

Studying the prevalence of hepatitis virus in patients in Sammawa city

دراسة نسبة الإصابة بفيروس التهاب الكبد في المرضى المصابين به في مدينة السماوة

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Summary

This study was confirmed that HAV,HBV and HCV infections are endemic in Iraq, and are serious problem in Al-Muthanna province, during the period between October 2010 and April 2011,

The study included 83 patients who was diagnosed as viral hepatitis and referred to Central Public Health laboratory, with age range from 1-40 years old of both sexes.

Patients group were found to be 59 anti-HAV seropositve ,16 HBsAg seropositve, and anti-HCV seropositve.

The study showed that the percentage of anti-HAV seropositve was (71%) followed by HBsAg was (19%) and anti-HCV (10%). The higher infection rates according to the age groups were under 10 years old 83% for hepatitis A, while hepatitis B and C were under age group 21-30 years old 50% and 51% respectively.

The higher infection rates according to the sex was in males in hepatitis A, B and C 61%,75% and 100% respectively. The higher infection rates according to residence was in hepatitis B in the rural regions (81%) while in urban regions in hepatitis A and C were 67% and 62% respectively.

الخلاصة

اظهرت هذه الدراسة الوبائية بان التهاب الكبد الفايروسي نوع A,B,C هو مرض مستوطن في العراق ومشكلة خطيرة في محافظه السماوة وذلك عملت هذه الدراسة للفترة بين تشرين الاول من عام 2010 ولغاية نيسان 2011. شملت هذه الدراسة 83 شخص مصاب بالتهاب الكبد الفايروسي قد راجعوا الى مختبر الصحة المركزي للفئة العمرية تراوحت من 1-40 سنة ولكلا الجنسين.

هذه المجموعة تضمنت حوالي 59 شخص مصاب بالتهاب الكبد نوع A يليها 16 شخص بالتهاب الكبد نوع B و8 اشخاص بالتهاب الكبد نوع C .

اظهرت هذه الدراسة بان نسبة المصابين بالتهاب الكبد نوع A كانت الاعلى 71% يليها التهاب الكبد نوع B بنسبة 19% والتهاب الكبد نوع C بنسبة 10%. وقد اظهرت نسب الإصابة الاعلى بالتهاب الكبد حسب المجاميع العمرية حيث ان التهاب الكبد نوع A كان الاعلى بنسبة 83% ضمن المجموعة العمرية دون العشر سنوات يليها التهاب الكبد نوع B و C ضمن المجموعة العمرية من 21-30 سنة بنسبة 50% و 51% على التوالي , في حين كانت نسب الإصابة للأنواع الثلاثة من التهاب الكبد A,B,C هي الاعلى في الذكور منها في الاناث بنسب 61% و 75% و 100% على التوالي.

بينما كانت نسب الإصابة الاعلى بالنسبة للمنطقة الجغرافية في التهاب الكبد نوع B هي الاعلى في المناطق الحضرية بنسبة 81% بينما سجل التهاب الكبد نوع A, C اعلى نسب اصابه في المناطق الريفية وهي 67% و 62% على التوالي.

INTRODUCTION

Viral hepatitis is a major health problem in the world. It is the commonest cause liver cancer in many countries all over of the world including Iraq(1).

The disease is spreading like a jungle fire in our country and can be truly called as an endemic hepatitis can be caused by many drugs and toxic agents as well as by numerous viruses, the clinical manifestations of which may be quite similar. Viruses causing hepatitis are hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV) (delta agent), and hepatitis E virus (HEV)(2).

Our laboratory utilizes the most useful of the immunoassays available, the two antibody “sandwich” enzyme linked immunosorbent assay (ELISA). This assay is used to determine the antigen concentration in unknown samples (3). This ELISA is fast and accurate, and if a purified antigen standard is available, the assay can determine the absolute amount of antigen in an unknown sample. The sandwich ELISA requires two antibodies that bind to epitopes that do not overlap on the antigen (4).

Hepatitis viruses can be classified in to 5 type and mentioned very important types:

Hepatitis type A

HAV is a distinct member of the picornavirus family . HAV is a 27- to 32-nm spherical particle with cubic symmetry, containing a linear single-stranded RNA genome with a size of 7.5 kb. There is no antigenic cross-reactivity with HBV or with the other hepatitis viruses (3, 5).

