ISSN: 2833-9320

Research Article

International Journal of Health Policy Planning

Haemovigilance and Trends of Transfusion Transmissible Viral Infections among Asymptomatic Population at Akatsi South Municipal in Volta Region of Ghana from 2014 to 2019

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Submitted: 2023, June 08; **Accepted**: 2023, June 23; **Published**: 2023, July 04

Citation: Hamid, A. W. M., Agyemang, K. O., Bonsu, K. K., Mensah, M. O., Adase, I., et, al. (2023). Haemovigilance and Trends of Transfusion Transmissible Viral Infections among Asymptomatic Population at Akatsi South Municipal in Volta Region of Ghana from 2014 to 2019. *Int J Health Policy Plann, 2*(2), 94-102.

Abstract

Background: *The use of advance screening tools to prevent Transfusion Transmissible Infections (TTIs), is critical to Sustainable Development Goals (SDG.3.3). This study assessed the implications of using chromatographic Rapid Diagnostic Test (RDTs) kits, and dynamics on TTIs, including Human Immunodeficiency Virus (HIV) among blood donors at the Akatsi South Municipality in the Volta Region of Ghana.*

Methods: *This was a haemovigilance study, designed to retrospectively evaluate secondary data on 2,588 blood donors in Akatsi South District Hospital from 2014 to 2019. The data was collected using data extraction log, quality controlled using double data entry mechanism, and managed electronically using Microsoft Visual Basics and STATA. TTIs' trends were determined using frequentist and descriptive statistics, and 95% confidence intervals using the Clopper Pearson test.*

Results: *Prevalence of TTIs was 8.0%. The prevalence of HIV as well as HBV and HCV, was 3.8%, 3.2% and 1.0% respectively. For female hosts, the prevalence was 7.4% (HIV), 4.2 % (HBV) and 1.6% (HCV). For Male-host, the rates were 3.1% (HIV), 3.5% (HBV) and 1.0% (HVC). Donors aged 15-19years were most infected at rates of 13.2% (HIV), 4.7% (HBV) and 1.9% (HCV). About 57(2.4%) and 3(1.2%) of 2380 blood donated were TTIs false negatives and false positives respectively.*

Conclusion: *Generally, there was reductive trends in prevalence of named TTIs, including HIV at a rate of 30.3% across the period. However, the rate of new HIV infections was above the regional and national rates, and this has research and policy implications. In addition, the limitation of current screening tool to detect about 2.4% of named TTIs among the screened blood was a potential risk medium for transfusing unsafe blood. A relatively higher sensitive blood transfusion screening method is urgently needed to prevent the transfusion of HIV, HBV and HCV false negative blood in Akatsi Municipal Hospital.*

Keywords: Haemovigilance, Transfusion Transmissible Infections (TTIs), Human Immunodeficiency Virus (HIV), Hepatitis Viruses

1. Introduction

The unavailability of innovative technologies for optimum Blood banking services in developing countries including Ghana is a known challenge that compromises the public health strategy to prevent the transfusion of false negative transmissible infections including HIV [1-3]. The international response to mitigate risks associated with Blood transfusion has been the recommendations that, the state actors must initiate centralized national programmes, and to ensure their linkages to Millennium Development Goals" (MDGs) and now the "Sustainable Development Goals" (SDGs) and "Blood Safety Information System" (BSIS) [1-4].

Being a subscriber to these conventions, the Ghana Blood transfusion service implemented a "national blood policy, which is driven by "legislative framework", and it aimed at sustaining a safe blood supply through voluntary blood donation mechanism nationally [5]. Consequently, Ghana became the second after Lesotho to launch the 'BSIS' in Africa [3]. The 'BSIS' was designed to link HIV infected donors to treatment mechanism. By its implementation, the use of 'BSIS' tool was projected to transcend from national to regional and district levels in Ghana [3]. With less than a 'decade of action' to meet the SDGs deadline, it is essential to evaluate records on Blood donation so as to track any changing epidemiology of TTIs at the district levels after the implementation of the global health sector strategy in 2016 towards the 2020 milestone and eventually, 2030 deadline. Therefore, this article presents an assessment on the Sero-epidemiologic features of Transfusion Transmissible viral Infections, including HIV among population of blood donors at Akatsi South Municipality in Volta Region of Ghana.

