

Sero-Prevalence of hepatitis C & B viruses & assessment Knowledge in a group of infertile couples attending at women's health center, Assiut city

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Abstract

viral hepatitis remains a serious problem and a public health priority in Egypt and major cause of morbidity and mortality. **Aims of the study:** To determine the seroprevalence of both HCV and HBV infection among infertile couples and assesses knowledge regarding HCV and HBV infection. **Methods:** A cross-sectional research design carried out in Women's Health Center at Assiut University hospital from client in Gynecology department. Purposive sample included a total of 200 infertile couples according the budget from Assiut University. Data collected by using; tool (1): structured interviewing questionnaire for assessment knowledge of couples and included demographic data and infertility, medical and surgical history, Tool (2): serological blood tests to detect infection with HCV and HBV. **Results:** The mean maternal age of females and males was (29.2±9.8 & 34.5±11.3 respectively), the prevalence of HCV was 8% (4.5% females and 3.5% males) and prevalence of HBV was 4% (1% females and 3% males) and Majority of couples had poor knowledge regarding HCV and HBV. **Conclusion:** There is a significant poor knowledge of infertile couples toward Hepatitis B and C. **Recommendation:** need more researches for a larger number of people from different geographical areas to increase awareness about HBV and HCV.

Key Words: *Hepatitis B, Hepatitis C, Infertility, Public Awareness & Public Education.*

Introduction

Viral hepatitis infection is a major global public health problem in both developed and developing countries (Seyed, et al., 2009). Blood borne diseases impose heavy burdens on national economies and individual families due to costs arising from acute and chronic morbidity and mortality (Shalaby et al., 2010). More than 50,000 deaths annually are directly attributable to HCV, with an additional 300,000 deaths due to liver cancer caused by HCV, and almost 800,000 deaths due to cirrhosis (WHO, 2011). Egypt has the largest burden of HCV infection in the world, with a 10% prevalence of chronic HCV infection among persons aged 15–59 years. On average, over half a million people in Egypt get infected by the hepatitis C virus (HCV) each year, far more than any other country in the world, according to a new study published in the Proceedings of The National Academy of Sciences. Nearly seven out of every 1,000 of Egypt's 77 million people get infected with HCV each year. Around 10% of Egyptians are chronically infected and infectious, creating a large reservoir that supplies the spread of the disease mainly through hospitals and clinics (Mohammed, 2011).

Hepatitis C Like the slow, silent serial killers found in society, this disease, slowly and methodically has infected many people. Initially, like an efficient serial

killer, people infected with (HCV) do not realize they are in danger until for many individuals; the disease becomes untreatable with death as the outcome (Charles et al., 2012). (HBV) and (HCV) are the main causes of severe liver diseases, including cirrhosis, hepato cellular carcinoma (HCC) and end stage of liver disease. WHO estimated that over 2 billion people have been infected with HBV and 170 million HCV infected patient worldwide. HBV is 50 to 100 times infectious than Human immunodeficiency virus (HIV) (Averhoff et al., 2012).

Infertility is a global phenomenon that affects between 60 million and 168 million people worldwide. It affects 13% to 15% of couple worldwide (Remah, 2010).

Infertility is a common clinical problem. It affects 13% to 15% of couples worldwide or more than 70 million couples suffer from infertility. The prevalence varies widely, being less in developed countries and more in developing countries (Boivin et al., 2007).

Hepatitis C virus (HCV) infection in females undergoing ICSI has impact which attributed to a hormonal disturbance associated with viral liver cirrhosis, occurs in the context of active viral replication, impaired ovarian response to stimulation and lower pregnancy rates (Hanafi et al., 2011).

Hepatitis infection in males associated with poor sperm quality and worse ICSI and embryo transfer outcomes because contributed to increased rates of asthenozoospermia and oligozoospermia/azoospermia as well as decreased rates of implantation and clinical pregnancy in ICSI cycles (Ping Zhou et al., 2011).

Significance of the study

Egypt has the highest HCV prevalence worldwide and is the most significant public health problem facing Egypt today. The prevalence rate ranges from 10%–20% of the general population (Hassan et al, 2013). The prevalence of HBsAg in Egypt is of intermediate endemicity (2–8%). Nearly 2-3 million Egyptians are chronic carriers of HBV. In Egypt, it appears that HBV transmission is a mixture of perinatal transmission (Abdel-Rahman, 2007).

