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Hepatitis B virus, hepatitis C virus and human immunodeficiency virus infection in Expatriate workers and Libyan people in Darna

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ABSTRACT

Viral hepatitis constitutes a global health problem; previous studies have affirmed a considerable morbidity and mortality from both acute infections and chronic complications. On the other hand, Human Immunodeficiency Virus (HIV) infection is also of known burden. Determining prevalence measures of these viruses is crucial for establishing appropriate country specific strategies regarding prevention, diagnosis, and containment. The data for this research were records from 2-year period from 20-2018, a total of 1.968 cases were collected from two years. In 2017, a total of 696, (429) Libyan and (267) expatriate, only one infected Libyan and expatriate equally with HCV in June. A total of 1272 cases in 2018, 543 were no Libyan cases with viral infection and 729 Expatriates recorded infection with 8 cases (3 HBSAg and 5 HCV) in November, 7 (one cases with HIV, two cases with HBSAg and 4 cases with HCV). According to the seasons, HIV was recorded with one case (10) in the autumn while the highest HBSAg infected was observed in autumn 5 (50%) followed by summer 4 (40%) and the highest HCV infected was recorded in autumn 9 (90%) followed by summer 3 (30%) and winter 1 (10%).

INTRODUCTION

Worldwide, 2 billion people have been infected with hepatitis B virus (HBV), 360 million have chronic infection, and 600,000 die each year from HBV-related liver disease or hepatocellular carcinoma (1). Also HCV can cause acute and chronic hepatitis (2). Both viruses are transmitted through contact with infected blood, blood products and other bodily fluids (ECDC; 2018). A global work is under system to reduce human immunodeficiency virus (HIV) and viral hepatitis as public health dangers by 2030. To do this objective, the World Health Organization (WHO) and UNAIDS have recognized several goals beside the band of care for HIV, hepatitis B virus (HBV), hepatitis C virus (HCV). These involve encouraging early diagnosis, increasing up treatment and decreasing disease-related mortality (3). HIV and often HBV infection need lifelong treatment, HCV infection can currently be treated in a few weeks. Individuals with high incidence of HCV and HBV infection comprise immigrants born in endemic nations, men who have sex with men (MSM), people who inject drugs (PWID) and people in prison for HCV (2). Quick diagnosis makes available people infected with HCV, HBV or HIV a variety of benefits while also contributing to better public health. It facilitates them to access treatment. Lifelong hepatitis B treatment suppresses HBV replication in 70% to 80% of receivers, as well as reducing down development to cirrhosis and development of hepatocellular carcinoma. HCV treatment for 8 to 12–24 weeks can now cure HCV infection in more than 90% of patients (4). In 97% to 98% of patients living with HIV, antiretroviral treatment effects in viral suppression, reduced rates of co-morbidities and prevention of future opportunistic infections acquisitions (5) (4). HCV and HBV can both cause acute and chronic hepatitis, possibly principal to the progress of cirrhosis, liver cancer and death (6). Both viruses are spread through contact with infected bodily fluids blood and blood products. Transmission in the EU/EEA happens mostly through injecting drug use or sexual contact, with some nations still recording high levels of nosocomial transmission (7). ECDC shows that the load of viral hepatitis is greater in Eastern Europe and southern. Again, caused by the mostly asymptomatic nature of hepatitis infections as well as insufficient local testing practices, the total of people alive with these infections in the EU/EEA who are naive of their HCV and HBV status is likely to be (8). Over the bygone years, about 30 000 new HIV diagnoses have been reported every year in the EU/EEA, about 6 new cases per 100 000 people yearly. Throughout the past years, the sum of new AIDS patients dropped steadily due to rises in the coverage of effective antiretroviral

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treatment. The most significant people groups to target for HIV prevention and testing are thus People who inject drugs (PWID), migrants (especially those from high-prevalence countries) and Men who have sex with men (MSM) (9). Other individuals heretofore identified as danger groups in parts of Europe comprise criminals and sex workers (10) (11).The study aims to determine the seroprevalence of hepatitis B, hepatitis C and human immunodeficiency virus (HIV) in Libyan and expatriates.

METHODS

This study was aimed to identify the prevalence of hepatitis viruses C, B and HIV **in Expatriate workers and Libyan people in Darna** city. A retrospective study was carried out in 2017-2018 on 1968 expatriate and Libyan people. Libyan and expatriate samples were tested in the National Centre for Prevention of Infectious Diseases Laboratory-Darna.

5 cc Blood should be collected aseptically by venipuncture, allowed to clot, and serum separated from clot after centrifugation.