2. Materials and Methods

2.1. Study Design

This is a haemovigilance study, designed to retrospectively evaluate secondary data on 2, 588 blood donors registered from January 2014 to December 2019 at the Blood bank.

2.2. Study Setting

The study was conducted at Akatsi South Municipal Hospital (Figure 1) [6]. The Municipality is one of the eighteen municipalities and districts in Volta Region of Ghana [6]. It is located in the southeastern part of the Volta Region at coordinates: 6oS-7oN, 0oW 1oE. The total land area is about 531km2. The population was "92, 494 with 43,062 males and 49,432 females" [6]. The hospital is a 70-bed capacity facility, and provides a wider range of clinical services, including surgical, reproductive child health and maternity care [7]. The hospital serves as a referral center for the surrounding primary health facilities including 4 health centers, 26 National Community Health Planning and Services (CHPS) compounds, and 4 private health facilities in the municipality. As at 2020, the staff strength was over 200. These include 1 Biomedical Scientist and 3 laboratory assistants, who were the technical handlers of Blood banking in the hospital [7].

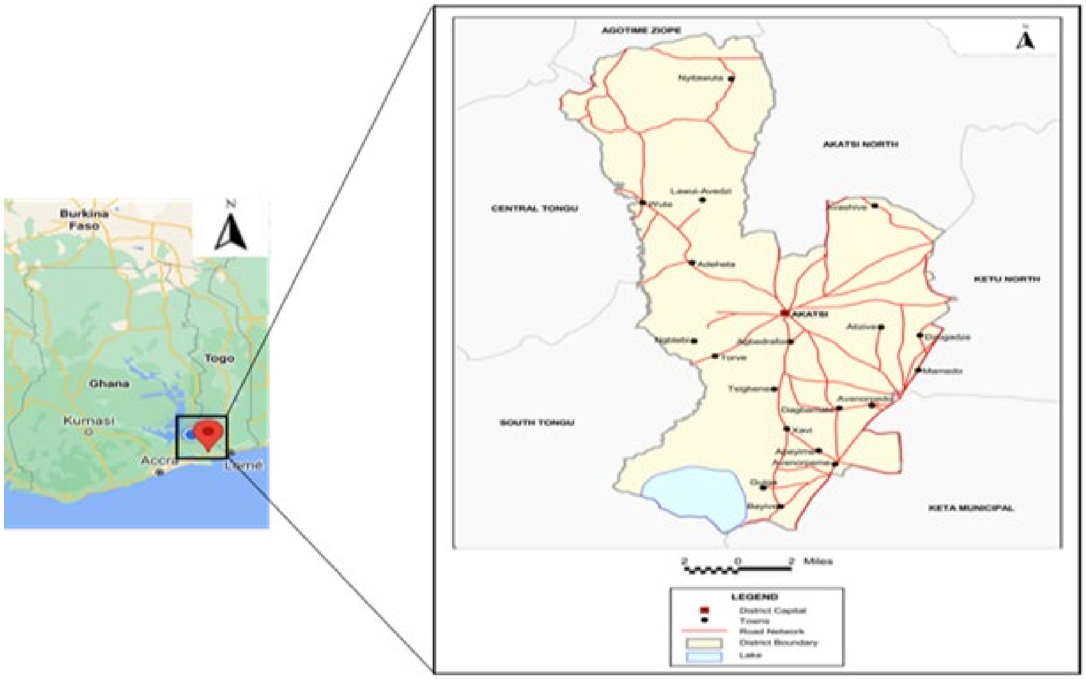

Figure 1: District Map of Akatsi South [6]

2.3. Study Participants

The Blood donors were screened for HIV, HBV and HCV infections using Immunochromatographic Rapid Diagnostic Test (RDT) kits of about 5 different brands listed in Table 1 over the study period. All the tests were conducted according to the manufacturers' instructions outlined in the leaflets inserted in the test kits.

