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Research Paper

Prevalence and Risk Factors for Hepatitis B and C Viral among Blood Donors Attending Al Leith General Hospital, Saudi Arabia

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ABSTRACT: *This is hospital based cross sectional descriptive study was conducted during the period 10/10/2018 to 10/3/2019 among blood donors attending Al Leith general hospital to estimate the prevalence of hepatitis B virus and hepatitis C virus and associated risk factors. Blood samples were taken from all blood donors' total coverage (473 donors) and then were tests by ELISA. About 196 blood donors out of 473 were selected randomly to fill the questionnaire to gather information on hepatitis B virus and hepatitis C virus associated risk factors included history of tattooing, blood and blood product transfusion, dental procedures, drug abuse, travelling abroad, sexual contact, Data were analyzed by Microsoft Office Excel, 2007. The prevalence of hepatitis B virus and hepatitis C virus were found 6.1% and 0.63% respectively. The highest infected participants were found in age group 27 – 36 years followed by age group 37 – 46 years. Risk factors significantly associated with hepatitis B virus infection were found: got piercing by needle 27% (n = 8), have tattoing 24% (n = 7), have touched someone else's blood 17% (n = 5), have sexual contact with someone who used needles for drug abuse or steroid 3% (n = 1) and have an incidental piercing 3% (n = 1). Also these factors were significantly associated with hepatitis C virus infection. This study showed high prevalence for hepatitis B virus and low prevalence for hepatitis C virus among blood donors attending Al Leith general hospital.*

Key Worlds: *Hepatitis B, Hepatitis C, Blood donors, Al Leith, Hospital*

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I. INTRODUCTION

The World Health Organization estimated that 360 million people are chronically infected with hepatitis B virus and about 200 million people are infected with hepatitis C virus worldwide **(Zaheer et al., 2014)**. Hepatitis B virus is estimated to result in 563,000 deaths annually versus 366,000 deaths for hepatitis C virus **(Nada and Atwa, 2013)**. The transfusion of blood and its product is a recognized risk factor of acquiring hepatitis B virus and hepatitis C virus **(Baha et al., 2013; Hussein et al., 2017),** also transmitted through direct contact with blood, intravenous injections and unprotected sex **(Cerny and Chisari, 1999; Mahoney, 1999).** Transmission of hepatitis C virus has been strongly associated with intravenous and percutaneous drug and needle use **(Theodore and Jamal, 2006).** Certain types of behaviours increase the risk for contracting hepatitis B virus such as: use of contaminated needle during acupuncture, ear piercing and tattooing, sexually active heterosexuals or homosexuals, infants/children in highly endemic areas, infants born to infected mothers, health care workers, haemodialysis patients, haemophiliacs, prisoners with long term sentences as well as visitors to highly endemic regions **(Janahi, 2014)**. The awareness of the importance of blood safety for controlling the transmission of hepatitis B virus and hepatitis C virus has helped to decrease the spread of these viruses **(Al-Waleedi and Khader, 2012)**. Moreover, infection with these viruses might associate with increased mortality rate as the infection may predispose to the development of serious liver diseases such as liver cirrhosis, liver failure and hepatocellular carcinoma **(Hussein et al., 2017).** Approximately 15 - 40% of infected patients will develop cirrhosis, liver failure or hepatocellular carcinoma **(Karim et al., 2013)**

The prevalence of hepatitis B virus has declined considerably in Saudi Arabia since the introduction of immunization in 1989. It fell from 7% in 1989 to 0.3% in 1997. It has been reported that the prevalence of

hepatitis B virus among blood donors in Saudi Arabia decreased from 2.7% in 1993 to 0.28% in 2003 **(Al-Ajlan, 2011)**. The overall prevalence of hepatitis C virus among blood donors in Saudi Arabia is 1.1%. In the Jazan region previous study conducted over a period of 25 months (June 1995 to June 1997) showed that the prevalence of hepatitis B virus infection among blood donors was 5.4% **(Abdulla, 2013)**. The more recent studies in KSA found a prevalence rate of hepatitis B virus of 1.3%, which is considerably lower than the average found in the studies conducted from 1964 to 2013 **(Aljumah et al., 2019).** Saudi blood donor screening centers indicate hepatitis C virus infection rates of 0.4 - 1.1% **(Bashawri et al., 2004; Madani, 2007)**. A recent systematic review including all published studies on the hepatitis C virus infection estimated that the prevalence ranges from 1.0 - 1.9% **(Sievert et al., 2011)**.