With the purpose of obtain blood serum, all whole blood samples were collected in covered clean plain tubes then let the blood samples to clot at room temperature for 15-30 minutes by and them without interruption, tubes were then centrifuged (5000 rpm for 10 minutes), the resulting serum and directly transferred of serum components into a clean Eppendorf tubes using a Pasteur pipettes and maintained at 2-8 C˚ before analyzing. Serum samples were maintained at 2-8 C˚ before analyzing.(12)

Sample storage Serum samples can be stored in the refrigerator at 2-6 ^{0}C for up to one week • Serum samples can be stored frozen at -200C or lower • For longer storage sera should be aliquoted because repeatedly frozen and thawed samples may produce erroneous results • Performance is not affected by sample that have undergone up to 3-4 freeze-thaw cycles.

IDENTIFICATION

Rapid diagnostic test (RDT) Involve the collection of a blood sample from the venous and provides results immediately.

ELISA Test HCV, HBSAg and HIV were detected using the Enzyme Linked Immunosorbent Assay (ELISA), kits produced by Autobio ELISA test company (autobio diagnostics an autobio group company). HBsAg ELISA Kit for qualitative determination of hepatitis B surface antigen (HBsAg) in human serum or plasma Anti-HCV HCV ELISA for qualitative determination of antibodies to hepatitis C virus in human serum or plasma.

Statistical analysis: - Analysis was done by Excel method.

RESULTS

4.1 Annual number of Libyan and Expatriate people according to viral infection in 2017.

Total of samples was 696, 429 Libyan and 267 expatriate, the number of patients are infected with HCV was 1 in Libyan and 1expatriate with total percentage (0%) equally.

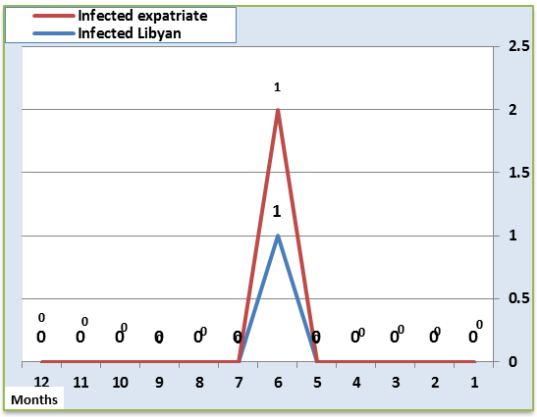

Figure. 1 Annual number of Libyan and Expatriate people according to viral infection in 2017.

4.2 Distribution Of Libyan According To Viral Infection In 2017.

Total of 429 Libyan samples where 1 shown viral infection with total percentage (0%).

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TABLE 1. DISTRIBUTION OF LIBYAN ACCORDING TO VIRAL INFECTION IN 2017.

Months 2017	Libyan	Libyan infected
Months 1	48 (11%)	0 (0%)
Months 2	41 (10%)	0 (0%)
Months3	74 (17%)	0 (0%)
Months 4	73 (17%)	0 (0%)
Months 5	38 (9%)	0 (0%)
Months 6	6 (6%)	1 (0%)
Months 7	47 (11%)	0 (0%)
Month 9	14 (3%)	0 (0%)
Months 8	15 (3%)	0 (0%)
Months 10	19 (4%)	0 (0%)
Months 11	26 (6%)	0 (0%)
Months 12	28 (7%)	0 (0%)
Total	429 (100%)	1 (0%)

4.3 Distribution of expatriate according to viral infections

A total of 267 samples have shown one infection with HCV with total percentage (0%).

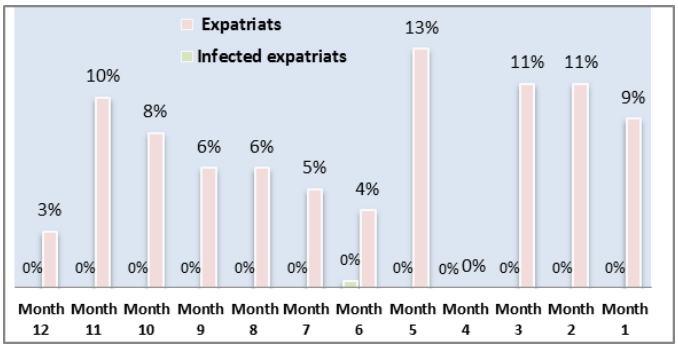

Figure. 2 Distribution of expatriate according to viral infections

4.4 Distribution of viral infections in Libyan and expatriate people during the months

A total of 267 samples have shown 2 infections with HCV with total percentage (0%) were recorded in June.