Manufacturers		Year Used	Device Type	Sensitivity	Specificity
1.	DiaSpot®, USA	2013-2014	kit	99%	97%
2.	ACON, San Diego, CA	2015	Strip	93%	100%
3.	ACON, San Diego, CA	2016	Strip	99%	99%
4.	OneStep HIGHTOP	2017-2019	Strip	99.3%	99.2%
•	Average			97.6	98.8

Table 1: Brands and Validity of RDT kits used in Blood bank to screen Blood for TTIs among donors in Volta Region, including Akatsi South municipal Hospital from 2014 to 2019

2.4. Data Collection, Management and Analysis

Using data extraction log, the data on socio-demographic parameters, including the host sex and age, residential status, and clinical outcomes, including participants Hemoglobin concentration (HB), Body Mass Index, and TTIs status at screening were collected from all participants who presented for blood donation between 2014 and 2019. The records on participants who presented for blood donation but had neither complete demographic parameters, nor complete clinical parameters were excluded. The data was quality controlled using double data entry mechanism, managed electronically using Microsoft Visual basic. The clean data was exported onto Stata version 13.0 (Stata Corp. College Station, TX, USA) for statistical analyses. The trend metrics were determined using frequentist and Cochrane-Armitage statistics, and the 95% confidence intervals were determined using Clopper Pearson statistics.

2.5. Ethical Issues

Ethical clearance was sought from the University of Health and Allied Sciences, Research Ethics Committee (REC) on certification number: UHAS-REC A.6 [102] 19-20. Permission was also obtained from the Akatsi South Municipal Hospital before the commencement of the study.

3. Results

The frequentist analysis in Table 2, depicted a significant variation between proportions of 90.7% (2348 of 2588) and 9.3% (240 of 2588) of participants who passed and failed the blood screening respectively (x^2= 20.1, p<0.01). Out of 240 that failed, 208 (86.7%) and 32 (13.3%) were due to TTIs and clinical limitations respectively (Table 2). There was neither a significant variation between proportions of voluntary donors:46.1% (1193 of 2588) and replacement donors:53.9% (1395 of 2588) (x^2=1.7, p<0.19); nor a significant variation between proportion of 91.5% (voluntary) verses (vs) 90.0% (replacement) who passed, and 8.5% (voluntary) verses 10% (replacement) who failed the screening (x^2=1.7, p<0.19) (Table 2).

Unlike Blood sources, the donation history showed significant variations between proportion of 96.5% (first time donors) and 3.6% (multiple donors). But there was no significant variation between proportion of 90.5% (first time donors) vs 95.7% (multiple donors) who passed, and 8.3% (first time donors) vs 4.3% (multiple donors) who failed screening (x^2=2.8, p-0.09) (Table 2).

The frequentists on demographics, depicted a significant variation between the proportions of Male (92.7%; 2398 of 2588) and Female (7.3%; 190 of 2588) donors (Table 2). Also, there was a significant variation between proportion of 91.2% (Male) vs 84.2% (Female) who passed, and 8.8% (Male) vs 15.8% (Female) who failed the blood screening (x^2=10.3, p<0.01) (Table 2). By the host-age groupings, about 63.3% and 36.7% of Blood donors were <30 and ≥ 30 years old participants respectively. There was no significant trend and variation between a proportion of <30years (63.3%; 1487of 2348) vs proportion of ≥30years old donors (36.7%; 861 of 2348) who passed, and proportion of <30years (63.3%; 152 of 240) vs proportion of ≥30 years old donors (36.7%; 88 of 240), who failed the screening (x^2=1.3, p=0.25) (Table 2).

Parameters	**Total**	**Screening Outcome**		**Cochrane's Mantel-Haenszel Chi-Squire**
		Passed	**Failed**	
	n (%)	***n (%) [95% CI]***	***n (%) [95% CI]***	***X^2(p-value)***
1. Blood Donors	2588	2348(90.7)[89.5-91.8]	240(9.3)[8.2-10.5]	20.1(<0.01)
2. Blood Sources				
a) Voluntary Donation	1193(46.1)	1092(91.5) [89.8-93.1]	101(8.5) [6.9-10.2]	1.72(0.19)
b) Replacement Donation	1395(53.9)	1256(90.0) [88.3-91.6]	139(10.0) [8.4-11.7]	
3. Donation History				
a) First time	2496(96.4)	2260(90.5) [89.3-91.7]	236(9.5) [8.3-10.7]	2.75(0.09)
b) Multiple times	92(3.6)	88(95.7) [89.2-98.8]	4(4.3) [1.2-10.8]	
4. Demographics				
a) Sex				
i. Male	2398(92.7)	2188(91.2) [90.0-92.3]	210(8.8) [7.7-10.0]	10.3(<0.01)
ii. Female	190(7.3)	160(84.2) [78.2-89.1]	30(15.8) [10.9-21.8]	
b) Age Group				
i. 15-19	190(7.3)	156(82.1) [75.9-87.3]	34(17.9) [12.7-24.1]	1.3(0.25)**
ii. 20-29	1449(56.0)	1331(91.9) [90.3-93.2]	118(8.1) [6.8-9.7]	
iii. 30-39	695(26.9)	631(90.8) [88.4-92.8]	64(9.2) [7.2-11.6]	
iv. 40-49	201(7.8)	184(91.5) [86.8-95.0]	17(8.5) [5.0-13.2]	
v. ≥50	53(2.0)	46(86.8) [74.7-94.5]	7(13.2) [(5.5-25.3]	
Key.** Cochrane-Armitage Chi-square for Trend; CI= Confidence Intervals. X^2=Chi-Square				

