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Review Article

Hepatitis Screening in Community Pharmacies as a Measure of Reducing the Rate of Infections

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Abstract

The burden of dealing with HBV and HCV still remain despite the progress that has been made in screening, vaccination, and treating the infections. On average, there about 354 million cases of hepatitis globally. Hepatitis has high mortality rates. On average, 1.1 million people lose their lives to the infections each year. Addressing hepatitis requires rigorous measures one of them being increasing screening. Hepatitis infections are identified through screening. As such, screening and taking the right preventative and treatment measures can help to reduce the risk of infections. However, screening is still a challenge. The number of people who screen for hepatitis remains low despite the efforts that have been put in place to increase uptake. The uptake of screening is low because of inadequate access to screening centers. Thus, increasing screening settings can help to increase uptake. Community pharmacies can help to bridge this barrier by making screening more accessible. They are accessible and in close proximity to vulnerable populations, which makes them ideal as screening settings. This review explores the potential of community pharmacies as screening settings for HBV and HCV and whether they can help to reduce the rate of infections.

Keywords: screening, hepatitis B, hepatitis C, community pharmacies

Introduction

Hepatitis B virus (HBV) and hepatitis C virus (HCV) contribute heavily to the burden of disease globally. There were about 296 million cases of chronic HBV and another 58 million cases of HCV globally according to WHO.[1] On average about 1.5 million people acquire HBV every year and another 1.5 million acquire HCV.[1] Viral hepatitis accounts for high mortality rates. In 2019, about 1.1 million people lost their lives to hepatitis comorbidities such as liver cancer and chronic liver disease.[1] In the United States, viral hepatitis remains a significant health challenge with approximately 2.4 million having HCV and another 850,000 living with HBV.[2] The numbers could be higher because few people go for screening. Edlin et al.[3]estimates that the number of hepatitis C cases could be up to 4.7 million because of low screening rates. For HBV, the numbers could be as high as 2.2 million.[2]

Screening is one of the measures that can help to reduce hepatitis infections. [4-6] Community pharmacies remain one of the avenues that are yet to be explored when it comes to hepatitis screening. Based on a recent study, they have a lot of potential when it comes to screening for hepatitis.[7] The potential of pharmacies is mainly because of their proximity and accessibility by vulnerable populations that are greatly affected by hepatitis.[7] Having community pharmacies as points of screening for hepatitis can help to reduce the rate of infections and increase the number of people who are reciving care.[8] This review explores the potential of community pharmacies as centers for screening for HBV and HCV. Additionally, it expolores whether having pharmacies as screening centers can help to reduce the rate of infections. It does this by investigating screening strategies that can be used in pharmacy settings including point-of-care (POC) testing.

Prevalence of Hepatitis B and C in the US

HBV and HCV are still a burden even with medical advances in screening. On average, there about 2.44 million people that live with HCV in the US.[2] An additional 850,000 live with HBV.[2] These numbers could even be higher because most people do not go for testing and do not know their status. Estimates from a study done by Edlin et al. [3] showed that the actual number of people living with HCV in the US could be as high as 4.7 million or 2.5 million on the lower side. For hepatitis B, the number of people living with the infection could be as high as 2.2 million.[2] The viral hepatitis national progress report shows a clear picture of the prevalence of hepatitis. According to the 2021 report, 2045 new cases of acute HBV were reported in 2021 across the country with the new infections averaging 13,300.[9] For chronic hepatitis B, there were about 14,229 new cases with the rates averaging 5.9 per 100,000 people.[9] The rates were a decline from the 2017 baseline report which indicated that the rates of hepatitis B were 22,200.[10] However, unlike hepatitis B, the number of HCV cases reported increased in 2021 from the 44700 that were reported in 2017 to 69800 in 2021.[11]The number of new chronic HCV cases also increased in 2021 to 107,540 which was an average of 39.8 cases per 100,000 people.[11]Identifying the risk factors for HBV and HCV is a step towards reducing the number of new infections because it can increase the screening rates and allow for better-directed care.

Risk Factors for Hepatitis B and C

Hepatitis can be attributed to several risk factors. According to WHO, the highest burden of HBV and HCV is concentrated in economically disadvantaged regions, mostly in Africa, South East Asia, and Eastern Mediterranean.[1] The highest prevalence of new hepatitis cases in these regions is due to a number of factors key among them being poor prevention measures. The rate of screening and surveillance also tend to be lower in these regions which means that the number of people infected by the infections do not know they have them hence spreading them unknowingly.[12] HBV and HCV tend to be prevalent in people who have a history of sexually transmitted diseases and those who have multiple sex partners.[13] People who are born in countries that have a high prevalence of hepatitis B or C and individuals living with human immunodeficiency virus (HIV) also have high prevalence.[4] Other groups that are likely to report high incidences of hepatitis are men who have sex with men, blood donors, people with a surgical history, people who are incarcerated or formerly incarcerated, infants that are born to mothers who are already infected, individuals who inject drugs, and people who have an immune that is suppressed.[13,4,14,15]

