

## THE PREVALENCE OF HBV, HCV AND HIV INFECTIONS IN IMMIGRANTS AND ASSOCIATED RISKS FOR LOCAL COMMUNITY IN BANI WALID – LIBYA

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### **Abstract:-**

Since 2011, the number of illegal immigrants has dramatically increased from African counties to Libya, where they prepare for their journey through the Mediterranean Sea to Europe. Before migration, they stay for a period of time and work in Libyan cities and may contact the local community through various means. BaniWalid is a small city with a population of 120,000, receives thousands of immigrants every month, the majority of them come from countries known with endemic diseases. The study was carried out during the period from March to June 2016, with the help of Baniwalid healthcare office and non-governmental foreigners' registration office in BaniWalid. Blood samples of 1511 immigrants from 24 nationalities were tested for infectious diseases including HBV, HCV and HIV using Rapid test kit and positive results were confirmed by ELISA. The aim of this work was to find out the prevalence in immigrants and associated risk for local community. The study found high prevalence of HBV and the results were 6.68%, 3.51% and 0.967% positive for HBV, HCV and HIV respectively. The prevalence of infection rate for each nationality was established to find the high risk group. The finding indicates that the increased contact with immigrants will represent high risks for the local community. The paper suggests that Libyan health service providers must think differently and focus on educating local community about prevention, transmission, symptoms, treatment and control of infectious diseases as the first line of defense.

**Keyword:-** Hepatitis, HIV, Immigrants, BaniWalid, Libya.

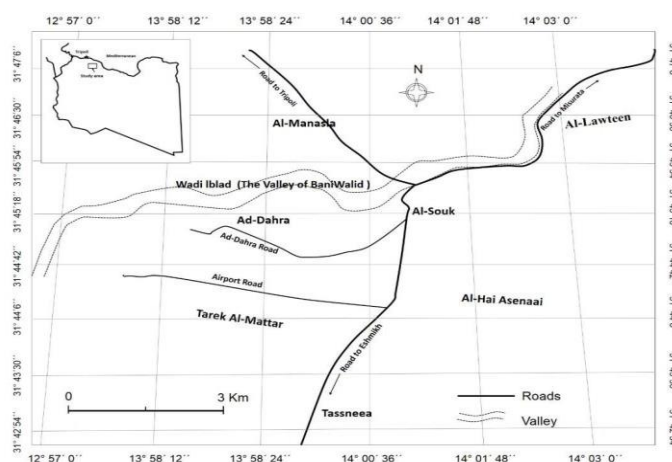
## INTRODUCTION

The most common infectious diseases such as hepatitis B (HBV), hepatitis C (HCV) and human immune deficiency (HIV), are spreading in the world (1). Those diseases infect people and affect national economic development (2). Those infections share similar routes of transmission (1). Injection drug use is considered the most common mean of transmission, receipt of donated blood, blood products and organs, needle stick injuries in healthcare settings, birth to an infected mother, sexual intercourse, sharing personal items contaminated with infectious blood, such as shaving razors and toothbrushes (3). Transmission is possible when disinfection and sterilization techniques are inadequate, and contaminated equipment is shared among patients. Some studies have indicated the possibility of infection occurring among patients on hemodialysis, due to sharing of contaminated medical equipments (3, 4). Hundreds of millions of people are infected worldwide with HBV, HCV and AIDS, and millions of new cases are emerging every year (5). In Africa HBV, HCV and HIV infections are endemic and their prevalence rates differ from one country to another (1). HBV prevalence ranges from 3–20%, whereas the prevalence of HCV range from 1–26% (6). HIV infection infected 2.7 million people in Sub-Saharan Africa alone in 2008, and 63% of HIV infected people worldwide are located in the continent of Africa (7, 8). In Libya, there are some studies have been conduct on the prevalence of HBV, HCV and HIV infections. Libya has an area of 1,775,500 km<sup>2</sup> and is located in the north of Africa surrounded by six African countries; Chad, Sudan, Niger, Egypt, Algeria and Tunisia. In the North it overlooks on the Mediterranean Sea with the coast of 2000 km. The country has a population of about six millions and boasts the highest literacy and educational enrolment in North Africa and among the Arab nations (3, 9).

