The Effect of Applying the Health Belief Model on Predicting the Delivery Method Among pregnant Women

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Abstract:
Background: *Delivery by Caesarian Sections (CS) have become steadily increasing in the world. usually performed when vaginal birth is become hazardous either to the fetus or the mother.* **Aim of the study:** *Toevaluatethe effect of applying the health belief model on predicting the delivery method among pregnantWomen.* **Research design:** *A quasi-experimental designof the study was used.* **Setting:** *The study was conducted at, Abogenshu Urban Medical Center, at El-Fayoum in Egypt.* **Subjects:** *A total of 97 pregnant women attending at antenatal clinic.* **Tools:** *Two Tools were used to collect the necessary data for the research.* **Tool I:** *Interview questionnaire sheet:. That is divided into two parts.* **Part one**: *Socio -demographic data as; age, educational level, employment status, occupation, monthly household income, residence, and sources of information on mode of delivery.* **Part two:***Obstetrics history assessment present history of current pregnancy as Gestational age (week), Number of abortion .* **Tool II:** *The Champion's Health Belief Model Scale..* **Results:** *Reported that, majority of the pregnant women had negative perception regarding to vaginal delivery pre applying health belief model. While, nearly three quarter of them had positive perception regarding to vaginal delivery post applying health belief model.***Conclusion:***The current study concluded that there was animprovement in pregnant women perception regarding to vaginal delivery after applying the health belief model, these result support the research hypothesis.* **Recommendation:***There is need for empower women with comprehensive information on the benefits and severity of the different modes of delivery and medical technology in birth mode by medical staff, so women can choice on the mode of birth that is most suitable for them.*
Key words: *Mode of delivery, Caesarean section (CS) , Vaginal Birth (VB), Health Belief Mode.*

I. Introduction

Childbirth is which termination of pregnancy aims to maximize the chances of pass delivery to a healthy delivery without threatening the baby and mother's health. The majority of cases, vaginal birth (VB) is the best mode of delivery and the most referred whereas a C-section is supposed to be limited to cases unable to borne by natural delivery or when mother's or baby's health are threatened . According to the body of related literature, the adverse effects of CS are significantly greater than (VB). **(Safari A, et al., 2018)**

A normal vaginal delivery is spontaneous in onset, low-risk at the start of labor and the infant is born spontaneously between 37 and 42 completed weeks of pregnancy. After birth mother and baby are in good condition. Also, normal vaginal delivery has been defined as one which starts naturally and does not involve any medical or technological intervention. Therefor the definition excludes births which involve induction, acceleration, medical pain relief including epidurals, forceps, ventouse, or an episiotomy. **(Wondie, et al., 2019).**Cesarean section (CS) is a surgical procedure for delivery of fetus through an abdominal incision when vaginal birth (VB) contraindicated. Cesarean section (CS) is one of the most frequently performed major abdominal surgeries. That is difficult to pinpoint an exact reason for the increasing rates of Caesarean sections. Medical, legal, psychological institutional and socio-demographic factors play a contributing role. The provision of CS on maternal request is a discussed as one of the main factors to the increasing rate of CS. (**Al-Battawi, et al., 2017)**

The health belief Model (HBM) is one of the first theories of health behavior was developing in the 1950 by a group of U.S. The health belief model proposes that a person's health-related behavior depends on the person's perception of four critical areas the severity of a potential illness, the person's susceptibility to that illness, the benefits of taking a preventive action, and the barriers to taking that action **(Lazariu, et al., 2019).**

Application of the health belief model (HBM) on the maternal choice of mode of birth: In the current study, the Health Belief Model (HBM) was developed as a conceptual framework, to provide theoretical sound basis for understanding the factors that effect on women's childbirth decisions. The HBM can specify the relationship between health-related beliefs/factors and maternal behaviors, help in predicting the possibility of a woman choosing a special mode of birth. Using (HBM) to choice mode of birth and its determining factors can be explored within the 5 domains of the HBM, namely: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action. **(Loke, et al., 2015)**

Perceived Susceptibility refers to a person's perception that a health problem is personally relevant or that a diagnosis of illness is accurate. Perceived severity even when one recognizes personal susceptibility, action will not occur unless the individual perceives the severity to be high enough to have serious organic or social complications. Perceived benefits refer to the patient's belief that a given treatment will cure the illness or help to prevented. Perceived cost refers to the complexity, duration, and accessibility and accessibility of the treatment. Cues to action include the desire to comply with a treatment and the belief that people should do what. **(Amini, et al., 2018).**The maternity nurse has a vital role In Normal vaginal delivery: The physical examination also includes the following assessments fundal height measurement uterine activity, including contraction frequency, duration, and intensity, Status of membranes (intact or ruptured).Cervical dilatation and degree of effacement. Fetal status, including heart rate, position, and station. Pain level assessment parameters, form a baseline against which the nurse can compare all future values throughout labor. **(Damian, et al., 2017).**

