SEROPREVALENCE OF HIV, HBV, HCV, AND VD AMONG PREGNANT WOMEN IN SOMALIA: A RETROSPECTIVE STUDY

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Abstract. In resource-limited settings, infectious diseases during pregnancy remain a significant public health concern due to their serious impacts on maternal and neonatal health. We retrospectively reviewed the medical records of pregnant women (n = 5,335), 15-45 years of age, who attended the maternity clinic of a tertiary hospital in Mogadishu, Somalia, between 2021 and 2023. Data was obtained from the hospital's electronic information system on the presence of HIV, HBV, HCV, and venereal disease (VD) as well as sociodemographic characteristics. HBsAg, anti-HCV antibody, anti-HIV antibody, and VD positivity among the subjects was 4.3, 1.1, 0.4, and 0.9%, respectively. Yearly differences in HBsAg, anti-HCV antibody and VD positivity are statistically significant (p-value = 0.002, 0.009 and 0.007, respectively), as well as across all ages (p-value = 0.031, 0.028 and <0.001, respectively). These findings highlight the ongoing burden of hepatitis B, hepatitis C and VD infections among pregnant women in Mogadishu (and possibly the whole country) and emphasize the need for routine antenatal screening. Large-scale screening initiatives and maternal health education programs are crucial for preventing these infections and reducing perinatal transmission.

Keywords: hepatitis B virus, hepatitis C virus, human immunodeficiency virus, pregnancy, syphilis

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INTRODUCTION

Viral infections, such as HBV (hepatitis B virus), HCV (hepatitis C virus), HIV (human immunodeficiency virus), and syphilis, are significant public health threats for pregnant women worldwide. These infections can adversely affect maternal health and lead to serious neonatal complications, including spontaneous abortion, preterm birth and low birth weight (de Oliveira Freire *et al*, 2021). HBV and HCV are associated with long-term complications such as cirrhosis and liver cancer (Dahie and Heyle, 2017). HBV is primarily transmitted through contact with infected blood or body fluids and can be passed from mother to child during birth, as well as through needlestick injuries, tattoos and body piercings. HCV is also transmitted via blood, commonly through transfusions, medical procedures or injection of drugs of abuse; sexual transmission is extremely rare (Egbe *et al*, 2023).

According to the World Health Organization (WHO), approximately 325 million people globally are living with chronic HBV or HCV infections, with the majority residing in East Asia and sub-Saharan Africa (WHO, 2017). The prevalence of HBV among pregnant women in Africa is estimated at 6.8% (Bigna *et al*, 2019), and ranging from 9 to 20% in sub-Saharan Africa (Dahie and Heyle, 2017). HBV carries vertical and horizontal transmission risks and poses a threat to both mothers and infants (Larebo *et al*, 2024).

HCV affects over 58 million people globally, including 14.9 million women 15-49 years of age (Abbasi *et al*, 2023). HCV prevalence during pregnancy ranges from 0.15 to 2.4% in developed countries and is as high as 8.6% in sub-Saharan Africa (Shittu *et al*, 2023).

HIV is the leading cause of death among women of reproductive age. In 2023, an estimated 4,000 girls and young women 15-24 years of age acquire HIV each week, with 3,100 of those cases occurring in sub-Saharan Africa (UNAIDS, 2023). Syphilis, caused by Treponema pallidum, is transmitted primarily through sexual contact, blood transfusion or transplacentally from an infected mother to her fetus (Befekadu *et al*, 2022). Despite the availability of simple diagnostic tools and effective, low-cost treatment, syphilis remains a significant public health issue among pregnant women in sub-Saharan Africa, where its prevalence is approximately 2.7% (Joseph Davey *et al*, 2016; UNAIDS, 2023).

However, there are limited data on the seroprevalence of these infections in Somalia. Thus, we determined the seroprevalence of HIV, HBV, HCV, and venereal diseases among pregnant women attending the maternity clinic of a tertiary hospital in Mogadishu, Somalia, between 2021 and 2023. The results of this study may provide critical baseline data to support national policy development, improve prenatal care protocols, and reduce the risks of adverse maternal and neonatal outcomes associated with these infections in Somalia.

MATERIALS AND METHODS

Study setting

The study was conducted in the capital Mogadishu, southeastern Somalia. Mogadishu has a population of almost three million (Ali *et al*, 2024).