Since 2011, Libya has seen many armed conflicts, which affected all aspects of life in the country especially health services sector and its ability to contain all health problems (10). The instability of Libya has diminished the control on the borders, which led to the illegal entry of thousands of Africans every month from African countries into Libya to enter Southern Europe illegally. Many of them transit and maybe stay in Libya for a period of time until they get the chance to board the ships to their final destination in Italy or another state of European union (9). Thousands of immigrants cannot afford to pay for their transportation and they stay and work in Libyan cities for months. Baniwalid is small city in the western part of Libya with estimated population of 120 thousands, the map is shown in graph 1 (11). It is one of the cities that receives thousands of illegal immigrants every month. They work in farms, building industry and as sheep keepers. During their stay, they get in contact with local community and use different services such as health facilities, markets and restaurants. In Libya, the overall prevalence of HBV and HCV were 3.7% and 0.9% respectively. Whereas the prevalence of HCV in Libya is estimated about 20.5% in hospital staff (12). The relocation of thousands of immigrants between countries introduces a big concerns for health of locals and immigrants (13). Up-to-date information on prevalence and burden of disease attributable to HBV, HCV and HIV is important for the development of a good emergency and national policies (14, 15). Few studies were carried out on the prevalence of HBV and HCV infections in Libyans. Also some studies were conducted on the prevalence of HBV and HCV infections in immigrants in Libya (15), but there is lack of studies in immigrants from different countries past the armed conflict since 2011. Therefore, the objectives of this study were to determine the prevalence rates of HBV, HCV and HIV in immigrants in BaniWalid, Libya, and to analyze the risk factors to the local community in the city.

## MATERIAL AN METHODS

Blood sample of 5ml was collected from 1511 participants using a sterile plain vacutainer, and the serum was separated by centrifugation at 4000 rpm for 15 minutes and then tested for the infection using Rapid test Kit. Used needles were discarded in a sharps box. The serum samples were analysed for HBsAg, anti-HCV and anti-HIV antibodies. The samples were analysed in BaniWalid healthcare center laboratory and some private laboratories, which have been authorized and validated by healthcare office. Positive samples were retested for confirmation using a third-generation enzyme immunoassay (AxSYM; HCV EIA 3.0; Abbott Laboratories, Abbott Park, Illinois, and HBsAg, AxSYM, Switzerland) as described in (16).



**Graph 1: The map of BaniWalid city, adjusted from Abdoarrahem *et al.* (16)**

## RESULTS

Serum samples were collected from 1511 individual immigrants in BaniWalid from 24 nationalities during the period of April to June 2016. There were 168 infected people which make infection rates of 11.12 %. The HIV, HBV and HCV infections rates of immigrants from all nationalities are presented in Tables 1, 2, 3. The overall infection rate was recorded at 11.12 % of 1511 tested people. The number of infected people and 357 infection rate of Arab immigrants are shown in table 1. Whereas the infected people from African and Asian origin are presented in table 2 and 3. Comparison of infection rates of HBV, HCV and HIV between different categories are shown in table 4. The age distribution and its infection rate is illustrated in table 5.

**Table 1: Infection rates of immigrants from Arab countries residing in BaniWalid (during April - June 2016) having HBV, HCV and HIV infections.**

The race	Country of origin	Number of tested people	Number of infected people	%
Arab Countries	Egypt	89	6	6.74
	Sudan	49	2	4.08
	Morocco	18	0	0
	Tunisia	29	0	0
	Palestine	39	0	0
	Syria	19	0	0
	Yemen	18	0	0
The sum		261	8	3.06

**Table 2: Infection rates of immigrants from Asian countries residing in BaniWalid (April - June 2016) with HBV, HCV and HIV infections.**

The race	Country of origin	Number of tested people	Number of infected people	%
Country	Bangladesh	56	3	5.357
	India	14	0	0
	Pakistan	61	3	4.9
The sum		131	6	4.58

The infection rates for the three infections in immigrants from Asian countries were recorded as follow, 5.357%, 0% and 4.9% for Bangladesh, India and Pakistan respectively. The overall infection rate of 131 tested people was 4.58%. Which make 3.57% of overall infection rates among the infected immigrants in BaniWalid. Overall infection rates in Arab immigrants found to be 6.7% and only Egyptians were infected among them.