HCV Infection, cause infertility by two principal mechanisms. First, HCV Infection damages the sperm membrane which in turn reduces the sperm's motility and ability to fuse with the oocyte. Secondly, HCV Infection directly damage sperm DNA, compromising the paternal genomic contribution to the embryo (Zini et al, 2000).

Aim of the study

- Determine the prevalence of both HBV and HCV infection among infertile couples.
- Assess the knowledge of couples regarding HBV and HCV infection.

Research questions

- What is the prevalence of hepatitis B and C among group of infertile couples?
- What is the level of couple's knowledge regarding hepatitis B and C among?

Subjects and Methods

Study design

A cross-sectional study design was utilized for the purpose of current study.

Setting of the study

The study was conducted at Women's Health Center at Assiut University hospital from in patient (Gynecological department) transferred from the outpatient's clinic (Infertility clinic).

Sample

Purposive sample included 200 infertile couples (200 females and 200 males).

- Sample size selection according to the budget from Assiut University for the purchase of materials for HBV and HCV analysis.
The target participant in the study was choosing according to the following criteria:-

Inclusion criteria

- Couples chosen in a reproductive age, the age range of the men and women was 18 to 62 years and 16 to 46 years respectively at women's health centers.
- Couples with a history of infertility with duration of ≥ 1 year (primary or secondary infertility).
- Normal couples with no history of liver problem, enrolled in the study.

Tools for Data Collection, two tools were used in data collection

Tool (1)

Structured interviewing questionnaire:- A pre-designed structured interviewing questionnaire was designed specifically for this study utilize by the researcher included the following data:-

Sociodemographic characteristics, this includes women's and husband's name, age, educational level, occupation, residence andetc.

Infertility history of couple, types of infertility, causes of infertility, menstrual history, Sexual history, past medical and surgical history.....etc.

Designed questions asked to assess level of couple's knowledge about hepatitis B and hepatitis C infection. It included many parts, **Part I** classified to (7) questions to assessment general awareness about the disease such as heard about hepatitis B&C, aware that most patient's remain symptomatic, sign and symptoms, these diseases common in our society, these is a viral diseases and any test for hepatitis did to the participants or their family member. **Part II** classified to (13) items under the question about mode of transmission as blood transfusion, dental procedures, scissors/surgical instruments, barbers shaving instruments...etc. **Part III** classified to (3) questions about awareness of participant to complications and effect of hepatitis on liver and if found a treatment and vaccinations for hepatitis B and C. **Part IV** classified to (8) open items under question about source of couple's awareness such as friends & relatives, television, newspapers...etc. each Question took answer yes or no then using scoring system for knowledge, a correct response was scored (1) grade and zero for the incorrect. The classified by scoring system to determine level of couple's knowledge (less than 50 degree (poor knowledge), 50 to 70 degree (satisfactory knowledge) and more than 70 degree (good knowledge) (Al-Thaqafy et al, 2009).

Tool (2)

Included laboratory serology for hepatitis C virus and hepatitis B virus:

Blood virus screening for diagnosis of (HCV-Ag/Ab) and (HBs-Ag) using Screening kit for the detection of (HCV and HBV) infection in human serum/plasma by Enzyme-Linked Immunosorbent Assay (ELISA).

Study phases

Administrative phase, an official approval was obtained from the Dean of the faculty of Nursing, Assiut University then transferred to president of Assiut University to give us a permission and fund to purchase the chemical materials to perform Enzyme-Linked Immunosorbent Assay (ELISA) test for the selected sample and ethical approval from chairman of Department of Obstetrics & Gynecological nursing to Head of Department of Obstetrics & Gynecology at women's health center, Assiut University hospitals to collect the study sample.

Pilot study Pilot study was carried out before starting the data collection phase on 10% to evaluate the clarity of the tools and to estimate the required time to fill the interview form which excluded from the study.

Ethical considerations, the study approved by Faculty of Nursing, Assiut University ethical review committee. The people were recruited to the study informed about the objectives of the study and that they are free to refuse participation. A verbal witnessed consent obtained from the participants. The confidentiality of the collected data was assured.

