

Prevalence of Hepatitis C at a Primary Hospital in the Western Region of Ghana

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Abstract Background: Hepatitis C infection can often be detected by antibodies to the hepatitis C virus. HCV infection frequently goes untreated since it is asymptomatic for decades before symptoms appear as a result of severe liver damage. This study will investigate the prevalence of HCV in the Western region, specifically the Sekondi-Takoradi metropolis. The research sought to improve the knowledge gap by providing data on the prevalence rates of HCV. **Methods:** 980 samples collected from January to April 2022 were subjected to a retrospective analysis. The HCV serologic test was performed using the one-step immune-chromatographic test kit. Age-related data and the results of all serologic tests for HCV were recorded and evaluated during analysis. **Results:** A total number of 980 samples were analyzed in this study. Out of which 91.3% (n=895) were seronegative and the remaining 8.7% (n=85) were seropositive. Seropositivity was mainly found significantly among the 35-44, <15, and 24-34-year age groups with 2.7%, 1.9%, and 1.7% positivity rates respectively. Age-specific prevalence rates were significantly high among the 35-44 and ≥55-year age groups with positivity rates of 13.8% and 8.3%. Also, the age-specific prevalence was high among the <15, 25-34, and 15-24-year age groups with positivity rates of 7.6%, 7.4%, and 7.3% respectively. **Conclusion:** This study recorded a high prevalence rate of HCV seropositivity. To the best of our knowledge, this is the first study in the Western region to have considered HCV prevalence. The findings emphasize the necessity for quick public health measures to lower infection rates. These must target screening of high-risk groups, education campaigns about HCV transmission patterns, and the provision of treatment for those who are infected.

Keywords: Hepatitis C, Seropositivity, prevalence

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1. Introduction

Infection with the hepatitis C virus (HCV) is now recognized as having a substantial impact on global health, impacting all nations, and necessitating the necessary care. The World Health Organization reports about 58 million people with chronic hepatitis C globally out of which 3.2 million belong to the adolescent and children group. In 2019, an estimated 290,000 people died from hepatitis C [1]. It is commonly acknowledged that more work has to be done to control the condition, even if recent estimates indicate a reducing burden mostly because of a decline in prevalence among youngsters. HCV infection can often be detected by antibodies to HCV (anti-HCV). To compare

HCV infection rates around the world, population-based studies' findings on the prevalence of anti-HCV are employed.

Hepatitis C is often associated with liver cirrhosis, fibrosis, and hepatocellular carcinoma (HCC) which could advance to hepatic failure [2]. About 30% of hepatitis C infections resolve after 6 months while the remaining 70% become chronic. At about 20 years post hepatitis C infection, 15% to 30% of chronically infected persons may develop HCC [1]. Chronic HCV infection is responsible for around 25% of liver cirrhosis and HCC cases worldwide, with rates being greater in endemic areas [3].

The prevalence of hepatitis C varies from 0.5% to 2.5%. Eastern Mediterranean and Europe have very high prevalence rates [4]. According to WHO regional

demarcations, the American region has the least number of hepatitis C infections followed by the African region [1]. However, Africa has recorded very high rates of 2.8% close to a decade ago [5]. With low surveillance and monitoring systems in Ghana and across the African continent, over-estimation or underestimation of disease occurrence is inevitable.

Hepatitis C does not affect only adults. Children and adolescents also get infected although the rate is minimal. The global prevalence rate of the disease among children aged 1 – 19 years is 0.15% [6]. The effect of the disease is low among this population with hepatocellular carcinoma being rare.

It is crucial to emphasize that there are several significant obstacles to accurately documenting the burden of HCV to determine the disease's genuine incidence and prevalence in any given nation [6]. Assays that can differentiate between acute and chronic infections are not readily available, for example, and the majority of acute HCV infections frequently have no symptoms. There is insufficient data on HCV prevalence in Ghana. The current data on the nation's prevalence according to Agyeman [7] was 3%. Studies on the regional prevalence of HCV are also limited. Akyar [8] reported Accra's HCV prevalence to be 6.4%.

Hence, it will be important for researchers to focus on the regional prevalence of the disease which could aid in a national aggregate of HCV prevalence. This study will investigate the prevalence of HCV in the Western region, specifically the Sekondi-Takoradi metropolis. The research sought to improve the knowledge gap by providing data on the prevalence rates of HCV at a primary health facility, Ghana Ports and Harbours Authority Hospital (GPHA) in the Western region of Ghana.