II. MATERIALS AND METHODS

This is hospital based cross sectional descriptive study was conducted during the period 10/10/2018 to 10/3/2019 among blood donors attending Al Leith General Hospital to estimate the prevalence of hepatitis B virus and hepatitis C virus and associated risk factors. Permission was obtained from administrator of Al-Leith Hospital and informs them about the study. The purpose and procedures of the study were explained to all participants. All volunteer blood donors who donated blood at the Al-Leith hospital laboratory were participated in this study they were found 473 donors during the periods of the study. Blood samples were taken from all blood donors which were found 473 (total coverage) and then were tests using ELISA kits in the hospital laboratory. The questionnaire was used to gather information on hepatitis B virus and hepatitis C virus associated risk factors included history of tattooing (hijama), blood and blood product transfusion, dental procedures, intravenous injections drug abuse, travelling abroad, sexual contact and hepatitis B and C contacts, 196 blood donors out of 473 were selected randomly to fill the questionnaire. Data were analyzed by Microsoft Office Excel, 2007.

III. RESULTS

The present study reveals that the prevalence of hepatitis B and hepatitis C virus were found 6.1% and 0.63% respectively. There were 73 (37%) from the age group of 27 – 36 years, followed by 56 (29%) from the age group of 37 – 46, while 52 (29%) from the age group of 18 – 26 years and 15 (8%) more than 47 year old. The highest infected participants with hepatitis B virus and hepatitis C virus were found in age group 27 – 36 years followed by age group 37 – 46 years and lowest in age group 18 – 26 years and more than 47 year old. Risk factors significantly associated with Hepatitis B Virus infection were found: got piercing by needle 27% (n = 8), have tattoing (hijama) 24% (n = 7), have touched someone else's blood 17% (n = 5), have sexual contact with someone who used needles for drug abuse or steroid 3% (n = 1) and have an incidental piercing 3% (n = 1). While the same factors were have significantly associated with hepatitis C virus infection, but hepatitis B virus has highest prevalence than hepatitis C virus.

Table 1: Age Groups of the Blood Donors Attending Al Leith General Hospital

Age groups	Hepatitis B cases	Hepatitis C cases	Non hepatitis
18 – 26	3	0	49
27 – 36	12	2	59
37 – 46	10	0	46
More than 47	4	1	10
Total	29	3	164

Figure 1: Prevalence of Hepatitis B and C Virus among Blood Donors Attending Al Leith General Hospital

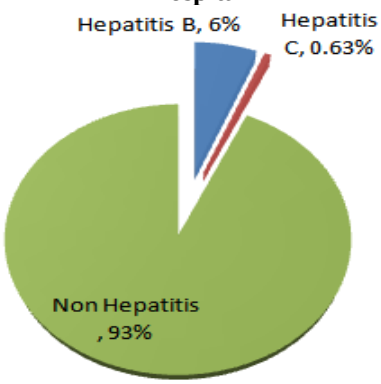


Figure 2: Distribution of Hepatitis B and Hepatitis C Virus among Age Groups of the Blood Donors.