Significant of the study: Cesarean section (CS) is an important lifesaving operation when vaginal delivery might pose a risk to a mother or baby. Despite the lack of evidence supporting improved maternal and perinatal outcomes, over-medicalization of childbirth is a growing problem in middle- and high-income countries **(Miller et al., 2016).** CS is over used in many high and middle income countries such as Dominican Republic, Brazil, and Egypt. The rate of 52 percent Egypt stands out among countries with the highest CS delivery rates in the world, following Dominican Republic (56.4 percent) and Brazil (55.6 percent) **(Betrán et al. 2016).** Within the Arab region, rates of CS are far higher in Egypt than any other Arab country, where the second highest rate is recorded in Jordan (28 percent) and the lowest was recorded in Yemen (5 percent) **(Abdel-Tawab, N. G., 2018).** Therefore, the recent study aim to evaluate the effect of applying the health belief model on predicting the delivery method among pregnant women

II. Material And Methods

The study was aimed to evaluatethe Effect of Applying the Health Belief Model on Predicting the Delivery Method among pregnantWomen.
I. Technical design:
The technical design used for the study was included research design, setting of the study, subjects, as well as tools for data collection.
 *Research design:
Quasi-experimental research (pre/post-test) design was utilized to conduct this study.
.   ***Setting:**
The study was conducted atantenatal clinic in Abogenshu Urban Center at El- Fayoum in Egypt. This clinic provides obstetrics and gynecological services for women seeking medical services and nursing care.
* Subjects (sampling):
 Sample type: A purposive sample was used in this study.
Sample criteria:Inclusion criteria;
1- Age range of 18-32 years.
2- Primipara, gestational age at least 28 weeks.
Exclusion criteria:
 1-Women who have high risk pregnancy.
Sample Size: The sample size was (97) of pregnant women. It calculated as 10% from total annual rate according to the statistical records of pregnant women who attending the antenatal clinic in third trimester in year of (2018) which was (970).
*Tools for data collection:
Tool (1): Interviewing questionnaire sheet:Was developed by the researcher, based on reviewing the literature, includes two parts:**Part one: Socio -demographic as** (age, educational level, employment status, occupation, monthly household income, residence, and sources of information about mode of delivery).**Part two: Obstetric history assessment sheet** as, gestational age (week) and Number of abortion
Tool (2):The Champion's Health Belief Model Scale (CHBMS) This tool was adopted by Champion's and tested for validity and reliability by Mikhail and Petro-Justas. **(Mikhail , 2001)** and found satisfactory. The (CHBMS) wasadapted by researcher and used to evaluate and explain individual differences in preventative health behavior, and assess women's perception regarding mode of delivery that is a reported questionnaire

fulfill by the researcher. It consists of 49-questions consist of two item the first (VD) that classified into five dimensions as follows: perceived susceptibility (3 items), perceived benefits (9 items), Perceived severity (6items), perceived barriers (item), and Cues to action (3) items.Then second item (CS) that classified into five dimensions as follows: perceived susceptibility (3 items), perceived benefits (9 items), Perceived severity (10 items), perceived barriers (2 item), and Cues to action (3) items. All the items have response choices ranging from strong -disagreement (no) to strong-agreement (yes).

Scoring system for second tool modified to:
The answer for this part ranged from (Yes) answer which represent (strong agree –agree) and scored as (2) , the (No) answer which represent (strong dis agree –disagree) and scored as (1). Total score are ranged from 49-98 questions.
Total Belief score was divided into:
•**Positive Belief**: ≥ 60%
●**NegativeBelief**: < 60%
Validity:
The data collection tools were reviewed by a panel of three experts in maternal and newborn health nursing field to test the face and content validity. Each of the experts was asked to examine tools for content coverage, relevance, understanding, comprehensiveness, wording, length, format and overall appearance. Modification was done based on the comments.
Reliability
Reliability was done by Cronbach's Alpha Coefficient Test which revealed that each item of the utilized tools consisted relatively homogeneous items.
Ethical considerations:
Before embarking to data collection, an informed oral consent was obtained from each recruited pregnant women to share in the study. Prior consent, full information provided to the women by the researcher and explaining the purpose of the study, as the informed consent covers all the required elements such as study title and aim, process of data collection and management. All participants were assured that their participation is voluntary and they have the right to withdraw at any time &the right to ask any question at the end of the interview. In addition, anonymity, privacy, and confidentiality of the data were all emphasized prior starting the interview. Each study participant was interviewed separately.
II. Administrative design:
Official letters, including the title, purpose and setting of the study was obtained from Faculty of Nursing Helwan University and submitted to the director of the manager of abogenshu urban medical center as an approval for data collection to conduct this study.
III. Operational design:
The study was completed through different phasesas follows: the preparatory phase, then the pilot study and field of work phase, lastly the limitation of the study.
Preparatory phase:
        Review was done of the current, local and international related literature about various aspect of the problem using books, periodicals journal, magazines and internet. This review helped the researcher to be more acquainted with magnitude and incidence of the problem, with the process of tools designed by researcher. Then tools were tested for being through a pilot study, then reviewed by three jury doctors: on professors specialized and two assistant professors in maternal and newborn nursing.

Pilot study:
The pilot study was carried out with 10% (10 pregnant women) of total sample at selective pregnant women to investigate the efficiency, the applicability and clarity of the tools. Pregnant women included in the pilot study not excluded from the total study sample.

