

DEVELOPING GUIDELINES FOR PREGNANT WOMEN TO IMPROVE KNOWLEDGE AND ATTITUDES TOWARD HEPATITIS (B) VIRUS AND ITS TRANSMISSION FROM MOTHER TO CHILD

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Abstract

Aim: To develop guidelines for pregnant women to improve knowledge and attitudes toward hepatitis (B) virus and its transmission from mother to child. **Study design:** A quasi experimental study design. **Setting:** Kafrelsheikh University Hospital, Egypt. **Methods:** Purposive sample of all pregnant women (two-hundred pregnant women). The study was conducted from the 1st of January, 2017 to the 1st of February 2018. **Tools:** Three tools were used to conduct this study: Interviewing questionnaire, knowledge and attitude questionnaire and scoring system. **Results:** The current study found that most of pregnant women (80%) were educated, The majority (99.5 %) of the pregnant women achieved satisfactory level score of knowledge regarding to hepatitis B followed guidelines compared to pre-test (p value <0.001). The majority (95.5 %) of the pregnant women achieved satisfactory level score of attitude regarding to hepatitis B followed guidelines compared to pre-test (p value <0.001). **Conclusion:** The majority of the pregnant women achieved satisfactory level score of knowledge and attitude regarding to hepatitis B followed guidelines compared to pre-test. According to the results, aim and research hypothesis of the current study, these study results achieved the study aim and supported the study hypothesis. **Recommendation:** It is recommended to conduct additional studies at a variety of institutions in Egypt.

Keywords:

1. Introduction

Hepatitis B infection (HBV) disease remains a genuine worldwide general medical issue. Internationally, there are an expected 240 million individuals incessantly tainted with HBV, with more than 686,000 passing every year because of difficulties of hepatitis B [1]. Nations which convey Just about half of the worldwide trouble for Ceaseless hepatitis are Brazil, China, Egypt, India, Indonesia, Mongolia, Myanmar, Nigeria, Pakistan, Uganda, Viet Nam [2]. Those WHO worldwide hepatitis report, 2017 demonstrates

that the expansive greater part of these people lack access to life-saving testing and treatment [3]. In endemic areas, mother to child transmission MTCT is the most widely recognized course of disease and the lifetime danger of contamination surpasses 60%. Women of childbearing age represent a specific clinical concern in the transmission of hepatitis B as recent data propose that high maternal HBV viraemia expands danger of HBV MTCT [4].

Vertical transmission of HBV is characterized as positivity at 6–12 months of life of the hepatic

tis B surface antigen (HBsAg) or of HBV-DNA in a baby destined to a tainted mother. A comprehension of the instruments of HBV transmission amid pregnancy is vital on the grounds that preventive systems go for focusing on these components. Mother-to-child transmission of HBV can occur by means of three modalities: intrauterine transmission; transmission amid conveyance; and baby blues transmission [5].

Mother-to-youngster transmission (MTCT) will be the true system for HBV transmission around those world, which is a dangerous since around 90% of contaminated babies advance to constant hepatitis B. This peril is respectably higher than from flat transmission where the rate of chronicity is 30–50% when tainted before 6 years old and <5% when contaminated in adulthood [1, 6, 7]. In spite of enhanced youth HBV inoculation around the world, MTCT still records for around half of new HBV contaminations in high endemic nations and 33% in low endemic nations [8, 9, 10, 11]. In this manner, avoiding MTCT is pivotal for diminishing HBV pervasiveness. Counteractive action requires HBV-contaminated pregnant women to know about their malady status and to comprehend the outcomes of HBV transmission to their kid. Albeit, many investigations have exhibited that lacking learning of HBV contamination in the overall population [12, 13, 14, 15, 16,17] and among medicinal services laborers [18, 19, 20] is related with high pervasiveness of hepatitis B, just a couple of studies have surveyed information, practice and demeanor of hepatitis B and MTCT among pregnant women.

Along these lines, keeping the mother-to-kid transmission course can significantly diminish HBV contamination among infants and can relieve the HBV disease burden [21].Hepatitis B Virus requires convincing guideline remembering the ultimate objective to be capably managed, this underscores the need to equip mothers with knowledge to prevent horizontal transmission of hepatitis B infection [22].

Medical caretakers especially a nurse have an imperative part to play in the administration of hepatitis B, as far as helping individuals with hep-

atitis B to live securely and healthy with this malady, and in addition in attempting to lessen the danger of spreading hepatitis B .There are right now no antibodies accessible for the anticipation of HBV disease. HBV transmission must be kept away from by training and strict adherence to sterile measures. As a piece of their instructing and evaluation abilities, medical attendants ought to have the capacity to teach and guidance patients with HBV or the individuals who are at chance for introduction to HBV. At last, because of the lingering danger of HBV vertical transmission, regardless of right during childbirth prophylaxis with hepatitis B immunoglobulin HBIG and immunization, different methodologies have been tried in this setting (in particular, antiviral medications, HBIG to the mother, and method of conveyance). Different procedures to lessen vertical transmission, for example, hepatitis B immunoglobulin organization amid pregnancy and kind of conveyance [23, 24, 25].

2. Significant of the study:

Hepatitis B infection (HBV) contamination is a standout amongst the most widely recognized medical issues around the world. The pervasiveness of HBV contamination among women of childbearing age might be as high as 2–8 % in China [26, 27], though in the United States USA it is just 0.4 % [28]. Most pregnant women with HBV disease are constant transporters, shown by positive serum hepatitis B surface antigen (HBsAg) status. HBsAg articulation has likewise been found in cells of the ovarian follicle or placental fine endothelium [29]. Intrauterine contamination and vertical transmission of HBV is a basic motivation behind why there are such a variety of incessant HBV bearers in China. The general evaluated rates of immunoprophylaxis disappointment for babies with HBsAg-positive and hepatitis B envelope antigen HBeAg-positive moms were 4.87 and 9.66 % individually. Without prophylaxis, the danger of HBV vertical transmission is high. The hazard is most astounding in HBsAg- and HBeAg-positive moms (transmission rate: 70%–90%), and low for HBsAg-positive HBeAg-

negative moms (transmission rate: 10%–40%) [30].

In spite of the fact that HBV transporter status is generally normal among pregnant women, particularly in exceedingly endemic nations, for example, China, there is a scarcity of information with respect to the effect of maternal HBV disease on the hazard for unfavorable pregnancy results [30]. The predominance rate of HBsAg in the Egyptian pregnant women was respectably high (10.1%); it was higher in the Upper Egypt (11.7%) than the Lower Egypt (8.0%) [31].

3. Subjects and methods:

Aim of the study: To developing guidelines for pregnant women to improve knowledge and attitudes toward hepatitis (B) virus and its transmission from mother to child.