Study population and design

Data on pregnant women (n = 5,335), 15-45 years of age, who attended the obstetrics clinic of a tertiary hospital in

Mogadishu, from 2021 to 2023 were retrospectively collected from the hospital's electronic medical records. Records were anonymized before the extraction of sociodemographic variables, and HBV, HCV, HIV, and VD test results.

Serological analysis

Venous blood samples from pregnant women were collected aseptically via venipuncture. Sera were used for antigen or antibody detection and tests for HBV, HCV, HIV, and VD. Microparticle ELISA (Vitros; Ortho-Clinical Diagnosis, Raritan, NJ) and diagnostic kits (Ortho-Clinical Diagnosis, Raritan, NJ) for HBsAg, anti-HCV antibodies, anti-HIV antibodies, and VD were used. Samples that gave positive results were re-evaluated using the same diagnostic kits. Blood samples that produced positive results in the repeat tests could not be further confirmed as there were no other tests, such as western blotting, available at the hospital.

Statistical analysis

Results were reported as percentages and frequency distributions. The chi-square (χ^2) and Fisher Exact tests were used to analyze categorical data. The significance level is accepted at p-value <0.005. Data were analyzed using Jamovi v2.3.26 (https://www.jamovi.org and https://www.jamovi.org/download.html).

Ethical consideration

The research protocols were approved by the Ethics Committee of Mogadishu Somali Türkiye Recep Tayyip Erdoğan Training and Research Hospital (Decision no. 912/ MSTH/16966). Prior informed consents were not obtained from the participants due to the nature of the study (retrospective review of anonymized records).

RESULTS

Analysis of the relationships of the ELISA results of pregnant women during the three years of the study (2021 to 2023) (Fig 1) revealed significant differences in the numbers of pregnant women positive for HBsAg, anti-HCV antibodies and VD (p-value = 0.002,

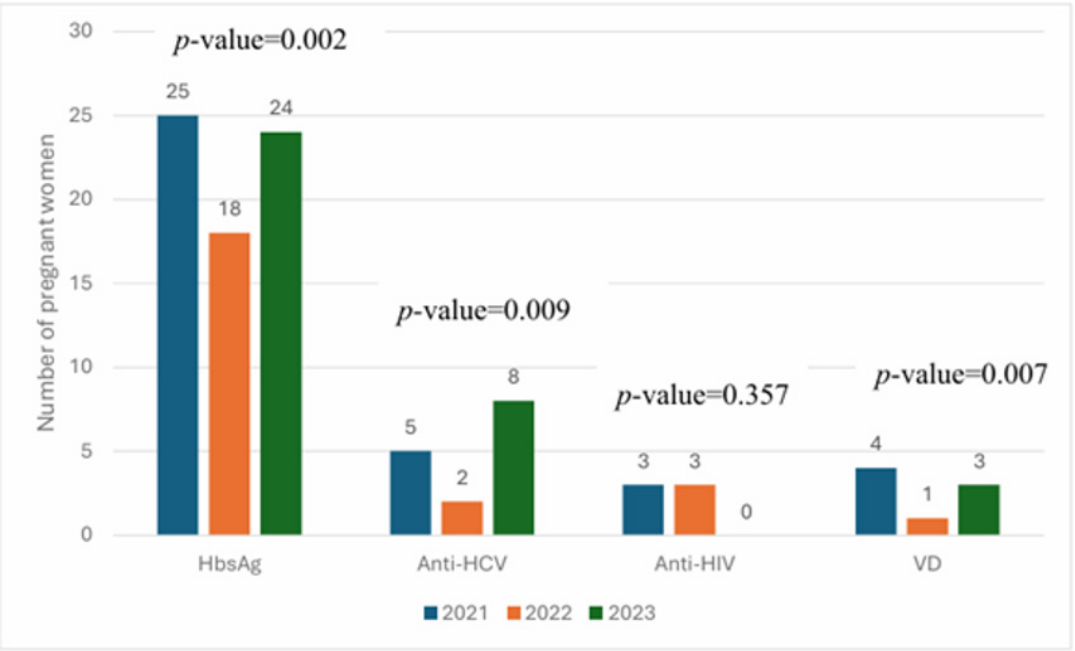

Fig 1 - Distribution of seropositivity rate of pregnant women, Mogadishu, Somalia, 2021-2023