Field work:
Assessment and planning phase:
•   The study continues for eight months, from March 2020 to the end October 2020,but the time from April to May stopped the data collection because the center become quarantine in corona period. The study started at antenatal clinic-at Abogenshu Urban Medical Center in El Fayoum in Egypt. Two days per week. After obtaining official permissions to conduct the study, the researcher introduced herself to the pregnant women and greeted them, then explained the research aim to gain confidence, trust to participate in the study and obtained the pregnant women orally consent.
•   Then, the women were interviewed to assess their socio-demographic characteristics and knowledge regarding mode of delivery. Tool 1 was used to collect base line data. And developed by the researchers after

extensive review of recent and related literature. Tools II Champion's Health Belief Model Scale (CHBMS) was tested for validity and reliability in Mikhail and Petro-Nustas and found satisfactory. It was tested for content validity by a jury and the recommended modifications were done and the final form was prepared after proving valid.

Implementation phase: Based on the assessment phase, and in view of the related literature, the researchers developed (booklet) about mode of delivery based on HBM with simple Arabic language to suit women' level of understanding. It includes definition of mode of delivery indication, advantage, disadvantage,delivery, contraindication, complication.

• Each pregnant woman was individually interviewed in waiting area before or after met with obstetrician. The subject has been used in sequence through the three sessions, each session's duration ranged from 30 to 45 minutes, including times for discussion according to improvement of knowledge. Different methods of teaching were used such as lecture, group discussion and brain storming. At the beginning of the first session, an orientation to the model and its purpose were made and then explained the general information about the mode of delivery. In subsequent sessions, the researchers demonstrated fear from prolonged labor (perceived severity), painful labor process (perceived susceptibility), and natural way of labor (perceived benefits). The researchers allowed group discussions to overcome any barriers contraindication of VB (perceived barriers) to healthy practices cues to action. After each session, feedback about the previous session was done, and the objectives of the new topics were mentioned.

Evaluation phase: After implementing the model, the post-test was done often within two week to assess women perception to word the mode of delivery by the same format of the pre-test of tool champines to evaluate the effectiveness of the implemented model. The finally of this research concluded that there was an improvement in pregnant women perception regarding to vaginal delivery after applying the health belief model, these result support the research hyposis.

IV. Statistical design:

The collected data were revised, coded, and analyze and produce some graphic presentation for some important resultswas entered into the computer, and statistical analysis was done using the Statistical Package for Social Science (SPSS) version 25. Data were presented using descriptive statistics in the form of frequencies and percentage for categorical data, the arithmetic mean (X) and standard deviation (SD) for quantitative data. Qualitative variables were compared using chi square test ($X2$). Baseline differences between the group at pre- and post-were assessed using an independent T. test for continuous variables.

III. Result

Table(1): Distribution of the pregnant women according to their socio -demographic data (n=97).

Items	No	%
Age (Year)		
18-<25	62	63.9
25-<32	35	36.1
Mean ± S.D24.10 ± 3.09		
Educationallevel		
Illiterate	6	6.2
Primary	14	14.4
Secondary	52	53.6
University	25	25.8
Occupational status		
House wife	56	57.7
Employee Workers	41	42.3
Monthly household income		
Not enough for living costs	65	67
Enough for living costs	32	33
Residence		
Rural	52	53.6
Urban	45	46.4
Sources of information regarding mode of delivery		
Obstetrician	10	10.3
Obstetric Nurses	18	18.6
Relatives	29	29.9
Friends	27	27.8
Internet	8	8.2
Books	5	5.2

Table (**1**) showed that, two-thirds (66%) of the pregnant women their age ranged between 18-<25 year with mean 24.10 ± 3.09 year. Regarding to educational level, more than half (53.6%) of them had secondary

education. Also, more than half (57.5%) of the pregnant women were house wife.Also, two-thirds (67%) of the pregnant women their monthly household income were not enough for living costs. Concerned to residence, more than half (53.6%) of them residing in rural areas. Moreover, more than one quarter (29.9%) of the pregnant women their sources of information regarding mode of delivery were from their relatives.

Table (2): Comparison between the pregnant women at pre and post applying health belief model regarding to their perception of vaginal delivery susceptibility and benefits (n=97).

Items	Pre		Post		T.test	
					X2	p-value
	YesNo (%)	NoNo (%)	YesNo (%)	NoNo (%)		
Perceived Susceptibility						
Painful labor process	92(94.8)	5 (5.2)	50(51.5)	47(48.5)	21.68	.009**
Postpartum hemorrhage.	80(82.5)	17(7.5)	44(45.4)	53(54.6)	24.20	.000**
Fetus suffocation	82(84.5)	15(5.5)	37(38.1)	60(61.9)	23.17	.002**
Perceived benefits VB						
Natural way of delivery	94(96.9)	3(3.1)	97(100)	0(0.0)	22.5	.002**
Maternal and newborn health is better early with VB.	16(16.5)	81(83.5)	94(96.9)	3(3.1)	29.37	.000**
Allows early contact with newborn after delivery	22(22.7)	75(77.3)	94(96.9)	3(3.1)	28.14	.000**
Allows early Breastfeeding.	20(20.6)	77(79.4)	97(100)	0(0.0)	24.22	.000**
Shorter hospital stay.	25(25.8)	72(74.2)	97(100)	0(100)	22.15	.000**
Faster recovery after delivery and early go back to the work	18(18.6)	79(81.4)	90(92.8)	7(7.2)	21.17	.001**
No necessary surgical wound pain	32(33)	65 (67)	88(90.7)	9(9.3)	26.29	.000**
No need for an operation risk and anesthesia.	29(29.9)	68(70.1)	88(90.7)	9(9.3)	25.37	.000**
Low in the cost.	36(37.1)	61(62.9)	90(92.8)	7(7.2)	22.82	.000**