Data collection phase**Field work**

- The data collection were started within about fifteen months from (20/11/2012 to 6/3/2014), The researcher was going every day to the inpatient (gynecological department) to ask for cases with infertility history, they had done laparoscopy and looked for their husband, because many cases without their husband due to they were working and traveling to another governorates.
- Husbands and wives were interviewed separate to evaluate their knowledge on hepatitis separately.
- When found the husband, the researchers met him alone then his wife, greeted and introduced myself then explained the nature of the study, the procedure, and rights for privacy and confidentiality. Then take oral consent to participate in the study. The designed data in questionnaire were collected from both and Asked for every question about hepatitis B and C according the designed questionnaire to evaluate awareness of couples and followed by correction and explanation for every wrong answer and answer for any question.
- Then a blood sample (3mL) was taken from couples. This sample was put in glass container labeled with his full name and his wife name without use any edita for allowed to clot naturally to separate the serum for analysis and then stored in refrigerator until it was sent to the laboratory for analysis.

- Couples separately were instructed to call back in 3 days to know results of hepatitis status.
- Each couple was given health education and gave them a brochure in Arabic language with simple point about hepatitis B and C virus infection. Included important points about the nature of the disease, some of the symptoms, modes of transmission between individuals, and methods of prevention and explaining every point to all couples, because a large number of the study samples were uneducated.
- **Follow up** for all cases after receiving the result of blood sample through the telephone number to rest-assured the couples with negative results while the positive person transferred to gastroenterological clinic for evaluation and management.

Results

Table (1): Distribution of infertile couples according to their demographic characteristics.

Demographic characteristics	female		Male	
	N = 200		N = 200	
	No	%	No	%
1- Age/Years (Mean ± SD)	29.2±9.8		34.5±11.3	
• <20	7	3.50	0	0.00
• 20-29	112	56.00	58	29.00
• 30-39	71	35.50	94	47.00
• ≥ 40	10	5.00	48	24.00
2- Education				
• Illiterate	81	40.50	54	27.00
• Read & Write	3	2	10	5.00
• Primary school	16	8.00	12	6.00
• Preparatory school	15	7.50	17	8.50
• Secondary school	74	37.00	85	42.50
• University	11	5.50	22	11.00
3- Residence				
• Rural	164	82	164	82
• Urban	36	18	36	18
Total	200	100	200	100