Research hypothesis: To fulfill the aim of this study, research hypothesis was tested: Pregnant women who receive guidelines for hepatitis (B) virus and its transmission from mother to child have higher knowledge and attitude scores after guidelines.

Study design: A quasi experimental study design.

Setting: Kafr elsheikh University Hospital, Egypt.

Sampling: A purposive sample of participants in this research who assigned during the period from 1st of January 2017 to the 1st of February 2018 at Kafr el sheikh University Hospital, Egypt.

Inclusion criteria: Pregnant women were recruited when they fulfilled the following inclusion criteria:

1. Older than 18 years.
 - Primipara.
 - With Hepatitis (B) Virus.
 - Test for HBV DNA and hepatitis e antigen, additional testing in HBsAg-positive women
 - With and without Hepatitis (B) Virus treatment.

Sample size:

The target variable in this study is the pregnant women. Based on data obtained from previous study that assessed the knowledge and attitude scores pre and post guidelines, considering level of significance of 5%, and power of study of 80%, the sample size can be calculated using the following formula: $n = [(Z\alpha/2 + Z\beta)^2 \times \{2(SD)^2\}] / (\text{mean difference between the two groups})^2 = [(1.96 + 0.84)^2 \times 2(8.9)^2] / (41.6 - 37.2)^2 = 129.1$. Based on this formula, 200 participants are needed in study group.

Group assignments:

A purposive sample of 200 pregnant women who met the inclusive criteria was recruited consecutively during the study period and assigned for the study sample.

Data collection tools: Data collection obtained by using the following three tools:

1-Interviewing questionnaire:

The researchers were developed it after reviewing relevant literature. It was written in simple Arabic language. It consisted of the following parts which included characteristics of pregnant women such as age (years), sources of information, education and residence.

2- Knowledge and attitude questionnaire:

The questionnaire of pre-testing in pregnant women indicated that the questions were easy to understand. The questionnaire consisted of 17 items, divided into two parts: Knowledge of HBV and attitudes about HBV. The knowledge section tested three aspects: 1) general knowledge of HBV (4 items: Q1 through Q4); 2) modes of transmission (5 items: Q5 through Q9); and 3) knowledge of vaccine of HBV (2 items: Q10, and Q11). The attitude section consisted of 6 items (Q12 through Q17) and was mainly about prevention of HBV and follow-up after birth. For each item there were three response options: 'yes', 'no', and 'don't know' [32].

3- Scoring system: To analyze the results, criteria were established to consider the knowledge and attitude for hepatitis B and its transmission as correct, incorrect or I don't know. The correct responses of the pre and post guidelines were summed up to get the total knowledge and

attitude scores for each participant. Questions related to the participants' knowledge and attitude were asked and scored. One point gave for correct answer, zero point gave for wrong answer or I don't know. This applied before and after the guidelines. Missing data were considered wrong. The general knowledge score was the sum of the scores of 11 knowledge items. The attitude score was the total of the six attitude items. Satisfactory knowledge considered if they achieved 70% from the total answers [32].

4. Validity:

The three tools used in this study were reviewed by a panel of 3 expertises in the maternity nursing specialty before introducing them to the participants to ensure its validity and their comments were considered.

Administrative design:

Official permission was obtained from the Director of University Hospital.

Ethical consideration:

Ethical approval was allowed from the Ethics Committee of the Nursing Faculty. Permission to carry out the study was obtained from the Dean of Nursing Faculty. The researcher introduced herself to all pregnant women and the aim of the study was explained prior their participation to obtain their acceptance & cooperation as well as their written consent.

5. Pilot study:

The purpose of the pilot study was to test content clarity and applicability of implementing the designed tools and developing guidelines and time required to fill each tool. The pilot study was done on 10% of the study sample, involving 20 pregnant women. Evaluation of the contents of the guidelines and the simplicity of its language was also considered. The pilot group was excluded from the study sample.

6. Research procedure:

(1) Preparatory phase:

A survey of the past and current neighborhood and global accessible related writing covering different parts of the subjects was finished utilizing accessible books, articles, periodicals and magazines was important to be familiar with all parts of the examination issue and furthermore to create applicable devices for information gathering and the substance of the rules.

For information accumulation and rules execution, the researcher helps meeting the member and started Pretest evaluation for everyone. The researcher begun by acquainting herself with the member's pregnant women and gave them a short thought regarding the study and its point and expected results and afterward composed assent was acquired from them. The meeting took from 15 to 20 minutes. The researcher disclosed to them that there would be some kind of one visit following one month for Posttest evaluation.

(2) Guidelines implementation:

The implementation of guidelines was carried out as follow: The study group which consisted of 200 pregnant women who takes guidelines which started and carried out during the second interview. Thereafter, 200 pregnant women were enrolled in this study. Each participant was assigned to attend four sessions. In order to implement the study group training, 4 groups were formed, each with 50 participant's pregnant women. The session lasted for 45 minutes. During session the researcher gave a brochure to the pregnant women. Brochure which included guidelines about transmission and prevention of transmission of hepatitis B virus during pregnancy from mother to child that was created after a literature review tooled by the researcher. It consisted of important guidelines such as: Objectives of the study, general information about HBV, prevalence of HBV in Egypt and during pregnancy, mechanism of transmission, course of medication and vaccinations time table and strategies to reduce vertical transmission in addition, basic hygiene and the disposal of potentially infected material should be discussed with the pregnant women. Offering the previous guidelines implemented by the researcher during scheduled sessions.

(3) Evaluation of the outcome:

After the completion of the implemented guidelines, evaluation was done for the study, the posttest assessment was done for 200 pregnant women in the study which the same format used in the pretest assessment, to evaluate the outcomes of the guidelines; one month after the completion.

Outcome of the study: The effect of guidelines that promotes information about transmission of hepatitis B virus among pregnant women on the development of 200 pregnant women' knowledge and attitude.

Limitation of the study: It would have been better to repeat the assessment once again at a later time.

Statistical analysis:

Statistical analysis of the data was performed using the SPSS version 20.0 program. All data were expressed as number and percent. The comparisons of the categorical data were made by chi square test. The level of significance was set at <0.05 .

7. Results:

The current results will include the following eight parts: Distribution of the pregnant women according to personal characteristics, responses of pregnant women related to knowledge pre and post guidelines toward hepatitis (B) virus and its transmission from mother to child, responses of pregnant women related to attitude pre and post guidelines toward hepatitis (B) virus and its transmission from mother to child, frequency of the satisfactory knowledge level of pregnant women pre and post guidelines, frequency of the satisfactory attitude level of pregnant women pre and post guidelines, relation between sources of information and knowledge and attitude level of pregnant women (post- guidelines), relation between education and knowledge and attitude level of pregnant women (post- guidelines), relation between residence and knowledge and attitude level of pregnant women (post- guidelines). According to the study aim and hypotheses, the following findings will support the study hypothesis and achieve the study aim.