Anti-HCV: hepatitis C virus antibody; Anti-HIV: human immunodeficiency virus antibody; HbsAg: hepatitis B surface antigen; VD: venereal disease

0.009 and 0.007, respectively), but not for anti-HIV antibodies. Overall seropositivity in pregnant women for HBsAg, anti-HCV antibodies, anti-HIV antibodies, and VD was 4.3% (67/1,553), 1.1% (15/1,363), 0.4% (6/1,558) and 0.9% (8/861), respectively.

When seropositivity of pregnant women was categorized according to age groups, HBsAg positivity in the 20-30 and 31-40 years of age group was 4.2 and 6.2% respectively but not in <20 and 41-45 years of age groups; the differences among the groups are statistically significant (Table 1). Anti-HCV antibody positivity was 2.1 and 1.4% in the <20 and 20-30 years of age group respectively but not in the

Table 1

HbsAg, anti-HCV, anti-HIV, and VD serological status of pregnant women according to age groups, Mogadishu, Somalia, 2021-2023

Seroprevalence	Frequency by age groups, *n* (%)				Total	χ^2	*p*-value
	<20 years	20-30 years	31-40 years	41-45 years	*n* (%)		
HbsAg						8.901	0.031
Positive	N/A	45 (4.2)	22 (6.2)	N/A	67 (4.3)		
Negative	118 (100.0)	1,026 (95.8)	332 (93.8)	10 (100.0)	1,486 (95.7)		
Total	118 (100.0)	1,071 (100.0)	354 (100.0)	10 (100.0)	1,553 (100.0)		
Anti-HCV						4.810	0.028
Positive	2 (2.1)	13 (1.4)	N/A	N/A	15 (1.1)		
Negative	95 (97.9)	925 (98.6)	317 (100.0)	11 (100.0)	1,348 (98.9)		
Total	97 (100.0)	938 (100.0)	317 (100.0)	11 (100.0)	1,363 (100.0)		
Anti-HIV						2.692	0.442
Positive	N/A	3 (0.3)	3 (0.8)	N/A	6 (0.4)		
Negative	122 (100.0)	1,064 (99.7)	357 (99.2)	9 (100.0)	1,552 (99.6)		
Total	122 (100.0)	1,067 (100.0)	360 (100.0)	9 (100.0)	1,558 (100.0)		

Table 1 (cont)

Seroprevalence	Frequency by age groups, *n* (%)				Total	χ^2	*p*-value
	<20 years	20-30 years	31-40 years	41-45 years	*n* (%)		
VD						85.752	<0.001
Positive	N/A	3 (0.5)	3 (1.6)	2 (40.0)	8 (0.9)		
Negative	73 (100.0)	595 (99.5)	182 (98.4)	3 (60.0)	853 (99.1)		
Total	73 (100.0)	598 (100.0)	185 (100.0)	5 (100)	861 (100.0)		

Note: Not all participants were tested for all four infections (HBsAg, anti-HCV, anti-HIV, and VD).

Anti-HCV: hepatitis C virus antibody; Anti-HIV: human immunodeficiency virus antibody; HbsAg: hepatitis B surface antigen; N/A: not available; VD: venereal disease

31-45 years of age group; the differences among the groups are statistically significant (Table 1). Anti-HIV antibody positivity was 0.3 and 0.8% in the 20-30 and 31-40 years of age group respectively but not in the <20 and 41-45 years of age groups; however, the differences among the groups are not statistically significant (Table 1). VD positivity was 0.5, 1.6 and 40% in the 20-30, 31-40 and 41-45 years of age group, respectively but 0% in the <20 years of age group; the differences among the groups are statistically significant (Table 1).

When the seropositivity of pregnant women was categorized according to trimester, HBsAg positivity was 100, 10.5 and 3.4% in the 1st, 2nd and 3rd trimester, respectively; the differences among the three groups are statistically significant (Table 2). Anti-HCV antibody positivity was 0.5, 2.0 and 1.6% in the 1st, 2nd and 3rd trimester, respectively; however, the differences among the three groups are not statistically significant (Table 2). Anti-HIV antibody positivity was 0.5 and 0.4% in the 2nd and 3rd trimester group respectively but 0% in the 1st trimester; however, the differences among the three groups are not statistically significant (Table 2). VD positivity was only found (100%) in the 3rd trimester group (Table 2).