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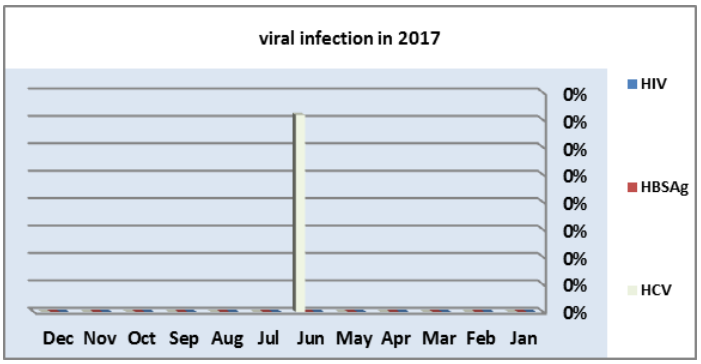

Figure. 3 Distribution of viral infections in Libyan and expatriate people during the months

4.5 Distribution of HCV, HBSAg and HIV among Patients according to the seasons.

The incidence of viral infection was only1 (0%) HCV was recorded in summer and no viral infection with HIV and HBSAg were recorded.

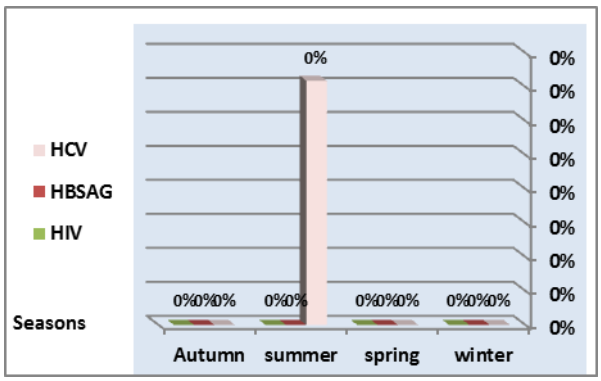

Figure. 4 Distribution of HCV, HBSAg and HIV among Patients according to the seasons.

4.6 Annual number of Libyan and Expatriate people according to viral infection in 2018.

Total of 1272 samples, 543 Libyan and 729 expatriate, the numbers of Libyan patients were infected with HCV was 1 and 1expatriate with total percentage (0%).

Table 2. Annual numbers of Libyan and Expatriate people and the viral infected

Seasons 2018	Libyan	Expatriate	Infected Libyan	Infected expatriate	HCV	HBSAg	HIV
July	10	9	1	0	1	0	0
August	52	99	0	6	2	4	0
September	80	160	0	8	5	3	0
October	80	55	0	7	4	2	1
December	86	174	1	0	1	0	0

4.7 Distribution of Libyan according to viral infection.

Total of 543 Libyan samples where 1 shown viral infection with total percentage (0%).

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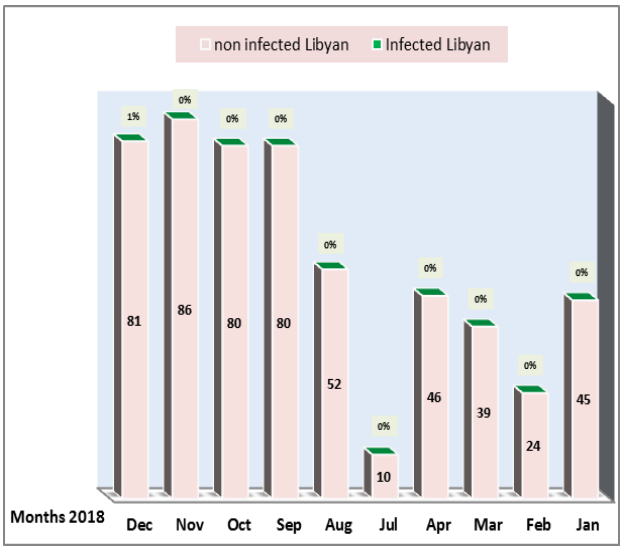

Figure. 5 Distribution of Libyan according to viral infection.

4.8 Distribution of expatriate according to viral infection.

Total of 429 expatriate samples where 23 shown viral infection with total percentage (5.3%).

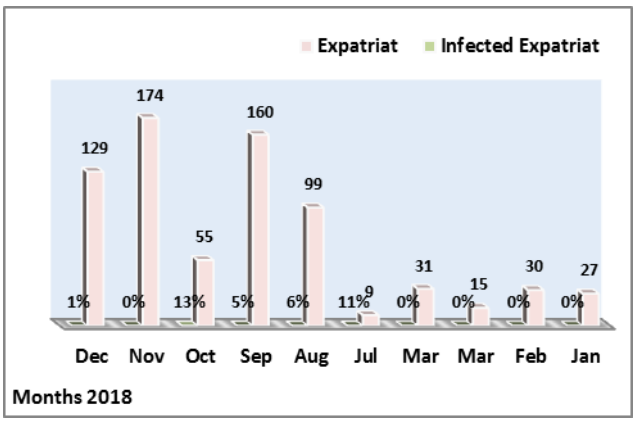

Figure. 6 Distribution of expatriate according to viral infection.