2. Methods

2.1. Study Design and Setting

This was a retrospective study involving selected samples drawn from patients who attended GPHA hospital

- Takoradi, from January to April 2022. The inclusion criteria were all EDTA samples collected within the period of study. Ethical clearance and data were sought and acquired from the management of the facility. Retrieved data were kept anonymous. 980 samples were analyzed for this study with ages 2 years and above and no gender limitations. The average age was 30 years old and they consisted of 410 (41.8%) males and 570 (58.2%) females. Of these, 23.4% (n=229) were in the 25-34-year age group. Only 8.3% (n=81) of the entire population were in the 15-24-year bracket, and a greater number were in the <15-year group (Figure 1).

2.2. Serological Screening

The HCV serologic test was performed using the one-step immune-chromatographic test kit (Wondfo, Sensitivity = 99%, Specificity = 99.8%).

The following assay protocol was used by the manufacturer: Using a plastic dropper included in the pouch, 10 µL of plasma volume was applied to the upper edge of the test strip's sample pad. Two drops of the diluent were then put on the lower edge. After fifteen minutes, the results were read and interpreted after 15 minutes. Any results after 20 minutes were not read since they can cause erroneous results.

2.3. Statistical Analysis

All patient demographics including ages and test results (seropositive/negative) were originally recorded and input for analysis into Microsoft Excel, 2016. Age-related data and the results of all serologic tests for HCV were evaluated.

3. Results

A total number of 980 samples were analyzed in this study. Out of which 91.3% (n=895) were seronegative and the remaining 8.7% (n=85) were seropositive (Figure 2). Out of the analyzed samples, 5.1% (n=50) of females and 3.6% (n=35) were seropositive (Figure 3).