When seropositivity of pregnant women was categorized according to gravidity, HBsAg positivity was 100 and 2.6% in the primigravida and multigravida group respectively; the difference between the two groups is statistically significant (Table 3). Anti-HCV antibody positivity was 1.9 and 1.1% in the primigravida and multigravida group respectively; however, the difference is not statistically significant (Table 3). Anti-HIV antibody positivity was 0.4 and 0% in the primigravida and multigravida group respectively; however, the difference is not statistically significant (Table 3).

DISCUSSION

Our study examined serological markers for HBsAg, anti-HCV antibody, anti-HIV antibody, and VD among pregnant women

Table 2

HbsAg, anti-HCV, anti-HIV, and VD serological status of pregnant women according to trimester, Mogadishu, Somalia, 2021-2023

Seroprevalence	Frequency by trimester, *n* (%)			Total	χ^2	*p*-value
	1st trimester	2nd trimester	3rd trimester	*n* (%)		
HbsAg					83.135	<0.001
Positive	3 (100)	16 (10.5)	48 (3.4)	67 (4.3)		
Negative	N/A	137 (89.5)	1,349 (96.6)	1,486 (95.7)		
Total	3 (100)	153 (100.0)	1,397 (100)	1,553 (100.0)		
Anti-HCV					4.428	0.109
Positive	3 (0.5)	2 (2.0)	10 (1.6)	15 (98.9)		
Negative	632 (99.5)	99 (98.0)	617 (98.4)	1,348 (1.1)		
Total	635 (100.0)	101 (100.0)	627 (100.0)	1,363 (100)		
Anti-HIV					1.230	0.541
Positive	N/A	4 (0.5)	2 (0.4)	6 (0.4)		
Negative	242 (100.0)	789 (99.5)	521 (99.6)	1,552 (99.1)		
Total	242 (100.0)	793 (100.0)	523 (100.0)	1,558 (100.0)		

Table 2 (cont)

Seroprevalence	Frequency by trimester, *n* (%)			Total	χ^2	*p*-value
	1st trimester	2nd trimester	3rd trimester	*n* (%)		
VD					ND	
Positive	N/A	N/A	8 (0.9)	8 (0.9)		
Negative	N/A	N/A	861 (99.1)	853 (99.1)		
Total	N/A	N/A	869 (100.0)	861 (100.0)		

Note: Not all participants were tested for all four infections (HBsAg, anti-HCV, anti-HIV, and VD).

Anti-HCV: hepatitis C virus antibody; Anti-HIV: human immunodeficiency virus antibody; HbsAg: hepatitis B surface antigen; N/A: not available; ND: analysis not determined due unavailable data; VD: venereal disease

Table 3

HbsAg, anti-HCV, anti-HIV, and VD serological status of pregnant women according to gravidity, Mogadishu, Somalia, 2021-2023

Seroprevalence	Frequency by gravidity, *n* (%)		Total	χ^2	*p*-value
	Primigravidity	Multigravidity	*n* (%)		
HbsAg				63.417	< 0.001
Positive	28 (100)	39 (2.6)	67 (4.3)		
Negative	N/A	1,486 (97.4)	1,486 (95.7)		
Total	28 (100)	1,525 (100.0)	1,553 (100.0)		

Table 3 (cont)

Seroprevalence	Frequency by gravidity, *n* (%)		Total	χ^2	*p*-value
	Primigravidity	Multigravidity	*n* (%)		
Anti-HCV				0.292	0.456
Positive	1 (1.9)	14 (1.1)	15 (1.1)		
Negative	53 (98.1)	1,295 (98.9)	1,348 (98.9)		
Total	54 (100.0)	1,309 (100.0)	1,363 (100.0)		
Anti-HIV				1.000*	0.423
Positive	6 (0.4)	N/A	6 (0.4)		
Negative	1,344 (99.6)	208 (100.0)	1,552 (99.6)		
Total	1,350 (100.0)	208 (100.0)	1,558 (100.0)		
VD				ND	
Positive	8 (0.9)	N/A	8 (0.9)		
Negative	853 (99.1)	N/A	853 (99.1)		
Total	861 (100.0)	N/A	861 (100.0)		

Note: Not all participants were tested for all four infections (HBsAg, anti-HCV, anti-HIV, and VD).