4.9 Distribution of viral infection among the expatriate residents.

A total of 267 expatriate samples have shown 12 (1.6%) infections with HCV, 9 (1.2%) infections with HBSAg and 1 (0%) infections with HIV.

Table 3. Distribution of viral infection among the expatriate residents.

Expatriate with viral infected	January	February	March	April	July	August	September	October	November	December
HCV	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1(0%)	2 (0%)	5 (1%)	4 (1%)	0%	0%
HBSAg	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (1%)	3 (0%)	2 (0%)	0 (0%)	0 (0%)
HIV	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0%)	0 (0%)	0 (0%)

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4.11 Distribution of HCV, HBSAg and HIV among Patients according to the seasons.
Incidence of viral infections have shown 1 (0%) infections with HIV was recorded in autumn, 5 (50%) infections with HBSAg was recorded in autumn and 4 (40%) infections with HBSAg in summer while 9 (90%) infections with HCV in autumn, 3 (30%) infections with HCV in summer and 1 (10%) infections with HCV in winter.

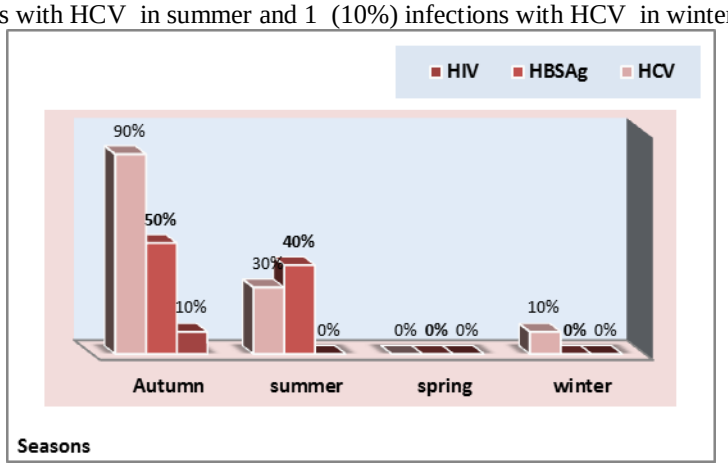

Figure. 7 Distribution of HCV, HBSAg and HIV among Patients according to the seasons.

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In this section, the researchers can give a simple discussion related to the results of the research trials. This section contains the author's opinion about the research results obtained. Common features of the discussion section include the comparison between measured and modeled data or comparison among various modeling methods, the results obtained to solve a specific engineering or scientific problem, and further explanation of new and significant findings

DISCUSSION

Data samples were collected from the National Centre for Prevention of Infectious Diseases Laboratory- Darna during the time from 2017-2018 on 1968 expatriate and Libyan people. A total of 267 Libyan and expatriate samples have shown 2 (0%) infections with HCV with total were recorded in June 2017. A total of 1272 Libyan and expatriate samples, 543 were 2 Libyan samples with viral infection HCV, and 729 Expatriates. Our study demonstrated that, the infection of HBV, HCV, and HIV is rare between Libyan people and rare in expatriate people. The overall prevalence of hepatitis B recorded infection with 8 cases (3 HBSAg and 5 HCV) in November, 7 (one cases with HIV, two cases with HBSAg and 4 cases with HCV). Contrast to our study, Recent WHO reports show that some of the highest prevalence rates of HIV infection; HBV and HCV are in Horn of Africa countries (13). These countries would benefit from efforts directed at ensuring the quality and accuracy of their medical testing procedures. HBV was the most common cause of unfitness among all the workers in this study. This was followed by chronic diseases and HCV. The pattern of these diseases among workers is consistent with the pattern of disease in most Asian and African countries where infectious diseases are more common (14). Workers from Indonesia and the Philippines had the highest specific rate of unfitness due to HIV, HBV and HCV, avian corona virus and chronic diseases (15,16) . Although the prevalence of HIV, CD4 acounts and hepatitis infections is high in South-East Asia (17).The rate of HIV cases among Africans was higher than that for South-East Asians in our study.

CONCLUSION

People run away from painful wars and/or great need is often poor. Correct management of the healthcare problems of expatriates requires expert personnel, funds and dedicated structures for their assistance. Should immigrants—legal or illegal—be offered screening for hepatitis B and indeed for other infections such as hepatitis C, human immunodeficiency virus (HIV), and tuberculosis (TB) The data demonstrate the demographic, clinical and virological characteristics of infection in expatriates in Libya and indicate the need for Libyan healthcare authorities to enhance their support for providing screening, HBV vaccination, treatment, and educational programs for this populations. This study demonstrates that the HIV/HBSAg and HCV co-infection rate significantly underestimated with the current serology testing.

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