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Hepatitis gender gap in Egypt: A study in medical geography

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Abstract

This study has confirmed the fact that there is a gap between males and females of hepatitis in Egypt. This gap in the numbers of infected people and percentage in all 6 types of hepatitis A, B, C, D, E, F where the percentage of infected males is higher than females, in the available selected years study 2002, 2003 and 2005. This gap is not limited to the population of one governorate which is inferior to one another; but this gap is wide between males and females in all governorates equally. This study has confirmed that this gap includes age specific ratio too, the percentage of morbid males in all age categories is higher than females, but this gap is much wider in median age stage than other categories. There are differences between rural and urban places in the percentage of disease infection between males and females, where the morbidity in rural is prejudice urban places, and the high percentage in some urban governorates and Capital does not mean that these cities are blighted or deteriorated, but because most cases in Egyptian governorates prefer to go to them for treatment. This study has confirmed that the life Expectancy in females is higher than males at least 4 years and this due to males exposure to risk of occupational diseases related to agricultural activity, and endemic diseases which cause high mortality rates in males compared with females

Keywords : Hepatitis, Gender gap, Medical Geography, Egypt.

1. Introduction

Hepatitis is a liver disease caused by several viruses which sometimes causes permanent liver damage. There have also been instances of Hepatitis being caused by non-viral substances such as chemicals, drugs and alcohol. There are several types of Hepatitis which designated as A, B, C, D, E and F, each one is caused by a different identified virus.

Studies of gender gap tend to be prejudiced for females, as they are considered kindly, and weak sex, as known with Feminism. We can notice that in all conferences , meetings and discussions which are interested in this dimension, whether China, Jordan, Egypt, and other places in the world, through distinction affairs against women in wages, rights and inequalities, which women are suffering in several countries in the world either developed or undeveloped.

But this study concentrates on another contrary dimension, because gender gap is not always oppressive for women and equitable for men. Yet this study comes out differently as a result of exposure of men to many healthy risks in mutual diseases between males and females, where morbidity in males predominates females. Hepatitis is chosen as a kind of disease which rates in males predominate the rates in females and males remain predominate on female even in disease too. This is due to men exposure for the risk of occupational diseases related to agricultural activity more than females.

Egypt was chosen as a field of study to clarify this gender gap between governorates, Arial

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differentiations, age specific morbidity rates, and its effects in life expectancy and mortality rates.

1.1. Methods and Materials

This study follows many methods and tools in the study of medical geography. The first one is disease pattern; it includes the concepts and attitudes. The second is disease diffusion study is conducted through comparisons between Egypt and other countries in the world, in order to know where Egypt situation is in the world in hepatitis, and a third method is depending on feminism approach to study differences between males and females in hepatitis rates between Egyptian governorates and specific morbidity rate between them.

This study depends on statistical analysis of data which are gathered from Ministry of health in Cairo, and through some specific health centers like WHO, and some other organizations interested in human health and wellbeing. Cartographic representation too is an important material in this study, to clarify this problem in the world and Egypt as phenomena, to explain the differences between males and females in hepatitis rate. Also this depends on the use of many diagrams to analyze data collection.

1.2. General concepts

1.2.1. Historical background

In 1963, Dr. Baruch Blumberg, who was studying hemophilia at the National Institutes of Health (NIH), discovered a common antibody (produced by the immune system to fight a foreign virus or antigen) in two American hemophilia patients. [1].

The same waterways that give life to the verdant Nile Delta are also home to a parasitic worm called the Schistosome. Which enters the body in the soft webbed area between the toes. It then infiltrates the bloodstream and lays eggs that settle in organs like the liver, bladder and intestines. A buildup of these eggs which causes the disease called Bilharzia, or Schistosomiasis can lead to bladder cancer and sometimes death. At the time that Bilharzia was a problem, Egypt was the hardest-hit country in the world, and in agricultural areas like the delta, where residents rely on water for farming, Bilharzia had infected 70 percent of the residents of some communities.

During this time from 1970s, people didn't even know of something called HCV, they couldn't walk, they had bleeding from the mouth, they found really young people dying. Hepatitis C wasn't identified until 1989, at which time it was renamed, dropping the highly ambiguous "Non A, Non B Hepatitis." Blood wasn't adequately screened for HCV until three years after that.

1.2.2. The concept of gender gap

Gender gap as a term is "the differences between women and men, especially as reflected in social, political, intellectual, cultural, or economic attainments or attitudes".[2]. In the dictionary of English language is "A disproportionate difference, as in attitudes, and voting preferences between the sexes"[3]. The definition gender gap in the Cultural Dictionary is "A phrase marking the trend in recent U.S. presidential elections, whereby more female than male voters support the Democratic Party candidate and more male than female voters support the Republican Party candidate"[4]. In dictionary of Idioms & Phrases, gender gap is “A broad difference between men and women, as in There is still an enormous gender gap in the wages of unskilled labor”. This expression at first referred to the difference between men and women in voting preferences. It has since been extended to other areas.[5]. The concept of gender gap in the Webster's New World College Dictionary is "the apparent disparity between men and women in values, attitudes, voting patterns, etc….."[6].