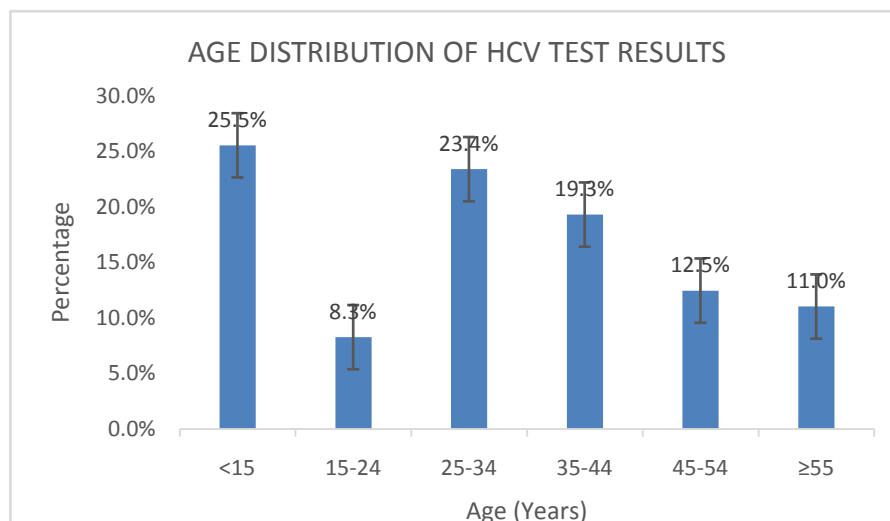


Figure 1. Age distribution among the study population

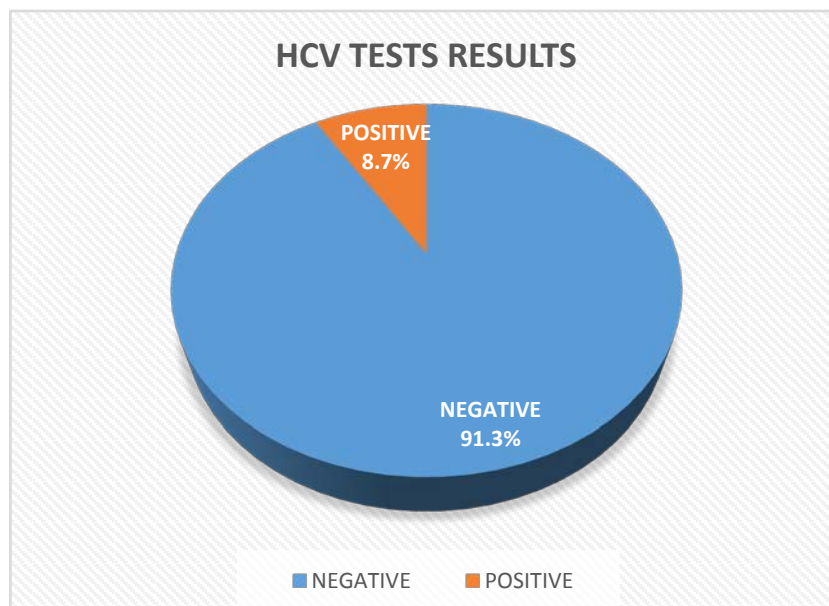


Figure 2. Total summary of tests results

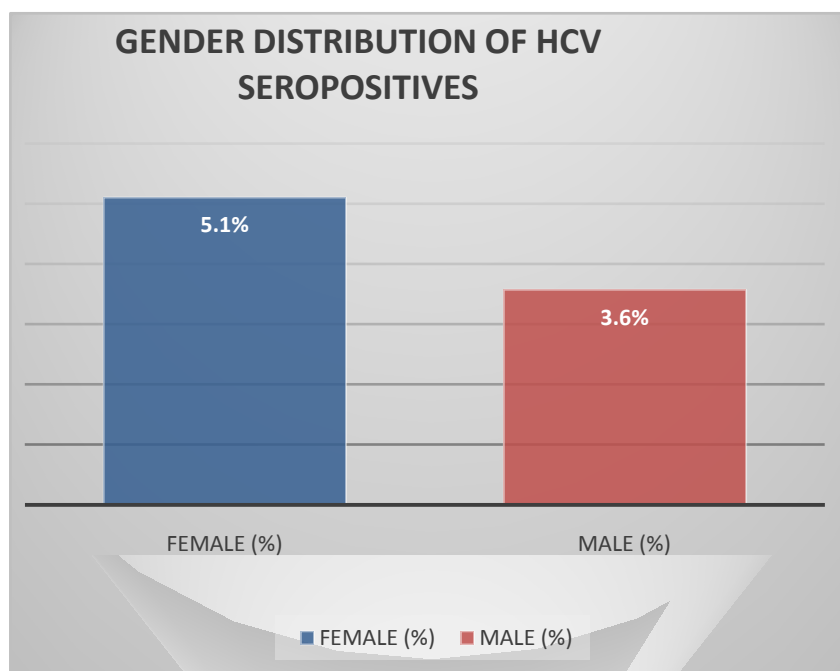


Figure 3. Gender distribution of HCV seropositives

In all, the seropositivity was mainly found significantly among the 35-44, <15, and 24-34-year age groups with 2.7%, 1.9%, and 1.7% positivity rates respectively. Age-specific prevalence rates were significantly high among the 35-44 and ≥ 55 -year age groups with positivity rates of 13.8% and 8.3% respectively. (Table 1). Age-specific prevalence was also high among the <15, 25-34, and 15-24-year age groups with positivity rates of 7.6%, 7.4%, and 7.3% respectively.

Table 1. Sero-prevalence of HCV among the study population

Age Distribution HCV Tests Results					
Age (Year)	Pop. Positive (%)	% Pos Age group	Pop. Negative (%)	% Neg Age group	Total
<15	19 (1.9)	7.6%	231 (23.6)	92.4%	250
15-24	6 (0.6)	7.3%	76 (7.8)	92.7%	82
25-34	17 (1.7)	7.4%	212 (21.6)	92.6%	229
35-44	26 (2.7)	13.8%	163 (16.6)	86.2%	189
45-54	8 (0.8)	6.6%	114 (11.6)	93.4%	122
≥ 55	9 (0.9)	8.3%	99 (10.1)	91.7%	108
Total	85 (8.7)	8.5%	895 (91.3)	91.5%	980

4. Discussion

In this study, the authors recorded a high HCV prevalence of 8.7 % among study subjects. These findings may not be representative of the regional HCV prevalence in the Western region of Ghana. Though the hospital receives clients from almost all districts in the region, data on the study subjects' districts were not available. An 8.7% positivity rate is significantly higher than the 6.4% recorded in Akyar [8] and the 3.0% national HCV prevalence reported by Agyemang [7]. This wide prevalence variation corresponds with Layden's [5] assertion that Africa's prevailing HCV prevalence data may be underestimated.

HCV infection is known to be high among human immune deficiency virus (HIV) infected persons [9]. The Western region is among the regions in Ghana with a high HIV prevalence rate [10]. This reason could partially account for the high HCV prevalence in the region. Future studies should focus on HCV prevalence among risk groups.

