REPUBLIC OF TURKEY
VAN YUZUNCU YIL UNIVERSITY
INSTITUTE OF HEALTH SCIENCES

SEROPREVALENCE OF HBSAG, ANTI-HCV, ANTI-HIV AND SYPHILIS IN BLOOD DONORS IN NORTH OF IRAQ

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LIST OF ABBRIVATIONS

AIDS : Acquired Immune Deficiency Syndrome

ELISA : Enzyme-Linked Immune Sorbent Assay

ESR : Erythrocyte Sedimentation Rate

HBs Ag : Hepatitis B surface antigen

HCV : Hepatitis C Virus

HIV : Human Immunodeficiency Virus

MENA : Middle East and North Africa

PCR : Polymerase Chain Reaction

STDs : Sexually Transmitted Diseases

TTIs : Transfusion Transmissible Infections

VDRL : Venereal Disease Research Laboratory

WHO : World Health Organization

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1. INTRODUCTION

WHO indicates that approximately 2 billion individuals globally are infected with HBV and that roughly 350 million are chronic HBV carriers. Consequently, in every year, about 4 million acute clinical cases are found and 25% of these turn out to be carriers meaning they are likely sources of disease. 1 million persons die regularly because of chronic active hepatitis, cirrhosis or primary carcinoma. WHO assesses that 3% of the total population suffer from HBV infection. There are approximately 4 million carriers just in Europe (Öner et al., 2011).

It was found out that there were roughly 2.2 million people infected with HIV/AIDS in 52 European states before the end of 2005 and out of these 1.6 million were residing in Eastern Europe and Middle Asia states. It was also estimated that around 45 million new HIV disease would develop by 2010 around the world. Incase preventative measures are overlooked, more than 4 million of these infection cases will be as a result of medicinal services administrations either by an admission of unsafe blood transfusion, injections, and other interventions thus the rising cases of HIV infections globally. 5%-10% is spread by infected blood products (Öner et al., 2011).

Screening for transfusion-transmissible infections (TTIs) operators is a usual practice all round to validate the wellbeing of blood and blood tools supply. To improve the safety of blood contributed, various measures should be applied like the being strict in determining criteria and prohibition (Screening, 2010).

The Middle East and North Africa states (MENA) underwent several big events with the spread of infectious diseases (Glynn et al., 2000).

Sexually transmitted diseases and some of their problems are amongst the five principles in the use of health administrations in creating nations (Glynn et al., 2000).

People with clinical and hypothetical dangers of hold infectious specialists by the use of survey have been received by most blood donation centers (Glynn et al., 2000).

Checking the occurrence of communicable infectious agents in blood donors will provide ways of assessing the security of blood supply. Adding to the existence of predominance rate of an infectious disease specialist may reflect changes in populace dangers may arise due to the presentation of new screening method which brings about improved ability to detect infected people and an increased cases of false constructive results or both (Glynn et al., 2000).

HCV first discovered in the year 1989 is a blood viral infection spread through direct exposure to human blood like blood transfusion, use of contamination needles and some job-related exposure. HIV and HCV are easily spread through some infected like needle injury that the injection-related transmission probability for HCV is 10 times more than that for HIV (Glynn et al., 2000).

HBs Ag, Anti HCV, Anti HIV and VDRL in blood givers. Existence and developments during the past 3 and a half years in a special medical center in a town called Ile-Ife, Nigeria. The threat for being infected with transfusion-transmitted viruses has been considerably reduced by the utilization of highly sensitive tests for blood-borne pathogens and the implementation of firm criteria in the choosing of potential donors. Regardless of these enhancements, a zero-risk blood distribution still remains a popular objective. HBV virus, HCV, and human immunodeficiency viruses (HIV) type 1 and 2 are among the viruses causing a big problem in transmission by transfusion. Most screening experiments for these infectious agents like HBV surface antigen, Anti HCV, Anti HIV and syphilis antibody tests are regularly done all over the world as well as in our country even before transfusion in order to accomplish safe blood transfusion and to reduce post-transfusion infections (Salawu et al., 2010).

Agreeing with Konda (2016), HIV with co-infection of HBV, HCV, and syphilis have the capability to increase the morbidity and mortality. Syphilis giving genital ulcerative lesions aid in the transmission of HIV. Patients giving syphilis need to be tested for HIV and the other way around (Konda, 2016).

Establishment of HBV and HCV co-infection of those infected with HIV/AIDS is most vital because of the hidden complexities like liver disorders related to these viruses which seem to reduce life expectancy rate in the HIV-infected patients. Millions are thought of having chronic HBV co-infection among the number of HIV-infected patients, furthermore, it enhances movement of HCV-related liver infection (Konda et al., 2016).

2. GENERAL INFORMATION

2.1. Hepatitis B Virus (HBV)

2.1.1. General information

In the year 1963 an unknown protein with Australia Anti-gen in the blood of an Australian native by Baruch Blumberg. Obviously the protein was identified type B hepatitis and the Australian antigen is presently known as the hepatitis B surface antigen. In the year 1973, a virus like particles in the serum of patients with type B hepatitis was discovered by David Dane. The particles got to be known as Dane particles and appeared to be virions of HBV. Paul Kaplan recognized endogenous RNA/DNA- dependent DNA polymerase (reverse transcriptase) beneath the center of hepatitis B virions. The hepatitis B virus DNA genome was in the end cloned and sequenced by Pierre Tiollais, Patrick Charny, Pablo Valenzuela and William Rutter in 1979 (Acheson, 2007).

Indicated by Acheson (2007), Hepatitis B virus is distinctive in the world of viruses with its compact 3.2-kb circular DNA genome. Broad us of overlapping reading frame, generation of a genome RNA and depending on a reverse translation step for replication. In view of its use of reverse transcriptase, hepatitis B virus is compared here and the retroviruses which were the main viruses known to use reverse transcriptase for replication. Despite sharing reverse transcription as a necessary step in their replication cycles, these viruses differ in an essential way; retroviruses package an RNA genome that is reverse copied into DNA once it enters the host cell while hepadnaviruses package a DNA a genome that is reverse recorded from a genome RNA in the cell during virus collection (figure 1) (Acheson, 2007).

HBV turned into the main example of the Hepadnaviridie family. Similar viruses are found in Genome is appeared as an orange wavy line sure to polymerase (orange sphere). Capsid appeared as icosahedrons and is built from core protein. Envelope containing the three types of surface protein is appeared as orange subunits surrounding the capsid (Acheson, 2007)

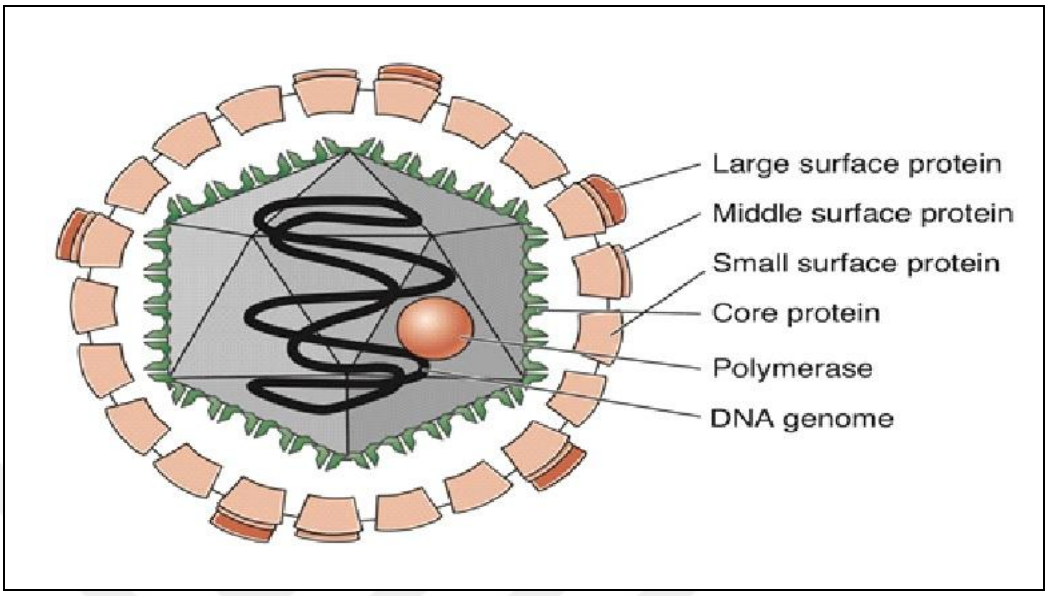

Figure 1. Structure of virons of hepatitsia B virusis.

2.1.2. Diseases caused by HBV

Hepatitis B virus does not directly murder infected cells nonetheless prompts it to chronic persistent ailments. It brings about the impression that most tissue harm in the host is the consequence of a host immune reaction bound for viral antigens on the surface of infected cells. The incubation time frame for viral disease averages 2 to months yet can be the length of 6 months, depending on the level of virus exposure (Boldogh et al., 1996).

In the early stages of disease around a share of patients are asymptomatic while others suffer from flu-symptoms, jaundice, elevated liver enzymes (ALT) and aspartate amino- transferase [AST] in the blood and serum sickness hypersensitivity response to a lot of viral anti-gen in the serum. Coincidentally almost 90% of adults who are infected resolve their infection inside six months and show no further signs (Davis, 2017).

About 1% of the infected suffer ill effects of a serious sickness called fulminant hepatitis, as it is harmful as it arises liver levels and can be lethal. The other 9% of adults get to be chronic carriers and about a half of whom sooner or later develop liver cancer. Those chronically sick people progress to cirrhosis which is described by fibrin deposition in the liver, production of ascites fluid, infiltration of lymphocytes, signs of flu, high serum ALT

levels and bleeding. Small kids have separate disease results. About 50% try to clear the virus and 40% get to be chronic carriers as the young have an immature immune system (World Health Organization, 2016).

2.1.3. Transmission routes of HBV

Spread of hepatitis B is mainly by blood or sexual intercourse and also transmitted to babies during birth. There isn't cure for HBV at the moment for the infected. But there are ways to reduce chances of getting the virus (Workowski and Bolan, 2015).