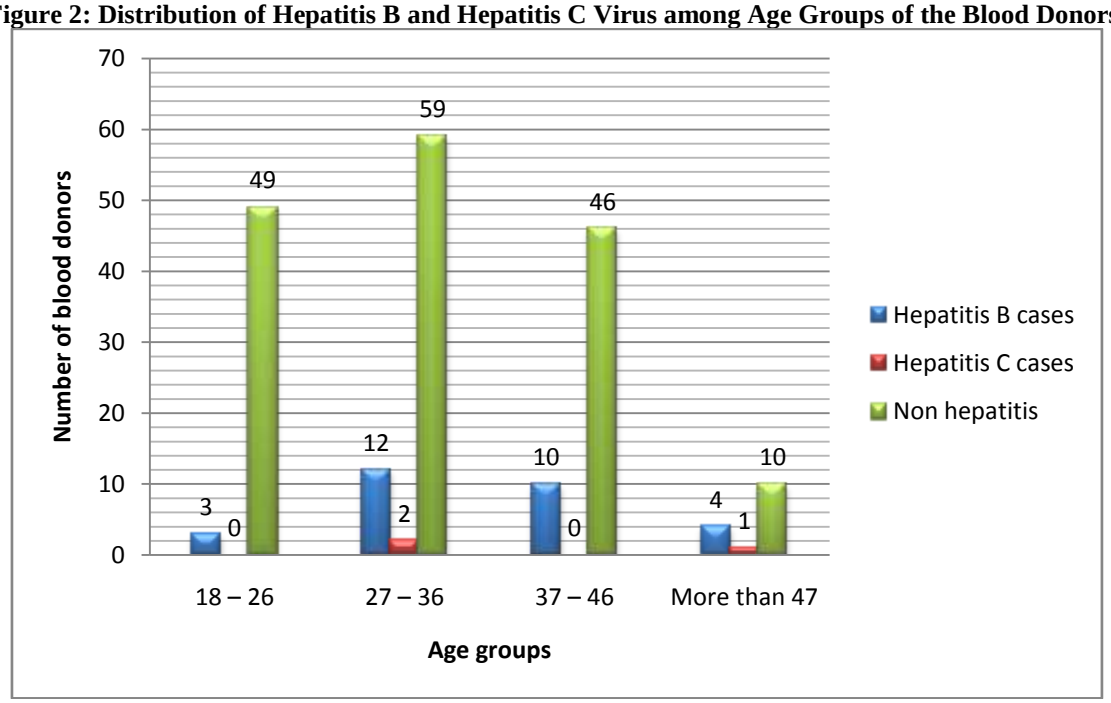


Table 2: Questions on Risk Factors Associated with Hepatitis B Virus and Hepatitis C Virus among Blood Donors Attending Al Leith General Hospital:

No.	Question on risk factors	Hepatitis B cases		Hepatitis C cases		Non hepatitis		Total
		Yes	No	Yes	No	Yes	No	
1	Got piercing by needle?	8	21	2	1	0	164	196
2	Have you undergone organ transplantation, tissue or bone marrow?	0	29	0	1	0	164	196
3	Have undergone bone or skin grafting?	0	29	0	3	0	164	196
4	Have you touched someone else's blood?	5	24	1	2	0	164	196
5	Have an incidental piercing?	1	28	0	2	0	164	196
6	Have you had sexual contact with anyone who is infected with HIV or has the HIV test been positive?	0	29	0	3	0	164	196
7	Did you have a sexual contact with someone who used to use needles for drug abuse or steroid or any preparation that was not prescribed by the doctor?	1	28	0	3	0	164	196
8	Have you had sexual contact with anyone with hemorrhagic or used concentrated coagulate agents??	0	29	0	3	0	164	196
9	Have you had sexual contact with anyone with hepatitis?	0	29	0	3	0	164	196
10	Have you stayed with someone with hepatitis?	0	29	0	3	0	164	196
11	Have you had a tattoo or piercing of the ear or any area of the body?	0	29	0	3	0	164	196
12	Have tattooing (hijama)	7	22	0	3	0	164	196
13	During the last three years, have you traveled outside Saudi Arabia?	0	29	0	2	0	164	196

Figure 3: Significant Risk Factors Associated with Hepatitis B Virus among Blood Donors Infected with Hepatitis B Virus