A gender difference is a distinction of biological and /or physiological characteristics typically associated with either males or females of a species in general. In the study of humans, socio-political issues arise in classifying whether a sex difference results from the biology of gender.

The Gender gap Index assesses countries on how well they are dividing their resources and opportunities among their male and female populations, regardless of the overall levels of these resources and opportunities. By providing a comprehensible framework for assessing and comparing global gender gaps and by revealing those countries that are role models in dividing these resources equitably between women and men, serves as a catalyst for greater awareness as well as greater exchange between policymakers.

The Global gender gap index, introduced by the World Economic Forum annually is a framework for capturing the magnitude and scope of gender-based disparities and tracking their progress. The Index examines four critical national gender gaps areas of inequality between men and women on economic, political, education- and health based criteria, and provides country rankings that allow for effective comparisons across regions and income groups, and over time. The rankings are designed to create greater awareness among a global audience of the challenges posed by gender gaps and the opportunities created by

reducing them. The straightforward methodology and quantitative analysis behind the rankings are intended to serve as a base for designing effective measures for reducing gender gaps.

1.2.3. Disease gender gap

Because gender gap is a search for the difference between males and females in income and wages or in other activities, such as health and diseases, so disease gender gap, is interested in the study of the differences between males and females in the disease pattern.

Many studies throw the light on the study of gender gap diseases; some of them cover the prevalence of hypertension in Egypt, which was estimated prevalence 26.3%, increased progressively with age, from 7.8% in 25- to 34-year-olds to 56.6% in those 75 years or older. It was slightly more common in women than in men (26.9% versus 25.7%, respectively). [7].

2. Gender Gap in Hepatitis types

2.1. Hepatitis A virus (HAV)

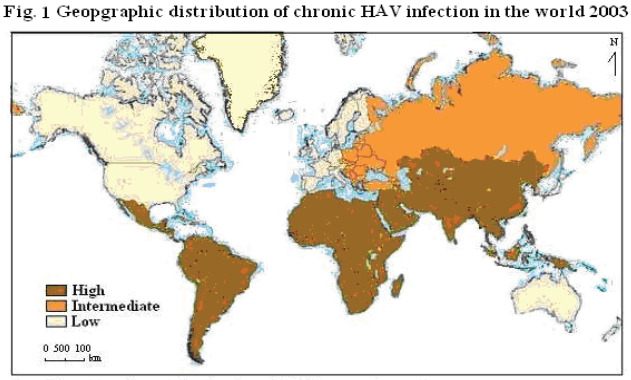
Egypt falls under the high site between the world in the prevalence of hepatitis A, Fig 1. Transmission can occur directly from person-to-person contact; through exposure to contaminated water, ice, or shellfish harvested from sewage-contaminated water; or from fruits, vegetables, or other foods that are eaten uncooked and that were contaminated during harvesting, or subsequent handling, but generally, the disease is not serious, and effects children below the age of 15. Some researchers also say it is found frequently in adults in the West. Symptoms - Feeling under the weather, passing dark urine, yellow eyes, loss of appetite, nausea. All these symptoms are temporary and settle down in a couple of weeks

Although rare, in some cases Hepatitis A has proven to be fatal following a linked a complication called Fulminant Hepatic Failure. It reaches peak levels through week or two before onset of symptoms and diminishes rapidly after liver dysfunction or symptoms appear which is concurrent with the appearance of circulating antibodies to HAV. Infants and children, however, may shed virus for up to 6 months following infection. Hepatitis A is one of the most common vaccine-preventable infections acquired during travel.

In spite of the number of infected people with hepatitis A in Egyptian Governorates is not reliable, because the data gathered from the ministry of health in Cairo is not true, where they tend to negligence of serious diseases, but this data may be is useful in the case of comparable between males and females only, which this study needs to be sure to sex ratio and the difference between males and females in the ratio of morbidity.

Table 1 and figure 2 show the percentage of people infected with hepatitis A in the Egyptian governorates during the period from 2002 to 2005. We can notice some observations:-

Fig. 1 Geopgraphic distribution of chronic HAV infection in the world 2003



Source: Figure prepared by researcher depending on WHO data.