In the US, incarceration and using injection drugs are key risk factors associated with hepatitis.[4] The opioid epidemic and heroin use were two of the key contributing factors that were attributed to the increase in HBV and HCV infections.[2] Other studies have also found a correlation between HBV and HCV, and drug use, especially among people who inject drugs.[16-18] There are several reasons why the prevalence of HBV and HCV is high among people who inject drugs. Sharing needles and other drug preparation equipment is one of the reasons why hepatitis rates are high in this population groups.[16] Other reasons are impaired judgement and the likelihood of engaging in unsafe behaviors. [16] Sharing needles increases the risk of exposure to hepatitis from people who are already infected while drug use impairs judgement and the likelihood of engaging in risky behaviors.[19] Controlling for these risk factors is instrumental in reducing the rate of infections.

Screening Strategies

Routine screening and surveillance are key to reducing hepatitis infections. They can help with prevention, control, and elimination these infections.[20,21] The Centers for Disease Control and Prevention (CDC) recognises screening and surveillance as key in detecting and monitoring outbreaks, identifying exposures, and guiding intervention efforts.[20] Despite the advances in screening, many people who have chronic HBV are not aware they have the infection until they have symptoms of liver cirrhosis and end-stage liver disease.[22,23] Lack of early screening is one of the key factors that causes delays in evaluation and treatment.[22] It also contributes to ongoing transmission. For instance, current drug injection use is one of the most significant risk factors for hepatitis C.[24] Therefore, being aware of one's infection status is vital for reducing the rate of infections.

The CDC recommends universal screening for both HBV and HCV as a measure to reduce the rate of infections. For HBV, the CDC recommends one-time universal Hepatitis B surface antigen (HBsAg) screening.[22] The screening is recommended for adults that are aged 18 to 69 years.[22] The HBsAg test used should be approved by the Food and Drug Administration (FDA) and a confirmatory test should follow if the initial results are reactive.[22] A positive HBsAg result indicates the presence of acute or chronic hepatitis B.[22] Universal screening is regarded as a more cost-effective measure compared to risk-based screening.[25] In addition to being effective, universal screening can minimize the cases of cirrhosis, liver transplants, and HBV-related deaths.[4] For HCV, the CDC recommends universal screening at least once in the life of an adult who is 18 years and older.[26] Anti-HCV antibody testing is the recommended testing for hepatitis C.[24] The Anti-HCV is followed by polymerase chain reaction testing for hepatitis C (HCV RNA). Universal screening is also recommended for all women who are pregnant during each of the pregnancies. However, where there is no existing data on HCV prevalence, universal screening should be initiated until the prevalence of HCV RNA-positivity is determined to be less than 0.1%.[26] For individuals with high-risk factors for hepatitis C, screening at least once is recommended.[26] In addition to universal screening for HBV, screening is recommended in settings that have a higher prevalence of the infection.[4] Routine periodic testing for HCV is also recommended for people who are constantly exposed to risk factors such as those who inject drugs or share needles and those who have certain medical conditions such as those who receive maintenance hemodialysis.[26,24]

Role of Community Pharmacies in Hepatitis Screening

Community pharmacies are recognized as important settings for screening and managing infectious diseases. During the COVID-19 pandemic, community pharmacies played a key role in the management of the disease by offering vaccinations, point-of-care (POC) testing, medication dispensing, and medication management.[27] Gubbins et al. [28] also note that pharmacies provide opportunities to perform POC and expand their role beyond medication dispensing and counselling for patients with infectious diseases. Accessibility is one of the key factors that inform the community pharmacies' roles in infectious disease management. Most community pharmacies in the US are located within 5 miles of where 90% of the population lives making them accessible than the primary care providers.[27] Community pharmacies can leverage their accessibility to provide POC testing for infectious disease management.[28]

POC refers to clinical laboratory testing that is done near where the patient is receiving care or treatment.[29]When it comes to the management of infectious diseases, POC testing is preferred because it provides rapid turnaround of test results which makes it easier to provide the right treatment quickly hence improving clinical and economic outcomes. Gubbins et al.[28] recognize that POC testing can improve the rate of detection and the subsequent management of infectious diseases because it reduces the time between testing for infection and diagnosis. The rapid diagnosis enables the patient to get timely access to care because the treatment therapy is initiated on time. In the case of infectious diseases such as HBV and HCV, it reduces the rate of disease transmission.