Table 1 showed that the distribution of the samples, as regards to their personal characteristics. The respondents were made up of 200 pregnant women, regarding to the age of women, 84% were between 21 to 23 years. The majority of them (65%) were urban. Most of them (80%) were educated. And most of mother's information regarding hepatitis B have been taken from doctors (90%), followed by (8 %) from family, friends and neighbors.

Table 2 presented the comparison between pre and post test percentage of the pregnant women's knowledge regard to hepatitis B virus. There was a significant improvement in pregnant women's percentage about different questions related to viral hepatitis B and its transmission among pregnant women from mother to child from pre and post test (p value <0.001) in two questions such as, hepatitis B can be transmitted through unprotected sexual intercourse?. And babies that infected perinatally (at or around the time of delivery) are at high risk for eventual complications of liver fibrosis, cirrhosis or liver cancer?.Regarding to pregnant women's knowledge proportion pre and post-test in 9 questions were statistically not significant for improved post-test findings.

Table 3 presented the comparison between pre and post test percentage of the pregnant women's attitude regard to hepatitis B virus. There was a significant improvement in pregnant women's proportion about different items related to viral hepatitis B and its transmission among pregnant women from mother to child from pre and posttest (p value <0.001) in four questions. According to pregnant women's attitude proportion pre and post-test in 2 questions were statistically not significant for improved post-test percentages such as, the pregnant women with HBV infection, should be take drugs that are not to harm the developing baby in pregnancy to prevent transmitting HBV to her baby? And the pregnant women with HBV infection, should be take her baby back to the clinic to test HBV status a few times during the first year after birth?.

Table 4 presented that, total scores of pregnant women's knowledge about hepatitis B illustrated the changes in pre-vs. Post-test scores for

the pregnant women's knowledge. It was found that, the majority 99.5 % of the pregnant women achieved satisfactory level score of knowledge regarding to hepatitis B followed guidelines compared to pre-test (p value <0.001).

Table 5 presented that, total scores of pregnant women's attitude about hepatitis B illustrated the changes in pre-vs. Post-test scores for the pregnant women's attitude. It was found that, the majority 95.5 % of the pregnant women achieved satisfactory level score of attitude regarding to hepatitis B followed guidelines compared to pre-test (p value <0.001).

Table 6 described the relation between total knowledge and attitude satisfactory scores regarding to hepatitis B and the sources of information in the study group post guidelines. There were statistical significant relation between post guidelines knowledge and attitude scores and the sources of information especially doctors source. The table showed highly statistical significant relation between post guidelines attitude score and the sources of information (p <0.001).

Table 7 pointed the relation between total knowledge and attitude satisfactory scores regarding to hepatitis B and the pregnant women's residence in the study group post guidelines. There were no statistical significant relation between post guidelines knowledge and attitude scores and the pregnant women's residence.

Table 8 pointed the relation between total knowledge and attitude satisfactory scores regarding to hepatitis B and the pregnant women's residence in the study group post guidelines. There were no statistical significant relation between post guidelines knowledge and attitude scores and the pregnant women's residence.

8. Discussion:

Hepatitis B infection (HBV) is a significant general health problem, with most noteworthy effect on morbidity and mortality. Around the world, there are an estimated 240 million chronically contaminated people, especially in low- and center pay nations[33], the major route of HBV transmission was Mother-to-child transmis-

sion (MTCT), which assesses all HBV infections contracted before birth, amid birth and in early childhood; that constitute more than one third of the worldwide unending HBV disease [34], the essentialness of which as a group is their curiously more serious danger of chronicity compared to infections picked up later in life [34,35]. In this way, Prevention of MTCT is a fundamental advance in decreasing the worldwide weight of interminable HBV.

In March 2015, WHO propelled its first "Guidelines for the prevention, care and treatment of people living with ceaseless hepatitis B infection" and in May 2016, The World Health Assembly received the principal "Worldwide Strategy on Viral Hepatitis, 2016-2020".The system has a prescience of eradicating viral hepatitis diseases by 90% and diminishing passing because of viral hepatitis by 65% by 2030 and emphasis mainly on raising awareness and bringing issues to light [36].

This study aimed to developing guidelines for pregnant women to improve knowledge and attitudes toward hepatitis (B) virus and its transmission from mother to child. The current study found that most of pregnant women (80%) were educated, The majority (99.5 %) of the pregnant women achieved satisfactory level score of knowledge regarding to hepatitis B followed guidelines compared to pre-test (p value <0.001). The majority (95.5 %) of the pregnant women achieved satisfactory level score of attitude regarding to hepatitis B followed guidelines compared to pre-test (p value <0.001). The study findings supported the study hypothesis and achieved the study aim.

In this sample of pregnant women mostly urban, educated, in childbearing age, with high rate of HBV disease and low level of knowledge about the danger of mother-to-child HBV transmission, that uncovers a note worthy gap in information and counsel that should be provided during prenatal visits resulting from lack of knowledge about HB transmission, as agreed by other studies[37,38,39],suggested that high pervasiveness of hepatitis B infection clarified by poor and inaccurate knowledge on infection with the HBV, particularly in regards to its counteractive action in

Table1. Distribution of the pregnant women according to personal characteristics

	N	%
Age (year)		
>18 - >21	3	6%
21–23	92	84%
>23	5	10%
Source of hepatitis B information		
Doctors	180	90%
Family/friends/neighbors	16	8%
Mass media (TV/ Radio/ Internet....)	4	2%
Education		
Not educated	40	20%
Educated	160	80%
Residence		
Rural	70	35%
Urban	130	65%

Table 2. Responses of pregnant women related to knowledge pre and post guidelines toward hepatitis (B) virus and its transmission from mother to child

	Pregnant women				Chi square test	
	Pre-guidelines (N = 200)		Post-guidelines (N = 200)		X ²	P
Knowledge	N	%	N	%		
Hepatitis B is caused by virus?						
Yes	197	98.5	200	100		
No	3	1.5	0	0		
I don't know	0	0	0	0	3.023	0.082
Hepatitis B can be transmitted through blood transfusion?						
Yes	199	99.5	200	100		
No	1	0.5	0	0		
I don't know	0	0	0	0	1.003	0.317
Hepatitis B can be transmitted through unprotected sexual intercourse?						
Yes	2	1	199	99.5		
No	197	98.5	1	0.5		
I don't know	1	0.5	0	0	388.1	<0.001
Hepatitis B can be transmitted from mother to fetus?						
Yes	199	99.5	200	100		
No	1	0.5	0	0		
I don't know	0	0	0	0	1.003	0.317
Hepatitis B can be transmitted through use of unsafe needles or sharps?						
Yes	199	99.5	200	100		
No	1	0.5	0	0		
I don't know	0	0	0	0	1.003	0.317