Harmful events to stay away from are used injections and unprotected sexual intercourse with many people. One also needs to be cautious when handling tainted surfaces like fluids and sharp objects as they will reduce contact. Employees of these organizations are encouraged to get vaccinated. Infection with HBV is still a menace for other occupational groups like undertakers, specialist, dental specialists, dialysis laborers, hemophiliacs, mental care facility workers, tattoo-parlor workers, fire-fighters, police officers among others (Nursingceu, 2017).

2.2. Hepatitis C Virus (HCV)

2.2.1. History

HCV is a reason for advance in liver disease with bout 130-170 million people infected worldwide. It brings about chronic infection to rise up by 80% in infected persons. The essential complications of HCV disease are serious liver fibrosis and cirrhosis and 30-50% of those infected with cirrhosis go further to grow hepatocellular carcinoma disease (Tong, 1995; Poynard, 1997).

Up until 1975 only few hepatitis viruses had been acknowledged, namely infectious hepatitis virus and serum hepatitis virus. On the other hand, other viruses were disqualified for the cause of about 65% of after transfusion hepatitis. Thereafter following this up, the cases were known as non-A and non-B(NANBH) (Feinstone, 1975).

The vaccination of apes with blood emerged from people infected with non-A and non B hepatitis led to tenacious development of serum alanine aminotransferase showing a transferable agent as the cause of the disease (Alter, 1978; Hollinger, 1978).

As a result it was proved that the infective agent could be rendered inoperative by chloroform. Moreover it was reported that the infectious agent was able to pass through 80nm membrane filters (Bradley, 1985).

Sampled at the same time these detections recommended that the non-A and non-B hepatitis triggering agent could be a minor disease with a lipid envelope. However the deficiency of appropriate cell culture organization for the extraction of the NANBH together with the inadequate access to apes prohibited more description of the infective agent of this infection for a number of years. In 1989 using a newly improved duplicating plan for nucleic acids received from plasma of infected apes the genome of the important infective agent was categorized (Choo, 1989).

CDNA clone 5-1-1 programmed immunological epitopes that associated with sera from individuals with this kind of hepatitis (Choo, 1989).

2.2.2. Viral structure

Simple tests of HCV virions are severely limited as the virus is hard to promote in cell culture system a necessity for producing adequate viral particle that can be observed by electron microscope. And so the pale yellow liquid separate from clot in blood coagulation mixed with virions are related with slightly dense lipids and proteins (Thomssen, 1992) making it hard to separate viral particles from the fluid portion of the lymph of infected subjects by centrifugation. Visualization of HCV like particles through electron microscopy do well just rarely (Kaito, 1994; Shimizu, 1996; Ruler, 1996) and it was a state of disagreement if the well-known structures truly were HCV virions. However these evaluations suggest that HCV has a diameter of 55-65nm confirming size prediction of the NANBH agent by separation (Bradley, 1985). Various kinds of HCV virions seem to be available in the blood of infected persons: virions stay together with low density lipoproteins,

they also joined to low density lipoproteins, virions complexed with immunogloblins (Kaito, 1994; Ruler, 1996; Shimizu, 1996).

2.2.3. Acute hepatitis C

There is an adjustable gestation period immediately after immunization. HCV RNA in blood or liver can be known by PCR within some days or few months. Amino transferases are raised in about 6 to 12 weeks after presentation. The rise of amino transferees varies greatly among people but has affinity to be more than 10-30 times the extreme limit of normal (Healthline, 2018).

2.2.4. Chronic hepatitis C

The threat of chronic HCV infection has increased. 80-100% of patients stay HCV & RNA positive after acute hepatitis C (Modify, 1999; Vogel, 2009). Chances of most them having raised liver enzymes in more developments. It is thought that hepatitis C is regarded chronic after perseverance of over 6 months. As soon the prolonged disease is detected there is low chances of unstructured authorization (Modify, 1999; Vogel, 2009).

It is uncertain as to the reason behind the HCV disease results in long-lasting infection in most cases. Genetic contradicting qualities of the virus and its tendency to fast mutation that may allow HCV to consistently escape immune acknowledgement. Components may as well be counted in the capacity to suddenly remove the virus. Features that have been correlated with successful HCV removal are HCV-particular CD4 T cell responses, high titers of cancelling out antibodies against HCV structural proteins, IL28B gene polymorphisms and specific HLA-DRB1 and –DQB1 alleles (Lauer, 2001; Thomas, 2009; Rauch, 2010).

Infection with HCV at the youth primal stage relates with a lower danger of infection, around 50-60% (Vogt, 1999).

At last there seems to be ethnic differences with a lower threat of chronic infection in specific masses. Most patients with chronic disease are asymptomatic or have a slightly common symptoms effects the length of cirrhosis is not seen (Merican, 1993; Lauer, 2001).

The most often upset is being tiresome. Fewer symptoms are nausea, weakness,myalgia, arthralgia and weight loss. HCV has been related with cognitive impairment. None of these symptoms can indicate sickness (Merican, 1993).

During that period the symptoms might just be out of something else such as depression and can be hard to notice if there is a disease. Exhaustion as a symptom might be insignificant as numerous circumstances can force this. Hepatitis is hardly ever in capacitating (Merican, 1993).

2.2.5. Blood transfusion

The transfer of blood has been a major risk influencing the spread of HCV. Statistically speaking, about 10% or more patients who received blood transfusions were infected with hepatitis C (Alter, 1989; Modify, 1989).

All the same, blood benefactor screening for HCV since early 90's has removed the risk of transmission course. Blood givers are screened for Anti HCV antibodies and HCV RNA in events by various countries. The danger is now calculated to be at 1,500,000 and 1,000,000 units (Pomper, 2003).

In partners of multiplied transfused patients like hemophiliacs, roughly 90% of patients were infected with hepatitis C in the past (Francois, 1993). Since the use of routine disabled virus such as heat inactivation or pasteurization new cases of hepatitis have turned out to be rare in patients (Francois, 1993).

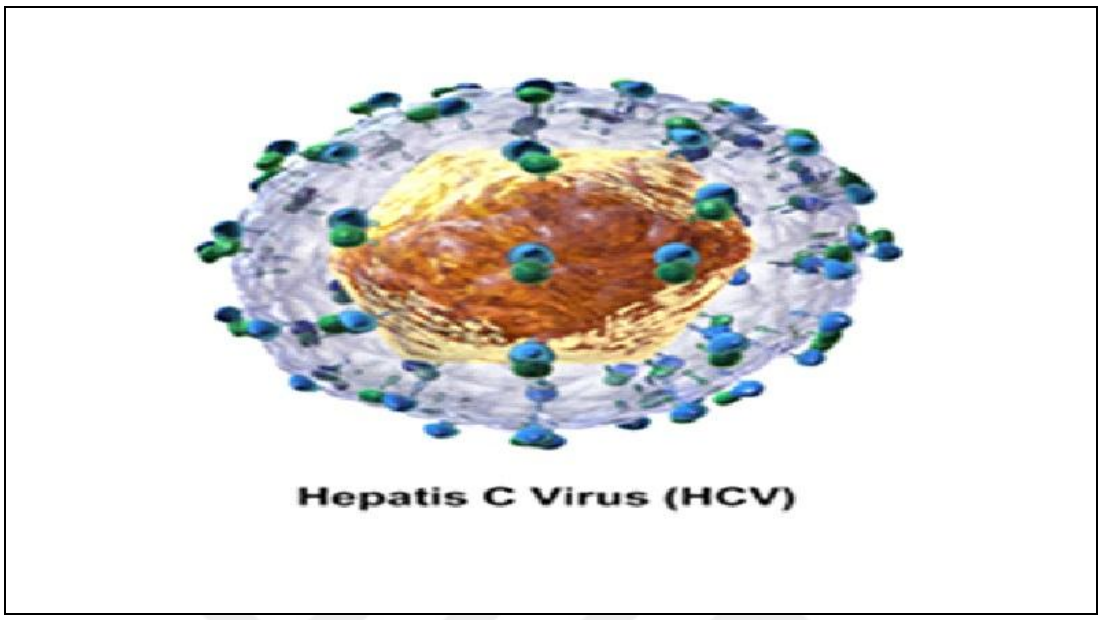

Figure 2. Hepatitis C virus (HCV).

2.3. Human Immunodeficiency Virus (HIV)

An infection is either made known by the discovering HIV individual plasma proteins reaction and by showing existence of the disease by macromolecular (containing genetic instructions) with the PCR which replicates DNA, p24 antigen testing or even though currently growing virus in cell structure (HIVinsite.ucsf.edu. 2018).

Antibody testing is the technique used to examine HIV infection. With highly sensitive HIV-1/HIV-2 enzyme immunoassay (EIA) studies as of now are obtainable on the market; seroconversion can be detected inside half a month of infection in most cases (HIVinsite.ucsf.edu. 2018).

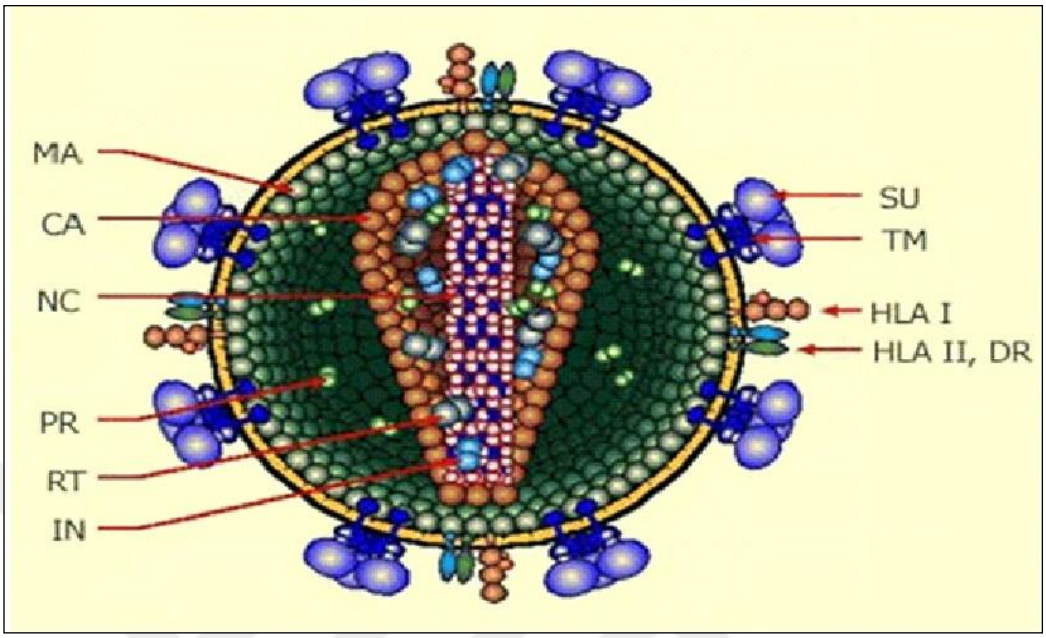

Figure 3. Diagram of structure of HIV-1 virion.