- The number of infected males with hepatitis A in most of Egyptian governorates is more than females.
- The number of infected males in all years of study from 2002 to 2005 is more than Females in the most of Egyptian Governorates.
- The Total of infected cases and the average in Egyptian governorates through the period from 2002 to 2005 show high percentage too between males comparable with females: we can see this percentage in 2002 is 65.8% for males versus 34.2% for females, and in the year 2003 was 60.7% between males versus 39.3% for females, and in 2005 was 59.5% for males versus 40.5% for females
- .The percentage of infected people is increased in the northern part of Egypt especially Delta governorates like Elbehira and kafrelshekh than the southern part of Egypt, and may be due to exposure more lands in

the delta to contamination, and use of the sewage water in irrigation of crops without treatment and purification, especially this kind of hepatitis is correlated with not following healthy behavior in using water and contaminated foods.

- This type of hepatitis is related to careless and unclean environment, where flies and insects spread, in addition to the prevalence of prowling dealers in the most of urban streets, who cook some fast foods like beans, liver, brain and bowel animals. Many people like to eat these fast foods which are prepared by some unhealthy and unlearned people in the streets caravan without healthy censorship from the health legislation. This is the first furtive door to infect them with hepatitis A.
- The percentage of disease tends to increase from 2002 to 2005 as we can see from figure 3.

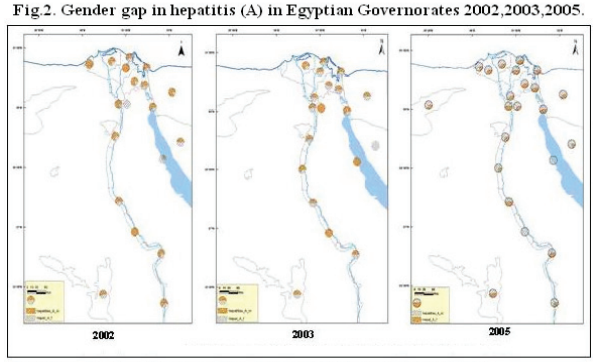
Table 1. Hepatitis A,B,C Sex ratio between males and females in Egyptian Governorates from 2002-2005

Governorate	Sex Ratio of Hepatitis A 2002 %		Sex Ratio of Hepatitis A 2003		Sex Ratio of Hepatitis A 2005		Sex Ratio of Hepatitis B 2002 %		Sex Ratio of Hepatitis B 2003 %		Sex Ratio of Hepatitis B 2005 %		Sex Ratio of Hepatitis C 2002 %		Sex Ratio of Hepatitis C 2003 %		Sex Ratio of Hepatitis C 2005 %	
	M	F	M	F	M	F	M	F	M	F	F	F	F	F	M	M	F	F
Cairo	-	100	100	-	68.1	31.9	-	-	-	-	22.2	22.2	-	-	-	-	87.5	12.5
Alexandria	100	-	-	-	80	20	80	20	76.5	23.5	32.1	32.1	73.6	26.4	71.9	28.1	66.2	33.8
Port Said	62.2	37.8	55.6	44.4	66.6	33.4	69.2	30.8	75	25	-	-	50	50	33.3	67.7	55.6	44.4
Swiss	63.5	36.5	62.6	37.4	56.8	43.2	90	10	80	20	-	-	67.9	32.1	71	29	80	20
Ismaelia	60	40	69.2	30.8	55.1	44.9	60	40	-	-	27.9	27.9	60	40	100	-	76.9	23.1
Demietta	58.3	41.7	55.7	44.3	60.2	39.8	79.1	20.9	78.6	21.4	100	100	80	20	67.7	33.3	-	100
Dakahlia	100	-	50	50	54.4	45.6	-	-	67.7	33.3	33.3	33.3	50	50	89.5	10.5	97.8	2.2
Sharkia	80	20	42.9	57.1	59.5	40.5	87.5	12.5	100	-	12.5	12.5	100	-	-	100	60	40
Kalubia	-	-	50	50	64.3	35.7	-	-	-	-	-	-	-	-	-	-	100	-
Kafr Elshikh	72.4	27.6	69.4	30.6	60.7	35.2	-	-	-	-	-	-	-	-	-	-	77.7	22.3
Behira	-	-	-	-	67.2	32.8	-	-	-	-	37.5	37.5	-	-	-	-	76.7	23.3
Giza	86.2	13.8	54.4	45.6	50	50	97.1	2.9	50	50	-	-	91.2	8.8	53.2	46.8	50	50
Bani Suif	71.1	28.9	57.8	42.2	70.2	29.8	79.3	20.7	70.6	29.4	26.7	26.7	67.7	33.3	72.4	27.6	75	25
Fayoum	-	-	-	-	-	-	77.8	22.2	100	-	-	-	60	40	-	-	-	-
Minia	-	-	66.7	33.3	75	25	-	-	64.5	35.5	33.3	33.3	-	-	63.8	36.2	-	100
Assuit	56.5	43.5	50	50	50	50	58.6	41.4	75	25	27.6	27.6	57.1	42.9	75	25	63.6	36.4
Suhag	100	-	100	-	100	-	-	-	-	-	-	-	-	-	-	-	66.7	33.3
Kena	67.9	32.1	48.3	51.7	57.9	42.1	60	40	47.1	52.9	6.7	6.7	67.7	33.3	50	50	71.4	28.6
Aswan	67.7	33.3	-	-	71.4	28.6	100	-	-	100	-	-	83.3	16.7	-	-	70.6	29.4
Matruh	-	-	-	-	66.7	33.3	79.3	20.7	61.4	38.6	42.8	42.8	50	50	60	40	60	40
New valley	56.1	43.9	52.3	47.7	53.8	46.2	42.9	57.1	-	100	40	40	50	50	70	30	71.4	28.6
Red sea	25	75	-	-	100	-	100	-	-	-	-	-	-	-	-	-	100	-
North Sinai	83.3	16.7	51.7	48.3	64.3	35.7	100	-	-	100	-	-	-	-	-	-	-	-
South Sinai	50	50	-	100	80	20	100	-	-	-	14.3	14.3	100	-	75	25	86.7	13.3
Total	**65.8**	**34.2**	**60.7**	**39.3**	**59.5**	**40.5**	**75.7**	**24.3**	**68.8**	**31.2**	**25.3**	**25.3**	74.1	25.9	68.5	31.5	74.1	25.9