An individual can be infected by both Hepatitis B and HIV?						
Yes	199	99.5	200	100		
No	1	0.5	0	0		
I don't know	0	0	0	0	1.003	0.317
Hepatitis B infection can lead to liver cancer?						
Yes	199	99.5	200	100		
No	1	0.5	0	0		
I don't know	0	0	0	0	1.003	0.317
Hepatitis B infection can lead to liver cirrhosis (scarred liver)?						
Yes	199	99.5	200	100		
No	1	0.5	0	0		
I don't know	0	0	0	0	1.003	0.317
A person can be infected Hepatitis B and not have any symptoms of the disease?						
Yes	199	99.5	200	100		
No	1	0.5	0	0		
I don't know	0	0	0	0	1.003	0.317
Hepatitis B can lead to liver cirrhosis (scarred liver)?						
Yes	199	99.5	200	100		
No	1	0.5	0	0		
I don't know	0	0	0	0	1.003	0.317
Babies that infected perinatally (at or around the time of delivery) are at high risk for eventual complications of liver fibrosis, cirrhosis or liver cancer?						
Yes	1	0.5	200	100		
No	199	99.5	0	0		
I don't know	0	0	0	0	396.02	<0.001

Table 3. Responses of pregnant women related to attitude pre and post guidelines toward hepatitis (B) virus and its transmission from mother to child

Attitude	Pregnant women				Chi square test	
	Pre-guidelines (N = 200)		Post-guidelines (N = 200)		X ²	P
	N	%	N	%		
The pregnant women should be willing to screen for Hepatitis B during antenatal care visit (blood test)?						
Yes	100	50	195	97.5		
No	1	0.5	5	2.5		
I don't know	99	49.5	0	0	132.26	<0.001
The pregnant women should be let her baby receive HBV						

vaccine?						
Yes	1	0.5	199	99.5		
No	199	99.5	1	0.5		
I don't know	0	0	0	0	392.04	<0.001
The pregnant women with HBV infection, should be let her baby receive anti HBV antibodies?						
Yes	2	1	199	99.5		
No	197	98.5	1	0.5		
I don't know	1	0.5	0	0	388.1	<0.001
The pregnant women with HBV infection, should be take drugs that are not to harm the developing baby in pregnancy to prevent transmitting HBV to her baby?						
Yes	199	99.5	200	100		
No	1	0.5	0	0		
I don't know	0	0	0	0	1.003	0.317
The pregnant women with HBV infection, should be take her baby back to the clinic to test HBV status a few times during the first year after birth?						
Yes	198	99	200	100		
No	1	0.5	0	0		
I don't know	1	0.5	0	0	2.01	0.366
The pregnant women with HBV infection, should be let health providers draw blood from her child of the context of a clinical trial?(about 2 ml per visit; 5 visits)						
Yes	1	0.5	198	99		
No	198	99	1	0.5		
I don't know	1	0.5	1	0.5	390.04	<0.001

Table 4. Frequency of the satisfactory knowledge level of pregnant women pre and post guidelines

	Pregnant women				Chi square test	
	Pre-guidelines (N = 200)		Post-guidelines (N = 200)		X ²	P
	N	%	N	%		
Satisfactory	1	0.5	199	99.5		
Unsatisfactory	199	99.5	1	0.5	392.04	<0.001

Table 5. Frequency of the satisfactory attitude level of pregnant women pre and post guidelines

	Pregnant women				Chi square test	
	Pre-guidelines (N = 200)		Post-guidelines (N = 200)		X ²	P
	N	%	N	%		
Satisfactory	1	0.5	191	95.5	361.579	<0.001
Unsatisfactory	199	99.5	9	4.5		

Table 6. Relation between sources of information and knowledge and attitude level of pregnant women (post- guidelines)

	Family/friends/ Doctors						Chi square test	
	Doctors		neighbors		Mass media		X ²	P
	N	%	N	%	N	%		
Knowledge								
Satisfactory	180	100%	15	93.7%	4	100%	11.558	0.003
Unsatisfactory	0	0%	1	6.3%	0	0%		
Attitude								
Satisfactory	178	98.9%	10	62.5%	3	65%	49.266	<0.001
Unsatisfactory	2	1.1%	6	37.5%	1	25%		

Table 7. Relation between education and knowledge and attitude level of pregnant women (post- guidelines)

	Not educated		Educated		Chi square test	
	N	%	N	%	X ²	P
Knowledge						
Satisfactory	40	100%	159	99.4%	0.251	0.616
Unsatisfactory	0	0%	1	0.6%		
Attitude						
Satisfactory	37	92.5%	154	97.3%	1.047	0.306
Unsatisfactory	3	7.5%	6	3.7%		

Table 8. Relation between residence and knowledge and attitude level of pregnant women (post- guidelines)

	Rural		Urban		Chi square test	
	N	%	N	%	X ²	P
Knowledge						
Satisfactory	69	98.6%	130	100%	1.866	0.172
Unsatisfactory	1	1.4%	0	0%		
Attitude						
Satisfactory	67	95.8%	124	95.3%	0.012	0.913
Unsatisfactory	3	4.2%	6	4.6%		