Hepatitis B virus

(HBV) infection of the liver cells results in expression of viral antigen on the cell surface, followed by immunological cell damage with acute, possibly fulminant, chronic persistent or chronic aggressive hepatitis. The final stages can be liver cirrhosis or hepatocellular carcinoma(6).

Hepatitis C

HCV is a single-stranded RNA virus (hepacivirus) with properties similar to those of flavivirus. At least six major genotypes of HCV have been identified. In the past, HCV was responsible for over 90% of cases of post-transfusion hepatitis, yet only 4% of cases of hepatitis C were attributable to blood transfusions(7).

Materials and methods

Reagents

Reagents used in enzyme-linked immunosorbent assay (elisa) directly
example detection of HBsAg in human serum.

A-Reagents use in screening test of HBsAg:

B-Packs with confirmatory reagents:

Reagents used in enzyme-linked immunosorbent assay (elisa) indirectly
-example detection of HCVAg in human serum.

METHODS:-

Enzyme-linked immunosorbent assay (ELISA) directly

ELISA method for the detection of HBsAg.

A-ELESA method for the screening of HBsAg.

B-ELESA method for of HBsAg confirmatory test

Enzyme-linked immunosorbent assay (ELISA) indirectly

Example ELISA method for the detection anti-HCV.

The results and Discussion:-

Over 7 months period the total (4745) healthy blood donors were tested for HBs Ag and Anti-HCV using ELISA test.

The results showed that the HBs Ag prevalence among healthy blood donors in Al-Samawa province was 62% and a seropositive Anti-HCV Ab was 38%. In addition data from central public health laboratory in Samawa showed that tested suspected patients(83) were 71%(59) type A, 19% (16) type B and 10% (8) type C from 83 seropositive patients from (214) cases were suspected and these results are agreed with (8).(figure 1 and 2).