2.3.1. HIV 1

Disease is well-known by either recognition of HIV- specific antibodies in serum, plasma or showing the presence of the virus by nucleic acid discovery using polymerase chain reaction, p24 antigen testing and growing virus in cell structure (Dougan et al., 2005) .

Antibody testing is the best way used to examine HIV disease. With sensitive HIV-1/HIV-2 enzyme immunoassay tests and since they are currently on the market, seroconversion can be known inside half a month of disease in most cases (Dougan et al., 2005).

2.3.2. HIV 2

Many labs use a HIV-1/HIV-2 screening examine to get a small number of HIV-2 infected people found in Canada. Good confident display tests which give false HIV-1 different spot movements that are tested repeatedly on individual Human immune virus-2 blotch (Fearon, 2005).

2.3.3. HIV diagnosis

Body fluids like blood examination are commonly ways to identify this virus. Such assessments try finding plasma proteins to the disease that the host produces when fighting the virus. People introduced to the virus need to be tested immediately as it can affect the body anywhere in just span of a month and a half a year to make antibodies to the virus. Few more tests are required depending on the first time of contact (Parry et al., 2003).

Primal testing is vital. Suppose one is tested positive for HIV, you and the doctor will need to have a sit down and talk and come up with a treatment plan that can assist fight HIV and escape its impediments. Early testing also keeps one ready to avoid a strategic distance from behavior that can make one vulnerable to spread virus to others. Most health centers provide HIV testing on a regular basis together with counseling. Free testing is available. During the process of testing, the doctor in charge will need to get some information about symptoms, medical history and risk factors and carry out a physical test (Parry et al., 2003).

2.3.4. Tests for HIV and AIDS

Major tests include:

ELISA test: it remains for enzyme –linked immunosorbent assay is used to find HIV infection. If test turns out positive, the Western blotch is then synchronized to approve the check up and if negative one may think he/she is HIV positive but one ought to get tested again later in one to three months. This kind of test is sensitive in chronic HIV disease then again since antibodies aren't produced soon enough after infection one may test negative during a period of a week to a few months after infection. Despite testing negative during this period one may have a large amount of virus thus at danger of spreading the virus (Aidsmap.com, 2012).

2.4. Syphilis

Is a severe infection caused by *spirochete Treponema pallidum* .On its clinical appearance this disease can be organized separately in medical phases: Early stage, subordinate stage, premature latent stage, late dormant stage and maturity phase. The first

phase is characterized by a painless genital ulcer that grows inside 9-90 days following contact to infection. If not treated well it will progress to secondary stage. Here it is categorized by a regular maculopapular rash including palms, sole and peak bacterium with a high load of spirochetes in the blood. About 50% of untreated secondary syphilis will spread to latent infection. This face is asymptomatic and a sure test for syphilis being the main indicator of infection. Around 33% of uncured cases of dormant infection will advance to maturity syphilis in few 10-20n years, it includes cardiovascular and neurological systems (Actor, 2009).

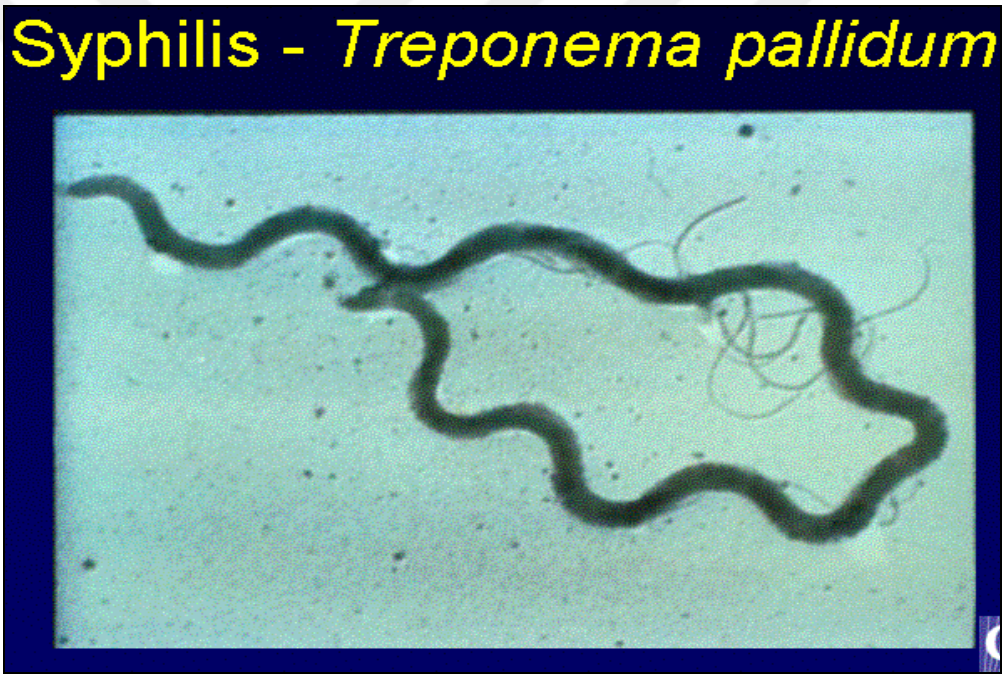

Figure 4. Structure of Syphilis.

2.4.1. Mode of transmission

This disease is normally spread through sexual intercourse with an infected person or either contact from nursing mother to infant. Granting that wide spread cases of syphilis is passed on by inactive sexual contact in individuals with underprivileged living clean conditions. The virus can also be spread through transfer of blood from givers with the disease or when blood is rendered unsafe (Actor, 2009).

2.4.2. Syphilis and blood donors

When choosing potential donors, background information is needed of the blood giver so as to differentiate threat aspects in the donor's behaviors; the history of medical information gathered using a study and physical tests of the giver so as to discover signs of the disease. Giver ultimatum is crucial as those with threatening characters and dangerous aspects might already be diseased with syphilis and render vulnerable the security of blood used for transfusion. Blood givers can be on time during selection as it can prove to be important in the beginning stage of the disease when lab examinations are not best (Actor, 2009).

In already countries, the popularity of *Treponema. pallidum* virus has significantly reduced in both the total population and blood givers. Even so, the state in built-up countries of the sub-Saharan region where the occurrence may reach 25%. In such a state there is low quality of labs testing because of insufficient apparatus, untrained staff, reagents and typical measures compounds the need of organized and far much better testing for syphilis to assist in safe blood quantity (Claude Tayou Tagny, 2011).

The possibility of Syphilis spread by transfusion is nearly associated to risky features in the blood giver especially sexual activeness as the disease is chiefly spread by sexual activities. Homosexual men are highly affected by this disease. A case of syphilis healing actions and HIV seropositivity are diligently involved to syphilis spread by transfusion. Other ways of increasing the rate of disease infection are sex workers, bisexual people, fake prescriptions and skin rituals like tattoos (Claude Tayou Tagny, 2011).

In Asia especially India, maximum numbers of blood donors are usually beginners who haven't donated at all. Occurrence of Syphilis in India was estimated to be 0.7%. The rate of blood donors change globally. A recent study by Adjei was seen that the prevalence of this disease was 7.5% among Ghanaian givers however a rate of 12.7% were known to be Tanzanian givers by Matee &friends, Bhatti & friends established a rate of 0.75% among Pakistani donors. This information shows that the dominance of syphilis is greater in additional givers than those givers who donate blood at will (Kaur, 2015).

The giver information inquiry consists of queries particularly recognized with infection of syphilis in the past. It is mainly concentrated on sexual mischief and frequent specific symptoms seen during the medical tests. Some givers who are easily sensitive continue to donate blood despite being given counselling after donation process. Definite gaps of spaces remain in donor strength of mind. This might lead to unawareness among people thus not able to comprehend questions due to high levels of illiteracy about transmitted-transfusion diseases. Some cultures and beliefs interfere with reveling data in regards to questions asked. Identified harmless givers should be engaged as recap givers to act as case studies and give knowledge to others on safety of blood source (Kaur, 2015).

3. MATERIAL AND METHODS

3.1. Study Design

For this research, the HBs Ag, Anti HCV, Anti HIV 1/2 and syphilis test performed for 386140 healthy volunteer blood donors who had been admitted for blood donation at the Blood Center in Erbil, Duhok, Sulaimanya and Kirkuk from the period between September 2013 and December 2015.