Table 2: General Overview of Haemovigilance Outcomes and Characteristics of Study Participants

The frequentist on distribution of TTIs by blood donor categories, showed no significant variation in proportions of TTIs among voluntary (7.6%) and replacement (8.4%) donors (x^2=0.5, p=0.4) (Table 3). In addition, there was no significant variation in proportions of TTIs among first time (8.2%) and multiple times (3.3) (x^2=2.9, p=0.08) (Table 3). Although, the proportion of female donors (7.3%) were significantly lower than their male counterpart (92.7%) (x^2=20.1, p<0.001) (Table 3), the proportion of HIV infection was significantly higher (7.4%) among the female than the male donors (3.5%) (x^2, p<0.01) (Figure 2).

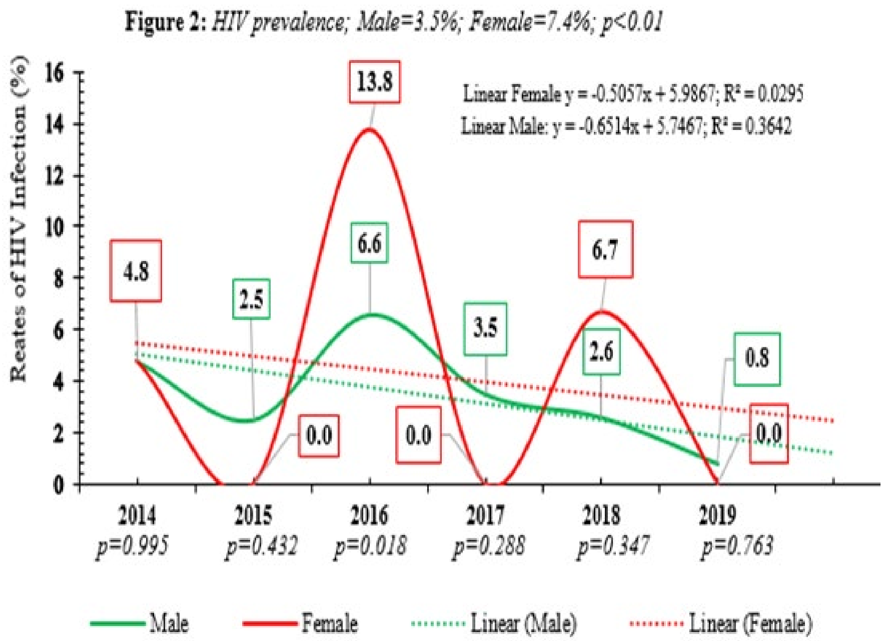

Figure 2: Trends of HIV Infection By Host-Gender and Periodic Interactions among Blood Donors in Akatsi South Municipal Hospital, 2014-2019