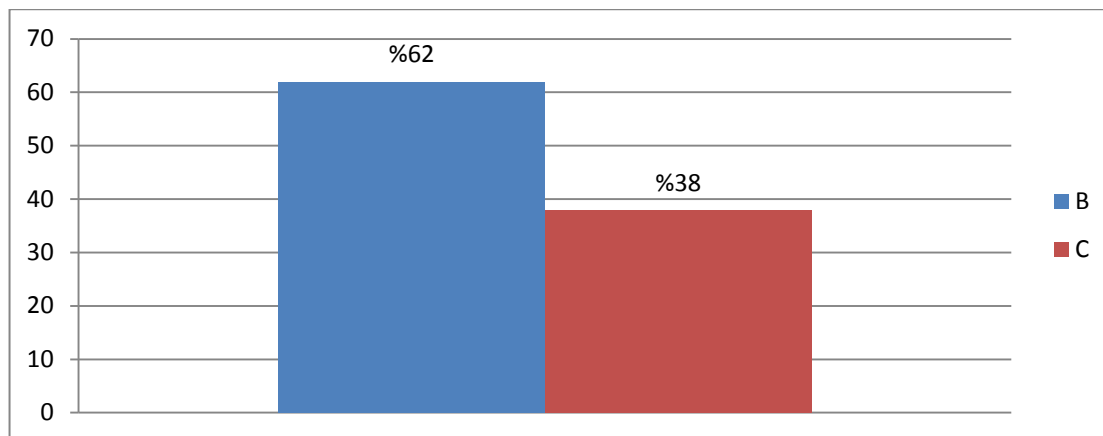


Figure (1): The distribution percentage of hepatitis B and C from positive cases

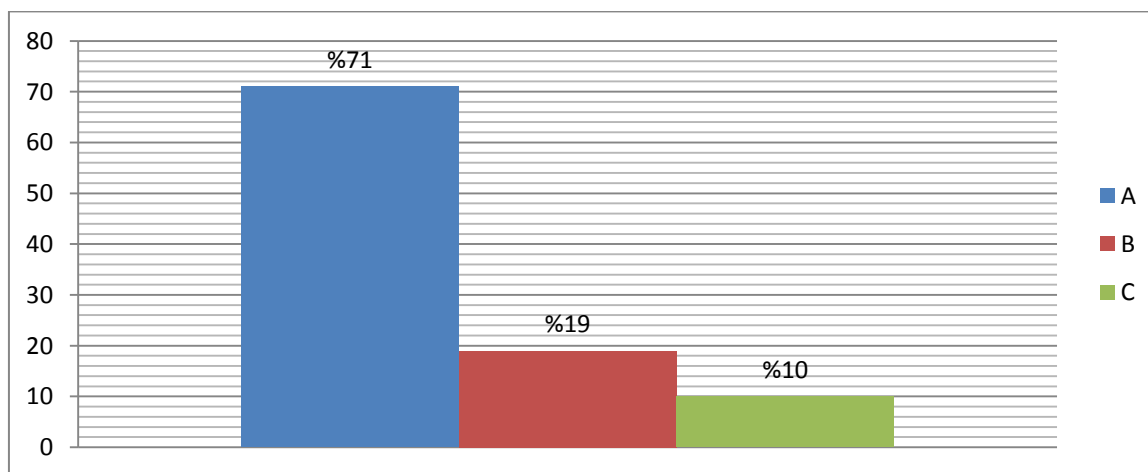


Figure (2): The distribution percentage of hepatitis A, B and C and from(83) positive cases

The distribution of tested serum for Anti-HAV Ab according to the age group, sex and residence:-

The results showed that the seropositive percentage of Anti-HAV Ab according age group were 83% (49 from 59) for age under 10 years followed by 15%(9 from 59) for age 11-20 years, 2% (1 from 59) for age 21-30 years and 0% for age 31-40 years and this results may be explained that the under crowded conditions and poor sanitation, HAV infections occur at an early age ,with the highest rates in those between 5 and 14 years of age (2).While the results of seropositive Anti-HAV Ab were 61%(36 from 59) for males and 39%(23 from 59) for females, Finally the results showed that higher percentage were 67% (40 from 59) in urban community and 33%(19 from 59) in rural community,as shown in figures (3,4,5) and this results disagreement with (2,9) that stated the higher prevalence in those from lower socioeconomic groups .

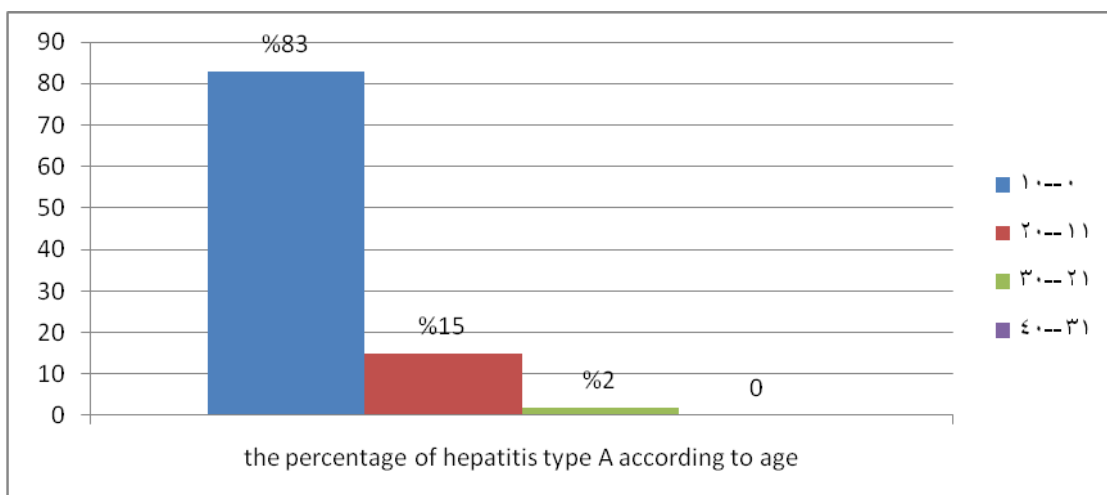


Figure (3)The distribution of tested sera for Anti-HAV Ab according to the age groups.

