



Syphilis and Its Seroprevalence in Blood Donors at Rural Area of Sindh

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Authors' contributions

This work was carried out in collaboration among all authors. Author SAJ designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors RAT and QAS managed the analyses of the study. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Blood transfusion is a life saving procedure for millions of people across the globe, but is inevitably associated with transfusion transmissible infections. Sexually transmissible disease (STDs) especially syphilis has no adequate prevalence rate among blood donors.

Objective: The main objective of this study is to see to prevalence rate of syphilis in blood donors attending Blood Bank Indus Medical College Hospital Tando Muhammad Khan.

Methods and Materials: This study was conducted at Blood Bank and Department of Pathology, Indus Medical College Hospital Tando Muhammad Khan Sindh Pakistan, between the period of October 2016 and February 2018. A total of 2002 blood donations were received during this time. All patients were screened to see seropositivity of syphilis. SPSS 21.0 was used to measure the frequency and percentage etc.

Results: A total of blood donations were received in Blood Bank, Indus Medical College Hospital Tando Muhammad Khan was 2002, out of which 1961 (97.95%) were male, while 41 (2.04%) were female. All patients were screened for syphilis. A total prevalence of syphilis in blood donors was present in 49 patients (2.44%).

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Conclusion: Prevalence of syphilis among blood donors was high. Screening of all blood donors is mandatory to prevent transmission transmissible infections in recipients to prevent early and late hazardous consequences of the disease.

Keywords: Seroprevalence; syphilis; transfusion; sexually transmissible disease.

1. INTRODUCTION

Blood donation is an essential technique which saves millions of lives globally. Along with its beneficial and life – saving side, there is also a great risk of transmission – transmitted infections, which implement big challenge to medical professionals to provide safe and transmission free blood products [1]. Blood transfusion is a major source of infection transmission caused by various microorganisms, including Hepatitis B virus, Hepatitis C virus, malaria, Human immunodeficiency virus and syphilis etc [2]. Malaria and syphilis are major infections which are transferred through blood products globally, especially in endemic areas like Pakistan. The prevalence rate of hepatitis B is 2.5% and hepatitis C is 4.9% in population of Pakistan, reflecting that approximately 13 million people suffer from chronic hepatitis B and hepatitis C carriers. Although, exact prevalence rate of syphilis is not reported adequately [3].

Protection and safety of human lives are major agenda adopted worldwide after disclosure of transfusion transmissible infections. Among all major and common infections caused by transfusion, sexually transmitted diseases (STDs) are dangerous entities transferred through blood donations. They can lead to persistent disability, problems regarding fertility, stillbirth, neonatal infections etc [4]. According to World Health Organization (WHO), approximately 340 million infections are caused by sexually transmitted diseases including Chlamydia, gonorrhoea, syphilis and trichomonas etc [5]. Among the sexually transmissible infections, syphilis is major infection occurring in blood donors. Syphilis is caused by *Treponema pallidum*, which is transmitted through sexual contact, direct inoculation, transplacenta during pregnancy and blood transfusion [6].

The main objective of this study is to reveal the prevalence of syphilis among blood donors in Tando Muhammad Khan and its peripheries.

2. MATERIALS AND METHODS

The study was conducted from October 2016 to February 2018 at Blood Bank and Department of

Pathology, Indus Medical College Tando Muhammad Khan Sindh Pakistan. Patients were selected according to including criteria taking into consideration regards hemoglobin level, body weight and medical and donation history. Total number of screened blood donations was 2002 in considerable duration. Blood samples were taken from all donors in Gel – containing tube and serum was separated by centrifugation. All samples were screened for syphilis using Syphilis Ultra Rapid Test Device. Statistical analysis of frequencies and percentages was performed using SPSS 21.0.

3. RESULTS

A total of blood donations were received in Blood Bank, Indus Medical College Hospital Tando Muhammad Khan was 2002 (Fig. 1), out of which 1961 (97.95%) were male, while 41 (2.04%) were female (Fig. 2). All patients were screened for syphilis. A total prevalence of syphilis in blood donors was present in 49 patients (2.44%) (Fig. 3).