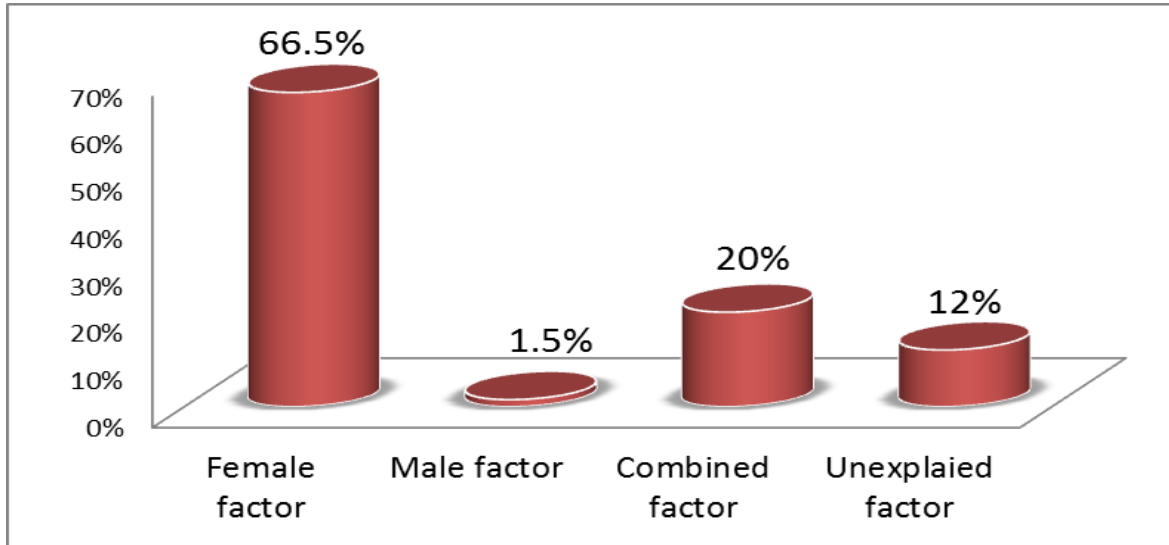
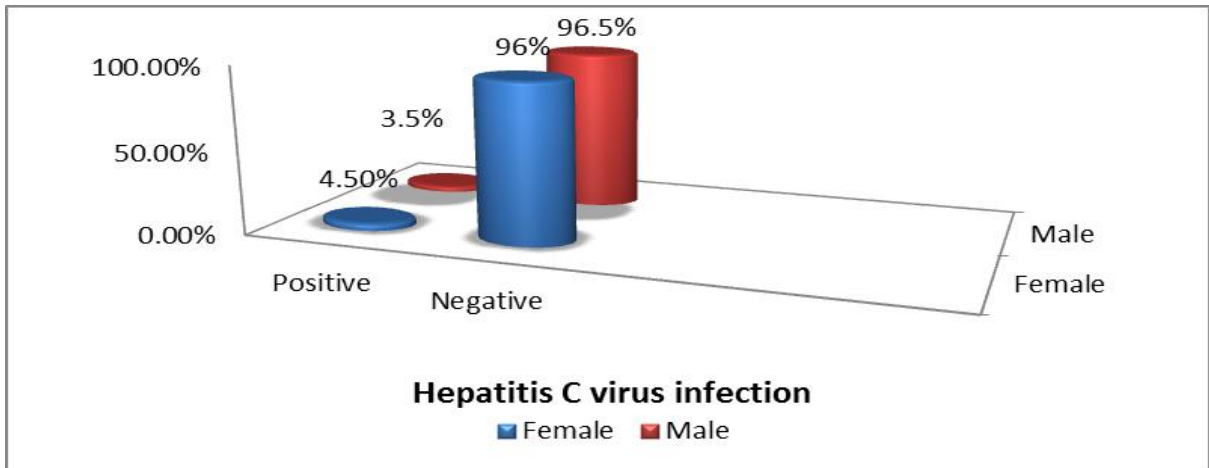
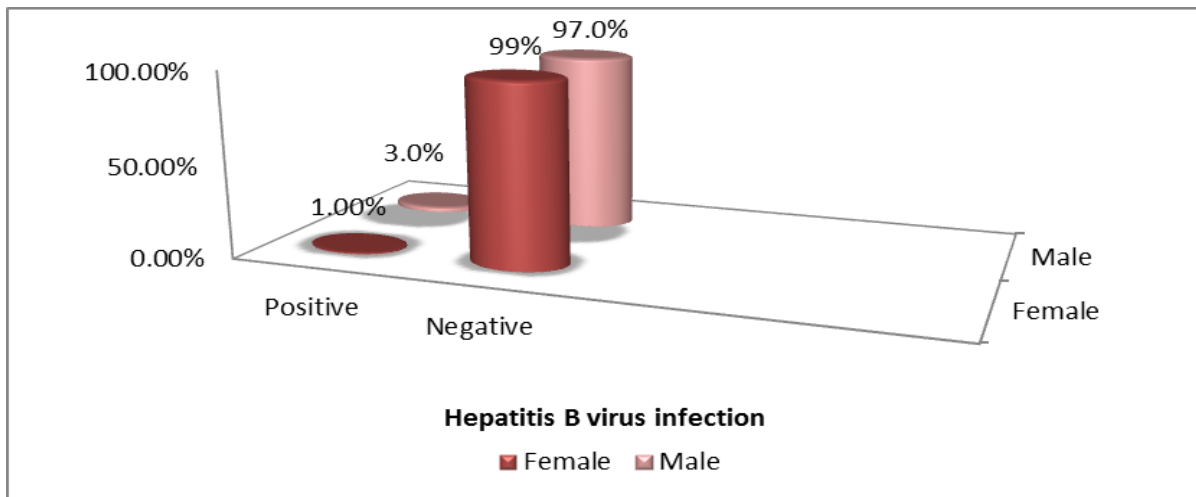


Figure (1): causes of infertility.



Figures (2): Distribution of infertile couples according to hepatitis C infection



Figures (3): Distribution of infertile couples according to hepatitis B infection

Table (2): Distribution of infertile couples according to their knowledge about hepatitis.

knowledge about hepatitis	female		Male	
	N = 200		N = 200	
	No	%	No	%
Heard about hepatitis B&C				
Yes	117	58.50	149	74.50
No	83	41.50	51	25.50
Aware that most patient's remain symptomatic				
Yes	42	21.00	68	34.00
No	158	79.00	132	66.00
This disease cause liver cancer				
Yes	40	20.00	57	28.50
No	160	80.00	143	71.50
You or other family member done any investigation for hepatitis				
Yes	18	9.00	53	26.50
No	182	91.00	147	73.50