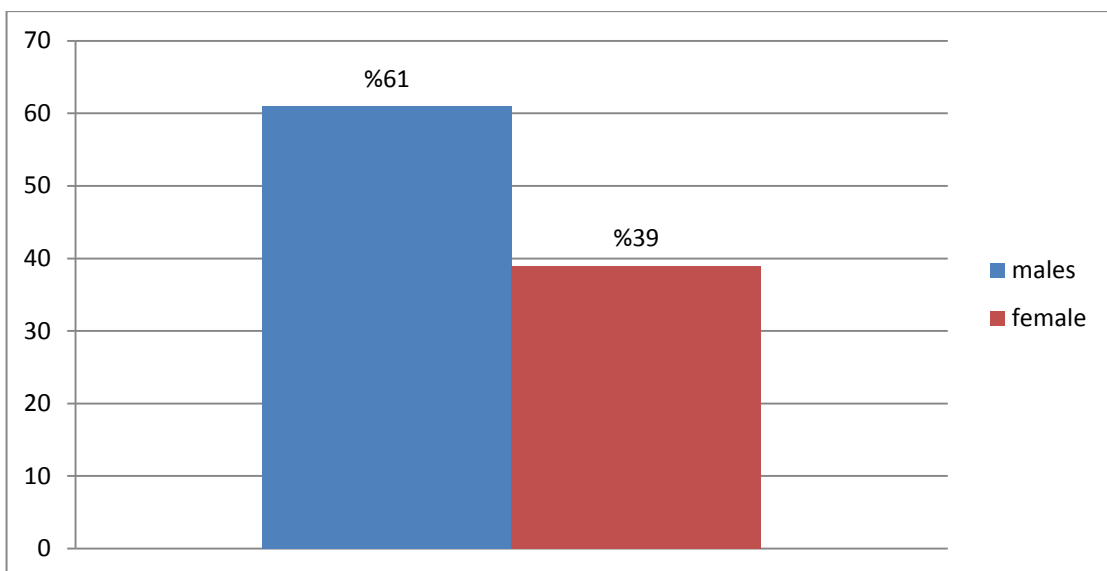


Figure (4)The distribution of tested sera for Anti-HAV Ab according to the sex.

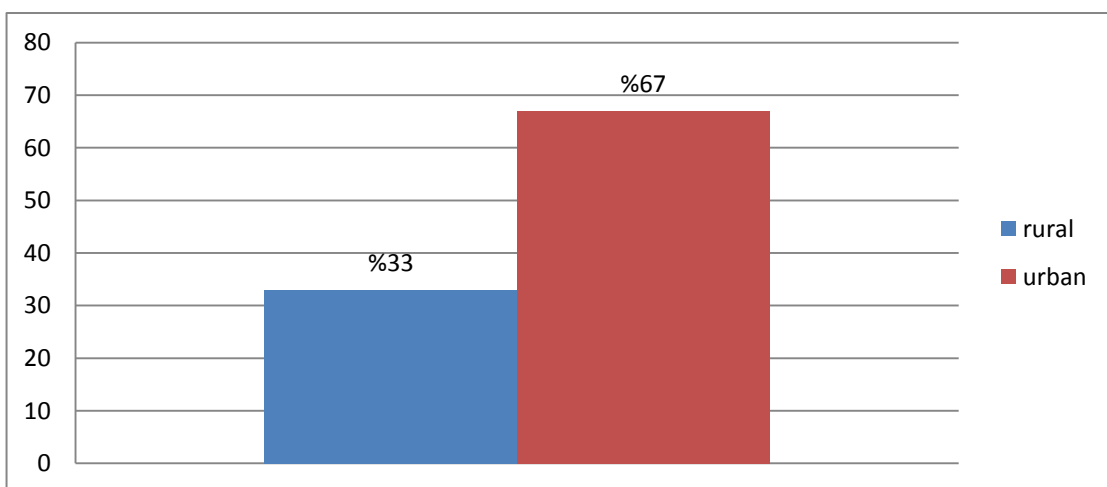


Figure (5)The distribution of tested sera for Anti-HAV Ab according to the residence.

The distribution of tested sera for HBs Ag(type B) according to the age group, sex and residence:-

The results showed that the seropositive HBs Ag according to age group were 50% (8 from 16) for age group 21-30 years, 44% (7 from 16) for age group 31-40 years, 6% (1 from 16) for age 11-20 years and 0% for age group under 10 years, as shown in figure(6) and this results disagreement with(8,9,10) that mentioned the distribution of the virus implies a different age infection rates; for regions of intermediate prevalence the highest infection rates occur in children larger than 5 years of age, adolescents and young adults, whereas in areas of high endemicity, children 5 years old have the highest risk for infection. While the results of seropositive HBs Ag were 75% (12 from 16) for males and 25% (4 from 16) for females as shown in figure (7). Finally the results showed that the higher percentage was 81% (13 from 16) for rural community and 19% (3 from 16) for urban community as shown in figure (8). This result agree with (11,12 , 13,14,15,16).