*Fisher exact test

Anti-HCV: hepatitis C virus antibody; Anti-HIV: human immunodeficiency virus antibody; HbsAg: hepatitis B surface antigen; N/A: not available; ND: analysis not determined due unavailable data; VD: venereal disease

(n = 5,335), 15-45 years of age, who attended the obstetrics clinic of a tertiary hospital in Mogadishu, from 2021 to 2023. We explored the changes in their prevalence related to such parameters as year-to-year variation, age group, gestational status (trimester), and gravidity.

HBsAg positivity (4.3%) among pregnant women in our study was consistent with a 2017 study from the same region (Mogadishu), which reported a prevalence of 4.12% (Dahie and Heyle, 2017), and similar to that of 4.4% found in a 2016 study from Cameroon (Dionne-Odom *et al*, 2016). However, it was higher than the that (1.6%) reported in an earlier study from Saudi Arabia (Alrowaily *et al*, 2008), but lower than the pooled prevalence of 5.89% reported in a meta-analysis of 91 studies across 28 African countries (Wondmeneh and Mekonnen, 2024). The low HBsAg positivity in our study may be due to the fact that HBV vaccination has been part of the national routine immunization program for children under five in Somalia since 2013 (Gabow and Mohamed, 2025). The differences from other studies may also be explained by geographical variation, cultural and behavioral practices, different risk factors for HBV infection, healthcare system inequalities, and differences in laboratory testing methods. Other contributing factors may include limited awareness among participants, poor hygiene practices in health facilities, and differences in vaccination coverage between developed and developing countries (Ahmed *et al*, 2024).

The number of HBsAg-positive pregnant women peaked in 2021, declined in 2022 and rose again in 2023, a variation that is statistically significant (p-value = 0.002). On the other hand, a review of 64 studies conducted in Türkiye between 1975 and 2016 showed that HBsAg positivity among pregnant women ranged from 1.2 to 19.2%, with a decreasing trend over time (Bakar and Dane, 2016). The observed fluctuations in our study may be attributed to several factors, such as disruptions in vaccination programs, limited access to antenatal care and reduced public health services

during certain periods, possibly due to sociopolitical instability or pandemic-related constraints. Additionally, variations in sample size, testing rate and public health awareness during the study period may also have influenced the annual differences in HBsAg prevalence.

No HBsAg-positive cases were found among pregnant women <20 and 41-45 years of age, but positivity (4.2%) was observed in the intermediate age group. These findings may be related to increased sexual activity, engagement in high-risk behaviors, or disparities in access to healthcare. Wu *et al* (2023), in China, reported a 4.0% HBV prevalence in the 21-30 years of age group, in agreement with that observed in our study.

The highest HBsAg prevalence was in the 1st trimester group and decreased among the second and third trimester groups. This may be due to increased testing or earlier antenatal visits during the 1st trimester. However, trimester-specific distributions vary in other studies. For instance, Metaferia *et al* (2016) in Northeast Ethiopia, Vueba *et al* (2021) in Angola and Tadesse *et al* (2022) in Ethiopia reported the highest HBsAg positivity in the 2nd trimester group compared by the 1st and 3rd trimester groups. These differences may be attributed to a variety of factors, including differences in the timing and frequency of antenatal care visits, regional health policies, and patient health-seeking behavior.

There are regional differences in HCV prevalence; North Africa/ Middle East and Central and East Asia are estimated to have high prevalence (>3.5%); sub-Saharan Africa, Andean, Central, and Southern Latin America, Australasia, Caribbean, Oceania, and Central, Eastern, and Western Europe, South and Southeast Asia have moderate prevalence (1.5%-3.5%); whereas North America, Asia Pacific, and Tropical Latin America have low prevalence (<1.5%) (Mohd Hanafiah *et al*, 2013). In our study, the HCV seropositivity rate was 1.1%, *ie*, in the low category; this aligns with findings from Nigeria (1.2%) (Agboghoroma *et*