In our study, most of the positivity rate lay within the 25-34 age group (1.7%) and 35-44 age group (2.7%). HCV infection among young adults is seen in people who inject drugs [11]. Sexually active individuals are also at risk. It is not surprising that this study recorded a high prevalence rate among young adults. In Ghana, HCC can develop at a young age [12]. About 1 in 14 cirrhosis cases in Ghana is caused by HCV [13]. About 8.8% of deaths among Ghanaian adults are liver-related of which HCV infection is responsible for 8.8% [14]. Therefore, HCV infection should be a concern for everyone. Stakeholders should commit to taking action to combat this disease. High HCV prevalence is anticipated to affect economic growth since infected individuals' general wellness and output are likely to suffer. Considering the effect HCV can have on Ghana's economy, the government needs to give adequate attention to the fight against the illness.

Though this study did not limit the population to pregnant women, the study analyzed samples that included those of pregnant women. Hence, the 8.7% prevalence recorded in this study raises an alarm among the pregnant women population. HCV infection among pregnant women exposes them to the risk of preterm birth, low birth weight, congenital abnormalities, pregnancy-related glucose intolerance, and overall perinatal mortality [15,16]. This is an important issue since the infected can transmit to their children, vertical transmission. Due to the potentially high incidence of HCV among pregnant women, Ghana needs to implement a national program that includes HCV screening as part of anti-natal routine lab tests.

Given the high frequency of other viral hepatitis in Ghana and the high prevalence of chronic HCV infection, there is rising worry about the safety of blood products [17]. A greater focus and stricter surveillance will be required to ensure high levels of compliance with the national blood policy to minimize the risk of transfusing contaminated blood to patients. Even though Ghana has a national blood policy requiring that all donated blood be tested for blood-borne infections such as HIV 1 and 2, Hepatitis B (HBV), HCV, and Syphilis, most laboratories rely heavily on antibody rapid diagnostic tests. More

specific tests like antigen and polymerase chain reaction (PCR) should be encouraged for screening donors.

The high rates of chronic HCV infection in the Western region could be a result of low knowledge about the disease. According to studies, Ghanaians are not very knowledgeable about hepatitis transmission routes. For instance, Mutocheluh and Kwarteng [18] found that among 200 barbers in Kumasi, 0% of the barbers could characterize the major HCV transmission pathways, and only 7% were aware that sharing razor blades or hair trimmers could be a mechanism of spreading viral infections like HCV and HBV. For pregnant women, similar patterns of decreased awareness have been noted [19]. In many Ghanaian communities, there has been an overemphasis on HCV and associated viral hepatitis as sexually transmitted illnesses (STIs), even though the mechanisms of HCV transmission are diverse. These include unprotected intercourse, mother-to-child transmission, and transfusion of infected blood [20]. Such beliefs about HCV's mode of transmission usually become a barrier to properly seeking medical attention.

There is presently no vaccine for HCV infection worldwide, though antiviral medications are available - depending on the type of HCV genome. As a result, public education is a good strategy for promoting disease awareness, transmission routes, early diagnosis, and treatment of infected individuals. Increasing understanding and awareness of the disease's transmission routes and also, early detection and treatment of sick individuals, would be the primary strategy for interrupting infection transmission through risk reduction.

5. Limitations

This study encountered the following limitations:

1. This study cannot be generalized to the entire Ghanaian population since it focused on subjects located in the Western region.
2. Confirmatory tests for RDT-positive cases were not available to the authors.
3. Socio-demographic data on subjects' district of residence and antenatal status could not be retrieved.

6. Recommendations

To better understand the HCV burden in Ghana, future research should focus on the epidemiology of HCV in Ghana and among certain high-risk populations. Further studies are needed to ascertain what is accountable for the high HCV prevalence observed in this study. Lastly, the National Health Insurance Scheme (NHIS) Medicines List can then be updated to include medications for HCV treatment.

7. Conclusion

We recorded an 8.7% HCV prevalence at the end of our study. To the best of our knowledge, this is the first study in the Western region to have considered HCV prevalence. The findings emphasize the necessity for quick public

health measures to lower infection rates. This report offers a means of educating stakeholders and policymakers about the imperative need to advance treatment access and HCV infection prevention efforts worldwide. These must target screening of high-risk groups, education campaigns about HCV transmission patterns, and the provision of treatment for those who are infected.

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