Parameters	**Total n(%)**	**Frequentist & Clopper Pearson Statistics**			
		HBV (%) [95% CI]	**HCV(%)[95% CI]**	**HIV(%)[95% CI]**	**TTIs (%)[95% CI]**
1. Blood Donors Screened	2588	82(3.2) [2.5-3.9]	27(1.0) [0.7-1.5]	99 (3.8) [3.1 - 4.6]	208(8.0) (7.0 - 9.2)
• *Voluntary Donation*	1193(46.1)	30(2.5) (1.7 - 3.6)	9(0.8) (0.3 - 1.4)	52(4.4) (3.3 - 5.7)	91(7.6) (6.2 - 9.3)
• *Replacement Donation*	1395(53.9)	52(3.7) (2.8 - 4.9)	18(1.3) (0.8 – 2.0)	47(3.4) (2.5 - 4.5)	117(8.4) (7.0 – 10.0)
➢X^2(p-value)		***3.08(0.0791)***	***2.21(0.1369)***	***1.71(0.1909)***	***0.50(0.4789)***
•First time donors	2496(96.4)	80(3.2) (2.5 – 4.0)	27(1.1) (0.7 – 1.6)	98(3.9) (3.2 – 4.8)	205(8.2) (7.2 – 9.4)
•Multiple donors	92(3.6)	2(2.2) (0.3 – 7.6)	0 (0)	1(1.1) (0.0 – 5.9)	3(3.3) (0.7 – 9.2)
➢X^2(p-value)		0.31(0.5793)	1.01(0.3160)	1.94(0.1633)	2.94(0.0862)
1. Years					
•2014	188 (7.3)	10 (5.3) [2.6 - 9.6]	5 (2.7) [0.9 - 6.1]	9 (4.8) [2.2 - 8.9]	24 (12.8) [8.4 - 18.4]
•2015	381 (14.7)	11 (2.9) [1.4 -5.1]	1 (0.3) [0.0 -1.5]	9 (2.4) [1.1 - 4.4]	21 (5.5) [3.4 - 8.3]
•2016	664 (25.7)	24 (3.6) [2.3 - 5.3]	10 (1.5) [0.7-2.8]	50 (7.5) [5.6 - 9.8]	84 (12.7) [10.2 - 15.4]
•2017	399 (15.4)	7 (1.8) [0.7 - 3.6]	3 (0.8) [0.2 - 2.2]	13 (3.3) [1.7 - 5.5]	23 (5.8) [3.7 - 8.5]
•2018	546 (21.1)	14 (2.6) [1.4 - 4.3]	6 (1.1) [0.4 - 2.4]	15 (2.7) [1.5 - 4.5]	35 (6.4) [4.5 - 8.8]
•2019	410 (15.8)	16 (3.9) [2.2 - 6.3]	2 (0.5) [0.1 - 1.8]	3 (0.7) [0.2 - 2.1]	21 (5.1) [3.2 - 7.7]
➢X^2(p-value)		0.58 (0.448)	1.80 (0.180)	11.55 (<0.001)	11.48 (<0.001)
2 .Age Group					
•15-19	190(7.3)	9(4.7) (2.2 – 8.8)	3(1.6) (0.3 – 4.5)	25(13.2) (8.7 - 18.8)	37(19.5) (14.1 – 25.8)
•20-29	1449(56.0)	43(3.0) (2.2 – 4.0)	13(0.9) (0.5 – 1.5)	45(3.1) (2.3 – 4.1)	101(7.0) (5.7 – 8.4)
•30-39	695(26.9)	23(3.3) (2.1 – 4.9)	10(1.4) (0.7 – 2.6)	19(2.7) (1.7 – 4.2)	52(7.5) (5.6 – 9.7)
•40-49	201(7.8)	5(2.5) (0.8 – 5.7)	0 (0.0)	7(3.5) (1.4 – 7.0)	12(5.7) (3.0 – 9.8)
•≥50	53(2.0)	2(3.8) (0.5 – 13.0)	1(1.9) (0.0 – 10.1)	3(5.7) (1.2 – 15.7)	6(11.3) (4.3 – 23)
➢X^2(p-value)		2.13(0.713)	4.37(0.359)	49.82(<0.001)	6.44(0.0111)

Table 3: Distribution of TTIs by Donor, Periodic and Socio-demographic parameters in Akatsi Municipal Hospital, 2014-2019

The relatively higher prevalence of 7.4% HIV infected females was due to high peaks in 2016 and 2018 (Figure 2). Descriptively, the average rate of 4.2% HIV infected female trended significantly by 0.3% above the mean of 3.9 for HIV infected females. Although, the rate of 6.6% HIV infected male in 2016 trended significantly by 0.7% above the mean, the rates of HIV infected male in 2014, 2017, 2018, and 2019 oscillated naturally around the mean (Figure 2).

Unlike HIV, there was no significant variation in proportions of HBV infections between female (4.7%) and male (3.1%) (x^2=20.1, p=0.39) (Figure 3). However, the enter-variant trends of HBV between female and male were strongly negative correlated (r=-0.9) (Figure 3).