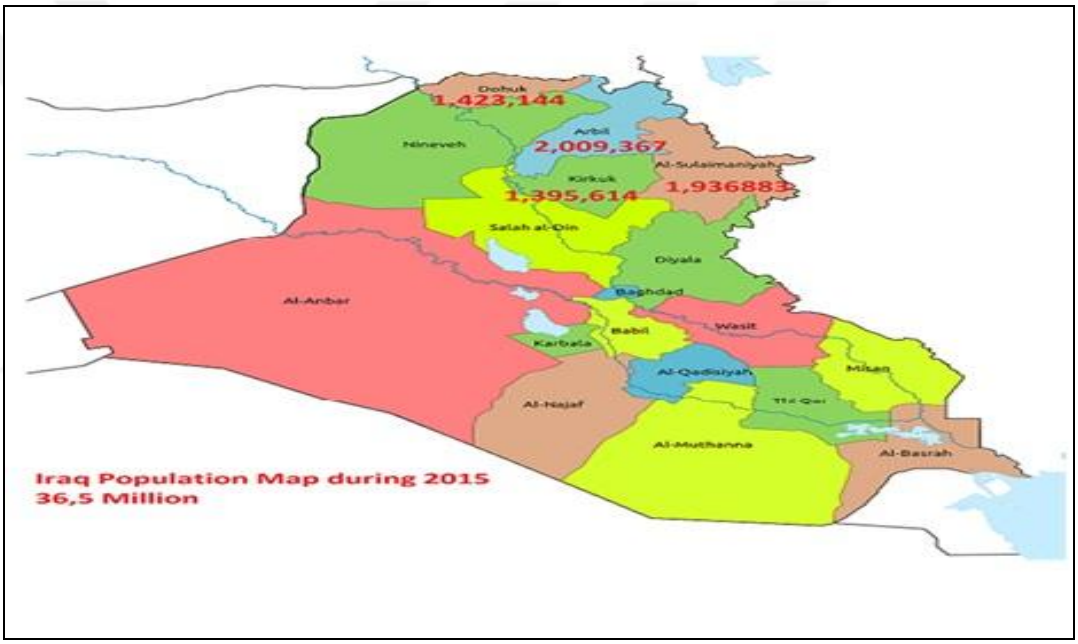

Figure 5. Map showing North of Iraq population density of four cities. Number of population during 2015 in Duhok is 1423144, Sulaimanya is 1936883, Kirkuk is 1395614 and in Erbil is 2009367 person.

3.2. The Detection of HBs Ag, Anti HCV, Anti HIV and Syphilis

3.2.1. HBs Ag and Anti HCV

Screening for the Simple Hepatitis B surface antigen (HBs Ag) on all specimens in four mentioned cities performed by the same fully automated ELISA device and Murex HBs Ag Version 3 test kit (Murex Biotech Ltd, Dartord, UK). All samples were tested twice for HBsAg using the screening test. HBs Ag positive samples were then additionally examined with the Murex HBs Ag confirmatory test kit (Murex HBs Ag Confirmatory Version 3).

Only samples confirmed to be positive with the Murex HBs Ag confirmatory test kit were recorded as HBs Ag positive.

All specimens were also tested for the Anti HBc marker using the Murex Anti HBc (Murex Anti HCV version 4.0) kit. All the tests used are enzyme immunoassays for the detection of HBs Ag and Anti HCV markers in human serum or plasma and according to the instructions in the manufacturer's product. All the specimen was taken from the period between September 2013 and December 2015.

3.2.2. HIV 1 and 2

Serum samples were screened for the presence of HIV 1 and 2, by using the same LIAISON® XL a fully automated chemiluminescence analyser (bioMérieux, Boxtel, Netherlands) in Erbil, Duhok, Sulaimanyah and Kirkuk and used the same kit for all specimens. For interpretation, the result if the optical density was bigger than the cutoff value seeing as a gray zone and the result considering as responsive but if the optical density was 20% less than the cutoff value the result considering as non-responsive, therewith the serum was tested with the Inno-Lia HIV I/II score line immunoassay (Innogenetics, Ghent, Belgium). According to the instructions in the manufacturer's product, the results were interpreted as negative, positive, or indeterminate. To check HIV infection in positive cases, HIV nested PCR was performed cause the affectability, sensitivity and specificity of this PCR was 100.

3.2.3. Syphilis

Serum from all blood donors in four mentioned cities was tested for the presence of treponemal antibodies using the same rapid plasma reagent test (RPR) in all region following the manufacturer's instructions (RPR, Wampole Laboratories, Princeton, NJ, USA). The serological analysis of syphilis is divided into two types the treponemal tests for measuring syphilis antibodies and nontreponemal tests, for example the rapid plasma reagen (RPR) test and the veneral disease research labortaory (VDRL) test, recognize reagin-based antibodies delivered because of treponemal disease. The examination needs specificity in light of the

fact that receptive antibodies can be evoked in illnesses and conditions irrelevant to syphilis, offering ascend to false-positives. In any case, nontreponal tests are valuable for deciding the phase of disease and to screen treatment achievement. Effective treatment lessens the quantity of lipoidal antigen that can be checked by detecting a decrease in RPR titre. Nontreponemal tests (RPR) measure IgM and IgG antibodies to cardiolipin and different lipids discharged from damaged host cells or from treponemes.

3.3. Statistical Analysis

Data were estimated statistically, investigated and organized in tables and charts furthermore, SPSS, data t-test was used to make evaluation between two variables also Microsoft Excel was used for arranging tables and figures. . Logistic regression analysis was used to determine risk factors associated with HIV, HBV, HCV and Syphilis infections. The main focus of the logistic regression analysis is which group of individuals
is to form a regression equation with no estimation. The use of the logistic model dates back to the 1845s. The logistic analysis used in the study of socio-economic issues mostly originated in studies aiming to explain population growth in the society with a mathematical expression. Unlike logistic regression analysis, discriminant analysis and multiple regression analysis, there is no need for researchers to provide estimates of the distribution of independent variables. In other words, normal distributions of independent variables, linearity and equality of variance-covariance matrices need not be met. It can therefore be said that the logistic regression is much more flexible than the other two techniques. As a result, if the logistic regression analysis is an alternative to the discriminant analysis and the contingency table analysis in the case of violations of the numbers such as the normal distribution and the common covariance, then the normality count is deteriorated when the dependent variable is a binary variable such as 0 and 1 can be expressed as an alternative to linear regression analysis.

4. RESULTS

4.1. The Test Results of Erbil.

The number of givers tested during September 2013 to 2015 was 164177 who were undergoing analysis and of these 934 were infected by at least one blood transmissible disease. Out of the total units declined, HBV represented 0.23% roughly 384, HIV 0.0006% just 1, HCV 0.11% about 193 people whereas syphilis owned 0.22% (356). The result of test according to HBs Ag, Anti HCV, Anti HIV and VDRL from September 2013 December 2015 in Erbil were showed table 1 and figure 8.

Table 1. Donor screening: number seropositive for the transfusion transmissible infections in Erbil.

Years	Total donors	HBs Ag	Anti HCV	Anti HIV	VDRL
2013	55.106	43	27	0	58
2014	52.047	212	99	1	186
2015	57.024	129	67	0	112
Total	**164.177**	**384**	**193**	**1**	**356**

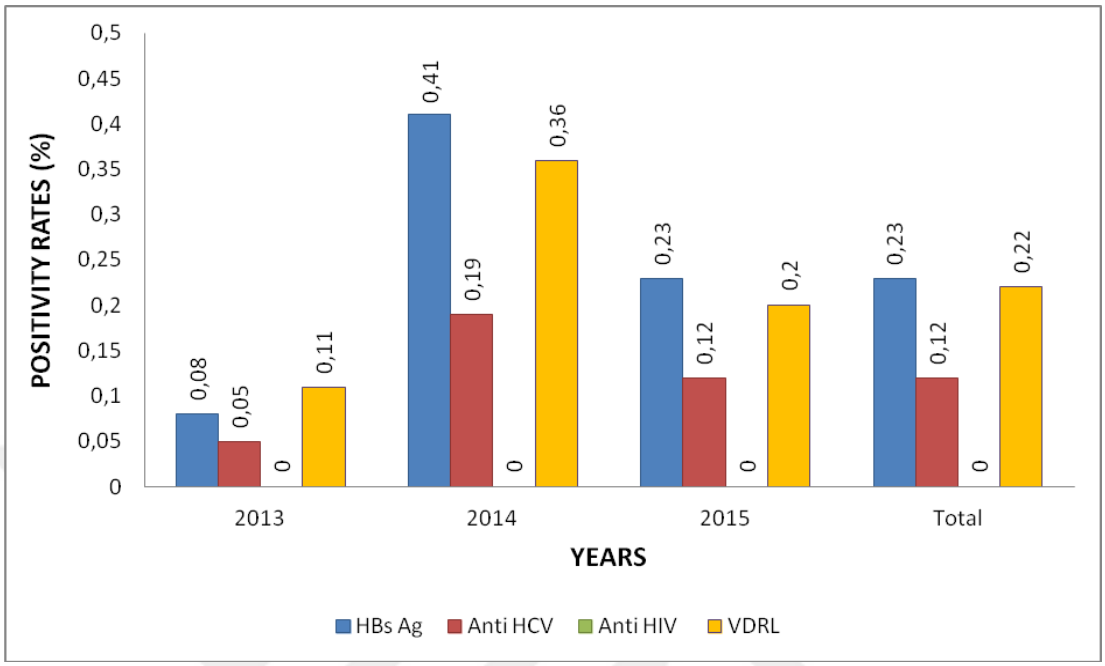

Figure 6. The positive rate of the test results (HBs Ag, Anti HCV, Anti HIV and VDRL) in Erbil.

In 2013 while conducting the tests (HBs Ag, Anti HCV, Anti HIV and VDRL) the tests have become more in relation to the other years (2014-2015) because the on doing the research may have gotten many givers for about four months from September 2013 to December 2013.

In the year 2014 the rise of HBs Ag has been thought to be 210 as compared to 2013 due to more time for blood donation and the war military.

Anti HCV has slowly progressed to about 100 rate of donors from 2013 to 2015. In addition Anti HIV has had no positive or negative rate in 2014 although VDRL shot up significantly from 2013 to 2014 to about 180 rate of donors. But HBs Ag has dropped from 100 rate of positive donors in 2014 to 70 positive rate of givers in 2015. Anti-HIV has no negative rate in 2015 despite the fact that VDRL has dropped slightly from 2014 to 2015 nearly 110 rate of givers.