Community pharmacies present an ideal test for providing POC testing for infectious diseases. Various studies have established that community pharmacies can help in preventing and managing infectious diseases by providing screening and vaccination. [30,31,28] Providing screening in community pharmacies can also improve linkage to care.[32] For HBV and HCV, pharmacies are recognized as instrumental in providing POC testing which helps to reduce the rate of infections. A three-month pilot study done by Dong et al.[33] established that community pharmacies were vital in providing POC testing with patients who engaged in these screening services reporting positive feedback. Although several challenges were reported, pharmacists reported that they were confident in providing hepatitis C screening and were prepared to link patients to care.[33] The study also established community pharmacies as key settings for providing hepatitis screening. Of the 83 participants that participated in the study, 80% which is about 66 reported that they had never had HCV screening before.[33] Similar findings were established by Buchanan et al.[34]

Pharmacies were instrumental in providing hepatitis C screening by carrying out over 200 tests during the two-year period of the study and leading to the identification of 13 new cases of infections.[13] Kugelmas et al. [35] also identified POC as instrumental in identifying people with HCV infection with the 6-month program leading to a total of 1296 screening and confirmation of 29 cases of HCV. The studies confirm that screening in community pharmacies increased the overall uptake of screening. Patients were also willing to be screened in community pharmacies which is an opportunity to increase their utilization to reduce the rate of hepatitis infections.[36] Various factors informed patients' decisions to be screened for hepatitis in community pharmacies. Some of these include reduced wait times, privacy, proximity, accessibility, confidence in the competence of pharmacists, anonymity, and fear of being discriminated against in other facilities.[37]Due to these factors, the study affirmed that community pharmacies were instrumental in providing screening, especially for those who were being tested for the first time, migrants, and heterosexuals. In most cases, targeted screening is not directed to these populations because they are not classified as among the most at risk of getting viral hepatitis.

Community pharmacies were not only instrumental in providing screening and testing alone. They were identified as vital in ensuring the continuity of care for individuals who were identified to have hepatitis B and C infection.[8,7] Community pharmacies were identified as vital in decentralizing care and ensuring reach for people affected with hepatitis C.[38] For those who were screened and found to be HCV antibody positive, they were contacted by a management specialist for further testing and management.[35]

In addition to ensuring continuity of care hepatitis B and C screening was identified as instrumental in identifying risk factors that increased the prevalence of the infections. Injecting drug use was one of the factors that was constantly mentioned as contributing to the risk of getting hepatitis B and C.[34,37,33] Other risk factors that were identified include being diagnosed with a sexually transmitted infection, men having sex with men, having intercourse with people living with the infection or HIV, using crack cocaine, being a female transgender, birth cohort, and getting a tattoo.[33,37,35]Birth cohort in this case were individuals who were born between 1945-1965 or were 50 years and older.[33,35]

Identifying risk factors is vital in increasing awareness about hepatitis B and C. By identifying risk factors that contributed to the infections, community pharmacists could provide education which increased patient awareness. Various studies recognize community pharmacies as vital in providing education to patients who seek screening.[38,36,39] Isho et al.[38] noted that screening provided an opportunity to increase patients' knowledge and awareness about hepatitis C. Those who were screened were provided with education about what hepatitis C was, how it spread, and how it was treated. Another program also educated patients on up-to-date evidence-based screening strategies for hepatitis C.[36] Increasing patient's knowledge and awareness about hepatitis increases the willingness to uptake screening. Education helps to address the misconceptions that may limit patient uptake of screening, improve knowledge about the disease, increase care uptake, and improve disease management.[40-42]

Based on the reviewed studies, screening in community pharmacies is an effective measure that can be used to reduce the rate of infections. It is through screening that cases of hepatitis can be identified and appropriate measures to reduce infection rates such as vaccination be taken. According to Abara et al.,[24] vaccines and screening remain the best cost-effective measures for reducing the burden of chronic hepatitis B infection. Vaccine provides protection for adults who are not infected with the virus and the protection can last up to three decades.[24] In the case of hepatitis C, screening helps to reduce the rate of new infections through transmission.[43] This is particularly the case in people who inject drugs.[44,45] By scaling up screening, people who inject drugs can be able to have increased access to harm reduction programs which can lead to reduced risk of new infections.[46] Besides, screening is recognized as a cost-effective measure which makes it instrumental in reducing the overall burden of the disease.[4,47] Therefore, there is a need to increase screening for viral hepatitis as a measure of reducing the rate of infections.