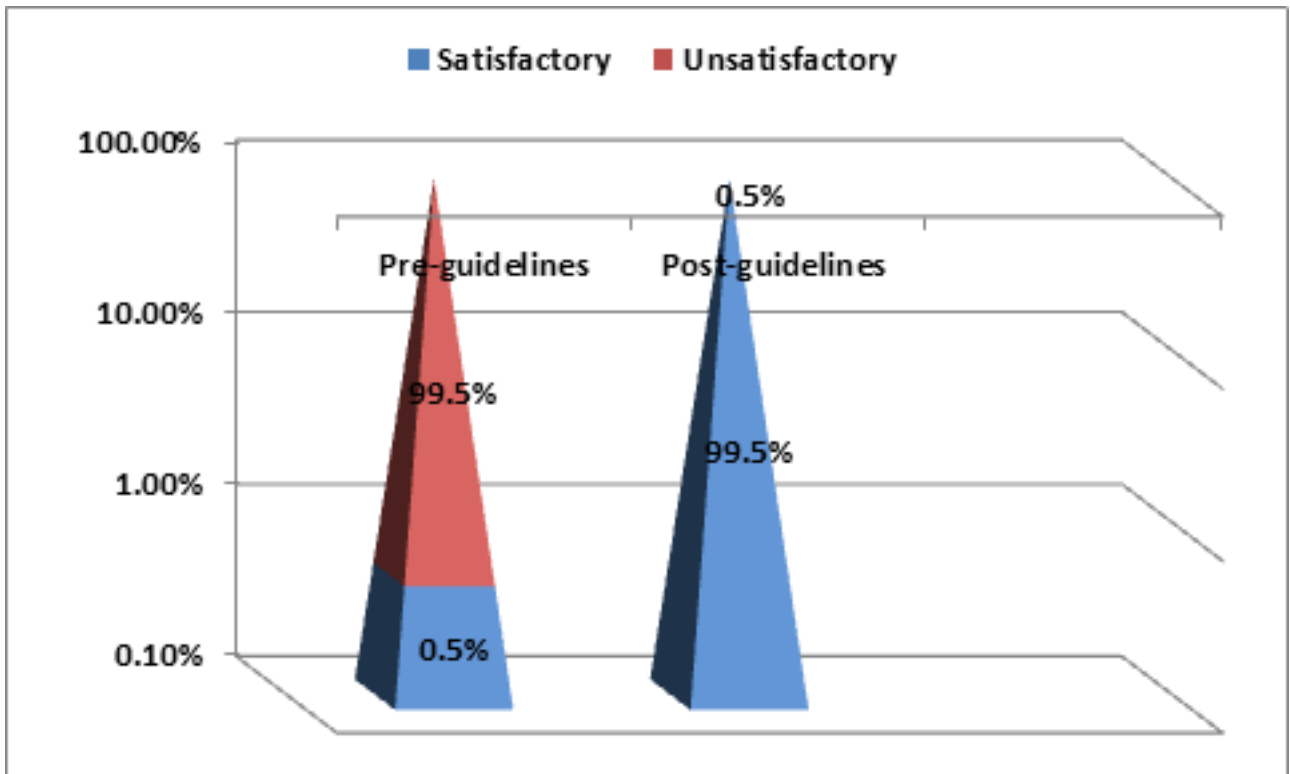


Figure 1: Frequency of the satisfactory knowledge level of pregnant women pre and post guidelines

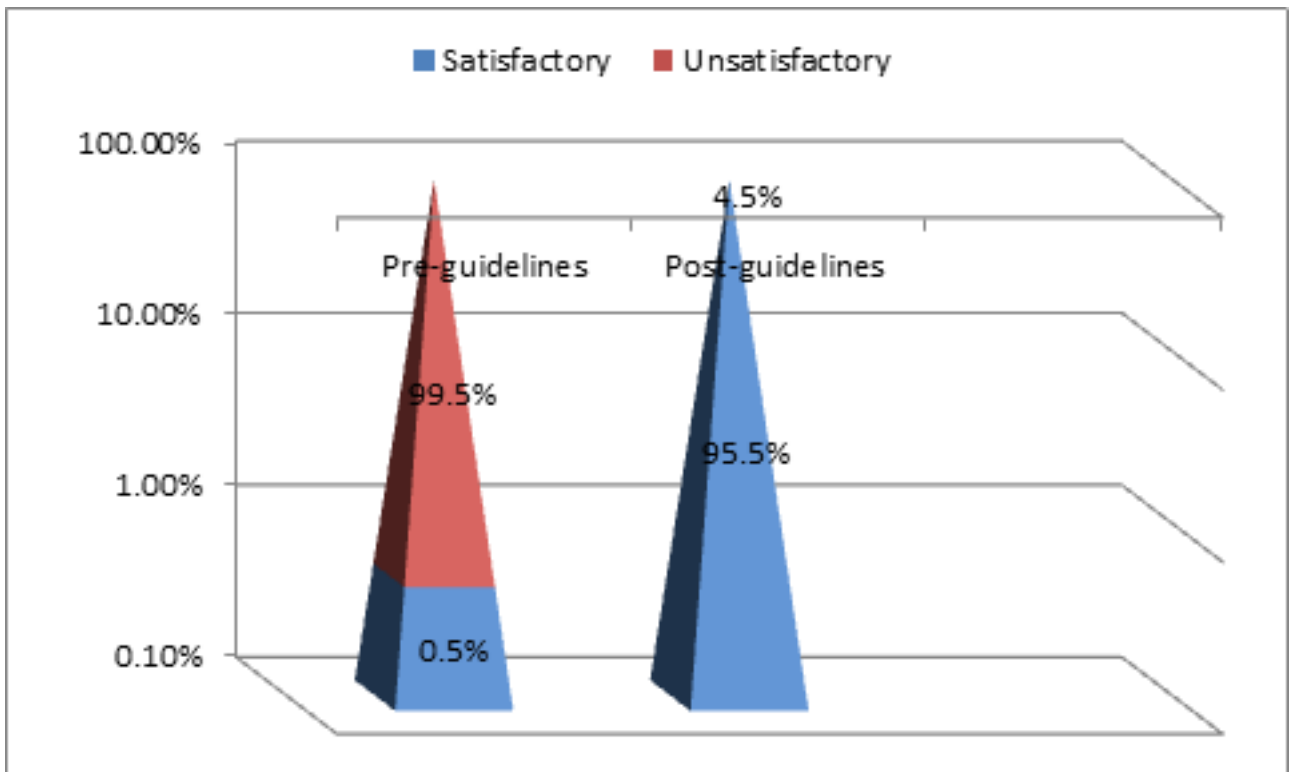


Figure 2: Frequency of the satisfactory attitude level of pregnant women pre and post guidelines

even transmission, in the fertile female populace. This results comes in the same line with other study [40]detailed that without mothers education and intervention, 70–90% of neonates destined to hepatitis B virus surface antigen (HBsAg) (+) mothers will end up noticeably tainted with HBV. Chan et al 2012 emphasize that among the general society, less is thought about the hazard and significance of horizontal transmission; in spite of the fact that education pamphlets, posters, and television advertisements have clarified about the danger of HBV[41].

This result could be due to the fact; these measures are not well actualized in our health facilities, as confirm by gigantic gap in light of the weight of hepatitis B contamination especially with the high pervasiveness of HBsAg among pregnant women in the nation. Moreover, Isolation from society and nonattendance of social communications in the public arena brings about several behavioral changes. It however varied from a study conducted by Adeyemi and partners who found that majority of their study respondents didn't have formal education with responding low level of information about HBV transmission [42] This finding ought to be a major concern for the health authority to increase awareness, and molding health seeking behaviors as mothers with high HBeAg values could be transmitting the infection to their babies in ignorance.