Lastly it is evident that 2013 has few patient donor due to rise of positive donors that started from September to December 2013 even though 2014 has more rate of givers because

of the existing of the war military when ratio of givers has effect to increase more chances of rate of positive result in regards to 2015 where it has decreased gradually due to immigrants have returned to original city because of effect to decrease rate of givers. Researcher also concluded the relation among total serum, protein, blood group and occurrence of CMV in pregnant women (Table 2).

Table 2. Positivity rate of the test results (HBs Ag, Anti HCV, Anti HIV and VDRL) according to months, year in Blood Donors in Erbil from September 2013 until December 2015.

Years	Months	HBs Ag	Anti HCV	Anti HIV	VDRL
2013	September	9	9	0	10
	October	6	3	0	6
	November	17	11	0	25
	December	11	4	0	17
2014	January	10	6	0	11
	February	13	6	0	16
	March	17	7	0	23
	April	16	15	0	20
	May	14	12	0	26
	June	24	4	0	21
	July	31	5	0	17
	August	22	6	0	17
	September	26	12	1	8
	October	5	4	0	10
	November	20	10	0	9
	December	14	12	0	8
2015	January	18	6	0	6
	February	18	10	0	13
	March	13	3	0	8
	April	3	4	0	3
	May	10	20	0	10
	June	10	7	0	11
	July	12	2	0	9
	August	17	1	0	13
	September	6	4	0	8
	October	11	4	0	17
	November	5	3	0	7
	December	6	3	0	7
	Total	**384**	**193**	**1**	**356**

Shows total of blood givers in regards to gender in Erbil per years. Female were tallied to be 324 and male donors 544458 from 54782 total between September to December 2013. More so the number of givers in 2014 was 51747 out of 300 female & 51447 male donors. In total 2015 had 56664 donors, 360 female and 56304 male who went to Erbil Blood enter for transfusion within 2 years and 4 months (Table.3).

Table 3. Number of blood donor screening according to gender in Erbil.

Year	No of donors	No. of Female	No. of Male
2013	54782	324	54458
2014	51747	300	51447
2015	56664	360	56304
Total	**163193**	**984**	**162209**

4.2. The Test Rresults of Sulaimanya.

Shows results of tests (HBs Ag, Anti HCV, Anti HIV and VDRL) from September 2013 to December 2015 in Sulaimanya. In 2013 such tests (HBs Ag, Anti HCV, Anti HIV and VDRL) has slowly progressed compared to the following years (2014-2015) as the one doing the research has gathered a sum of givers for 4 months from September to December 2013. (Figure 8).

Table 4. Donor screening: number seropositive for the transfusion transmissible infections in Sulimanya.

Years	Total donors	HBs Ag	Anti HCV	Anti HIV	VDRL
2013	10575	29	14	0	44
2014	35428	89	27	0	124
2015	36367	95	31	2	123
Total	**82370**	**213**	**72**	**2**	**291**

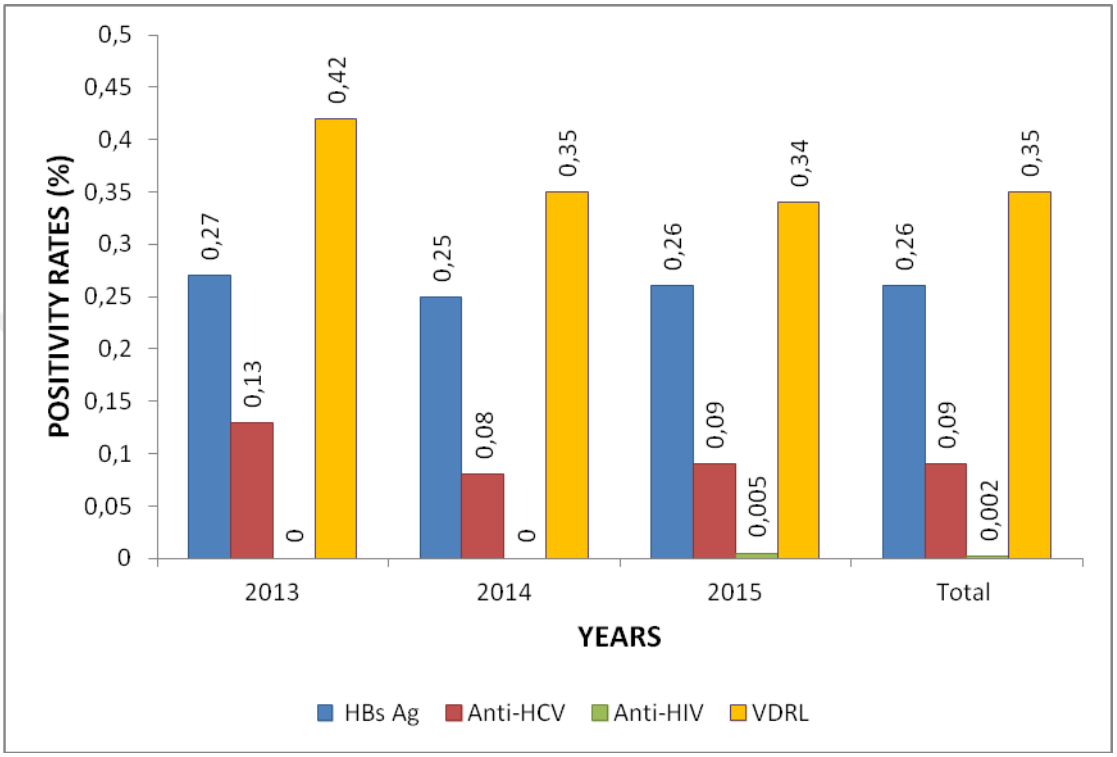

Figure 7. Positively rate of the test results (HBs Ag, Anti HCV, Anti HIV and VDRL) in Sulaymanya.

HBs Ag has risen to about 90 rate donors in 2014 while compared to 2013 as the giving of blood is more and the war military. Anti HCV has gently risen to about 25 rates of donors in 2014. Besides Anti HIV has no positive or negative rate in 2014 even though Syphilis shot up to 125 rate of donors during 2013-2014. On the other hand HBs Ag has moved gently to 95 positive donors in 2015 as compared to 2014 on 6 Augast 2014 where a thousand people moved to Sulaimanya and set their roots in Arabat Camps near city center of Sulaimanya and Anti HCV has progressed gently from 25 positive givers in 2014 to 35 rate of positive donors in 2015.

Anti HCV has no negative rate in 2015 whereas VDRL has the similar level of 2014 and 2015 of about 125 rates of givers. It is evident 2013 has few patient givers as positive

donors started from September to December 2013 and even though 2014 has extra givers due to the war with military when a proportion of givers has intensely effect to raise the rate of positive outcomes compared to 2015 where it has increased gradually as refugees return to their original place to reduce the amount of givers. The researcher observed relation among sum of serum, protein, blood group and existence of CMV in pregnant women.

Sum of donors was tested between September 2013-2015 was 82370. 578 were diseased by one likely transmissible disease. They are represented as 0.258% (213), HIV 0.02% (2), HCV 0.087% (72) and syphilis took about 0.353% (291) (Table 5).

Table 5. Positively rate of the test results (HBs Ag, Anti HCV, Anti HIV and VDRL) according to Months years in Blood Donors in Sulaimanya fromSeptember 2013 until December 2015.

Years	Months	HBs Ag	Anti HCV	Anti HIV	VDRL
2013	September	7	2	0	12
	October	14	2	0	9
	November	6	6	0	16
	December	2	4	0	7
2014	January	4	1	0	2
	February	6	2	0	12
	March	2	1	0	14
	April	7	2	0	8
	May	7	2	0	12
	June	9	2	0	12
	July	14	9	0	10
	August	11	2	0	12
	September	11	2	0	10
	October	6	1	0	8
	November	7	2	0	10
	December	5	1	0	14
2015	January	6	4	0	11
	February	11	2	1	11
	March	6	2	1	14
	April	9	4	0	11
	May	8	2	0	11
	June	5	2	0	14
	July	8	2	0	9
	August	8	1	0	8
	September	10	4	0	12
	October	4	5	0	6
	November	13	1	0	12
	December	7	2	0	4
	Total	**213**	**72**	**2**	**291**

Total amount of givers between September 2013-2015 under a thorough study was 82370, 578 were diseased with on likely causative agent. They are shown as 0.258% (213), HIV 0.02% (2), HCV 0.087% (72) and syphilis 0.353% (291) (Table6).

Table 6. Number of blood donor screening according to gender in Sulaimanya.

Year	No. of Donors per year	Rate. of Female	No. of Male
2013	10575	0	10575
2014	35428	0	35428
2015	36367	2	36365
Total	**82370**	**2**	**82368**

4.3. The Test Results of Duhok.

Overall number of givers tested in September 2013-2015 was 69987, 1021 were diseased with one likely causative agent. The declined units were as follows HBV 0.931% (652), HIV were none, HCV 0.184% (129) and syphilis 0.342% (240)(Table:8)

Table 7. Donor screening the transfusion transmissible: number seropositive for infections in Duhok.