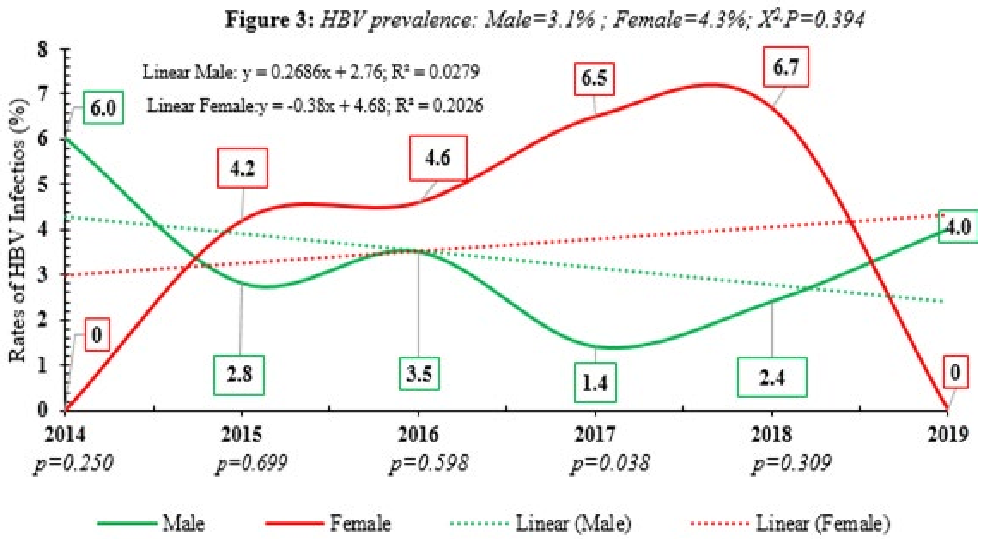

Figure 3: Trends of HBV Infection by Host-Gender and Periodic Interactions among Blood Donors in Akatsi South Municipal Hospital, 2014-2019

Similar to HBV, there was no significant variation in proportions of HCV infected female (1.6%) and male (1.0%) (Figure 4). In addition, the enter-variant trends of HCV infections between female and male were moderately negative correlated (r=-0.6) (Figure 4).

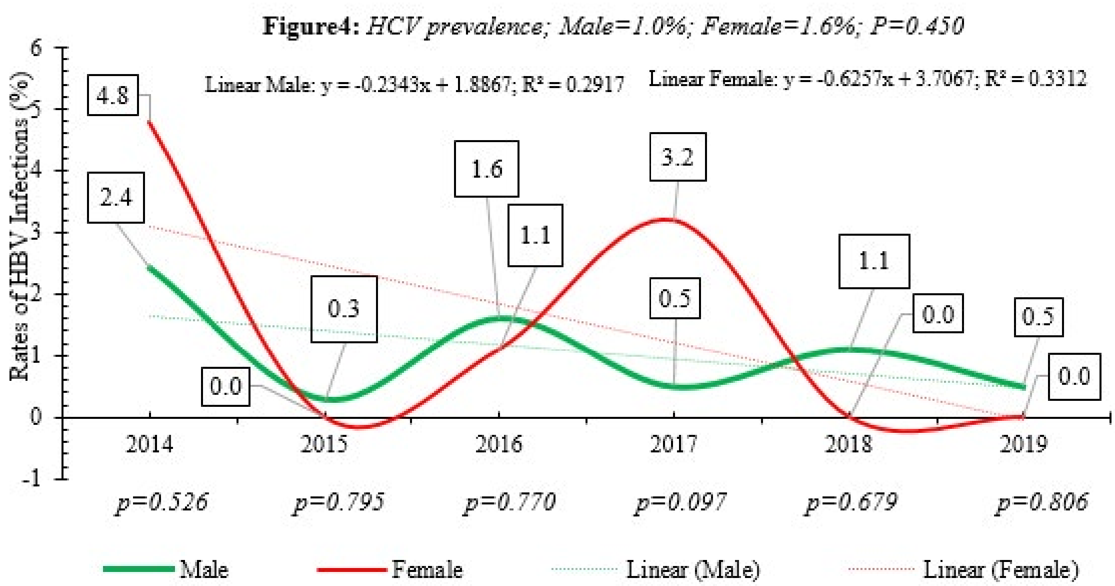

Figure 4: Trends of HCV Infection by Host-Gender and Periodic Interactions among Blood Donors in Akatsi South Municipal Hospital, 2014-2019