This study underpins that insufficient knowledge about HBV is a potential barrier to eliminating MTCT since a minority of women correctly answered all the questions about HBV transmission. This lack of knowledge may likewise impact the attitudes of the mother towards interventions that could lessen the danger of transmission to their babies, this could come about because of the supposition that the health care providers were ignorant of the danger of infants to perpetual HBV disease which affected their poor preventive practices that direct attention to the significance of actualizing standard conventions and intercessions which target counteractive action of MTCT of HBV contamination. Furthermore, An essential reason of this attitude is connected to the absence of communication be-

tween the healthcare professional and the patient, implying that the patient may not get sufficient information. This result is steady with another studies [38,43,44]revealed that, there is deficient knowledge among pregnant women about Hepatitis B infection that require urgent consideration. Medicinal services experts ought to scatter information regarding HB and present themselves as a primary source of information for HB patients. This will provide evidence-based knowledge to HB patients, which will enhance HB patients' compliance towards their treatment and prevent the further spread of infection. Haq et al 2012emphasize that heightened poor knowledge towards HB that expands the requirements for extensive health educational campaign [45]. In contrast with another study [46] demonstrates that more than 60% of participants knew about HBV. This difference in the finding might be credited to differences in the sample educational level.

The main finding of our study presented that, total scores of pregnant women's knowledge about hepatitis B showed the progressions in pre-versus post-test scores for the pregnant women's knowledge. This could result from the assumption that the mothers benefited from the regular education provided at the clinics. Within this context, in the current study, the attitude related to HB was dependent on the knowledge of the patients towards their disease condition. What's more, the attitude was molded because of the knowledge that the patient possesses regarding HB infection. Along these lines, correct knowledge brings about a positive attitude and this positive attitude brings about a positive change in patient's behavior.

Reports from other studies indicated that Women receive consistent information facilitates greater understanding of the disease, and discover that the medicinal services suppliers and facility staff are the essential wellsprings of learning and support, and breaking down barriers to health care [47]. Additionally different [44, 48] documented that lack of knowledge regarding hepatitis B impact the attitudes of the mother towards interventions that could diminish the risk of transmission to their infants. Haq et al 2012proposed

that better learning can prompt positive attitude and subsequently in good practices. This will further help in avoidance and management of HB [45]. Within this context, Perceived weakness or a perspective of how powerless a pregnant women sees herself as to getting an infection can impact one's attitude in taking certain activities. Physicians, pharmacists and nurses should assume a role in building up a collaborative care model to provide education to the patients. Enabling the patients will be helpful in disease management and in addition in controlling the further spread of disease to the sound populace [45, 49].

Our study and others [50,44] have shown that pregnant women achieved satisfactory level score of knowledge regarding to hepatitis B followed guidelines compared to pre-test, that increase willingness to commence and adhere to treatment. Moreover, women have voiced their valuation of services that that help them as well as their entire family as well. This result could be because of the reality Physicians and nurses are the core staff that request hepatitis B screening during pregnancy. More so, this staffs fill in as the principle wellspring of hepatitis B-related information for most clients.

Also study carried out by [44] emphasize that in order to expand the women's willingness towards interventions during pregnancy further work is expected to instruct women about both the long-term consequences of HBV infection in an infant and about prevention of MTCT of HBV.

On the other hand, in accordance with other researchers [51,52], the current study has found statistical significant relation between post guidelines knowledge and attitude scores and the sources of information especially doctors source, attributed to proceeding with proficient training that manufacture the limit of wellbeing experts as far as information and abilities.

Contrary to the results of the current study, other studies[38, 47]brought up that public health nurse education and mass media are the most favored channels for scattering instructive materials and information to overall population at the community level, on account of their popularity. Another study [45] uncovered that, although all

the patients approached to healthcare professionals, the primary source of information regarding HB was through family, friends and neighbors.

The finding with regards to the association between respondents' educational level and their knowledge of MTCT of HBV, there were no statistical significant relation between post guidelines knowledge and attitude scores and women's educational level. These results are similar to that seen in other studies and speak to the fact that no significant association between educational status and knowledge level regarding MTCT of HBV [54, 55]. Contrary to reports by Chan et al 2012 [6] and found that significant association between educational status and knowledge level related to MTCT of HBV. The same result was reported by several studies in different populations, that increased level of education increased level of HBV awareness [49, 53].

On the other hand the current study in line with other researchers [54] who predict that no statistical significant relation between post guidelines knowledge and attitude scores and the pregnant women's residence. Rather than different studies announced that health education ought to be given to overall public and particularly to the inhabitants of rural areas [56].

Then again the momentum examine in accordance with different scientists [54]who foresee that no factual noteworthy connection between post rules information and mentality scores and the pregnant ladies' home. Rather than different investigations announced that wellbeing instruction ought to be given to overall public and particularly to the inhabitants of country areas [56].

9. Conclusions:

Based on the results revealed by the present study, the present study pointed at number of conclusions, the majority of the pregnant women achieved satisfactory level score of knowledge regarding to hepatitis B followed guidelines compared to pre-test and also the majority of the pregnant women achieved satisfactory level score of attitude regarding to hepatitis B followed guidelines compared to pre-test. According to the

results, aim and research hypothesis of the current study, these study results achieved the study aim and supported the study hypothesis.

10. Recommendations:

It is recommended to conduct additional studies at a variety of institutions in Egypt. Additional efforts should be carried out to enhance HBV public health education programs in understandable language are needed to achieve the goal of prevention of HBV transmission from mother to child among pregnant women. Future studies could be aimed towards determining the impact of such education programs.