M= male F= female

Source: Table prepared by researcher depending on Egyptian ministry of unpublished health data.

Fig 2. Gender gap in hepatitis (A) in Egyptian Governorates 2002,2003,2005.

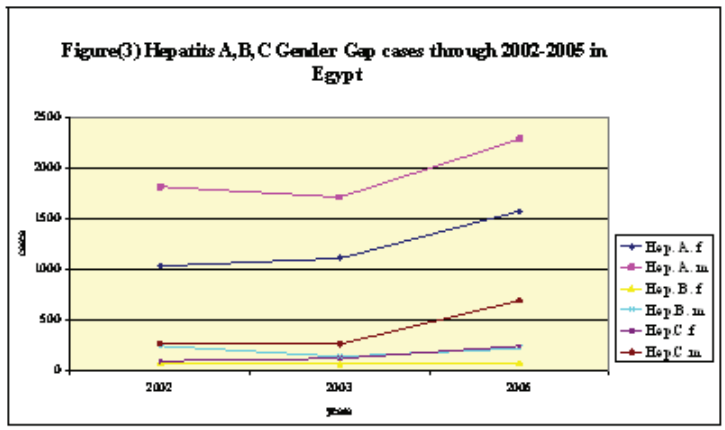


Source: Figure prepared by researcher depending on unpublished data of Ministry of health, Cairo, Egypt.

2.2. Hepatitis B virus (HBV)

Is the most common form of Hepatitis, and is extremely unpredictable. The disease can take hold rapidly and result in a quick death. It also increases the risk of death due to cirrhosis or liver cancer. The Symptoms of this disease is the same as Hepatitis A. The Source of infection spreads from mother to child at birth, or soon after birth. Through sexual contact, blood transfusions or contaminated needles, and through other bodily fluids. It is unique in that all regions of the viral genome encode protein sequences.[8].

An estimated one-third of the world's population-about 2 billion-have been exposed to the hepatitis B virus (HBV)



Source : Egyptian Ministry of health, unpublished data in several years.

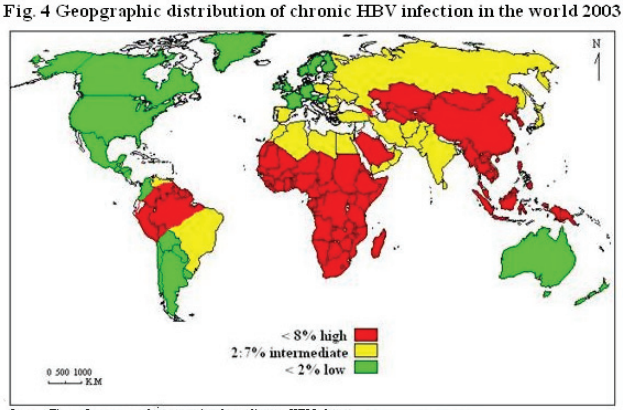
Around the world, HBV infection has a stronghold in Asia, where it is endemic. China, Southeast Asia, Taiwan and many Pacific islands have chronic infection rates ranging between 5 to 20 percent of their population due to infections at birth or during early childhood. Estimates from the National Centers for Disease Control and Prevention (CDC) for some regions of Asia indicate that between one-third to one-half of entire populations have been infected with HBV. In Asia, where 80 percent of the world's HBV infections occur, the prevalence is primarily due to infection passed from mother to child and injections with contaminated, reused needles and syringes administered to infants and young children. In a recent Chinese study conducted in Guangxi Province, researchers tested 1,882 people from 12 communities ranging in age from 1 to 59 and found that 76.2 percent of them had a past or current hepatitis B infection.