The crude prevalence of TTIs was 8.0% (208 of 2588). The point prevalence of TTIs across the period correlated negatively to year-to-year distributions (r=-0.8). Specifically, the highest point prevalence of 12.8% TTIs was in 2014; followed by 12.7% (2016), 6.4% (2018), 5.8% (2017) and 5.1% (2019). The variation in proportions of TTIs across the period is statistically significant (x^2=11.5, p<0.001). While the rates of TTIs in 2014 and 2016 trended significantly at an average of 2.6% above a mean of 8.1% points, the rates of TTIs in 2015, 2017, 2018 and 2019 distributed naturally at an average rate of 5.7% around the mean. While the trend of TTIs in 2014 was driven by a relatively higher rate of HBV in 2014 [5.3% (10 of 188)], the trend in 2016 was driven by a relatively higher rates of HIV in 2016 [7.5% (50 of 664] (Table 3).

In addition, neither the frequentist showed a significant variation in proportion of donor-age groups; nor the Cochrane-Armitage showed a significant trend of TTIs by donor-age distribution around the central theorem (x^2=1.3, p=0.25). The highest rate of TTIs (19.5%) was among donors' age ≤19 years; followed by age ≥50 (11.3%; 6 of 53), age 30-39 (7.5%; 52 of 695), age 20-29 (7.0%; 101 of 1449) and age 40 – 49 (5.7%; 12 of 201). The variation in proportions of TTIs by donor-age distribution was statistically significant (x^2=6.4, p=0.01). The TTIs rates among ≤19years trended significantly by 7.3% above a mean of 10.2%, and the TTIs among ≥50 years trended significantly by 1.1% above the mean point. However, the TTIs rates among age 20- 49 oscillated naturally at a rate of 6.7% around a mean point. While the trend of TTIs among age ≤19 was driven by a relatively higher rate of HIV infection [13.2% (25 of 190)], the TTIs' trend among age ≥50 was also driven by a relatively higher rate of HIV infections [5.7% (2 of 53)] (Table 3).

4. Discussion

In terms of blood transfusion services, the trends of blood donor population was dynamic , and observed intermitted troughs in 2014, 2015, 2017 and 2019, and intermitted peaks in 2016 and 2018 could be a reflection of limitations associated with blood banking to sustain the blood mobilization strategies in developing countries [8,9]. In addition, the preponderance of male over female donors was also reported in number of studies across the regions in Ghana, as well as in sub-Saharan Africa and Eastern Mediterranean [10-15]. The most cited reasons for this phenomenal low female donors included exhaustive lists of socio-cultural beliefs and clinical parameters such as menstruation cycles and maternity [8,10,11].

The relatively higher proportion of donors age 20-29 (56.0%) was similar to studies in Ethiopia [12,13]. The reasons attributed for these development included the dependency on secondary school and college students to sustain the blood banks [8,9]. This effort to use students, plus the fact that the population pyramid in Akatsi South Municipality was characterized by a relatively higher proportion of youths, could have driven the dominance of younger aged blood donors in our study [16]. Expectedly, the greater proportions of 96.4% blood sources were first time donors, and most of them (53.9%) were for family replacement [17]. Globally, because of the low repeats of donors as observed in this study (3.6%), blood banks often have to rely on family replacement donors; most of whom are never prepared for blood donation [1,17,18].

Moreover, in respect of trends of the TTIs, the 8.0% rate in this study was within the range of 3.6% in Ho and 18.3% in Hohoe in the study region [19,20]. A comparable higher rate of 19.5% TTIs was reported in the middle zone of Ghana [21]. Nonetheless, our TTIs rate was significantly higher than the 0.3% and 2.4% reported in Eastern Mediterranean and sub-Saharan Africa [22,23]. The high rate of TTIs in this study was driven by the high pool of replacement donors. Indeed, it is this risk of TTIs associated with replacement donors that WHO recommends the adherence to voluntary donations [24]. Furthermore, the variations in burden of TTIs across the aforementioned studies could be a reflection of natural variations associated with geo-demographic endemicity of venereal infections across the regions [20]. A stratified analysis on donor-age depicted a very high prevalence of TTIs among younger aged-donors. Similar trends was reported in Northern Ghana, where the highest rates of 4.7% HBV and13.2% HIV were observed among a younger aged group 15-19 [25]. These developments could be due to limited exposure to sexual education, as well as exposure to drug elicitation among the younger generation [26]. Similar to studies in Ghana, but contrast to studies in Ethiopia, the named infections were more prevalent among female than male donors in our study [12,13,20,23]. The relatively higher rates of TTIs among female in this study could be due to the natural anatomic limitations associated with female sexual organs, which often compromise the innate defense system [27]. Also, the socio-economic exuberantions associated with female population within the municipality and across the border township in Ghana and Togo could have exposed our female donors to higher risks environment and partners [28,29].