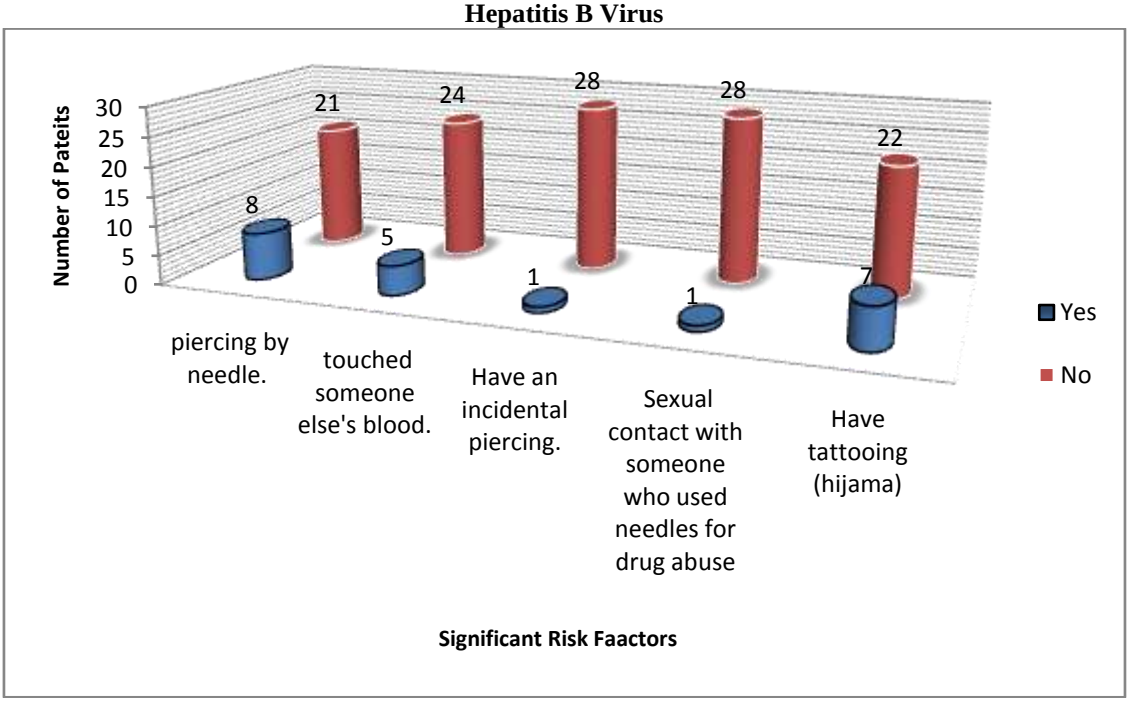
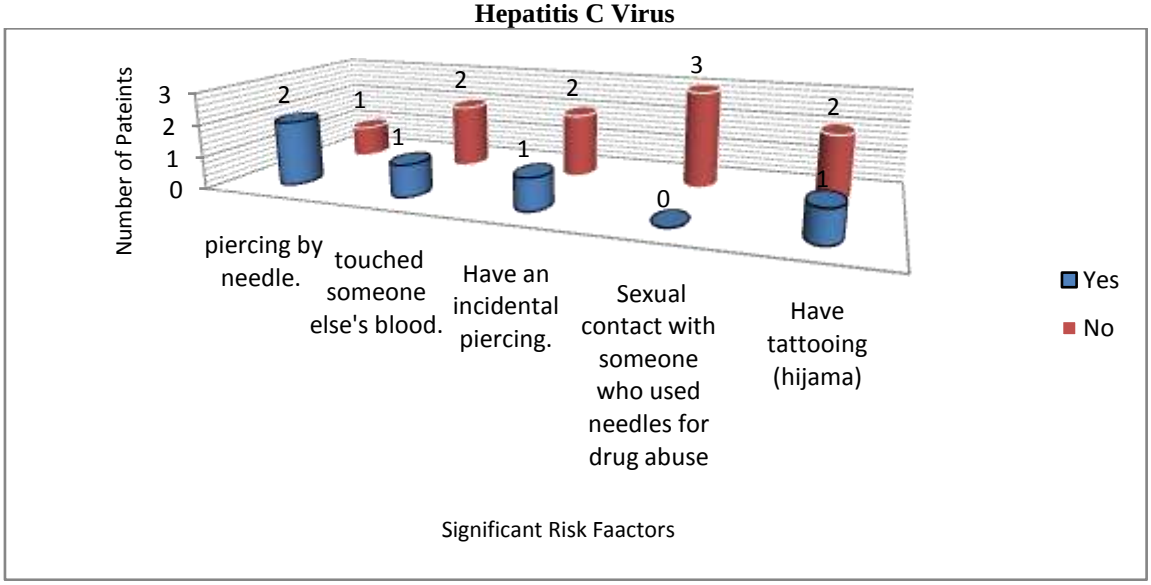