knowledge about hepatitis	female		Male	
	N = 200		N = 200	
	No	%	No	%
These viral diseases				
Yes	96	48.00	136	68.00
No	104	52.00	64	32.00
These diseases common in our society				
Yes	97	48.50	141	70.50
No	103	51.50	59	29.50
know mode of transmission #				
Yes	71	35.50	101	50.50
No information	129	64.50	99	49.50
Blood transfusion	62	23.57	90	45.00
Reusing needles	2	1	4	2.00
Dental procedures	33	12.55	53	26.50
IV drug use	4	2	7	3.50
Scissors/surgical instruments	23	8.5	41	20.50
Barbers shaving instruments	26	9.89	57	28.50
Children borne to mother with chronic hepatitis	5	1.5	7	3.50
Household contact with an infected person especially if personal items	26	9.89	46	23.00
Needle-stick injury or other occupational exposure	34	12.93	37	18.50
hemodialysis	8	4	13	6.50
Ear/body piercing	6	3	8	4.00
Sexual contact	32	12.17	41	20.50
Tattooing	2	1	4	2.00
Complications of hepatitis on liver				
Yes	74	37.00	103	51.50
No	126	63.00	97	48.50
Presence of treatment for hepatitis				
Yes	76	38.00	118	59.00
No	124	62.00	82	41.00
Presence of vaccine for HBV				
Yes	20	10.00	26	13.00
No	180	90.00	174	87.00
Source of information #				
Yes	71	35.50	101	50.50
No information	129	64.50	99	49.50
Friends & relatives	29	14.50	87	43.50
Television	66	33.00	61	30.50
Newspapers	0	0.00	2	1.00
Doctors	4	2.00	10	5.00
Internet	2	1.00	2	1.00
Radio	3	1.50	1	0.50
Health care workers	6	3.00	17	8.50
Others	10	5.00	15	7.50

Others=education and home visit by nursing team for giving information about hepatitis

More than one answer

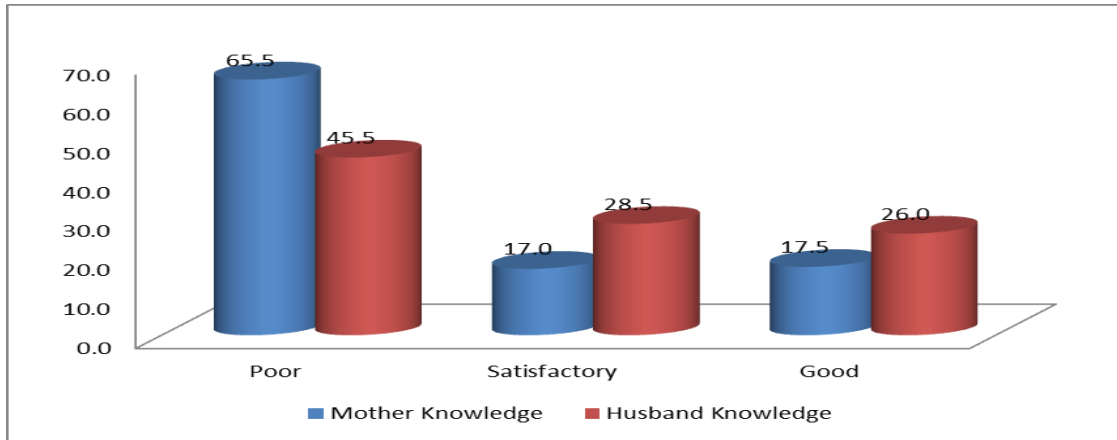


Figure (4): level of couple's knowledge.

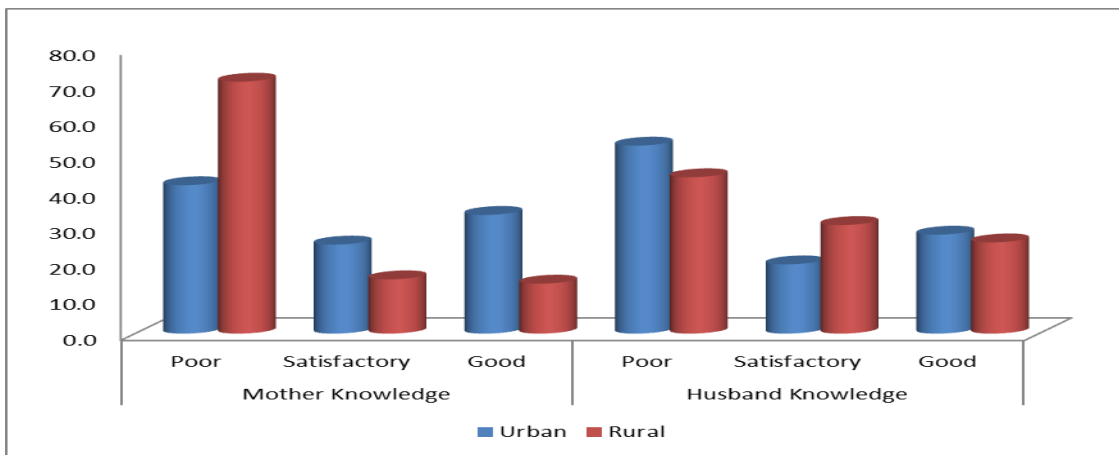


Figure (5): Relationship between residence and couple's knowledge.

