meet the STROBE requirements were excluded.

Data extraction and quality assessment

Two authors (E.A. and K.M.) reviewed the retrieved studies independently, and the following information was extracted: name of the first author, year of publication, location of study,

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