Year	Total donors	HBs Ag	Anti HCV	Anti HIV	VDRL
2013	8958	118	21	0	44
2014	29131	278	96	0	106
2015	31898	256	12	0	90
Total	**69987**	**652**	**129**	**0**	**240**

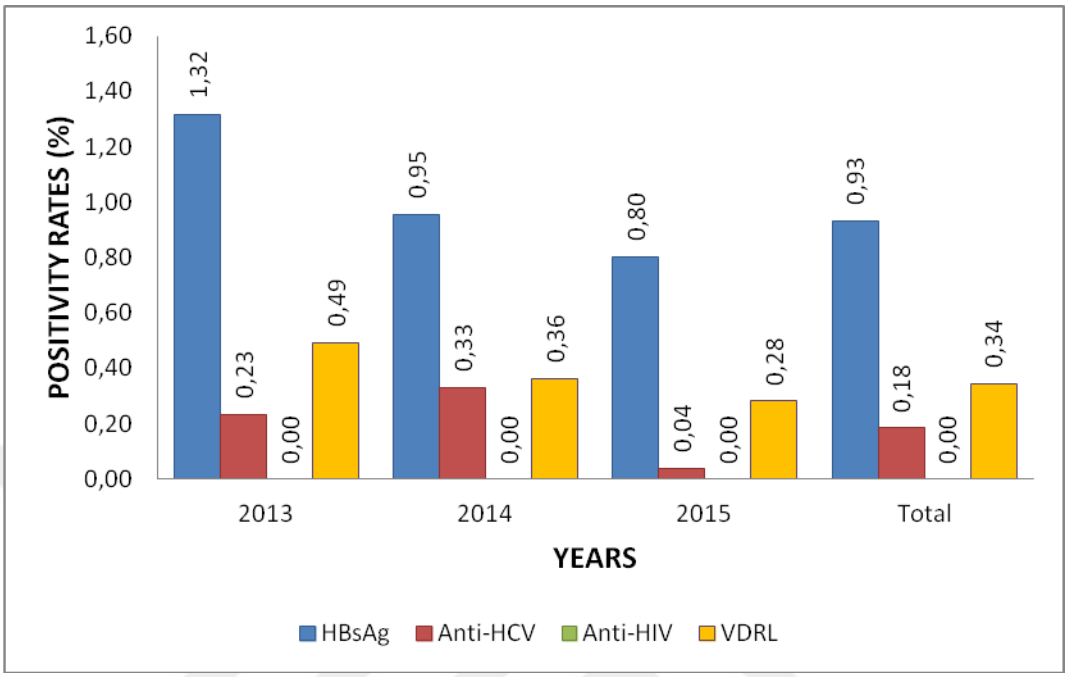

Figure 8. Positively rate of the test results (HBs Ag, Anti HCV, Anti HIV and VDRL in Duhok.

The above figure shows the following tests (HBs Ag, Anti HCV, Anti HIV and VDRL) from September 2013 to December 2015 in Duhok. Earlier on in 2013 the tests on these diseases have risen compared to 2014-2015 since the researcher gathered donors for 4 months from September to December 2013.

Even though, in 2014 HBs Ag cases have gradually increased to about 280 rate of donors in regards to 2015 due to war and frequent donation.

Anti HCV has slowly increased to estimately 90 rates of donors in 2014 if compared to the following year which shows a small number of givers visited Duhok Blood transfusion Center. Anti HIV also has negative as there is no noted any positive cases in 2014 while Syphilis has shot up slowly about 105 rate of givers.

In addition, HBs Ag has risen gently to about 95 positive givers in 2015 as compared to 2014 when the attack of ISIS group happened in Shingal. Many people of Ezidean migrated Sulaimanya and firm roots in Arabat Camps near city center of Sulaimanya and Anti HCV has risen from 25 to 35 rates of givers in 2015.

Table 8. Positively rate of the test results (HBs Ag, Anti HCV, Anti HIV and VDRL) according to months, years in blood donors in Duhok from September 2013 until December 2015.

Years	Months	HBs Ag	Anti HCV	Anti HIV	VDRL
2013	September	34	2	0	16
	October	22	0	0	11
	November	26	3	0	9
	December	36	16	0	8
2014	January	47	14	0	25
	February	19	21	0	5
	March	21	11	0	6
	April	22	9	0	7
	May	25	14	0	12
	June	26	4	0	17
	July	22	8	0	7
	August	31	1	0	11
	September	21	9	0	4
	October	26	2	0	8
	November	18	3	0	4
	December	0	0	0	0
2015	January	22	2	0	10
	February	14	0	0	14
	March	16	2	0	6
	April	15	1	0	6
	May	26	1	0	3
	June	27	1	0	9
	July	21	1	0	5
	August	30	2	0	8
	September	27	1	0	8
	October	14	0	0	6
	November	30	0	0	10
	December	14	1	0	5
	Total	**652**	**129**	**0**	**240**

The rate of female givers was 0% donors from 69987 which was the total between September 2013 until December 2015 who went to the Blood Center transfusion in two years and four months. Table 9: shows that the number of blood givers according to gender in Duhok per years.

Table 9. Number of blood donor screening according to gender in Duhok.

Year	No. of Donors per year	Rate. of Female	No. of male
2013	8958	0	8958
2014	29131	0	29131
2015	31898	0	31898
Total	**69987**	**0**	**69987**

4.4. The Test Results of Kirkuk.

Total no. of givers was 70590 in 4 months, 380 infected with one likely disease. The rest are HBV 0.257% (182), HIV none, HCV 0.0297% (21) and syphilis 0.252% (178) (Table 11).

Table 10. Donor screening: number seropositive for the transfusion transmissible infections in Kirkuk.

Year	Total donors	HBsAg	Anti HCV	Anti HIV	VDRL
2013	9635	14	3	0	19
2014	30515	72	8	0	76
2015	30440	96	9	0	83
Total	**70590**	**182**	**20**	**0**	**178**

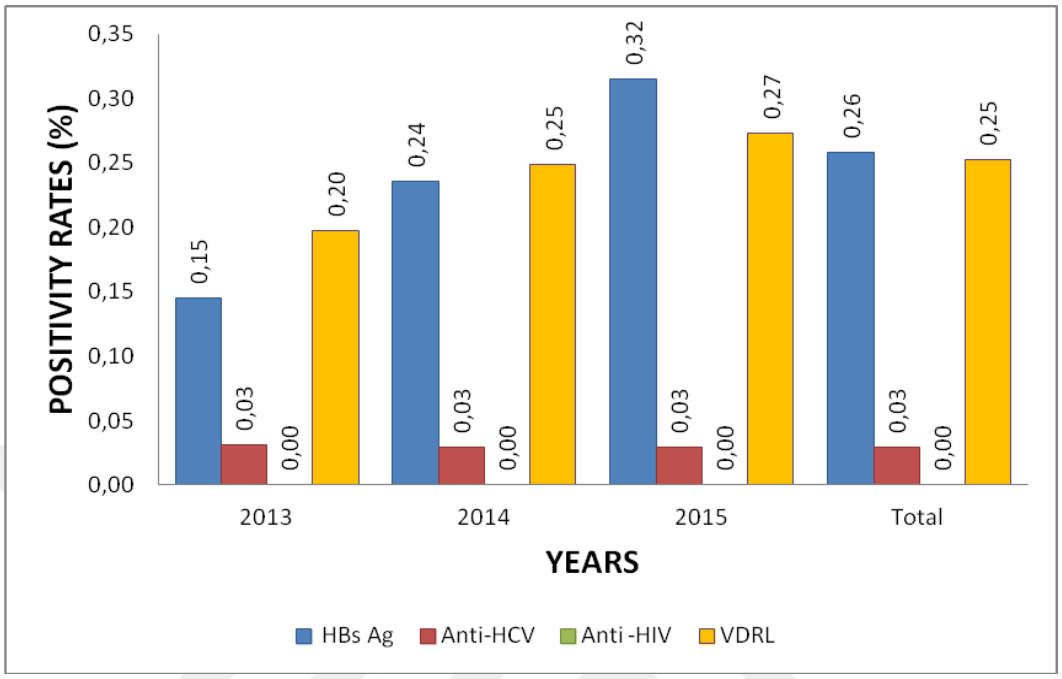

Figure 9. Positively rate of the test results (HBs Ag, Anti HCV, Anti HIV and VDRL) Kirkuk.

The above figure shows outcomes of tests from September 2013 to December 2015 in Kirkuk. Tests in 2013 compared with 2014-2015 due to researcher gathering givers within 4 months. 2014 there increase except Anti HIV was the same in 2 years about 10 rate of givers. In 2015 HBs Ag rose to 90 givers compared to 2014, 75 rate of givers. Anti HIV has negative as there is no cases in 2014, syphilis shot up to 75 rates of givers.

Table 11. Positively rate of the test results (HBs Ag, Anti HCV, Anti HIV and VDRL) according to Months, years in Blood Donors in Kirkuk from September 2013 until December 2015.

Years	Months	HBs Ag	Anti HCV	Anti HIV	VDRL
2013	September	5	1	0	3
	October	4	1	0	8
	November	2	1	0	6
	December	3	0	0	2
2014	January	7	1	0	7
	February	4	0	0	4
	March	3	1	0	6
	April	3	0	0	6
	May	5	0	0	0
	June	8	2	0	14
	July	3	0	0	0
	August	13	0	0	7
	September	4	0	0	4
	October	7	1	0	5
	November	7	1	0	5
	December	8	2	0	18
2015	January	8	0	0	12
	February	15	2	0	6
	March	6	0	0	6
	April	5	0	0	5
	May	4	0	0	9
	June	5	0	0	3
	July	6	2	0	4
	August	1	0	0	9
	September	6	3	0	4
	October	20	0	0	12
	November	2	0	0	3
	December	18	2	0	10
	Total	**182**	**20**	**0**	**178**

The table shows donors in gender in Kirkuk per year. Female were 406 from total 70590 between 4 months. Donations were at Blood transfusion Center in 2 years and 4 months.

Table 12. Number of blood donor screening according to gender in Kirkuk.

Year	No.of Donors per year	No. of Female	No. of male
2013	**9635**	**56**	**9579**
2014	**30515**	**153**	**30362**
2015	**30440**	**197**	**30243**
Total	**70590**	**406**	**70184**

4.5. TheTotally Test Results in North Iraq

Show outcomes of tests in just 4 months in North Iraq. HBs Ag is highest in about 650 rate of givers compared to the lowest which was 180 rate of givers.

Anti HCV is high with 190 rate of givers in Erbil while the lowest being 15 rate of givers.

There are no cases of Anti HIV recorded, syphilis being 360 rate of givers North of Iraq and in Erbil almost 180 rate of donors.

Table 13. Donor screening the transfusion transmissible: number seropositive for infections in North Iraq.