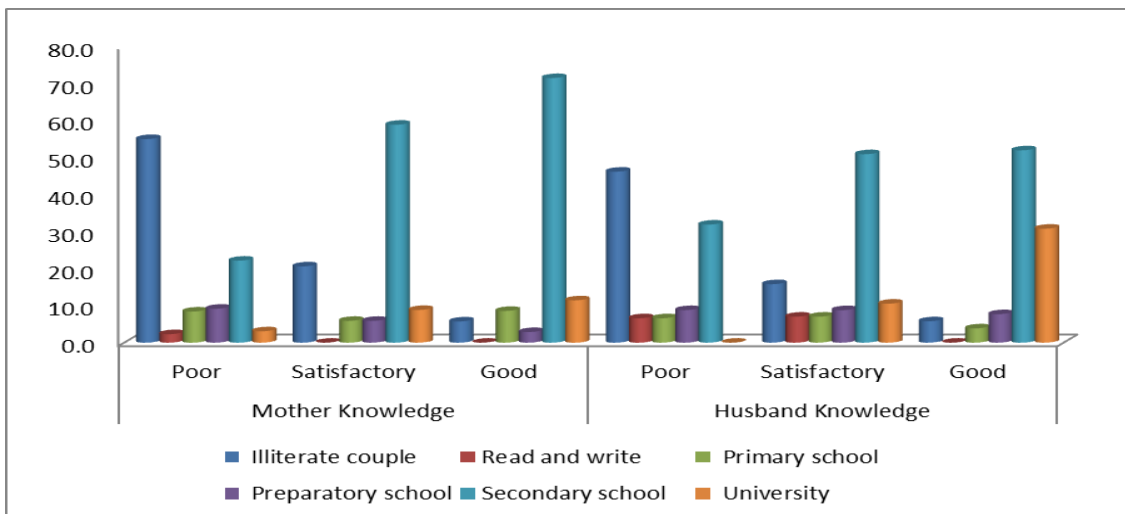


Figure (6): Relationship between level of education and couple's knowledge.

Table (1): illustrate distribution of age groups among infertile couples; the results showed that more than half of infertile females (56.00%) with mean maternal age (29.2±9.8) years and less than half of males (47.00%) with mean maternal age (34.5±11.3) years. As concerning to educational levels the results showed that the illiteracy common in females than males about less than half of females (40.50%) were illiterate and about one fourth (27.00%) of males were illiterate while more than one third of females (37.00%) were secondary school and about less than half of males (42.50%) were secondary school and few number of couples (5.5% of females & 11% of males) were university and distribution of couples according to their residence the results showed that the highest percentages of infertile couples (82%) were living in rural areas while (18%) living in urban areas.

Figure (1): illustrate the causes of infertility which showed that about two third of couples (66.5%) the main cause of infertility were female factors and (1.5%) with male factors.

Figures (2-3): illustrates the prevalence of hepatitis (HCV) and (HBV) among infertile couples which showed that (4.50% of females & 3.5% of males) with hepatitis (HCV) while (3.00% of males & 1.00% of females) with hepatitis (HBV).

Table (2): illustrates the knowledge of infertile couples about hepatitis, which showed that about more than half of females (58.50%) and about two third of males (74.50%) heard about hepatitis HBV&HCV and found only few number of couples (21.00% & 34.00% respectively) knew that most patient's remain symptomatic, also few number of couples (20.00% & 28.50% respectively) knew that this disease cause liver cancer.

As concerning of any investigations did for hepatitis the results showed that (91.00% of females & 73.50% of males) don't did any investigations for hepatitis, (48.00% & 68.00% respectively) of couples knew that these viral diseases and (48.50% & 70.50% respectively) knew that these diseases common in our society.

illustrate the mode of transmission, the results showed that about two third of females (64.50%) and about half of males (49.50%) without any information about all mode of transmission and illustrate that the highest percentage in modes of transmission defined by couples were blood transfusion (31.00% & 45.00% respectively) followed by needle-stick injury for females (17.00%) and barbers shaving instruments for males (28.50%), then dental procedures for couples (16.50% & 26.50% respectively) and the lowest percentages for couples were tattooing and reusing needles (1.00% & 2.00% respectively).