Figure 4: Significant Risk Factors Associated with Hepatitis C Virus among Blood Donors Infected with Hepatitis C Virus



IV. DISCUSSION

The result of this study reveals that the prevalence of hepatitis B virus and hepatitis C virus were found 6.1% and 0.63% respectively. This study showed high prevalence for hepatitis B virus and low prevalence for hepatitis C virus contrast with previous studies; **Al-Ajlan (2011)** who mentioned that the prevalence of hepatitis B virus has declined considerably in Saudi Arabia since the introduction of immunization in 1989. He has been reported that the prevalence of hepatitis B virus among blood donors in Saudi Arabia decreased from 2.7% in 1993 to 0.28% in 2003. Also **Abdulla (2013)** stated that the overall prevalence of hepatitis C virus among blood donors in Saudi Arabia is 1.1%. In the Jazan region, previous study conducted over a period of 25 months (June 1995 to June 1997) showed that the prevalence of hepatitis B virus infection among blood donors was 5.4%. While **Aljumah et al., (2019)** in recent studies in Kingdom Saudi Arabia found a prevalence rate of hepatitis B virus of 1.3%, which is considerably lower than the average found in the studies conducted from 1964 to 2013. Saudi blood donor screening centers indicate hepatitis C virus infection rates of 0.4 - 1.1% **(Bashawri et al.,**

2004; Madani, 2007). A recent systematic review including all published studies on the hepatitis C virus infection estimated that the prevalence ranges from 1.0 - 1.9% **(Sievert et al., 2011)**.

In this study the highest infected participants with hepatitis B and hepatitis C virus were found in age group 27 – 36 years followed by age group 37 – 46 years and less in age group 18 – 26 years and more than 47 year old. In our study factors significantly associated with hepatitis B Virus and hepatitis C virus infection were found: got piercing by needle, have tattoing (hijama), have touched someone else's blood, have sexual contact with someone who used needles for drug abuse or steroid and have an incidental piercing. Several studies have shown that the transmission of hepatitis C virus has been strongly associated with intravenous and percutaneous drug and needle use **(Theodore and Jamal, 2006).** Certain types of behaviours increase the risk for contracting hepatitis B virus such as: use of contaminated needle during acupuncture, ear piercing and tattooing, sexually active heterosexuals or homosexuals, infants/children in highly endemic areas, infants born to infected mothers, health care workers, haemodialysis patients, haemophiliacs, prisoners with long term sentences as well as visitors to highly endemic regions **(Janahi, 2014)**.

V. CONCLUSION

The study concluded that the prevalence of hepatitis B and hepatitis C virus were found were found 6.1% and 0.63% respectively. This study showed high prevalence for hepatitis B virus and low prevalence for hepatitis C virus. The highest infected blood donors were found in age group 27 – 36 years. Risk factors significantly associated with hepatitis B virus and hepatitis C virus were found: got piercing by needle, have tattoing (hijama), have touched someone else's blood, have sexual contact with someone who used needles for drug abuse or steroid and have an incidental piercing.

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