**Highly significant at p ‹ 0.01.

Table (2) indicated that, there was a marked improvement in pregnant woman's perception of susceptibility of (VD) post applying (HBM) with highly statistically significant difference at (P= < 0.01) between pre and post applying(HBM). As noticed, the majority (94.8% and 84.5%) of the pregnant women suspect painful labor process and fetus suffocation as a result of (VD) at applying (HBM), respectively. Whilechanged at post applying (HBM) to around half (51.5% and 38.1%), respectively. Also, indicated that, there was a marked improvement in pregnant woman's perception of benefits of (VD) post applying (HBM) with highly statistically significant difference at (P= < 0.01) between pre and post applying (HBM). As regard, more than three quarters (77.3% and 79.4%) of the pregnant women believed that (VD) didn't allows early contact with newborn after delivery and early breastfeeding, respectively. Whilechanged at post applying(HBM) to the minority (3.1% and 0.0%), respectively.

Table (3): Comparison between the pregnant women at pre and post applying (HBM) regarding to their perception of vaginal delivery severity (n=97).

Items	Pre		Post		T.test	
					X2	p-value
	YesNo (%)	NoNo (%)	YesNo (%)	NoNo (%)		
Severity of vaginal delivery						
Risk of fetal injuries when the baby goes through vaginal canal.	90(92.8)	7(7.2)	33(34)	64(66)	26.33	.002**
Risk of mother to baby transmission of infectious agent	87(89.7)	10(10.3)	24(24.7)	73(75.3)	22.25	.001**
Worry about perineal tears due to vaginal birth.	90(92.8)	7(7.2)	30(30.9)	67 (69.1)	25.23	.000**
Fear from pelvic organ prolapse and Concern of having urinary / anal incontinence due to VB.	87(89.7)	10(10.3)	35(36.1)	62(63.9)	27.51	.000**
Fear from prolonged labor.	82(84.5)	15(15.5)	18(18.6)	79(81.4)	27.25	.000**
preserved severity of VB.	90(92.8)	7(7.2)	25(25.8)	72(74.2)	30.31	.000**

**Highly significant at p ‹ 0.01.

Table (3) revealed that, there was a marked improvement in pregnant woman's perception of (VD) severity post applying (HBM) with highly statistically significant difference at (P= < 0.01) between pre and post

applying (HBM). As regard, the majority (92.8%) of the pregnant women believed that vaginal delivery caused risk of fetal injuries when the baby goes through vaginal canal and worry about perineal tears due to (VD), respectively. Whilechanged at post applying(HBM) to around third (34% and 30.9%), respectively.

Table (4): Comparison between the pregnant women at pre and post applying health belief model regarding to their perception of vaginal delivery barriers and cues to action (n=97).

Items	Pre		Post		T.test	
					X2	p-value
	YesN (%)	NoNo (%)	YesNo (%)	NoNo (%)		
Perceived barriers						
Presence of contra indication of VB.	87(89.7)	10(10.3)	18(18.6)	79(81.4)	24.20	.000**
Cues to action						
Healthcare professionals advise VB.	26(26.8)	71(73.2)	58(59.8)	41(42.3)	22.54	.002**
Relatives / friends advise VB.	30(30.9)	67(69.1)	62(63.9)	35(36.1)	22.32	.002**
Heard negative stories about cesarean delivery.	28(28.9)	69(71.1)	70(72.2)	27(27.8)	30.57	.000**

**Highly significant at p ‹ 0.01.

Table (4) showed that, there was a marked improvement in pregnant woman's perception of barriers related to vaginal delivery post applying health belief model with highly statistically significant difference at (P= < 0.01) between pre and post applying health belief model. As evidence, the majority (89.7%) of the pregnant women believed that vaginal delivery caused contra indication. Whilechanged at post applying health belief model to (18.6%). Also revealed that, there was a marked improvement in pregnant woman's perception of cues to action related to vaginal delivery post applying health belief model with highly statistically significant difference at (P= < 0.01) between pre and post applying health belief model. As regard, the majority (26.8% and 30.9%) of the pregnant women believed that healthcare professionals advise VB and relatives / friends advise VB, respectively. Whilechanged at post applying health belief model to (59.8% and 63.9%), respectively.
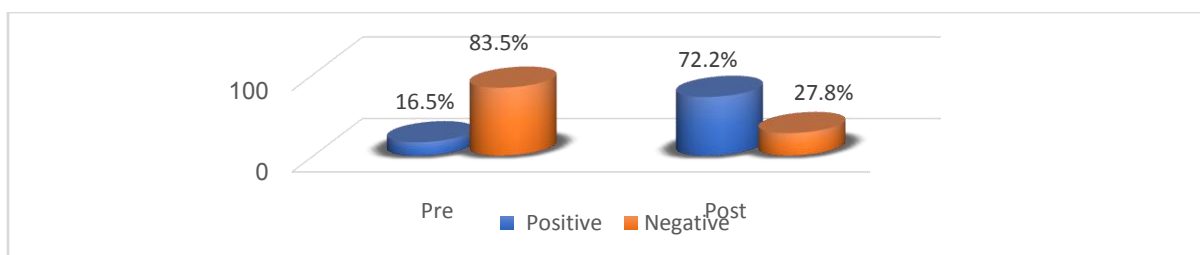