Sub-Saharan Africa and the Amazon Basin have chronic infection rates exceeding 8 percent, and the HBV infection rate may exceed 5 percent in countries that border the Mediterranean. Eastern Europe, Alaskan and Western Canadian native people also elusive disease to track. The infection and its symptoms can remain silent"

The chronic HBV infection rate was higher in males (23.4 percent) than females (13.8 percent). Researchers hypothesized that young boys, who are favored in Chinese culture, were given access to better medical care than were females and subjected to more injections during infancy and early childhood. As a result, they show a higher chronic HBV infection rate.

The association between HBV and HCC was suggested by the high incidences of HCC in regions where HBV infection is hyper-endemic. The risk of eventually developing HCC is inversely related to the age of acquisition of HBV. Thus, children exposed to HBV have a much greater chance of becoming chronic HBV carriers than do newly infected adults.[9].

Fig. 4 Geopgraphic distribution of chronic HBV infection in the world 2003



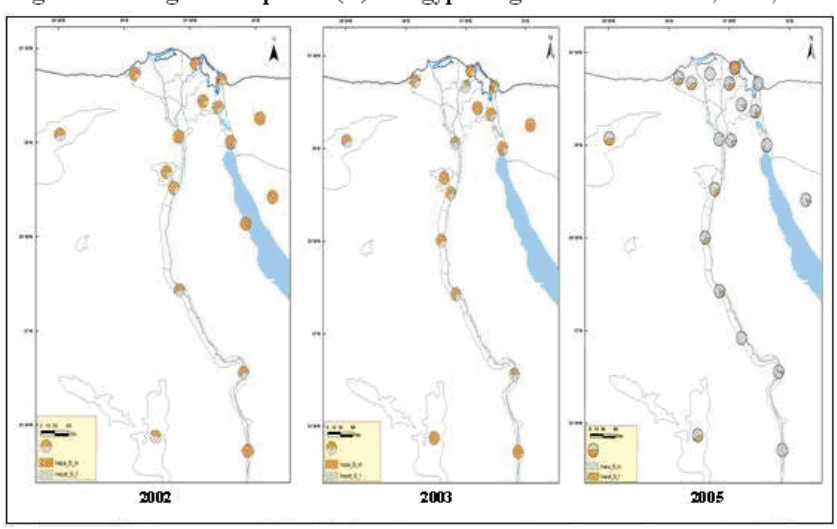
Source: Figure from researcher preparing depending on WHO data.

Egypt falls under the intermediate site between the world in the prevalence of hepatitis B, Fig 4. Nowadays people they have more awareness than in the past. Many years ago, people didn't care about fundamentals of health care, when they went to dentistry to treat their teeth and many of dentistry's often didn't care about sterility of tools, and when the midwives didn't care with pregnant mother and deliveries,

and when they used injection which were made of glass without boiling it, before emerging of disposal injections, or during circumcision process either to boys or girls, and used scalpel without sterile. All these practices were the essential causes in the increase of hepatitis B and C in Egypt. Table 1 and figures 3,5 shows many facts:-

- Data collected from the ministry of health indicate that the number of hepatitis B in Egypt is very small, less than 400 case in each year, in all governorates, but the fact is different completely. One visit to private surgeries in liver diseases can respond and find solution for this enigma. Specific liver physician in Minia University, during an interview with her said that "hepatitis B especially is considered a timer bomb in each Egyptian house "(in personal communication with professor Dr.Madeha Makhlof the head of of liver department in the Faculty of Medicine ,Minia University, Egypt.)". In spite of this declaration is very dangerous and fearful, but we must meet this problem with bravery, not to hide the data and statistics from researchers in this field, and be like the ostrich. The offices of information and documents in the ministry of health, considers the hepatitis data as a confidential and a highly state security topic, and not allowed to obtain information about the numbers of patients and their environments, so any document about these numbers is not true and less than factual.
- in spite of data lack and unreliability, but available data is considered adequate to analyze this dimension of study in gender gap between males and females, we can noticed some observations that indicate to this type of disease too is male disease, where males is beat on females in the number of cases and ratio, in all years study, either 2002 it was between males 75.7%, versus 24.3% between females, or in 2003 it was 68.8% in males versus 31.2% in females, or in 2005, it was 74.7 % in males versus 25.3% between females. So we can consider this disease as a masculine disease. This is due to the exposure of men to the risk of morbidity than women, which spread between them through intravenous drug use, simply by cigarettes or "sheesha" which spreads in all coffee shops in rural and urban areas, and through sexual intercourse, kissing , sharing a toothbrush, and in the barber's where the barber uses for shaving used tools.
- Figure 5 indicate to high prevalence of morbidity rate of Hepatitis B between population in upper Egypt is comparable with Delta, and this may be due to cultural and social background, where most of population is poor and the environment is lacks welfare and human wellbeing.
- The percentage of disease tends to increase from 2002 to 2005 as we can see from figure 3 .