Years	Total donors	HBs Ag	Anti HCV	Anti HIV	VDRL
2013	84274	204	65	0	165
2014	147121	651	230	1	492
2015	155729	576	119	2	408
Total	**387124**	**1431**	**414**	**3**	**1065**

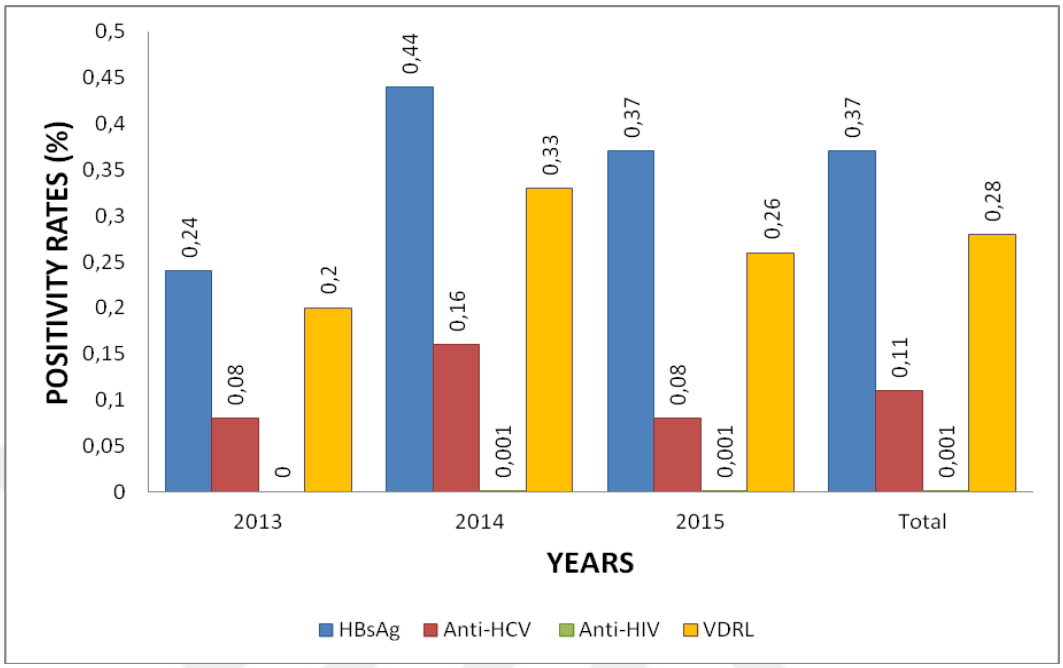

Figure 10. Positively rate of the test results (HBs Ag, Anti HCV, Anti HIV and VDRL) in North of Iraq.

5. DISCUSSION AND CONCLUSION

While the rate of transfusion-transmitted infections has declined in developed countries over the last 20 years, it is not possible to say the same thing for undeveloped or developing countries. Due to the social and political situation in Iraq, there has not been much data on the prevalence of HBV, HCV, HIV and Syphilis in the general population over the past decade. The only way to determine the presence of viral hepatitis is to investigate blood donors. The investigation of blood donors in terms of hepatitis seromarkers is important in the prevention of transfusion-induced hepatitis cases.

Blood transfusion and sexually transmitted plays an important role in the spread of hepatitis and other infectious diseases in Iraq.

Our study, we found the seroprevalence of HBs Ag, Anti HCV, Anti HIV and VDRL for Erbil respectively; 0.23%, 0.11%, 0.0006%, and 0.22%. For 2013, 2014 and 2015 in Erbil; we found the seroprevalence of HBsAg as 0.08%, 0.41% and 0.23%, the seroprevalence of HCV as 0.05%, 0.19% and 0.12%, HIV seroprevalence as 0%, 0.002% and 0%, VDRL seroprevalence as 0.11%, 0.36% and 0.20%. When the results obtained from Erbil are evaluated according to years, the seroprevalence of HBsAg, HCV, HIV and VDRL appears to be at the highest level in 2014.

Our study, we found the seroprevalence of HBs Ag, Anti HCV, Anti HIV and VDRL for Sulaimanya respectively; 0.26%, 0.09%, 0.02% and 0.35%. For 2013, 2014 and 2015 in Sulaimanya; we found the seroprevalence of HBsAg as 0.27%, 0.25% and 0.26%, the seroprevalence of HCV as 0.13%, 0.08% and 0.09%, HIV seroprevalence as 0%, 0% and 0.005% and VDRL seroprevalence as 0.42%, 0.35% and 0.34%. When the results obtained in Sulaimanya were evaluated according to years, seropositivity of HBsAg, HCV and VDRL decreased but HIV seroprevalence increased in 2015.

Our study, we found the seroprevalence of HBs Ag, Anti HCV, Anti HIV and VDRL for Duhok respectively; 0.93%, 0.18%, 0%, 0.34%. The data obtained in Duhok were evaluated by years for 2013, 2014 and 2015; HBsAg seroprevalence was 1.32%, 0.95% and

0.80%, HCV seroprevalence was 0.23%, 0.33% and 0.04%, HIV seroprevalence was 0%, 0% and 0%, and finally VDRL seroprevalence was 0.49%, 0.36% and 0.28%. Seroprevalence of HCV is highest in 2014, and seropositivity of HBsAg and HCV declines with years.

Our study, we found the seroprevalence of HBs Ag, Anti HCV, Anti HIV and VDRL for Kirkuk respectively; 0.26%, 0.03%, 0%, 0.25%. The data obtained in Kirkuk were evaluated by years for 2013, 2014 and 2015; HBsAg seroprevalence 0.15%, 0.24% and 0.32%, HCV seroprevalence was 0.03%, 0.03% and 0.03%, HIV seroprevalence was 0%, 0% and 0%, and finally VDRL seroprevalence was 0.2%, 0.25% and 0.27%. There is a small decrease in seroprevalence of HBsAg and VDRL compared to years.

Studies performed in North Iraq (Erbil, Sulaimanya, Duhok and Kirkuk) from the period between September 2013 and December 2015 shows that HBs Ag positivity is between 0.23% and 0.96%, Anti HCV positivity between 0.03% and 0.18%, Anti HIV positivity between 0% and 0.005% and VDRL positivity between 0.22% and 0.35% in donors. In this study, HBs Ag, Anti HCV, Anti HIV and syphilis reagent antibody (VDRL) tests results have been all together estimated in Blood Center.

We compared the results we obtained with the results of their studies published in 2007 by Dilek et al Which performed in different regions in Turkey have revealed that HBs Ag positivity is between 2.3% and 8.7%, Anti HCV positivity between 0% and 4.7%, Anti HIV positivity between 0% and 0.66% and VDRL positivity between 0.002% and 0.6% between 1995 and 2003. We found that the range of all tests was higher in Turkey compared with north Iraq. We think that this may be due to differences in the time frame of the studies, number of donors and sociological differences.

Dilek et al. (2007) have stated that their HBs Ag results have changed over the years but have not observed any significant increase or decrease. We think that the increase in HBs Ag positivity in our study compared to the year 2013 may be due to the increase in the number of donors in subsequent years.

Bhattacharya at al. (2007) conducted a study published in 2007 comparing serologic methods of HBV, HCV, HIV and syphilis infections in blood donors in West Bengal between 2004 and 2005 and comparing the results. Bhattacharya and his colleagues have concluded that HBV, syphilis and HIV infections increase simultaneously and that this increase is more likely to be due to sexual transmission.

Patel at al. (2013) published in and included Vadodara city in India found 0.85% of HBsAg seropositivity, 0.21% of HCV seropositivity, 0.30% of HIV seropositivity and 0.25% of syphilis seropositivity.

In 2010, Arora at al. (2010) reported the seropositivity of HIV, HBS Ag, HCV and syphilis as 0.3%, 1.7%, 1.0% and 0.9%, respectively, in screening volunteer blood donors in the southern Haryana region of India.

The HIV seroprevalence we find in our study is lower than the results of both Patel et al. and Arora et al..

Shah at al. (2013) in their work in western India in 2013; HBsAg, HCV, HIV and VDRL as 0.89%, 0.1%, 0.15% and 0.22%, respectively. The HIV seroprevalence that Shah and his colleagues found in their work is considerably higher than the results we have found in our work in Iraqi cities.

Abaddi at al. (2014) reported seroprevalence of HBsAg, HCV, HIV and VDRL as 0.8%, 0.15%, 0.02% and 0.006% respectively in their study in Jordan in 2014. The VDRL seroprevalence reported by Abaddi et al. is very low when compared to the results we have found.

In their study published in 2015 by Rubaye et al. (2010) and investigating seroprevalence of HBsAg and HCV in donors in Iraq-Basra, they found that HBV seroprevalence to be 2.3% and HCV seroprevalence to be 0.1%. The seroprevalence of HBsAg that Rubaye and her colleagues obtained for Basra is largely similar to the results of our HBsAg seroprevalence in Erbil, Sulaimaniya and Kirkuk.

As a result, the greatest concern today in transfusion services is the increased seropositivity among donors for HCV, HIV, HBsAg and Syphilis. Along with the development of nucleic acid amplification techniques, western countries have significantly reduced the transfusion-transmitted infections risk. The high cost of nucleic acid amplification techniques was worrying, especially in underdeveloped countries like Iraq. Strategies for control and prevention of transfusion and sexually transmitted infections are of great importance. Apart from donor screening, other factors such as increasing public awareness, education and motivation programs can help to reduce infections. When we examined our findings, different values were recorded according to time and cities in terms of HBsAg, HCV, HIV, Syphilis. However, there was no regular increase or decrease in the rates of positivity.

We believe that our work will contribute to studies aiming to investigate the seroprevalence of HBs Ag, HCV, HIV and Syphilis in Iraq as well as epidemiological studies in other countries.