al, 2020) and Northeast Ethiopia (1.3%) (Metaferia *et al*, 2018), but is significantly lower than rates reported in Ghana (7.7%) (Ephraim *et al*, 2015) and the Republic of Congo (7.3%) (Angounda *et al*, 2019). A meta-analysis of 145 studies involving 258,251 pregnant women from 30 African countries reported an overall HCV prevalence of 3.4% (moderate prevalence) (Bigna *et al*, 2019). These variations may be due to differences in population demographics, genetic predispositions, socioeconomic conditions, cultural norms, diagnostic methods, and regional exposure risks for viral hepatitis (Angounda *et al*, 2019).

The prevalence of hepatitis C virus (HCV) among younger women of reproductive age is increasing (Quek *et al*, 2024). In the USA there is a 16-fold increase in HCV-positive pregnancies from 1998 to 2018, reaching 5.3 cases per 1,000 pregnancies in 2018 (Arditi *et al*, 2023; Chen *et al*, (2023). A meta-analysis by Abbasi *et al* (2023) found no significant increase in HCV prevalence in the African (Coefficient (C) = 0.0004, *p*-value = 0.51) and Eastern Mediterranean (C = 0.0005, *p*-value = 0.88) regions, and non-significant declining trends in all WHO regions. In line with the global findings, our study also demonstrated an upward trend in anti-HCV antibody positivity among pregnant women, with the difference across the study period being statistically significant (*p*-value = 0.009). The discrepancy between our findings and regional meta-analyses may be explained by the various factors described above.

We observed anti-HCV positivity in the <20 years of age (2.1%) and the 20-30 years of age (1.4%) groups, but not among subjects >31 years of age; the differences among age groups are statistically significant (*p*-value = 0.028). In United States, Ely and Gregory (2023) reported the lowest HCV rate (118.8 cases per 100,000 births) in the under-20 years of age group. In China, Wu *et al* (2023) reported a 2.2% prevalence in the 21-30 years of age group. In Nigeria, Oladeinde *et al* (2013) reported also a high HCV prevalence (1.4%)

in the 21-26 years of age group. These findings highlight this age group as having a high risk for HCV infection. However, regional and socioeconomic factors likely influence HCV transmission, and further large-scale studies are needed to confirm these findings.

Sub-Saharan Africa accounts for only 12% of the global population but bears 71% of the global HIV burden (Kharsany and Karim, 2016). We observed that the overall HIV seroprevalence among pregnant women in Mogadishu from 2021 to 2023 was 0.4%, comparable to the that of 0.28% reported in India (Santhakumar *et al*, 2020). A meta-analysis of 248 studies conducted in Africa between 1984 and 2020 estimated the overall HIV seroprevalence in pregnant women to be 9.3% (Ebogo-Belobo *et al*, 2023), with South Africa having the highest rate (29.4%) while North Africa the lowest (0.7%). Although our findings indicate even a lower HIV prevalence, it is important to note that our data were from single hospital-based subjects and may not be representative of the broader population in Somalia.

We noted that the year-to-year differences in the numbers of anti-HIV antibody-positive pregnant women are not statistically significant. A retrospective study conducted at Jimma University Private Hospital in Ethiopia found a fluctuating trend in HIV prevalence among pregnant women: an increase in 2020 compared to 2019 but a decline in 2021 (Kebede *et al*, 2022). The absence of a statistically significant change in our findings may be due to an overall low HIV prevalence in the study population, limited testing coverage or consistency in health-seeking behavior among our study subjects. Additionally, underreporting or incomplete registration of HIV cases may obscure the actual trends. Differences between our study and the regional data may also result from variations in sample size, healthcare infrastructure, antenatal HIV screening policies, and implementation of public health interventions.

Among the different age groups, we observed positive anti-HIV antibodies in the 20-40 years of age group, with none in the younger and older age groups; however, differences among the age groups are not statistically significant. In Ethiopia the highest HIV prevalence is among the 25-29 years of age group (Kebede *et al*, 2022), in China among the 31-40 years of age (Wu *et al*, 2023), in Angola among the 26-35 years of age (Vueba *et al*, 2021), and in Nigeria among the 27-32 years of age (Oladeinde *et al*, 2013). These age-specific variations may be attributed to differences in sexual behavior patterns, sociocultural norms, and access to HIV education and testing services.