Figure (**1**) showed that, highly statistically significant difference at (P= < 0.01) between pre and post applying (HBM). 83.5% of the pregnant women had negative perception regarding to vaginal delivery pre applying health belief model. While, 72.2% of them had positive perception regarding to vaginal delivery post applying health belief model.

Table (5): Comparison between the pregnant women at pre and post applying (HBM) regarding to their perception of (CS)susceptibility and benefits (n=97).

Items	Pre		Post		T.test	
					X2	p-value
	YesNo (%)	NoNo (%)	YesNo (%)	NoNo (%)		
Perceived Susceptibility						
Wound pain	**32(33)**	65(67)	90(92.8)	7(7.2)	33.07	.000**
Abdominal wound infection	24(24.7)	73(75.3)	86(88.7)	11(11.3)	24.20	.000**
Long time of recovery.	36(37.1)	61(62.9)	92(94.8)	5 (5.2)	30.91	.000**
Perceived benefits						
A faster / more convenient method of delivery	90(92.8)	7(7.2)	30(30.9)	67(69.1)	22.68	.001**
A trend / modern and fashion method of delivery.	87(89.7)	10(10.3)	35(36.1)	62(63.9)	24.22	.000**
Less fear from fetal injuries.	90(92.8)	7(7.2)	18(18.6)	79(81.4)	19.17	.002**
Decrease pain included by receptive vaginal	94(96.9)	3(3.1)	30(30.9)	67(69.1)	20.57	.002**

examinations						
Avoid prolonged labor.	82(84.5)	15(15.5)	12(12.4)	85(87.6)	22.68	.001**
Start before labor pain	90(92.8)	7(7.2)	70(72.2)	27(27.8)	16.99	.008**
Preserve sexual function and general appearance of sex organs.	94(96.9)	3(3.1)	62(63.9)	35(36.1)	19.17	.005**
Allow better planning of maternity leave.	87(89.7)	10(10.3)	26(26.8)	71(73.2)	22.38	.002**
Can know the date of delivery from before	94(96.9)	3(3.1)	50(51.5)	47(48.5)	17.26	.009**

**Highly significant at p ‹ 0.01.

Table (5) indicated that, there was a marked improvement in pregnant woman's perception of CS susceptibility at post applying (HBM) with highly statistically significant difference at (P= < 0.01) between pre and post applying (HBM). As noticed, one third and more (33% and 37.1%) of the pregnant women suspect wound pain and longtime of recovery as a result of CS at applying(HBM) respectively. Whilechanged at post applying(HBM) to the majority (92.8% and 94.8%), respectively. Also, there was a marked improvement in pregnant woman's perception of CS benefits post applying(HBM) with highly statistically significant difference at (P= < 0.01) between pre and post applying(HBM). As regard, the majority (92.8% and 89.7%) of the pregnant women believed that CS consider a faster / more convenient method of delivery and a trend / modern and fashion method of delivery, respectively. Whilechanged at post applying (HBM) to around one-third (30.9% and 36.1%), respectively.

Table (6): Comparison between the pregnant women at pre and post applying (HBM) regarding to their perception of CS severity

Items	Pre		Post		T.test	
					X2	p-value
	YesNo (%)	NoNo (%)	YesNo (%)	NoNo (%)		
Severity of cesarean delivery						
Concern over the anesthesia complications of CS.	38(39.2)	59(60.8)	90(92.8)	7(7.2)	16.17	.003**
Afraid of uterine ruptures and hysterectomy in the coming pregnancy	32(33)	65(67)	89(91.8)	8(8.2)	19.17	.002**
Afraid of adhesion formation	16(16.5)	81(83.5)	82(84.5)	15(15.5)	34.22	.000**
Neonatal respiratory depression secondary to anesthesia	18(18.6)	79(81.4)	90(92.8)	7(7.2)	20.37	.002**
Inability to get out of the bed and Need to help during walking for long time.	53(54.6)	44(45.4)	94(96.9)	3(3.1)	21.17	.001**
Fear from pain during cough	30(30.9)	67(69.1)	94(96.9)	3(3.1)	34.29	.000**
Need for help to car and feed the baby.	41(42.3)	56(57.7)	90(92.8)	7(7.2)	20.37	.002**
Effects on work, family, and social activity.	29(29.9)	68(70.1)	92(94.8)	5(5.2)	29.82	.000**
Can need for blood transfusion,	48(49.5)	49(50.5)	70(72.2)	22(27.8)	34.29	.000**
preserved severity of CS.	40(41.2)	57(58.8)	94(96.9)	3(3.1)	34.55	.000**

**Highly significant at p ‹ 0.01.

Table (6) revealed that, there was a marked improvement in pregnant woman's perception of CS severity post applying (HBM) with highly statistically significant difference at (P= < 0.01) between pre and post applying (HBM). As regard, around one quarter (18.6% and 30.9%) of the pregnant women believed that CS caused neonatal respiratory depression secondary to anesthesia and pain during cough, respectively. Whilechanged at post applying (HBM) to the majority (92.8% and 96.9%), respectively.