Fig. 5.Gender gab in hepatitis(B) in Egyptian governorates 2002,2003,2005.



Source: Figure from researcher preparing depending on data of Ministry of health information Center, Cairo, Egypt.

2.3. Hepatitis C virus (HCV)

Current statistics say that the Hepatitis C virus is far more potent and infectious than HIV virus. The Symptoms of this disease vary from patient to patient. In some cases there are no symptoms but the virus lies dormant in the victim. No vaccine has yet been developed to combat Hepatitis C. Some patients have sporadic Hepatitis C. This virus spreads mainly through blood transmission, needles, syringes and sex intravenous drug used to tattooing and body piercing is a common vehicle for transmission. The blood should be thoroughly screened before a transfusion. The cause of death is very complicated, when "Schistosomiasis killed Egyptian people from pharoanic era; Rover discovered the ova of bilharzias in the Egyptian mummies in the middle of twentieth century. During this time, Hepatitis C wasn't identified until

1989, when the government combated bilharzia, patients lined up to receive 10 to 12 shots of tartar emetic to kill the blood flukes. The age of most infected individuals was from 30 years and up. This occurred through widespread use of inadequately sterilized needles for administering parenteral anti-schistosomal therapy (PAT), and through other iatrogenic exposures. Accordingly, [10]. In Egypt, from 12 to 15 percent of its population estimated to carry the virus antibodies. Fig 7. Some studies show that up to 20% of the Egyptian citizenry – now estimated at 80 million - has come in contact with the virus. But as we say before the responsibility of health affairs in Egypt deliberately hide this fact for security reasons.

(HCV) has been suggested as a major cause of HCC in areas where the incidence of HBV infection is declining or already low. The prevalence of anti-HCV antibodies among patients with HCC ranges from around 30% in China and South Africa to 70% to 80% in southern Europe, Egypt, and Japan. Chronic HCV infection coexists with HBV infection or alcohol abuse in 20% of cases.[11].

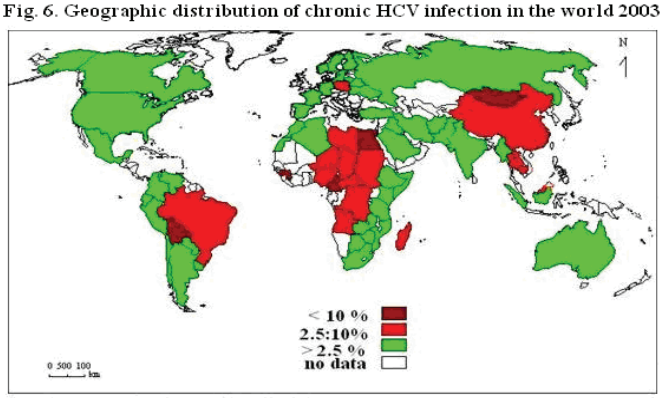
In areas where HBV is hyper-endemic, such as Taiwan, the prevalence of anti–HCV antibodies is much higher among hepatitis HB Prospective studies have indicated that more adults are long-term carriers of HCV than of HBV.[12].

In a group of patients with transfusion-associated liver disease, the interval between blood transfusion and diagnosis of anti–HCV antibody–positive HCC was as long as 29 years.[13].

The IARC (International Association for Research on Cancer) working group determined that chronic infection with HCV is carcinogenic in humans. It has been hypothesized that HCV is probably the major viral cause of HCC in areas with a low incidence of HBV carriers. Although there is no evidence that the virus itself is oncogenic, it has been suggested that this agent may promote carcinogenesis through the induction of chronic necro-inflammatory hepatic activity and liver cirrhosis.[14].

Figure 6 show the prevalence of Hepatitis C in the world, Egypt is one of the four countries in the world which has a high percentage in hepatitis C. More than 10% from population at least, is suffering from disease. And table 1 shows many kinds of observations: -

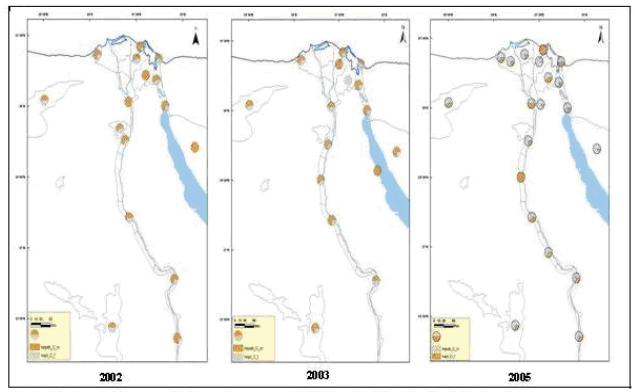
Fig. 6. Geographic distribution of chronic HCV infection in the world 2003



Source: Figure prepared by researcher depending on WHO data.