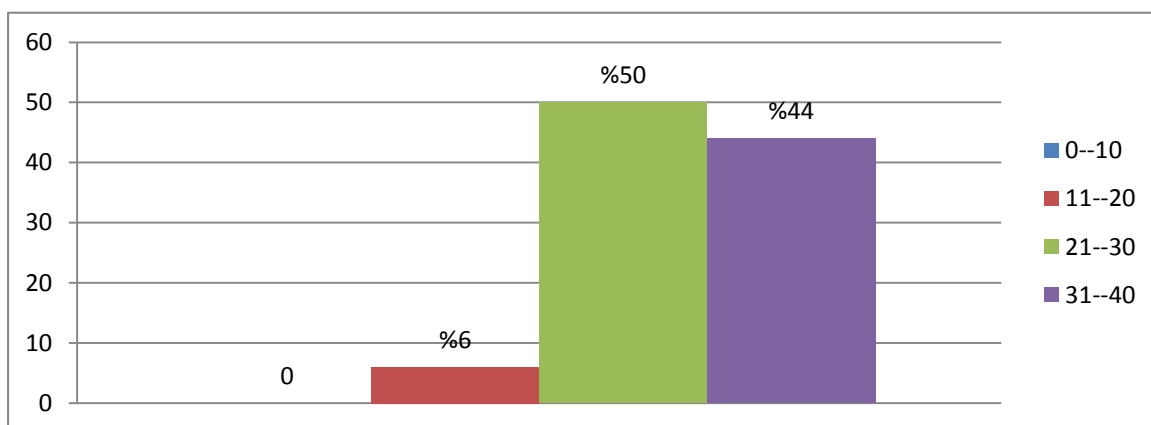


Figure (6) distribution of tested sera for HBs Ag according to the age groups .

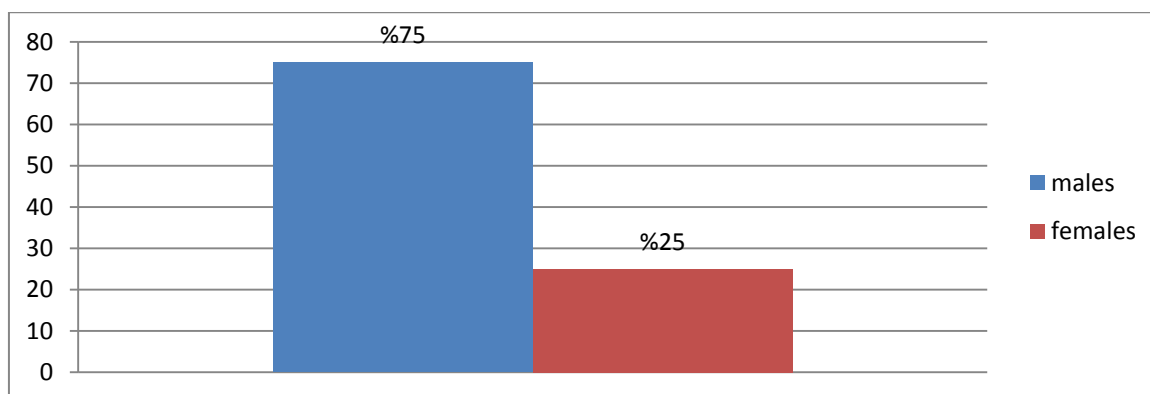


Figure (7) distribution of tested sera for HBs Ag according to the sex.

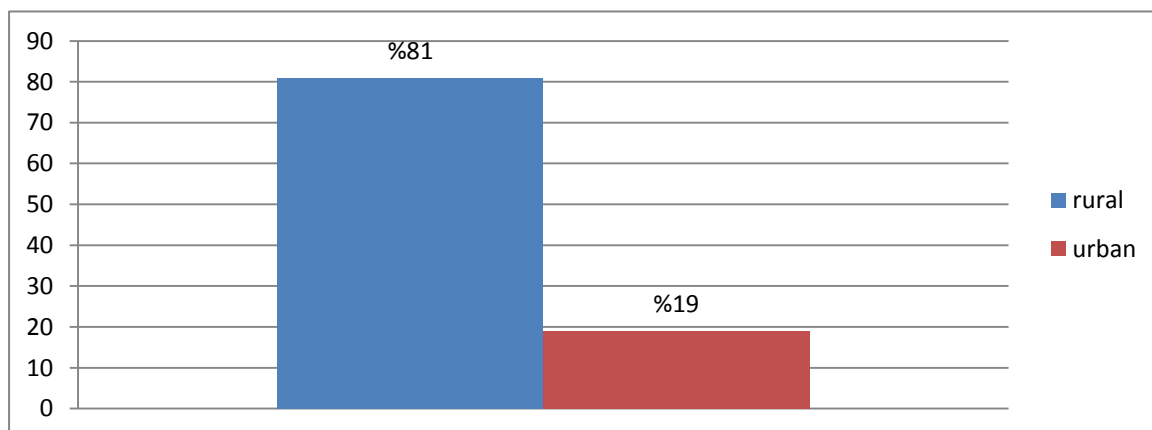


Figure (8) distribution of tested sera for HBs Ag according to the residence.