Table (7): Comparison between the pregnant women at pre and post applying (HBM) regarding to their perception of CS barriers and cues to action (n=97).

Items	Pre		Post		T.test	
					X2	p-value
	YesNo (%)	NoNo (%)	YesNo (%)	NoNo (%)		
Perceived barriers						
Extra cost of CS out of own pocket.	65(67)	32(33)	91(93.8)	6(6.2)	17.34	.009**

Can't choose CS in governmental hospital.	73(75.3)	24(24.7)	84(86.6)	13(13.4)	11.30	0.01*
Cues to action						
Health care professionals advise CS.	69(71.1)	28(28.9)	38(39.2)	59(60.8)	31.14	.000**
Heard negative stories about VB	81(63.9)	16(36.1)	18(18.6)	79(81.4)	20.04	.009**
Fear of vaginal delivery due to a difficult family history.	59(60.8)	38(39.2)	16(16.5)	81(83.5)	26.55	.000**

*significant at p ‹ 0.05. **Highly significant at p ‹ 0.01.

Table (7) revealed that, there was a marked improvement in pregnant woman's perception of CS barriers at post applying (HBM) with highly statistically significant difference at (P= < 0.01) between pre and post applying(HBM). As evidence, two third and more (67% and 75.3%) of the pregnant women believe that a CS needs an extra cost out of their own pocket and can't choose CS in governmental hospital. Whilechanged at post applying (HBM)to the majority (93.8% and 86.6%).Also there was a marked improvement in pregnant woman's perception of CS cues to action at post applying (HBM) with highly statistically significant difference at (P= < 0.01) between pre and post applying(HBM). As regard, the majority (71.1% and 60.8%) of the pregnant women believed that healthcare professionals advise CS and Fear of VB due to a difficult family history, respectively. Whilechanged at post applying (HBM) to (39.2% and 16.5%), respectively.
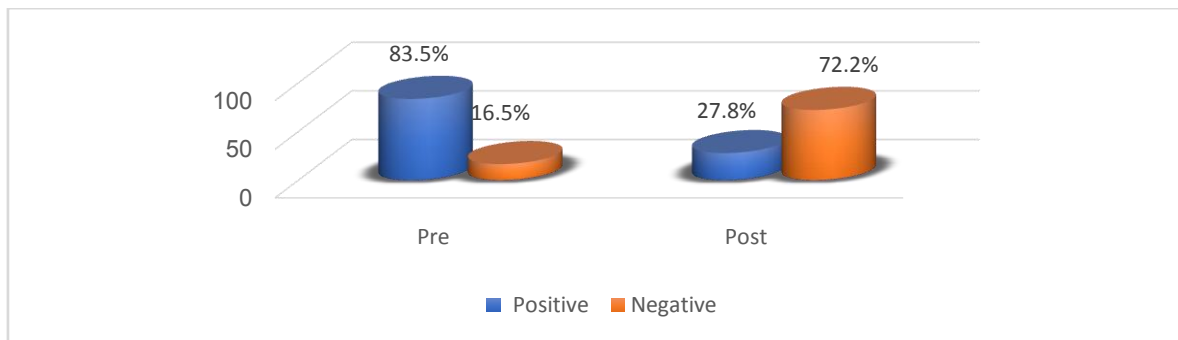

Figure (**2**) showed that, 83.5% of the pregnant women had positive perception regarding to cesarean section pre applying health belief model. While, 72.2% of them had negative perception regarding to cesarean section post applying health belief model.

IV.   Discussion

Regarding distribution of characteristics of socio-demographics, the findings of the current study revealed that, the two-thirdsof the pregnant womentheir age ranged between 18-<25 year with mean 24.10 ± 3.09 year. Regarding to educational level, more than half of them had secondary education. Concerned to residence , more than half of them residing in rural areas. Moreover, more than one quarter of the pregnant women their sources of information regarding mode of delivery were from their relatives. There was high statistically significant relation between mother's perception regarding to mode of birth and their age, educational level, monthly household income and sources of information at (P= < 0.01).