As regarding to complications of viral hepatitis on liver, found that about one third of females (37.00%) & more than half of males (51.50%) knew that the virus effect on liver and (38.00% of females & 59.00% of males) knew presence of treatment while (90.00% of females & 87.00% of males) do not knew presence of vaccine for HBV.

As regarding to source of information the results showed that the television was the main source for females (33.00%) while the friends & relatives the main source for males (43.50%) and newspaper, internet and radio were the lowest source of information between couples.

Figure (4): illustrate level of couple's knowledge which the result showed that about one third of females (65.5%) and less half of males (45.5%) with poor knowledge and only (17.5%) of females and (26.0%) of males with good knowledge about hepatitis B and C.

Figure (5): illustrate relationship between residence and couple's knowledge which showed that the females from rural areas with poor knowledge than females from urban areas while in males from urban areas with poor knowledge than males from rural areas.

Figure (6): illustrate relationship between educational level and couple's knowledge which showed that the most of couples with poor knowledge were illiterate while most of couples with satisfactory knowledge were secondary education and in couples with good knowledge were secondary education followed by university education.

Discussion

In the present study the age range of the men and women was 18 to 62 years and 16 to 46 years respectively which illustrated that more than half of infertile females (56.00%) were in the age group 20-29 years old with mean maternal age (29.2±9.8) years and less than half of infertile males (47.00%) were in the age group 30-39 years old with mean maternal age (34.5±11.3) years. This result was in the same line with (Nikbakht et al., 2012) who revealed that in their study most of infertile females were in the age group 26-35 years old with mean maternal age (27.98 ± 5.34) years and infertile males were in the age group 30-39 years old with mean maternal age (33.13± 6.05) years.

The present study estimate the prevalence of hepatitis (HCV) which found that the prevalence of positive HCV was 8% in general between males and females (4.5% in females & 3.5% in males) this result agree with (Eassa et al., 2007) who found that the prevalence of anti HCV sero-positivity was 10.9% in

a number of 307 persons from El-Ghar Village in Zagazig,

Egypt. Also in the same line with (Passos et al., 2002) that performed a cross-sectional study and determined the prevalence for HCV infection in 409 patients (248 women, 161 men) attending the infertility clinic at a teaching hospital in southern Brazil. The overall prevalence of anti-HCV was 3.2% among the females and 3.7% among the males. The mean age of the male patients was 33.9 ± 5.7 years and the mean age of the female patients was 31.6 ± 4.1 years.

The present results were supported by analysis at Assiut study by (Mohamoud et al., 2013) in research article on the epidemiology of hepatitis C virus in Egypt, illustrate in previous studied done in Assiut, Upper Egypt on 4,275 Village residents people the incidence was 0.8% /1,000 person-years and 2008-2009 prevalence among the general population in Assiut, Egypt were 8.0% in 500 person and between age group their shown that the prevalence were 8.7% in 6,031 from Village residents ≥ 5 years old, 3.6% in 4,164 from Village residents: ≤ 30 years and 20.0% in 1,867 from Village residents > 30 years at Assiut, Egypt.

The present study estimate the prevalence of hepatitis (HBV) which found that the prevalence of positive HBV was 4% in general between males and females (1% in females & 3% in males) this result near to the lower limit of the national range in Egypt (2-8%) recorded by (Abdel-Rahman El-Zayadi, 2007) and agree with the result of (Shalaby, et al, 2010) to assess hepatitis B and C viral infection: prevalence, knowledge, attitude and practice among barbers and clients in Gharbia governorate, Egypt, found that the total prevalence of HBsAg detected in 308 persons from barbers was 4.2% and 3.9% in 308 persons from their clients and also the results consisted with other study done by (Nikbakht, et al, 2012) in Ahvaz, South-West Iran on 712 infertile couple to estimate the prevalence of HBsAg, HCV and HIV Antibodies showed that 11 (0.77 %) infertile couples; 6 (0.8) women and 5 (0.7%) men were HBV positive and 9 (0.63%) infertile couples; 6 (0.8) women and 3 (0.4%) men were HCV positive.