**Table 3: Infection rates of immigrants from African countries in BaniWalid (April – June 2016) with HBV, HCV and HIV infections.**

The origin	Country	Number of tested people	Number of infected people	%
African Nationalities and countries	Niger	265	72	8.7
	Burkina	28	7	25
	Zambia	3	0	0
	Ghana	82	14	17.1

**Table 4: Infection rates for HBV, HCV and HIV infections in all immigrants in BaniWalid and the infection rate for each group of the infected number (April – June 2016).**

The origin	HBV	%	HCV	%	HIV	%	% of infection
Arabs 261	6	2.298	2	0.766	0	0	4.76
Africans 1119	90	8.042	50	4.52	14	1.25	91.66
Asians 131	5	3.82	1	0.76	0	0	3.57
All 1511	101	6.68	53	3.51	14	0.967	11.118

**Table 5: Infection rates for HBV, HCV and HIV infections in different age groups.**

Age	0 -10	11- 20	21- 30	30 -40	41-50	51-60	61-70
%	0	3	39	32	13	11	2
Infected %	0	0	49	41	7	4	1

The highest infection rates were found in Senegal (33.3%), Gambia (30.76%), Ivory coast (29.5%), Burkina and Benin (25%), Guinea (18%), Negeria (17.2%) and Ghana (17.1%) followed by Mali, Chad, Niger (15%, 9.4% and 8.7% respectively). The lowest infection rates found in Liberia and Zambia with 0% as no positive cases were recorded. The largest number of immigrants was in the age group of 21 -30 years old followed by 31-40 age group. The highest infection rate was in the age group (21-30), (31-40), (41-50) and 51-60 years with percentage of 49%, 41%, 7%, and 4% respectively.

## DISCUSSION

The objectives of this study were to determine the prevalence rates of HBV, HCV and HIV in immigrants in BaniWalid, Libya, and to analyze the risk they represent to the local community in the city. Few studies were conducted on the prevalence of HBV, HCV and HIV infections in Libya (14). Studying the prevalence of these infections in immigrants Will provide insights on their effects and risk factors on the Libyan community in BaniWalid. It is very important to identify nationalities with high prevalence rates due to their potential roles in spreading infections to others. The main route of transmission of HBV, HCV and HIV is the direct contact between infected individuals from immigrants with another immigrants or local people, which happens at work and markets. Blood transfusion and the usage of contaminated certain health care facilities, which can be shared between infected immigrants and intact local people. This is in agreement with studies reported from other African countries (17, 18).

The overall prevalence of HBV in this study was 6.68 % of all 1511 immigrants that were tested. The prevalence of each nationality was calculated and the highest prevalence was found in African immigrants as follow; Benin (25%), Senegal (19.33%), Burkina (17.8%), Ivory Coast (29.3%), Gambia (23.1%) Nigeria (10.34%), Mali (9.4%), Guinea (8.3%) and Chad (5.3%). Positive cases of HBV found only in Egyptians among Arab immigrants with rate of infection 4.49%. The overall prevalence of HCV in immigrants was 2.51%, which is higher than reported in Libya in general public, (1.3%) and in neighbouring countries: Algeria (2.5%), Tunisia (1.3%), and Morocco (1.6%) (3). the prevalence of HCV varied among immigrants from one nationality to another. The infection rates were recorded in Senegalese (9.67%), Gambia (7.7%), Burkina (7.14%), Ghana (4.89%), Chad (3.24%) and Egypt (2.2%).