Regarding the five main HBM constructs, the current study results showed marked improvement in pregnant woman's perception of susceptibility of VB post applying HBM with highly statistically significant difference between pre and post applying HBM. As noticed, the majority of the pregnant women suspect painful labor process and fetus suffocation as a result of VB at applying HBM, respectively. While changed at post applying HBM to around half, respectively. This result is compatible to **Safari-Moradabadi, et al., (2018)** in Bandar Abbas , Iran which studied that "Investigating the delivery type among primiparous women in Bandar Abbas according to the Health Belief Model" Both of them had studied the effects of education based HBM to Predict Factors influencing Women decision. Which estimated that mother's perceived susceptibility and threat of the side effects of each delivery type on both mother and child can affect their choice of delivery. From the researcher view the result may be due to the labor pain is very important reason for fear the women from VB but also with the medical technology it isn't reason for choice CS because have another solution for avoid labor pain that is vaginal delivery without pain.

There are improvement in pregnant woman's perception of benefits of VB post applying HBM with highly statistically significant difference between pre and post applying HBM. As regard, more than three quarters of the pregnant women believed that vaginal delivery didn't allows early contact with newborn after

delivery and early breastfeeding, respectively. While This is agreement with study Al-Battawi, & Ibrahim ., (2017) inAlexandria in Egypt "Applying Health Belief Model to Predict Factors influencing Women decision regarding Mode of Delivery". Women who preferred VB perceived the benefits of VB as being that it is a normal and natural process (100%), recovery is faster after delivery, it allows for earlier breastfeeding, and no unnecessary surgery and anesthesia is involved in the process . In my opinion the benefit of VB is strong part to choice VB as the best method to delivery as early recovery, and early start of breastfeeding.changed at post applying HBM to the minority, respectively.

The present study, the perceived severity score was found to be significantly higher after implementation. As regard, the majority of the pregnant women believed that VB caused risk of fetal injuries when the baby goes through vaginal canal and worry about perineal tears due to vaginal birth, respectively. Whilechanged at post applying health belief model to around third, respectively. This result in the same line with the study findings Abd El Aziz, et al., (2016). In Benha, Egypt who had studied"Effect of Application of Health Belief Model on Pregnant Women' Knowledge and Health Beliefs RegardingUrogenital Infections". The indicated that the score of the perceived severity in the intervention group was meaningfully increased, compared to the control group, afterimplementation.The researcher Point of view the result may be due the perineal tears and dilatations of cervix are very important reason for fear or refuse the women to VB. But with the medical technology the dilatation of cervix isn't reason for choice CS because that is not occur from first or second labor this may be occur after three time of vaginal delivery, and have aplastic surgery for modify it . while the perennial tears are not necessary for all case that is perform when need as when women has disproportion in pelvic diameter and newborn size and when it is perform don't worry about pain with execute doctor orders.

Additionally, in the present study was a marked improvement in pregnant woman's perception of barriers related to VB post applying HBM with highly statistically significant difference between pre and post applying HBM. As evidence, the majority of the pregnant women believed that VB caused contraindication. While changed at post applying HBM to. This result is similar to study Khoramabadi et al., (2016)they documented that a significant increase in the mean scores of perceived barriers on the intervention group compared to control after the intervention. From the researcher point of view when the women don't have any reason prevent VB or medical or obstetrical indication for CS must be don't make CS. Because that is with the medical technology progress become we have many solutions for most of VB problems.

Revealed that, is improvement in pregnant woman's perception of cues to action VB vaginal delivery post applying HBM with highly statistically significant difference between pre and post applying HBM As regard, the majority of the pregnant women believed that healthcare professionals advise VB and relatives / friends advise VB, respectively. Whilechanged at post applying health belief model to more half, respectively. This disagreement with Loke, et al., (2015).in Hong Kong Chinese.who had studied 'Factors influencing the decision that women make on their mode of delivery: the Health Belief Model". It has been reported that advice from physicians is an important influence on women in their choice of mode of birth. This study was show that only 5% of women continued to attempt a VB when they perceived that their obstetrician held an unfavorable attitude towards VB. The result may be due to the logistic regression analysis of the HBM demonstrateds that the constructs of perceived benefits, perceived severity, and cues to action were significant correlates of the maternal preference on mode of birth. These factors should be considered when designing educational interventions to help women make the decision on the mode of delivery that is most appropriate for their needs. Women who preferred VB had a significantly higher mean score on the perceived benefits and a lower score on the perceived severity of VB than those who preferred CD.

The finally Comparison between the pregnant women at pre and post applying health belief model regarding to their total perception of vaginal delivery showed that, 83.5% of the pregnant women had negative perception regarding to vaginal delivery pre applying HBM. While, 72.2% of them had positive perception regarding to vaginal delivery post applying HBM.From the researcher view the pregnant women perception about VB before applying health belief model was negative perception because less of information about advantage and disadvantage of VB. so that the women need to a lot of information about VB and VB without pain from medical staff.   .