The distribution of tested sera for Anti- HCV Ab according to the age group, sex and residence:-

The results showed that the seropositive percentage of Anti-HCV Ab according age group were 51% (5 from 9) for age group 21-30 years, 37%(3 from 9) for age group 11-20years,12%(1 from9) for age group under 10 years and 0% for age group31-40 years as shown in figure (9). While the results of seropositive Anti-HCV Ab 100% for males and 0% for females as shown in figure (10) , this results are similar with (9,15,18) that explained factors which accelerate clinical manifestations include alcohol intake, which has a pronounced effect on the course of the disease; coinfection with Human immunodeficiency virus -1 (HIV-1) or HBV; male sex, and an older age at infection and also Seroprevalence study done in 5 regions of Turkey demonstrated that the prevalence of HCV was 1.5 % and it is more common in resident over 45 years of age with primary education and low socioeconomic status (19), Sexual transmission of HCV is implicated by the seroprevalence of anti-HCV in gay men , (20). The prevalence of anti-HCV in the general population in Iraq is yet to be established, results obtained by (21) indicated the prevalence rate of anti-HCV in patients with various classes of liver disease was (17%) which is higher than observed prevalence (2.5%) in healthy control and (16.2%) among those with acute viral hepatitis (AVH). (22)found the prevalence of Anti-HCV was (62%) in Iraqi haemodialysis patients while(23,24) Stated that the prevalence of Anti-HCV was (0.67%) among blood donors in Salahdeen province . Finally, the results showed that higher percentage was 62% (5from 9) for rural community and 38% (3 from 9) for urban community as shown in figure (11) .

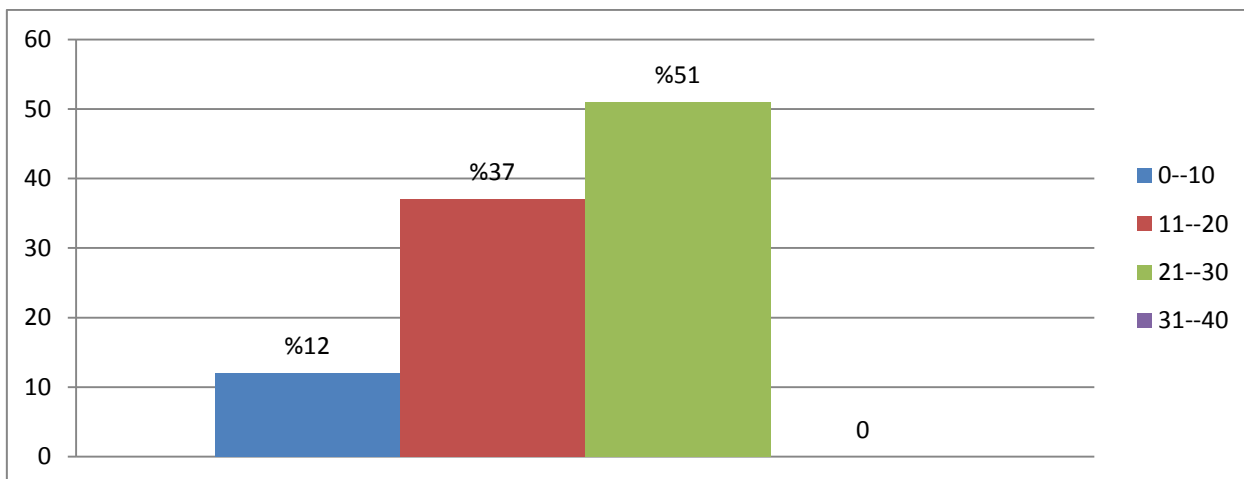


Figure (9) distribution of tested sera for Anti- HCV Ab according to the age groups.

