



# Does knowledge about bloodborne pathogens influence the reuse of medical injection syringes among women in Pakistan?



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## KEYWORDS

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**Summary** Injections with re-used syringes have been identified as a major risk factor for hepatitis B virus (HBV) and hepatitis C virus (HCV) infections in Pakistan. We analyzed data from the 2006–2007 Pakistan Demographic Health Survey (PDHS) to describe the distribution of injections administered with newly opened syringes and assessed the association of knowledge about bloodborne pathogens with syringe reuse in Pakistan. In the PDHS, women aged 12–49 years were enrolled through a multistage stratified cluster-sampling strategy across Pakistan. Approximately 10,000 women were interviewed to collect information regarding receiving injections, the use of syringes taken out of new unopened packages for their last injections, and knowledge regarding the transmission of Human Immunodeficiency Virus (HIV), HBV and HCV through the re-use of syringes and transfusion of unscreened blood. Of the 5126/10,023 women who provided information concerning their last injection, 4342 (86%) received this injection with a new syringe taken out of an unopened package. The proportion of injections received with a new syringe increased with the education level, wealth, HIV knowledge and knowledge about HCV/HBV transmission through the re-use of syringes. In the multivariable model, respondents in the 4th (adjusted odds ratio (AOR): 2.1, 95%CI: 1.4–3.0) and 5th (AOR: 2.4, 95%CI: 1.6–3.5) wealth quintiles, with some education (AOR: 1.4,

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95%CI: 1.1–1.9), those in the 4th quartile of the HIV knowledge score (AOR: 1.5, 95%CI: 1.1–2.0), and those with the knowledge that a new syringe protects against HCV/HBV and HIV (AOR: 2.3, 95%CI: 1.5–3.5) were more likely to receive injections with a newly opened syringe. The patients' knowledge regarding the transmission of bloodborne pathogens is an important factor in receiving injections with a new syringe.

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## Introduction

High rates of hepatitis B virus (HBV) and hepatitis C virus (HCV) infection in Pakistan have been well-documented in recent studies. The prevalence of HCV based on anti-HCV antibodies ranges from 5% to 25% in the general population, and the prevalence in high risk groups, such as people who inject drugs (PWID) (8–68%) and jail inmates (13–18%), is higher [1–10]. Similarly, studies have reported a high prevalence of HBV based on various markers of positivity (anti HBsAg antibodies) in the general population (3%) and in high risk groups (>6%) [4,5,7,10]. The high rates of HBV and HCV are culminating in a large number of people with chronic liver disease and the resulting sequelae, such as liver cirrhosis and hepatic carcinoma [11,12]. In addition to placing an increased burden on individuals, families and society because of the effects on the quality of life and life expectancy, these increased rates of chronic liver disease add to the burden of an already compromised health care system [13]. Although HIV prevalence is low in the general population, the prevalence in PWID has increased from 16% in 2006 to 37% in 2012 [14,15]. The re-use of syringes in clinics could act as bridge for HIV transmission between the high risk populations and the general population [16].

Since the early 1990s, studies on HBV and HCV have identified unsafe medical injections – mainly the reuse of injection equipment – as a major risk factor for HCV and HBV in Pakistan [2,17–21]. Injection use is very common in Pakistan, and 5–11 injections are received per person per year [22]. A large number of these injections are provided with previously used injection equipment [22]. Syringe reuse estimates vary from 25% to 80% across various settings [22–24]. To reduce the number of injections given with reused syringes, studies have mainly focused on assessing the determinants

of injection overuse [25,26]. Injection overuse is driven by patient and provider factors, including low awareness among patients about the risk of HBV/HCV transmission, beliefs in injection efficacy, patient perceptions that the provider considers it necessary to administer injections and provider perceptions that the patient expects to be given an injection. Economic incentives for providers and a low level of knowledge related to the risks associated with unnecessary injections also increase injection use [25,26]. These factors make reducing injection overuse complex, difficult and time consuming [22,25,26]. Focusing on reducing syringe reuse in the short term might be more conducive to the development of behavioral and structural interventions and would have a direct impact on the incidence of infection associated with syringe reuse.

Understanding the factors driving the reuse of injection equipment or injection administration with a new syringe in the population with a level of knowledge about the transmission of HBV/HCV could help in designing interventions to reduce reuse and reduce the incidence of infection. In healthcare workers, we found that increased knowledge about HBV/HCV transmission is associated with better adherence with protective measures [27,28]. We used data from the Pakistan Demographic and Health Survey (PDHS) conducted in 2007 to assess factors, especially the role of knowledge about bloodborne pathogens (BBPs), associated receiving injections with new syringes.

## Methods

### Setting and survey design

The 2006–2007 PDHS was a nationally representative household survey conducted in Pakistan [17].

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