Barriers to Hepatitis Screening in Community Pharmacies

Although community pharmacies can play a crucial role in reducing the rate of hepatitis infections, there are key barriers that need to be addressed to ensure efficacy. Various barriers make it difficult to implement hepatitis screening in community pharmacies. Dong et al.[33] identified two major barriers that pharmacists encountered while implementing hepatitis C screening in community pharmacies. These barriers were getting people to get into the pharmacy to be tested and balancing the time that is required to perform the tests and run the pharmacy.[33] The study also noted that the 20 to 30 minutes that were required to obtain results were a barrier to getting people into the pharmacy to be tested with some patients refusing to wait to get tested.[33] Concerns by pharmacists about balancing the workload and carrying out hepatitis screening are also documented in other studies.[34,48]

Lack of training was another barrier that community pharmacists encountered while providing hepatitis screening. Though POC tests were classified as simple to use with a low risk of error, they were not error-proof. Without adequate training, community pharmacists could be prone to making these errors.[28] The difficulty of collecting enough blood samples using the materials provided for POC testing also increased the risk of error.[37] Pharmacists also noted that they were not provided with the psychological training that was necessary to give results to the patients that had positive results.[37]

Patients' negative views and experiences about testing in community pharmacies were also identified as a barrier to screening.[49] Brewer et al.[36] noted that 28% of patients were not willing to receive testing at community pharmacies. The lack of adequate information provision by pharmacists was one of the barriers that were constantly mentioned for not wanting to do screening in community pharmacies.[36] Limited provision of information by healthcare professionals is often identified as a barrier that limits screening for individuals who are at risk of hepatitis.[48] Many individuals who sought screening noted that healthcare professionals failed to inform them about the meaning of diagnosis which contributed to the knowledge gap about hepatitis.[48] Limited information provision was not only noted as a barrier on the side of pharmacists. Pharmacists also noted that they did not receive adequate information concerning the user's continuum of care after a reactive test and hence were not aware if those who tested positive had a confirmatory test or were receiving treatment.[37]

Stigma associated with hepatitis infections is another barrier that needs to be addressed. Although concerns about privacy are not identified as a barrier to hepatitis screening, [36]some patients still report fear of stigma when doing screening tests.[37,50] The stigma associated with screening is mainly attributed to the stigma associated with hepatitis infection which can lead to fear of having positive results hence the fear of uptaking screening.[51,23]

Another barrier that limits screening in community pharmacies is vagueness when it comes to scope of practice. Gubbins et al.[28]

note that the scope of practice for pharmacies varies across states with regulations and legislations governing pharmacy practice being different. Such variations create vagueness making it difficult for many community pharmacies to recognize what is expected of them when it comes to infectious disease screening. Many community pharmacies may also not recognize that they are allowed to provide POC testing and screening.

Strengths and Limitations of the Review

Findings from this review add to the growing evidence of the need to include other settings in providing hepatitis screening and the need to decentralize care to achieve better health outcomes. Hepatitis screening in community pharmacies can increase the uptake of screening and help to reduce the rate of infections. It can also enhance the care continuum leading to better care outcomes.[38] To maximize the opportunity that community pharmacies offer when it comes to the uptake of screening, there is a need to address the existing barriers.[37] Addressing these barriers will increase screening uptake and help to reduce the rate of infections.

Although the review establishes screening in community pharmacies as a measure that can help to reduce the rate of infections, it has its limitations. First, there was a lack of enough studies on hepatitis B screening in community pharmacies. Most of the reviewed studies explored hepatitis C screening making it difficult to generalize the findings to the hepatitis B context. The review was also limited by the quality of the included studies. It was difficult to ascertain the quality of these studies because a quality assessment was not done.

Conclusion

This review has established that community pharmacies can provide hepatitis screening and hence help to reduce the rate of infections. Based on the reviewed studies, providing screening in community pharmacies increased screening uptake. As screening settings, community pharmacies offer accessibility and convenience which makes them ideal for providing hepatitis screening. Other factors that contribute to increased uptake of screening are reduced wait times, proximity of community pharmacies, anonymity, and confidence in the competency of pharmacists. Community pharmacies are also instrumental in ensuring the continuity of care. Individuals who are positive for hepatitis are referred for care and management. Screening in community pharmacies can also help to identify the risk factors for infection prevalence. By identifying risk factors that increase the likelihood of acquiring HBV and HCV, community pharmacists can take this as an opportunity to educate those at risk which can help to reduce infection rates. However, several barriers exist which that make it difficult to provide screening in community pharmacies. Stigma for example is one of these barriers. Pharmacists may also not be trained to conduct screening. Patients may also fail to go for screening because of negative perceptions about taking screening in community pharmacies. Other barriers are convincing people to get tested and balancing workload limit. Addressing these barriers can increase screening uptake.

List of Abbreviations

HBV: Hepatitis B Virus

HCV: Hepatitis C Virus

HIV: Human Immunodeficiency Virus

WHO: World Health Organization

POC: Point-of-care

HBsAg: Hepatitis B surface antigen

CDC: Centers for Disease Control and Prevention

FDA: Food and Drug Administration

HCV RNA: Hepatitis C RNA

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