According to the World Bank Group data, the prevalence of syphilis among women receiving antenatal care in Somalia was 4.07% in 2019 (World Bank Group, 2019). A systematic meta-analysis from sub-Saharan Africa reported an overall prevalence of 2.9% among pregnant women (Hussen and Tadesse, 2019). In our study, the VD seropositivity was 0.9% while a more recent study conducted in Mogadishu reported a syphilis prevalence of 5.3% (Ali and Elmi, 2024). The prevalence reported in other countries is 9.6% in southern Ethiopia (Beriso *et al*, 2023), 1.4% in southwestern Ethiopia (Befekadu *et al*, 2022), 1.7% in Cameroon (Dionne-Odom *et al*, 2016), and 0.97% in Brazil (da Silva *et al*, 2020). Factors associated with higher syphilis prevalence in the reported studies are abnormal vaginal discharge, history of miscarriage or stillbirth, and having multiple sexual partners (Beriso *et al*, 2023). Other contributing factors reported in the literature are early marriage, low education level, unemployment, residence in an urban setting, limited knowledge and awareness of syphilis, and inadequate access to healthcare services (Befekadu *et al*, 2022; Ali and Elmi, 2024).

We observed statistically significant variations in the numbers of VD-positive pregnancies across the study period (p-value = 0.007). A systematic meta-analysis from sub-Saharan Africa reported a

decline in syphilis prevalence among pregnant women in most regions, except East Africa, over the past two decades (Hussen and Tadesse, 2019). The increase in VD positivity in our study may reflect region-specific factors, such as limited access to antenatal care, low awareness of sexually transmitted infections and gaps in routine syphilis screening programs. Sociocultural practices, stigma regarding sexual health awareness and inconsistent implementation of preventive strategies may also contribute to ongoing transmission in Somalia.

We observed a statistically significant increase in VD-positive cases with an increase with age, ranging from 0% in the <20 years of age and rising to 40% in the 41-45 years of age. In another study conducted in Somalia by Ali and Elmi (2024), the highest prevalence is among women aged 24-34 years old. The differences in the two findings might be due to geographical and demographic factors. In China Wu *et al* (2023) reported a 1.0% VD positivity in the 21-30 years of age group, while in Tanzania Sunguya *et al* (2023) observed a 3.5% rate in women 35-44 years of age. The variation in VD prevalence across gestational age groups in these studies may reflect differences in maternal age, timing of antenatal care, and access to early screening and treatment services. Studies of larger cohorts in each of these countries are needed to better understand the regional and age-related variations.

Regarding the effect of gravidity, we found HBsAg positivity is significantly higher among primigravida than multigravida subjects, but there are no significant differences between the two groups for HCV, HIV and VD positivity. Kartini and Syamsul (2022) reported higher HBV infection rates among multigravidas than primigravidas in Makassar City, Indonesia. The elevated HBsAg positivity in primigravidas in our study may be due to early exposure to HBV during childhood or adolescence, lack of vaccination, vertical transmission from mother to child, or limited awareness of infection risk.

Of note, our study has two major limitations. Firstly, it was conducted in a single hospital and did not include pregnant women in other healthcare facilities. Larger, multicenter studies across different regions are needed to obtain a more accurate assessment of the burden of infection among pregnant women. Secondly, confirmatory tests were not performed for individuals with positive results to determine active infections due to the limited resources in our low-income setting.

In conclusion, seroprevalence of HBV, HCV, HIV, and venereal diseases (syphilis) was high among pregnant women in our study, highlighting the urgent need for preventive and control measures. In endemic regions, women should be routinely screened for these infections following conception and in the course of pregnancy, and appropriate remedial measures be implemented. To reduce perinatal transmission, women of reproductive age should be educated on the importance of regular HBV vaccination. Public awareness campaigns are also essential to promote behavioral changes and reduce high-risk sexual practices. Timely and targeted interventions are critical to preventing vertical transmission. Moreover, policy reforms and improved access to healthcare in high-prevalence areas such as sub-Saharan Africa are crucial to ensure early diagnosis and protection of maternal and child health.

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CONFLICT OF INTEREST DISCLOSURE

The authors declare no conflict of interest.

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