- The number and sex ratio of infected males with hepatitis C in all Egyptian governorates is more than females and this is correlated with the exposure of males to infect with Bilharzias in the end of last Century and using of tartar to eradicate it
- The number and sex ratio of infected males in all years of study from 2002 to 2005 is more than Females in all Egyptian Governorates.
- The Total of infected cases and the average in Egyptian governorates through the period from 2002 to 2005 show high percentage too between males comparable with females: we can see this percentage in 2002 is 74.1% for males and 25.9 % for females, and in the year 2003 was 68.5% between males and for 31.5 for females, and in 2005 was 74.1% for males and 25.9 % for females.
- Figure 7 for the geographic distribution of disease in the Egyptian governorates from 2002 to 2005, show that The percentage of infected people is not different between Egyptian governorates, but we can notice that this percentage increases more in Capital and urban governorates, and this is not an evidence to high prevalence of population of these governorates but because many peoples creep up to the Capitals and urban governorates to find a good chance to cure from this disease.
- Figure3, 7 which shows the development of Hepatitis C Virus in Egyptian Governorates from 2002 to 2005 tends to increase, and this increase in males is more than Females in general.

Fig. 7. Gender gap in hepatits (C) virus in Egyptian Governorates 2002,2003,2005



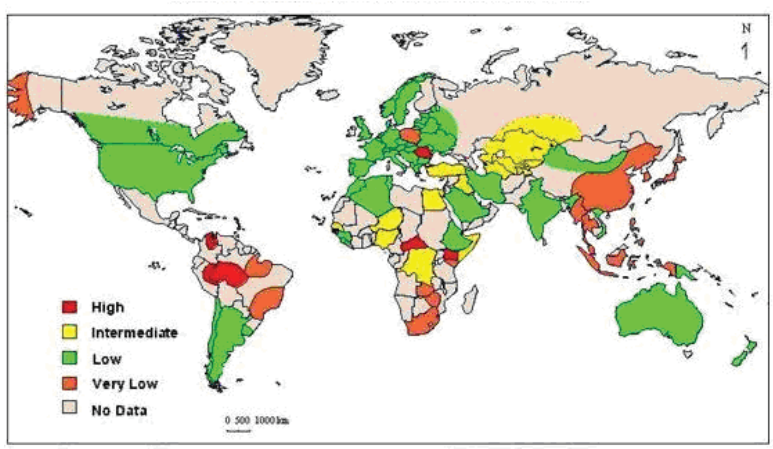
Source: Figure prepared by researcher depending on unpublished data of Ministry of health, Cairo, Egypt

2.4. Hepatitis D virus (HDV)

Hepatitis D Virus is mainly found in intravenous drug users who are carriers of Hepatitis B virus. It is an incomplete virus and affects patients who already have Hepatitis B which in turn might further complicate the disease. And Symptoms of this disease are the same as other hepatitis infections, but with diarrhea and abdominal pain. Many cases go undiagnosed because the symptoms are suggestive of a flu-like illness. The infection through blood transfusion and contaminated needles. It infects individuals who are already infected with Hepatitis B. It may be transmitted by carriers of Hepatitis B and D. HDV is not classified into a viral family because it is a unique virus dependent on HBV. Thus, HDV is considered a satellite virus of HBV. Unlike a classical satellite virus, however, HDV does not share sequence similarity with HBV, and it can replicate independently of HBV.[15].

Hepatitis D Virus infections are found worldwide, but the prevalence varies in different geographical areas. Anti-HDV antibodies are found in 20-40% of HBsAg carriers in Africa, the Middle East, and Southern Italy. We can see from figure 8 that Egypt is fall under the intermediate countries of infect with this disease, but it is not possible to find data to classification between males and females. In Egypt there is no classification of this kind of disease, the ministry of health put the infected cases of this disease under the menu of "other kinds of hepatitis" and this shared with hepatitis E and F too.

Fig 8 . Geographic distribution of chronic HDV infection 2003 in the world



Source: Figure prepared by researcher depending on WHO data.

HDV infection in the United States is relatively uncommon, except in drug addicts and hemophiliacs, who exhibit prevalence rates of 1-10%. Homosexual men and health care workers are at high risk for contracting HBV, but are surprisingly at low risk for HDV infection for unclear reasons. Additionally, HDV infection is uncommon in the large population in Southeast Asia and China. Additional high-risk groups for contracting HDV include hemodialysis patients, sex contacts of infected individuals, and infants born to infected mothers (rare). Worldwide, over 10 million people are infected with HDV.[16].

There are at least three HDV genotypes: I, II, and III. HDV isolated from Genotype I have been reported in every part of the world, The milder HDV II genotype is found primarily in Asia, including Japan, Taiwan, and Russia. HDV genotype III has been isolated only in northern South America (Peru, Venezuela, and Columbia) and is associated with severe acute hepatitis..[17].