The present study assessed the level of couples knowledge which showed that majority of couples with poor knowledge while the minority of couples have good knowledge which agree with (Abdel Rehim, 2014) study done on 350 general population from barber and their customers at Assiut city, Egypt to assess their knowledge, attitude and practices regarding hepatitis B and C viruses as a basis for educational program which illustrated that 88.6% of barber and 80.6% of customers with poor knowledge

and 11.4% of barber and 13.7% of customers with satisfactory knowledge and accepted with (Noman ul Haq et al., 2012) who reported in their study did on 780 participants to assessment of knowledge, attitude and practice towards Hepatitis B among healthy population of Quetta, Pakistan, found that majority were within the poor knowledge range whereas minority showed adequate knowledge about HBV and also the present study illustrated that females had less knowledge than males.

These results are consistent with several national and international researches conducted at different parts of the world regarding Hepatitis B and C showed less knowledge regarding disease as (Nazzro et al., 2006) study on youths in the USA to assess knowledge, attitude and behaviors about hepatitis B and C which found that most of youths in study with poor knowledge.

The present study illustrated the prevalence of HBs-Ag among rural infertile couples higher than that among urban people, this result is in agreement with study done by (Chunyan, et al, 2011) at Northeast China on a total of 3833 people was selected to estimate Seroprevalence and risk factors for Hepatitis B infection in an Adult Population, found that the prevalence of HBs-Ag more in rural than urban people.

Concerning to mode of transmission, in the present study the results shown that about (64.50% females and 49.50% males) without any information about mode of transmission, others informed couples with knowledge about more common factors contributing to hepatitis spread includes blood transfusion (23.57% & 45.00% respectively) followed by needle-stick injury, dental procedures, barbers shaving instruments, sexual contact, household contact with an infected person equipment and surgical instruments but this study showed a gap in knowledge about disease transmission from mother to baby, Reusing needles, hemodialysis and Tattooing. This is consistent with (Abdelaziz et al., 2014) who did a study at Tanta University on 200 person, found that (50%) had good knowledge score regarding common modes of transmission and also agree with study in Kuwait done by (Alkandari et al., 2013 and Singh & Jain, 2011) Who reported that most of the participants were aware that blood and blood products as well as needles and sharps were the main routs of transmission. But as regarding to sexual contact as mode of transmission incidence in the present study disagree with study conducted by (Samuel et al., 2009) who done to assess health workers' knowledge, attitude and behavior towards hepatitis B infection in Southern Nigeria, illustrated that sexual contact is usually less commonly mentioned as a route of transmission in their study.

In the present work found a significant correlation between knowledge of couples regarding HCV & HBV and level of education that the persons with low educated level less knowledgeable than higher educated persons, these results are consistent to previous study done by (Ahmed et al, 2007) on 500 male and female in Pakistan to assess knowledge and attitude toward hepatitis B & C who revealed that the knowledge and awareness about most aspects of the diseases was more amongst individuals who are educated (increase with the level of education) more than uneducated people were either unaware or had only little information in most of the parameters and also consistent with the present study that the females were more illiterate and had less knowledge than males.

This finding is not in the same line with (Khuwaja et al., 2002) who found in their study done at an Aga Khan University Hospital to assess Knowledge and attitude about hepatitis B and C among patients attending family medicine clinics which mentioned in their study that most of women had more knowledge about the disease than men. However, their study comprised of mostly educated individuals.

In the present study illustrated that the more source of knowledge in females (33.00%) was from the mass media followed by (14%) from friends & relatives while in males the main source of knowledge (43.50%) was from friends & relatives followed by (30.50%) from mass media agree with (Mohamed et al, 2012) found in their study on 780 person to assess knowledge of hepatitis that the major source of information was from family and friend 284(36.4%) and followed by 138 (17.7%) information through mass media. While in contrast with (Jonathan et al., 2010) which assessment knowledge on 288 persons from Primary Healthcare Workers, North Central Nigeria, illustrate that the knowledge was mainly derived from what they learnt in school and the mass media as only 10.8%.

Conclusion

The present study showed that the prevalence of hepatitis B and C among infertile couples was (4% & 8% respectively) and there a significant poor of knowledge towards Hepatitis B and C infection among infertile couples; females had less knowledge than male.

Recommendations

The present study demonstrated a need for further HBV, HCV researches and education for a larger number of people in Assiut city from different geographical areas to increase knowledge toward blood borne diseases and continuing in-service

education programs in Egypt on infection control toward blood borne diseases.

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