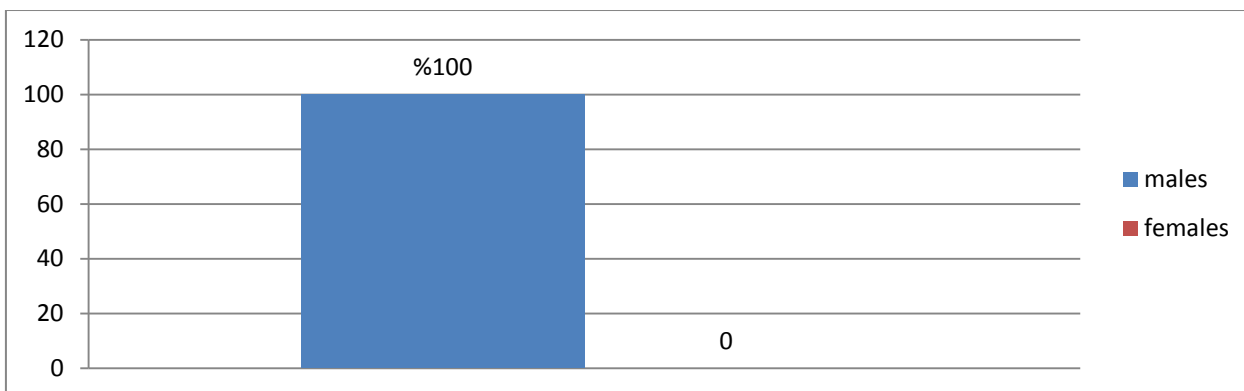


Figure (10) distribution of tested sera for Anti- HCV Ab according to the sex.

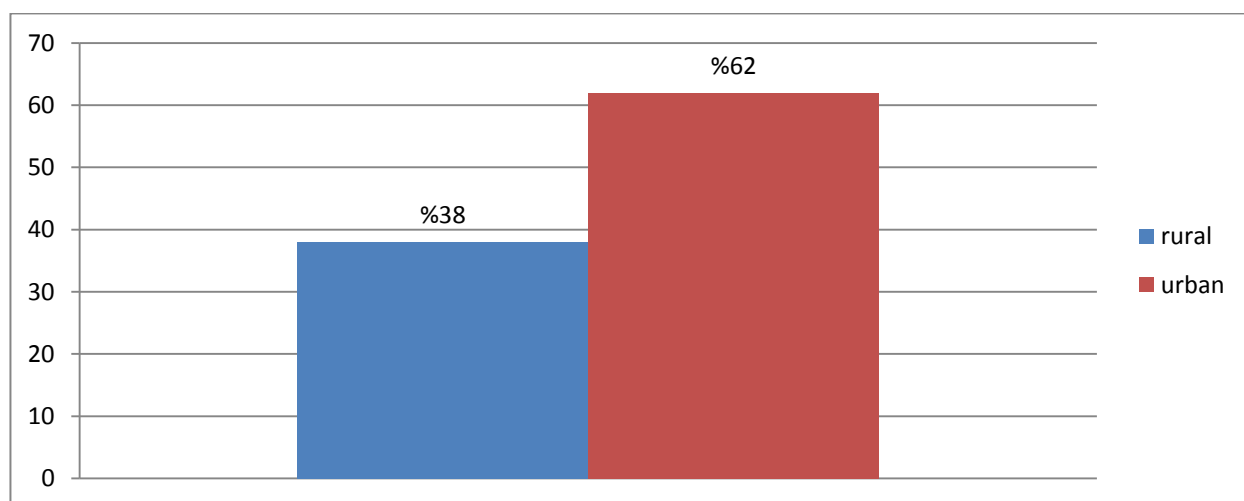


Figure (11) distribution of tested sera for Anti- HCV Ab according to the residence.

Conclusion

- 1-We reported higher infection rates of hepatitis (type A,B and C)consequently.
- 2-We reported higher infection rates according to the age groups under 10 years old and 21-30 years old.
- 3-We reported higher infection in males in types A,B and C of hepatitis.

4-We reported higher infection rates in this city for type B ,while the higher percentage was in urban community in type A and C.

Recommendation

1-We recommend make another study similar to our study in other governorate.

2-Must followed good hygienic measurement.

3-The use of improperly sterilized syringes should be avoided.

4-The prevalence and risk factor of hepatitis in other high risk groups like patients with leukemia, sickle cell anemia, health care workers .

5-Blood and blood product should be used only when necessary.

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