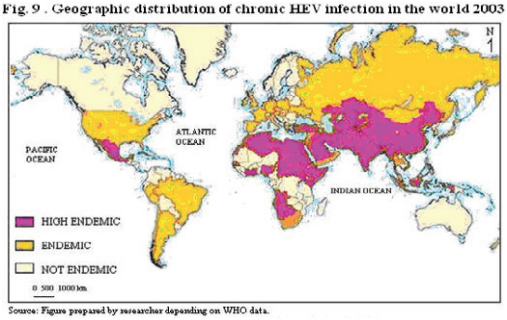
2.5. Hepatitis Evirus (HEV)

Hepatitis E Virus Usually spread by the fecal-oral route. The most common source of infection is fecally contaminated drinking water.an enterically- transmitted cause of acute viral hepatitis (AVH), is not fully understood. During outbreaks on the Indian subcontinent and elsewhere. The Symptoms of disease is the same as other hepatitis viruses. Source of infection is blood transfusions, water contaminated with fecal matter. Passed through a pregnant women to her foetus.

HEV causes severe AVH with mortality rates around 20% during pregnancy. In Egypt, where prevalence of HEV antibodies (anti-HEV) in rural communities is very high, severe HEV-caused AVH in pregnant women has not been reported. Egypt falls under the high endemic site between the world in the prevalence of hepatitis E, Fig 9.

In the study to examine a cohort of 2428 pregnant women in the Nile Delta to assess prevalence of, and risk factors for, anti-HEV and correlated these with history of liver disease. The results confirm that Egypt's high HEV endemicity and show that almost all women of childbearing age in these communities had prior HEV exposures without a history of liver disease. Reasons for the lack of clinical hepatitis remain unclear but could be the result of early childhood HEV exposures, producing long-lasting immunity and/or modify subsequent responses to exposure. Alternatively, the predominant HEV strain(s) in Egypt are less virulent than those in South Asia. [18].

Fig. 9 . Geographic distribution of chronic HEV infection in the world 2003



Hepatitis F virus (HFV)

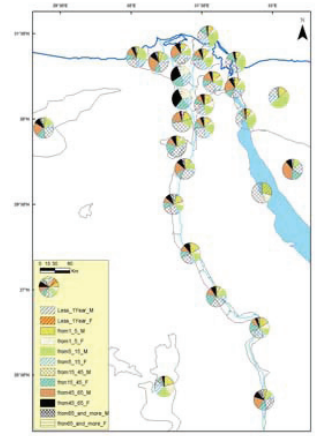


Fig. 10. Age specific morbidity gap differences between Egyptian Governorates 2005.

2.6. Hepatitis F virus (HFV)

Not much is known about this virus yet. Naturally, our bodies follow a system which after a certain period of illness produces antibodies and police cells which clears the virus on its own. There are exceptions in which patients cannot get rid of the virus which later complicates into cirrhosis of the liver and if that happens then the condition is totally irreversible.

The Symptoms of this disease is Vomiting of blood and accumulation of water in the abdomen which is called ascites. Another complication is extreme drowsiness resulting from the neurological disease encephalopathy, which may cause gradual transition into coma for the infected person. [19].

3. Age Specific Morbidity Gap differences

The study of age specific morbidity rate differences in the Egypt show some observations from the Fig 10 which explain the distribution of all hepatitis type in Egyptian governorates 2005 in many elections ages from under to one year , and 1:5 years and 5:15 years,15:45 years,45:65 years and then above 65 years. This table show that:

- the high Gender gap in the total population falls under the category from 15: 45 years it was 64.5% in males versus 35.5% in females, and from 45:65 years it was 62.7 % in males versus 37.3 in females, where this Gap percentage is narrow between other categories as shown in figure, it was 55.4% in males versus 44.6% in females for infants less than one year, and from 1 to 5 years it was 54.9% in males versus 45.1 in females, and in the category 5:15 years it was between males 53.8% versus 46.2% in females , and from 65 years and more it was 60.3% in males versus 39.7% in females . The cause of this gab between males and females in the age categories is the risk of work of males in the middle age and more patients are responsible to keep their families.
- The prevalence among children is much lower than it is among adults who were infected. In the Age

category less than 15 years , the percent of infected in males 24.5% versus 20.7% in females from the total cases happened in 2005 where this percentage was 32.7 % in males versus 18.6% in females in the category between 15: 65 years , and in the last age category it was 2.3% in males and 1.5 % in females .

- The percentage of infected males in all age categories is higher than female in all Egyptian Governorates.
- the age specific morbidity gap between governorates shows some differences, as we see in table 18, we can see this gap is narrow in upper Egypt Governorates where is this gap is wide in Delta governorate in general, and this refers to the importance of hospitals which population prefer to go in the Capital or in another specialized hospitals in Delta.

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