References

1. World Health Organization. Hepatitis B Fact sheet. Updated July 2016; <http://www.who.int/mediacentre/factsheets/fs204/en/>.
2. New hepatitis data highlight need for urgent global response: 11 May 2017; GENEVA, AMSTERDAM available at: <http://www.who.int/en/news/6391/new-hepatitis-data-highlight-need-urgent-global-response>. accessed 22/9/2017.
3. World Hepatitis Day 2017; Eliminate hepatitis. <http://www.who.int/campaigns/hepatitis-day/2017/event/en/>.
4. Patton H, Tran TT. Management of hepatitis B during pregnancy. *Nav Rev Gastroenterol Hepatol* 2014;11:402–9.
5. Zhang L, Wang YY, Huang YJ, Wang M, Nelson KE, Wang A, et al. Status of HBsAg seroprevalence in 15 million rural couples in China: a cross-sectional study. *Sci Rep*. 2017; Feb 21; 7:42822. pmid:28220812
6. Gambarin-Gelwan M. Hepatitis B in pregnancy. *Clinics in Liver Disease* 2007;11:945–963. pmid:17981236
7. Lai CL, Ratnu V, Yuen MF, Poynard T. Viral hepatitis B. *Lancet* 2003; 362:2089–2094. pmid:14697813
8. Gu Y, Liu H, Wang Y, Hao R, Li Z, Song H. The next step in controlling HBV in China. *BMJ*. 2013; Jul 16; 347:f4503. pmid:23861426
9. Giles ML, Grace R, Tai A, Michalak K, Walker SP. Prevention of mother-to-child transmission of hepatitis B virus (HBV) during pregnancy and the puerperium: current standards of care. *Aust N Z J Obstet Gynaecol*. 2013; Jun; 53(3):231–235. pmid:23452292
10. Vodkin I, Patton H. Management of Hepatitis B virus infection during pregnancy. *Minerva Gastroenterol Dietol*. 2014; Dec; 60(4):205–214. pmid:25275811
11. Thio CL, Guo N, Liew C, Nelson KE, Ehrhardt S. Global elimination of mother-to-child transmission of hepatitis B: revisiting the current strategy. *Lancet Infect Dis*. 2015; Aug; 15(8):981–5. pmid:26145195
12. Chung PW, Suen SH, Chan OK, Lao TH, Leung TY. Awareness and knowledge of hepatitis B infection and prevention and the use of hepatitis B vaccination in the Hong Kong adult Chinese population. *Chin Med J (Engl)*. 2012; Feb; 125(3):422–7.
13. Roushan N, Nasiri Toosi M, Meysamie A, Esteghamati AR, Hajrassuliha H. Hepatitis B knowledge among Iranian adolescents: a national survey. *Iran Red Crescent Med J*. 2013; Dec; 15(12):e11558. pmid:24693383
14. Cotler SJ, Cotler S, Liew H, Luc BJ, Layden TJ, Wong SS. Characterizing hepatitis B stigma in Chinese immigrants. *J Viral Hepat*. 2012; Feb; 19(2):147–152. pmid:22239504
15. Zheng J, Li J, Wang J, Zhang G, Wangen KR. Inequality in the hepatitis B awareness level in rural residents from 7 provinces in China. *Hum Vaccin Immunother*. 2017; Feb; 14:1–9.
16. Mohamed R, Ng CJ, Tong WT, Abidin SZ, Wong LP, Low WY. Knowledge, attitudes and practices among people with chronic hepatitis B

attending a hepatology clinic in Malaysia: a cross sectional study. *BMC Public Health*. 2012; Aug 3; 12:601. pmid:22856889

17. Huang J, Guan ML, Balch J, Wu E, Rao H, Lin A, Wei L, Lok AS. Survey of hepatitis B knowledge and stigma among chronically infected patients and uninfected persons in Beijing, China. *Liver Int*. 2016; Nov; 36(11):1595–1603. pmid:27206379

18. Hu Y, Dai , Zhou YH, Yang H. A knowledge survey of obstetrics and gynecology staff on the prevention of mother-to-child transmission of hepatitis B virus. *J Infect Dev Ctries*. 2013; May 13; 7(5):391–7. pmid:23669428

19. Al-Ha mi AH. Knowledge, attitudes and practice of primary health care physicians towards hepatitis B virus in Al-Jouf province, Saudi Arabia. *BMC Res Notes*. 2014; May 9; 7:288. pmid:24885149

20. Adjei CA, Asamoah R, Atibila F, Ti-Enkawol GN, Ansah-Nyarko M. Mother-to-child transmission of hepatitis B: e tent of knowledge of physicians and midwives in Eastern region of Ghana. *BMC Public Health*. 2016; Jul 11; 16:537. pmid:27401399

21. MG GEETA AND A RIYAZ 2013; Prevention of Mother to Child Transmission of Hepatitis B Infection *INDIAN PEDIATRICS VOLUME 50 FEBRUARY 16, 2013*

22. Ding Y, Sheng , Ma L and Dou . Chronic HBV infection among pregnant women and their infants in Shenyang, China *Virology Journal* 2013; 10:17 <http://www.virologyj.com/content/10/1/17>

23. Chan OK, Lao TT, Suen SS, Lau TK, Leung TY. Knowledge on hepatitis B infection among pregnant women in a high endemicity area. *Patient Educ Couns*. 2011; Dec; 85(3):516–20. pmid:21167671

24. Chan OK, Lao TT, Suen SS, Leung TY. Deficient knowledge on hepatitis B infection in pregnant women and prevalence of hepatitis B surface antigen carriage in an endemic area: a review. *Hepat Res Treat*. 2012; 2012:317451. pmid:23056935

25. Adeyemi AB, Enabor OO, Ugwu IA, Bello FA, Olayemi OO. Knowledge of hepatitis B virus infection, access to screening and vaccination among pregnant women in Ibadan, Nigeria. *J Obstet Gynaecol*. 2013; Feb; 33(2):155–9. pmid:23445138

26. Huang Y, Li L, Sun , Lu M, Liu H, Tang G, Wang D, Hutin YJ. Screening of pregnant women for hepatitis B virus surface antigen (HBsAg) and subsequent management, iandongnan prefecture, Gui hou, China, 2010. *Vaccin*. 2013;31Suppl 9:J62–5. View Article Google Scholar

27. Lao TT, Sahota DS, Law LW, Cheng YK, Leung TY. Age-specific prevalence of hepatitis B virus infection in young pregnant women, Hong Kong Special Administrative Region of China. *Bull World Health Organ*. 2014;92(11):782–9. View Article PubMed PubMed Central Google Scholar

28. Sorrell MF, Belongia EA, Costa J, Gareen IF, Grem JL, Inadomi JM, Kern ER, McHugh JA, Petersen GM, Rein MF et al. National Institutes of Health consensus development conference statement: management of hepatitis B. *Hepatol*. 2009;49(5 Suppl):S4–S12. View Article Google Scholar

29. Yu M, Jiang , Gu , Ju L, Ji Y, Wu K, Jiang H. Correlation between vertical transmission of hepatitis B virus and the e pression of HBsAg in ovarian follicles and placenta. *PLoS One*. 2013;8(1):e54246. View Article PubMed PubMed Central Google Scholar

30. Lin , Guo Y, Zhou A, Zhang Y, Cao J, Yang M, iao F, Zhang B, Du Y. Immunoprophylaxis

failure against vertical transmission of hepatitis B virus in the Chinese population: a hospital-based study and a meta-analysis. *Pediatr Infect Dis J*. 2014;33(9):897–903. View Article PubMed Google Scholar

31. Attia MA, Prevalence of hepatitis B and C in Egypt. *Antivir Ther*. 2016;3(Suppl 3):1-9 1998;3(Suppl 3):1-9.

32. Han Z, Yin Y, Zhang Y, Ehrhardt S, Thio CL, Nelson KE, et al. Knowledge and attitudes towards hepatitis B and its transmission from mother to child among pregnant women in Guangdong Province, China. *PLoS ONE*. 2017; 12(6): e0178671. <https://doi.org/10.1371/journal.pone.0178671>.