Marked improvement in pregnant woman's perception of CS susceptibility at post applying HBM with highly statistically significant difference between pre and post applying HBM. As noticed, one third and more of the pregnant women suspect wound pain and longtime of recovery as a result of CS at applying HBM, respectively. Whilechanged at post applying HBM to the majority, respectively. This is in the same line with Abd El Aziz, et al, (2016). In Benha, Egypt who had studied"Effect of Application of Health Belief Model on Pregnant Women' Knowledge and Health Beliefs RegardingUrogenital Infections".which the study results showed a significant increase in the mean scores of perceived susceptibility on the intervention group compared to control group two months after program implementation. Both of them had studied the effects of education based HBM on promoting preventive behaviors regarding brucellosis among women. Moreover there was a

marked improvement in pregnant woman's perception of CS benefits post applying HBM with highly statistically significant difference between pre and post applying HBM. As regard, the majority of the pregnant women believed that CS consider a faster / more convenient method of delivery and a trend / modern and fashion method of delivery, respectively. While changed at post applying HBM to around one-third, respectively. This agree with Al-Battawi & Ibrahim,. (2017).) inAlexandria in Egypt "Applying Health Belief Model to Predict Factors influencing Women decision regarding Mode of Delivery".Women who preferred CS believed that by opting for thisprocess they would be able to avoid prolonged labor near three quarter, labor pain more than three quarter, and fetal injuries, as well as have a fast and convenient delivery. For women who preferred CS, advice from health professionals, negative stories of VB from relatives and friends, as well as a family history of difficult births were the cues to action The current study revealed that, there was a marked improvement in pregnant woman's perception of CS severity post applying HBM with highly statistically significant difference between pre and post applying HBM. As regard, around one quarter of the pregnant women believed that CS caused neonatal respiratory depression secondary to anesthesia and pain during cough, respectively. While HBMchanged at post applying to the majority respectively this agreement with Hassani, et al., (2016). "In decreasing cesarean rate among primiparous pregnant mothers" In bander Abbas, Hormozgan, Iranwhich made use of the HBM to affect the choice of delivery type (either natural or cesarean).Can infer that instructions directed by the HBM are more effective in pregnant mothers' perceive than nonsystematic instructions. The results of the present research showed a significant divergence in the mean scores of perceived severity in the two research groups after the instructional intervention. The designed instructions seem to have been effective in increasing women's perceived severity. Considering the role of the instructional sessions held, this finding is very well expected and quite natural. Results showed a decreased rate of cesarean.
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The current study revealed that, there was a marked improvement in pregnant woman's perception of CS barriers at post applying HBM with highly statistically significant difference between pre and post applying HBM. As evidence, two third and more of the pregnant women believe that a CS needs an extra cost out of their own pocket and can't choose CS in governmental hospital.Whilechanged at post applying HBM to the majority. Dadipoor, S., etal., (2017). "Prediction of Birth Type Based on the Health Belief Model" In Tehran, Iran. Indicated that perceived barriers formed the primary construct of the HBM in suggesting a healthy behavior, the fear of VB as the key barrier of VB. Consultation managed to change the decision of the majority ofpregnant women fearing natural delivery.Therefore, attention to the psychological aspect of interventions and following strategies to remove the perceived barriers to VB can be truly helpful. In the present research, the key predictor of birth type showed to be the perceived barriers. Awareness was among the key factors involved in health and awareness arising was the first step of making a health-related decision. The role awareness plays in choosing a CS is determining in their research. The researcher concluded that in order to reduce the prevalence of CS and its side effects, pregnant women's awareness should be raised. The investigation revealed that raising mothers' awareness VB led to a more positive attitude towards this type of childbirth. It can, therefore, be expected that higher awareness and consequently developing a correct attitude towards VB childbirth can significantly affect mother's decision to choose the type of delivery

Also revealed that, there was a marked improvement in pregnant woman's perception of CS cues to action at post applying HBM with highly statistically significant difference at (P= < 0.01) between pre and post applying HBM. As regard, the majority of the pregnant women believed that healthcare professionals advise CS and Fear of vaginal delivery due to a difficult family history, respectively. Whilechanged at post applying HBM respectively.This agree withAl-Battawi & Ibrahim,. (2017).) inAlexandria in Egypt "Applying Health Belief Model to Predict Factors influencing Women decision regarding Mode of Delivery".Which study result showCues to action indicated that advice from professionals played an important role in the maternal decision on mode of birth, especially for CD. Other research reported that advice from physicians is an important influence on women in their choice of mode of birth. Some midwives have actually been reported to encourage women to undergo a CD in order to protect their pelvic floor and reduce the risks of developing urinary or fecal incontinence.   .

finally, Comparison between the pregnant women at pre and post applying HBM regarding to their total perception of CS showed that, 83.5% of the pregnant women had positive perception regarding to CS pre applying health belief model. While, 72.2% of them had negative perception regarding to cesarean section post applying HBM .Women that preferred CD had a significantly higher mean score on the perceived benefits and a lower score on the perceived severity of CD, and a higher mean score on cues to action than those who preferred VB.These results are consistent with those of other studies. Studies have confirmed that perceived benefits are a predictive factor of delivery preference. Women weighed the considerations of the maternal/fetal benefits and complications of a particular mode of, demonstrating the importance of these constructs of HBM in decision making

V. Conclusion

The current study concluded that there was animprovement in pregnant women perception regarding to vaginal delivery after applying the health belief model, these result support the research hypothesis.

VI. Recommendation

1-There is need for empower women with comprehensive information on the benefits and severity of the different modes of delivery and medical technology in birth mode by medical staff, so women can choice on the mode of birth that is most suitable for them.

2- Nurses should provide pregnant women with instructional booklets about delivery method based on HBM to improve their knowledge and health belief.

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