SUMMARY

Aziz Uthman Y, Seroprevalence of HBs Ag, Anti HCV, Anti HIV, and Syphilis in Blood Donors in North of Iraq. University of Van Yüzüncü Yıl Faculty of Medical Sciences, Department of Medical Microbiology, Master Thesis, Van, 2018. In this study, it was aimed to determine the prevalence of Hepatitis B virus (HBV), Hepatitis C virus (HCV), Human Immunodeficiency Virus (HIV) and Syphilis among blood donors in four cities (Erbil, Sulimania, Duhok and Kirkuk) in northern Iraq. Blood donation records covering the period from September 2013 to December 2015 were reviewed retrospectively. Logistic regression analysis was used to determine risk factors associated with HIV, HBV, HCV and Syphilis infections. The study included, 164177 donors from Erbil, 82370 donors from Sulimanya, 69987 from Duhok and 70590 donors from Kirkuk. All tests of HCV, HBS AG, HBV, HIV and syphilis were evaluated with ELISA and Coulter counter and the results were verified As a result, prevalence was found as Hbs Ag 384 (0.23%), Anti HCV 173 (0.11%), Anti HIV 1 (0.21%) and VDRL 353 (0.21%), respectively. The prevalence rate of HBsAg and HBsAg were found to be 213 (0.258%) and 72 (0.087%) for anti-HCV, 291 (0.353%) for anti-HIV, respectively, with 82370 donors in Sulimania. In Duhok, the prevalence rate of 69987 donors was 652 (0.931%) for HBs Ag, 129 (0.184%) for Anti HCV, 0 for Anti HIV and 240 (0.342%) for VDRL respectively. Finally, in Kerkük 70590. HBs Ag 182 (0.257%), Anti HCV 21 (0.029%), Anti HIV zero and VDRL 178 (0.252%) were found in Kirkuk.

Key words: Anti HCV, Anti HIV, HBs Ag, Syphilis.

ÖZET

Aziz Uthman Y, Irak'ın Kuzeyinde Bulunan Kan Vericilerinde HBs Ag, Anti HCV, Anti HIV ve Frengi seroprevalansı. Van Yüzüncü Yıl Üniversitesi, Tıp Fakültesi, Tıbbi Mikrobiyoloji Anabilim Dalı, Yüksek Lisans Tezi, Van, 2018. Bu çalışmada, Kuzey Irak'da dört şehirdeki (Erbil, Sulimanya, Duhok ve Kerkük) kan bağışçıları arasında hepatit B virüsü (HBV), hepatit C virüsü (HCV), İnsan immünyetmezlik virüsü (HIV) ve Sifiliz prevalansının belirlenmesi amaçlanmıştır. Eylül 2013 ile Aralık 2015 arasındaki dönemi kapsayan kan bağışı kayıtları retrospektif olarak değerlendirildi. HIV, HBV, HCV ve Sifiliz enfeksiyonları ile ilişkili risk faktörlerini belirlemek için lojistik regresyon analizi kullanıldı. Erbil'de 164177 donör, Süleymaniye'de 82370 donör, Duhok'ta 69987, Kerkük'te 70590 donör çalışmaya dahil edildi. HCV, HBs Ag, HBV, HIV ve Sifiliz'in tüm testleri ELISA ve Coulter Sayacı ile değerlendirilerek sonuçların doğrulanması sağlandı. Sonuç olarak; Erbil'de 164177 bağışçı ile yapılan değerlendirmede prevalans sırasıyla HBs Ag 384 (% 0.23), Anti HCV 193 (% 0.11), Anti HIV 1 ve VDRL 353 (% 0.21) olarak bulundu. Süleymaniye'de 82370 bağışçı ile yapılan değerlendirmede prevalans sırasıyla, HBs Ag için 213 (% 0.258), Anti HCV için 72 (% 0.087), Anti HIV için 2 ve VDRL için 291 (% 0.353) olarak bulundu. Duhok'ta 69987 bağışçı ile yapılan değerlendirmede prevalans sırasıyla, HBs Ag için 652 (% 0.931), Anti HCV için 129 (% 0.184), Anti HIV için sıfır ve VDRL için 240 (% 0.342) olarak bulundu. Son olarak Kerkük'te 70590. HBs Ag 182 (% 0.257), Anti HCV 21 (% 0.029), Anti HIV sıfır ve VDRL 178 (% 0.252) olarak bulundu.

Anahtar Kelimeler: Anti HCV, Anti HIV, HBs Ag, Syphilis.

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CURRICULUM VITAE

Yousif Uthman Aziz born at 01/July/1962 in Erbil, Iraq, after completing. Primary, secondary and high education school in Erbil and graduated in Erbil Medical Institutes in 1984 also, graduated from the Biology department of Koya University in 2008. The main language is kurdish and fluent speak in Arabic, and English. Currently, employee in Ministry of Health Department of Laboratory.

ATTACHMENT

Attachment 1. Ethical Statement.

T.C.
YÜZÜNCÜ YIL ÜNİVERSİTESİ
TIP FAKÜLTESİ
GİRİŞİMSEL OLMAYAN
KLİNİK ARAŞTIRMALAR ETİK KURULU
KARAR FORMU

BAŞVURU BİLGİLERİ	ARAŞTIRMANIN AÇIK ADI	İrak Erbil' de Kan Donörlerinde HBsAg, Anti-HCV,Anti-HIV, Sifiliz Seroprevalansı				
	ARAŞTIRMA PROTOKOL KODU	Yok				
	KOORDİNATÖR/SORUMLU ARAŞTIRMACI UNVANI/ADI/SOYADI	Yrd.Doç.Dr. Mehmet PARLAK				
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ UZMANLIK ALANI	Tıbbi Mikrobiyoloji				
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ BULUNDUĞU MERKEZ	Yüzüncü Yıl Üniversitesi Tıp Fakültesi Tıbbi Mikrobiyoloji Anabilim Dalı				
	DESTEKLEYİCİ	Yok				
	DESTEKLEYİCİNİN YASAL TEMSİLCİSİ	Yok				
	ARAŞTIRMANIN TÜRÜ	Tüm gözlemsel çalışmalar	☐			
		Anket çalışmaları	☐			
		Dosya ve görüntü kayıtları kullanılarak yapılan retrospektif arşiv taramaları ve benzeri gözlemsel çalışmalar	☒			
		Kan, idrar, doku, görüntü gibi biyoloma, mikrobiyoloji, patoloji ve radyoloji koleksiyon materyalleriyle veya rutin muayene, teşhis, tahlil ve tedavi işlemleri sırasında elde edilmiş materyallerle yapılacak çalışmalar	☐			
		Rutin teşhis ve tedavi işlemleri sırasında elde edilmiş materyallerle yapılacak çalışma	☐			
		Hücre veya doku kültürü çalışmaları	☐			
		Gen tedavisi klinik araştırmaları dışında kalan ve tanımlamaya yönelik olarak genetik materyalle yapılacak araştırmalar	☐			
		Hemşirelik faaliyetlerinin sınırı içerisinde yapılacak araştırmalar	☐			
		Gıda katkı maddeleriyle yapılacak diyet çalışmaları	☐			
		Egzersiz gibi vücut fizyolojisi ile ilgili araştırmalar	☐			
		Antropometrik ölçümlere dayalı yapılan çalışmalar	☐			
		Yaşam alışkanlıklarının değerlendirilmesi araştırmaları gibi İnsana bir bekleni doğrudan müdahalesini gerektirmeden yapılacak olan tüm araştırmalar	☐			
	ARAŞTIRMAYA KATILAN MERKEZLER	TEK MERKEZ ☒	ÇOK MERKEZLİ ☐	ULUSAL ☒	ULUSLARARASI ☐	

DEĞERLENDİRİLEN DİĞER BELGELER	Belge Adı		Açıklama
	ARAŞTIRMA BÜTÇESİ	☒	
	BİYOLOJİK MATERYEL TRANSFER FORMU	☐	
	YILLIK BİLDİRİM	☐	
	SONUÇ RAPORU	☐	
	DİĞER:	☒	İyi Klinik Uygulamaları Taahhütnamesi,Tüm Araştırmacılara Ait Özgeçmiş,Anabilim Dalı Yazısı, Literatür ve CD,

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Attachment 2. Plagiarism Report

YÜZÜNCÜ YIL ÜNİVERSİTESİ
SAĞLIK BİLİMLERİ ENSTİTÜSÜ
LİSANSÜSTÜ TEZ ORİJİNALLİK RAPORU

Tarih: 06/02/2018

Tez Başlığı / Konusu: Seroprevalence of HBs Ag, Anti HCV, Anti HIV, and Syphilis in blood donors in North of Iraq.

Yukarıda başlığı/konusu belirlenen tez çalışmamın Kapak sayfası, Giriş, Ana bölümler ve Sonuç bölümlerinden oluşan toplam 42 sayfalık kısmına ilişkin, 23/01/2018 tarihinde şahsım/tez danışmanım tarafından TURNİTİN intihal tespit programından aşağıda belirtilen filtreleme uygulanarak alınmış olan orijinallik raporuna göre, tezimin benzerlik oranı % 18 (Yüzde onsekiz) dir.
Uygulanan filtreler aşağıda verilmiştir:
- Kabul ve onay sayfası hariç,
- Teşekkür hariç,
- İçindekiler hariç,
- Simge ve kısaltmalar hariç,
- Gereç ve yöntemler hariç,
- Kaynakça hariç,
- Alıntılar hariç,
-Tezden çıkan yayınlar hariç,
- 7 kelimeden daha az örtüşme içeren metin kısımları hariç (Limit match size to 7 words)

Yüzüncü Yıl Üniversitesi Lisansüstü Tez Orijinallik Raporu Alınması ve Kullanılmasına İlişkin Yönergeyi inceledim ve bu yönergede belirtilen azami benzerlik oranlarına göre tez çalışmamın herhangi bir intihal içermediğini; aksinin tespit edileceği muhtemel durumda doğabilecek her türlü hukuki sorumluluğu kabul ettiğimi ve yukarıda vermiş olduğum bilgilerin doğru olduğunu beyan ederim.

Gereğini bilgilerinize arz ederim.

Yousif Uthman AZİZ
06.02.2018

Adı Soyadı: Yousif Uthman AZİZ
Öğrenci No:
Anabilim Dalı: Mikrobiyoloji
Programı: Tıp Programı
Statüsü: Y.Lisans X Doktora☐

DANIŞMAN ONAYI
UYGUNDUR

Doç. Dr. Mehmet PARLAK
(Unvan, Ad Soyad, İmza)

ENSTİTÜ ONAYI
UYGUNDUR

Enstitü Sekreteri
(Unvan, Ad Soyad, İmza)