Additionally, findings on the transfusion transmissible HIV, suggest the rate of 3.8% HIV infection in this study was lower than 4.8% reported among blood donors in Ho within the study region, 4.9% at Kintampo in middle Ghana [21,30]. Nevertheless, this rate was significantly higher than the general population based regional and national rates of 1.28% and 2.0% respectively [31]. Although the higher proportion of HIV infected female is not unique to this study, the persistence of HIV across the period aligns with the observation made by the locally based HIV/AIDS response team's assessment on the surge of HIV/AIDS in the municipality [32]. Nonetheless, using 2015 as the baseline, a relatively point prevalence of 0.7% HIV (3 of 410) in 2019 was a remarkable reduction of HIV to a rate of 33.3% from 2015 to 2019. This was just a 0.3% higher than the 30% reduction targeted for 2020 by global health sector strategy towards global deadline to end epidemic HIV/AIDS by 2030 [33].

Likewise, the rate of 3.2% HBV infection in this study was lower than the 6.9% reported in Ho Municipality in the study region, and 9.6% in Soboba, in Northern Ghana [25,34]. Compared to the figures at national level, this rate is significantly below the 12.3% recorded within, the MDGs era, and 11.3% within the SDGs era in Ghana [35,36]. The intra low rate of HBV in this study could be due to the impact of the implementation of interventional policy and programmes to prevent and control viral hepatitis in Ghana [37]. The periodic analysis depicted a higher mean rate of 4.4% HBV from 2014 to 2015, and a lower mean rate of 2.9 HBV from 2016 to 2019 in this study. The inter-variations in rate of HBV infections could be due to the different testing methods employed in the diagnosis of the viral infections and/ or a reflection of natural ecological variations between the study sites [38,39]. The highest rate of 4.7% HBV among younger age donors (≤19), and rate of 4.9% HBV among older donors (≥50) was also reported in Northern Ghana [25]. However, the variation between rate of new infection (younger aged) and chronic carriers (older aged) was insignificantly by 0.2% point. This implicates the public health interventions to reduce the margins of new TTIs, including HIV [40].

The rate 1.0% HCV in this study was significantly below the national rate of 3.0% in Ghana [41]. The lower rate of HCV affirmed that significant intra and inter variation in HCV prevalence and endemicity exists among different geo-demographics in Ghana. Although, the 1% HCV was a lower rate, the inconsistent pattern in which HCV oscillates among female donors compared to more stable distribution of HCV among male donor across the period is of significant public health concern that requires further research.

4.1. Limitations

Although, all attempt were made to minimize the type 1 and type2 errors associated with retrospective study such as this, we were unable to overcome the inherent limitations associated with using Rapid Diagnostic Test (RDT) kits results obtained under non-experimental conditions. Therefore, the findings of our study should be interpreted within the context of our settings and study design.

5. Conclusion

The sero-prevalence of TTIs as exhibited in the study shows significant reductive trends from 2015 to 2019 at rate of 30.3%. This was a positive implication on existing public health strategies to combat TTIs, including HIV/AIDS in Akatsi south municipality and Ghana. Despite this positive assessment, the relatively higher rates of TTIs among female donors who constituted only 7.3% donor population have research and policy implications.

Recommendation

First, in order to sustain the reductive trend of named TTIs in this area, it is highly recommendable that the decentralization programmers component of the "National Strategic framework1 and 2" policies on venereal infections are accelerated and strengthened at the sub-district levels in Ghana. Secondly, the use of chromatographic Rapid Diagnostic Test (RDTs), with limited validity metrics, is a potential medium for transfusion false negative viral infected blood. Deductively, about 2.4% of the blood transfused within the period were false negatives for the named TTIs using the RDTs listed in Table 1. Therefore, relatively higher sensitive screening methods such Enzyme Linked Immunosorbent Assay (ELISA) and/or Polymerase Chain Reaction (PCR) methods are urgently needed to prevent the transfusion of false negative HBV, HCV and HIV infected blood in Akatsi Municipal Hospital.

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