The overall prevalence of HIV in all tested people reached about 0.97%, which shows high prevalence, where most of the immigrants are mainly from Africa. The highest HIV prevalence was found in Senegal (3.1%) and followed by Niger, Guinea, Mali, and Chad with (1.2%, 1.46%, 0.88% and 0.88% respectively). The findings and collected data are similar to other studies in North African and Middle-Eastern countries (19). This is in agreement with other studies that have stated HIV is now spreading at alarming rates among North African countries and HIV map will be different in the near future. Serious efforts are needed urgently and more frequent studies are required to study HIV and its risk factors in Libya (19, 20). Co-infection rate in this study was low among the population studied: only 0.04% of the participants were found co-infected with HBV and HCV, which is similar to the rate for HIV and HBV and HCV and HIV co-infection. This rate is very low compared to those observed in Tunisia (5%) and Egypt (22.5%) (3). Despite a clear decline during the past decade, migrants still constitute 35% of new HIV cases in the European Union; however developing countries have a high burden of viral hepatitis, the increasing influx of refugees from highly endemic counties is changing the disease burden in Europe (21).

Little is known about the prevalence HIV and hepatitis co-infection among Libyans as the record system in Libyan health system is not fully computerized and is not up to date. Also the social factories play a negative role in getting the correct situation of these infections rates and prevalence. In Libya, the main route of transmission of HCV is blood transfusion and then followed by usage of certain health care facilities, such as haemodialysis units and sharing injections for drug up use. This is in agreement with studies reported from other African countries (17, 20, 22). This study gave clear insights on these three viruses among immigrants in BaniWalid that were screened during the period of three months in 2016. It highlights the risk that Libyans may face through the continuous of current situation in Libya, of the lack of control on borders and lack of health prevention plans and shortage of supplies and facilities, where thousands of infected Africans are coming to BaniWalid and more will keep on coming as long as the situation remains. More thousands of infected immigrants will continue to enter the country illegally with the help of human trade gangs in Libya and abroad, including BaniWalid city. The risk of infections found in this study was the direct contact between immigrants and another immigrants or local people. This factor should be addressed and the public must be educated how to avoid getting infected. The Libyan health service providers need to use different approaches to reduce the threat of infections to their local communities. Many efforts are needed to control hepatitis and HIV infections in Libya and African countries. The paper identified high infection rates in some nationalities and the risk associated with these infections for Libyans. Also provided data could be used for implementation of new plans and measures of control HBV, HCV and HIV infections.

National policies and local and social regulations should be established in this context to stop illegal migration. Policies should include clear economic and health care strategies to improve the quality of living conditions of locals and immigrants, education and easy access to health care facilities, and to combat intravenous drug use and out marriage intercourse and also work regulations must be updated accordingly. The challenges face health systems include lack of resources, adequate surveillance systems, knowledge and awareness among communities and health professionals. Raising awareness of the local community and use of safe and effective vaccination will help to reduce infections. Screening blood donors and patients in hospitals as well as health workers is very important to stop infecting people in

hospitals. Also the use of safe injection practice by single use injections may protect against HBV, HCV and HIV infections. Routine screening and treating people infected will help to prevent the proceeding of cirrhosis and liver cancer (23). This emphasizes the need to improve screening procedures among locals. The education approaches will help to reduce the transmission of hepatitis and AIDS morbidity, mortality, soci-economic impact on communities (24). Education in schools, Universities, mosques, meetings and all radio channels must be done in professional way to be effective and efficient. The local health service provides a services to the Libyan community in the city of Baniwalid, but immigrants should not be denied to access to healthcare facilities when they need it with more precautions. Also immigrants should be subjected to the education approaches as well as the locals. Health staff and UN staff should visit immigrant's residential areas in the city and examine them on regular basis to assess the situation and make decisions.

## ETHICS AND CONSENT

The participants are immigrants from 24 nationalities that stayed in BaniWalid during the study period and they have been asked to go under health check by the local authority to be allowed to work. Written consent was obtain from each to use their information in this research paper.

## ACKNOWLEDGEMENT

The research group would like to thank all participants that agreed to use their data and the staff of foreigners' registration committee for their help and thanks to all laboratories staff involved.

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