4. DISCUSSION

An unsafe transfusion of blood is precarious from human point of view. Long – term effect, overdue viremia and veiled consequences resulting from transfusion of infected blood products have harmful effects, not only for recipients, but also for their families and communities. Nada et al. [7] Transmission of syphilis takes place via sexual contact, vertical transmission (from mother to fetus) and transfusion of blood products. Infection through blood transfusion is uncommon because of trending serological screening of blood donors and because of short survival of *T. pallidum* in collected blood products; though it is rapidly shattered by heating, drying or by air within short time. Screening for syphilis and other infectious agents is very important in safety of blood donation system to avoid infectious which can be transferred through transfusion of blood [8].

Ansari et al. [9] performed a study at Pakistan Institute of Medical Sciences Islamabad in 2012. The prevalence rate of syphilis in his study was 0.89%. However, the sample size of his study

was 10,145 blood donors. Ansari et al. [9] in his study at Rawalpindi showed 2.4% prevalence rate of syphilis Kamran et al. [10]. in her study at Egypt showed no syphilis positive in any blood

donor. Although, the number of donors was 149,381. Nada et al. [7] Various studies have been performed across different regions to evaluate the prevalence of syphilis (Table 1).

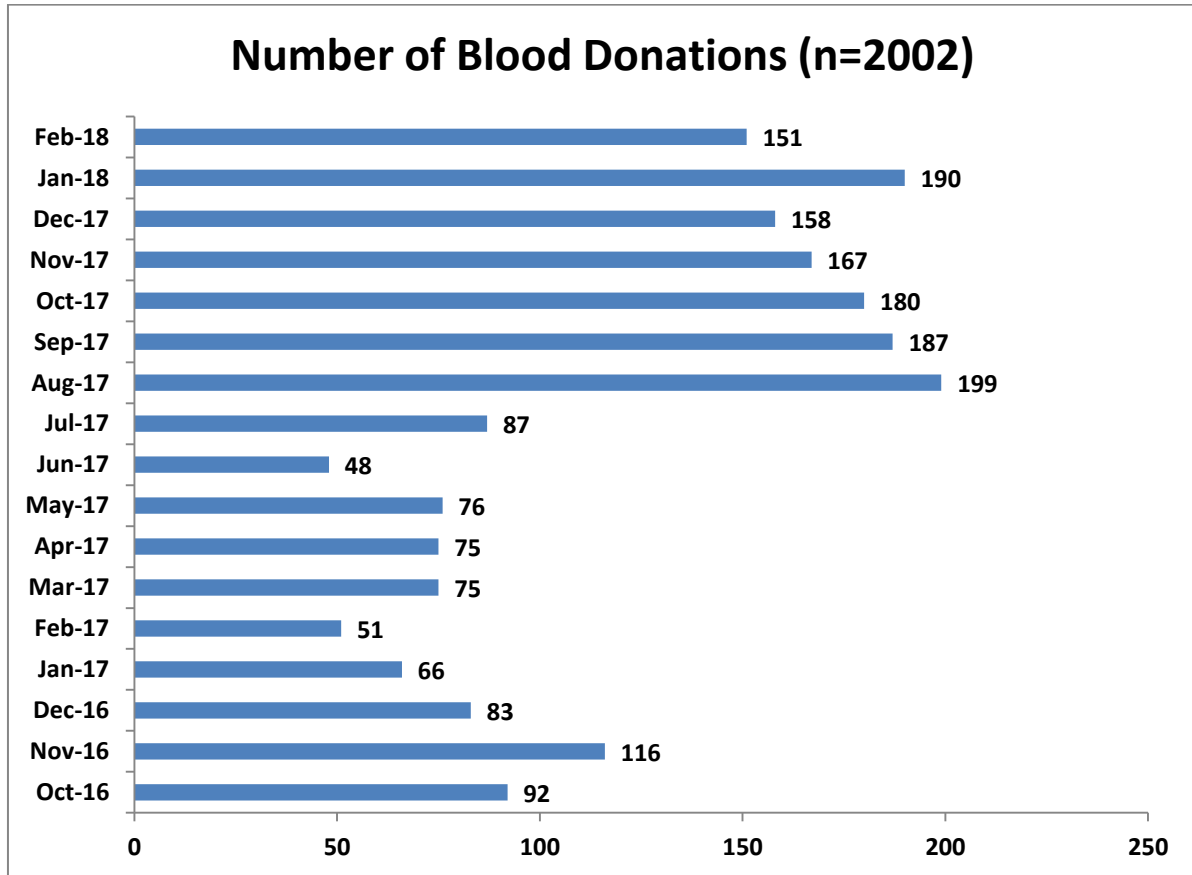


Fig. 1. Total Number of Blood Donations (October 2016 to February 2018)

Table 1. Prevalence rates of syphilis across different regions

S. No	Author	Year	Region	Sample size	Prevalence of syphilis
1	Ansari et al. [9]	2012	Islamabad	10,145	0.89%
2	Nada et al. [7]	2013	Egypt	149,381	0%
3	Kamran et al. [10]	2014	Rawalpindi	300	2.4%
4	Nazir et al. [4]	2013	Lahore	449	3.1%
5	Abid et al. [11]	2015	Multan	48,020	0.07%
6	Birhaneselassie [12]	2016	Ethiopia	6,337	3%
7	Elymany et al. [13]	2016	Saudi Arabia	239,330	0.02%
8	Arshad et al. [1]	2016	Karachi	16,557	2.1%
9	Mavenyengwa et al. [2]	2014	Namibia	24,761	0.3%
10	Sial et al. [3]	2016	Lahore	29,522	1.79%
11	Kumari et al. [14]	2016	India	1,462	0.01%
12	Balao et al. [8]	2014	Brazil	83,396	0.14%
13	Our study	2018	Tando Muhammad Khan	2002	2.44%