33. Geneva: World Health Organization. Guidelines for the prevention, care and treatment of persons with chronic hepatitis B infection, 2016; AVAILABLE AT <http://www.who.int/hepatitis/publications/hepatitis-b-guidelines/en/> ACCESSED AT 28/9/2016.

34. Thio CL, Guo N, Lie C, Nelson KE, Ehrhardt S. Global elimination of mother-to child transmission of hepatitis B: revisiting the current strategy. *Lancet Infect Dis*. 2015; 15:981–5.

35. Behrou Navabakhsh, Narges Mehrabi, Are oo Estakhri, Mehdi Mohamadnejad, Hossein Poustchi. Hepatitis B Virus Infection during Pregnancy: Transmission and Prevention. *Middle East Journal of Digestive Diseases*. 2011; 3(2)

36. Hepatitis B, Fact sheet Reviewed July 2017; Available at <http://www.WHO.int/mediacentre/factsheets/fs204/en/> accessed August 2017.

37. aydalasouk K, Keomalaphet S, Lattha phasavang V, Souvong V, Buisson Y 2016; Assessment of mother-to-child HBV transmission at the prenatal consultation in Vientiane, Laos. *Bull Soc Pathol Et*. 2016; 109(1):13-9. doi: 10.1007/s13149-016-0474-5. Epub 2016.

38. Chan OK, Lao TT, Suen SS, Leung TY. Deficient knowledge on hepatitis B infection in pregnant women and prevalence of hepatitis B surface antigen carriage in an endemic area: a

review. *Hepat Res Treat*. 2012; 2012:317451. <https://doi.org/10.1155/2012/317451> PMID: 23056935

39. Frambo AA, Atashili J, Fon PN, Ndumbe PM. Prevalence of HBsAg and knowledge about hepatitis B in pregnancy in the Buea Health District, Cameroon: a cross-sectional study. *BMC Res Notes*. 2014;7(1):394. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24965844>. Accessed 17 Aug 2015.

40. Nelson NP, Jamieson DJ, Murphy TV. Prevention of perinatal hepatitis B virus transmission. *J Pediatric Dis Soc; Suppl*. 2014; 1:S7–S12.

41. OiKa Chan, Terence T. Lao, Stephen S. H. Suen, and TakYeungLeung. Deficient Knowledge on Hepatitis B Infection in Pregnant Women and Prevalence of Hepatitis B Surface Antigen Carriage in an Endemic Area: A Review *Hepat Res Treat*. 2012; 317451. Published online 2012 Sep 28. doi:10.1155/2012/317451 PMID: PMC3465960.

42. Adeyemi a B, Enabor OO, Ugwu I a, Bello F a, Olayemi OO. Knowledge of hepatitis B virus infection, access to screening and vaccination among pregnant women in Ibadan, Nigeria. *J Obstet Gynaecol (Lahore)* [Internet]. 2013 Feb [cited 2014 Dec 28];33(2):155–9. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/23445138>.

43. Chan OK, Lao TT, Suen SS, Lau TK, Leung TY. Knowledge on hepatitis B infection among pregnant women in a high endemicity area. *Patient Educ Couns*. 2011 Dec; 85(3):516±20. <https://doi.org/10.1016/j.pec.2010.11.006> PMID: 21167671.

44. Han Z, Yin Y, Zhang Y, Ehrhardt S, Thio CL, Nelson KE, et al. Knowledge of and attitudes towards hepatitis B and its transmission from mother to child among pregnant women in Guangdong Province, China. *PLoS ONE*. 2017; 12(6): e0178671. <https://doi.org/10.1371/journal.pone.0178671>

45. Haq NU, Hassali MA, Shafie AA, Saleem F, Farooqui M, Aljadhey H. A cross sectional assessment of knowledge, attitude and practice towards Hepatitis B among healthy population

- of uetta, Pakistan. BMC Public Health. 2012;12(1):692. doi: 10.1186/1471-2458-12-692.
46. Becker MH. The Health Belief Model and Sick Role Behavior. *Health EducBehav.* 2012;2(4):409–419.
47. Joanna P, Alisa J, Carol H. Perinatal Hepatitis B Prevention: Adapting Public Health Services to Meet the Changing Needs of a Diverse Community. *Public Health Reports.* 2009; Volume 124
48. Hu Y, Dai , Zhou YH, Yang H. A knowledge survey of obstetrics and gynecology staff on the prevention of mother-to-child transmission of hepatitis B virus. *J Infect DevCtries.* 2013; May 13; 7(5):391±7. <https://doi.org/10.3855/jidc.2915> PMID: 23669428
49. Ashri N. Y. hepatitis B and C knowledge among Saudi dental patients, *Saudi med j.*, (2008);29(12):1785-90.
50. HemantA.Shah, and MahmoudAbu–Amara. Education Provides Significant Benefits to Patients With Hepatitis B Virus or Hepatitis C Virus Infection: A Systematic Review. *Clinical Gastroenterology and Hepatology.* 2013; Volume 11, Issue 8, Pages 922-933
51. Adjei C, Asamoah R, Atibila F, Ti-enkawol G and Nyarko M. Mother-to-child transmission of hepatitis B: e tent of knowledge of physicians and midwives in Eastern region of Ghana. *BMC Public Health.* 2016; 16:537 DOI 10.1186/s12889-016-3215-6
52. Smith H, Brown H, Khanna J. Continuing education meetings and workshops: effect of professional practice in health-care outcomes. Geneva 2015; The WHO reproductive health library.
53. Magda Bayoumi and Mona Mejahed. Pregnant Women s Awareness regarding Viral Hepatitis B and C E *East Journal Of Nursing* February 2010 Middle East Journal Of Nursing January 2012
54. Dun-DeryF, Adokiya M, Williams W, Ernestina Y and Juventus B. Assessing the knowledge of e pectant mothers on mother–to-child transmission of viral hepatitis B in Upper West region of Ghana. *BMC Infectious Diseases.* 2017; 17:416 DOI 10.1186/s12879-017-2490-
55. UNICEF. Statistics (19) At a glance: Ghana [Internet]. 2013; [cited. Nov 9. 2015; Available from: https://www.unicef.org/infobycountry/ghana_statistics.html.
56. NomanulHaq, Mohamed, A mi Hassali, Asrul Akmal Shafie, Fahad Saleem, Maryam Farooqui, Abdul Haseeb, and HishamAljadhey. A cross-sectional assessment of knowledge, attitude and practice among Hepatitis-B patients in uetta, Pakistan. *BMC Public Health.* 2013; 13: 448. Published online 2013 May 6. doi: 10.1186/1471-2458-13-448
PMCID: PMC3648389