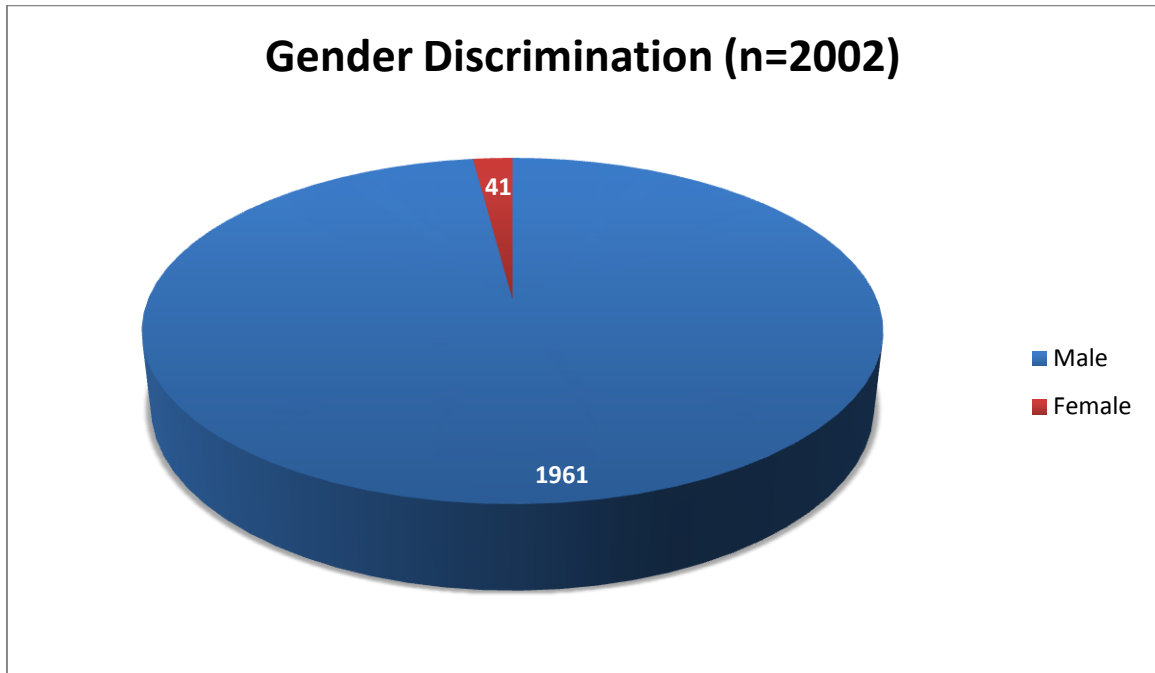


Fig. 2. Gender discrimination among all blood donors

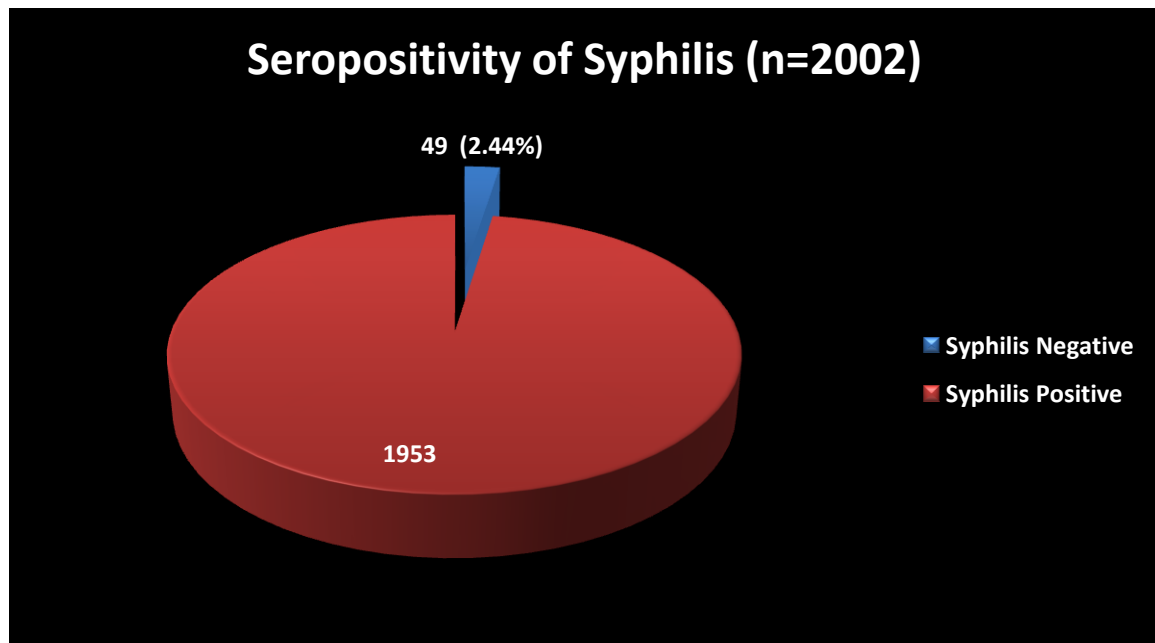


Fig. 3. Seropositivity of Syphilis among all blood donors

The prevalence rate of syphilis in our study was much higher as compared to other studies. This difference may be due to effect of various factors, including sample size, ethnic group diversity, number of fresh and regular donors etc. There is no data available to see the prevalence rate of syphilis in region of Tando Muhammad Khan and peripheries. This is the first study done

in this area to evaluate and compare the prevalence rate of syphilis from other regions of country as well as from outside country.

5. CONCLUSION

The prevalence rate of syphilis among blood donors was high as compared to other studies.

The syphilis is preventable and treatable if diagnosed at early stage and before involvement of other organs. Studies on large population of blood donors should be done and registered to get more strong evidence of syphilis in donor population.

CONSENT

Informed consent was taken from all donors suitable for the study.

ETHICAL APPROVAL

As per international standard, written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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