

Effect of Implementing Educational Program for Pregnant Women about Childbirth Preparation on Coping with Labor Process

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Abstract: Pregnant woman during the last trimester face many challenges physically, and psychologically that can interfere with her ability to cope with and to be well prepared for labor process. Preparation for childbirth (PFC) is an educational approach to labor and delivery that can help woman to be informed about pregnancy, birth, postpartum, parenting, breastfeeding, sexuality, changing relationships, and family. There is contradictory evidence on the effect of antenatal education on self-efficacy during labor process and more research is required.

Aim of the study: To determine the effect of implementation of educational program for pregnant women about childbirth preparation on coping with labor process.

Subjects and methods: A quasi experimental research design was used in a convenient sample of 60 primigravida women who fulfilled the inclusion criteria of the study They were selected from the antenatal outpatient clinic and inpatient unit of the obstetric and gynecological departments at Tanta University Hospital and El-Menshawy Hospital, and El-Mehala ElKopra General Hospital affiliated to the Ministry of Health. They were randomly divided into two groups: study and control groups, 30 women each.

Tools of data collection: To achieve the aim of the study, four tools were used for data collection. Tool I Biosocio-demographic and current pregnancy characteristics of the women, tool II Structured knowledge interview, tool III Childbirth Self-Efficacy Scale (CBSEI) and Tool (VI): Visual analogue scale (VAS) to assess labor pain severity.

Result: The study confirmed significant increase in the mean scores of the study group outcome expectancy and in the self-efficacy expectancy at the 1st stage of labor post intervention and in the follow up (111.37±19.54, 115.23±13.26 & 113.63±15.76, 120.20±9.55 respectively) compared to the control group (56.60±8.30, 67.73±12.20 & 54.70±8.54, 62.07±8.18 respectively) with statistically significant difference between both groups (F=182.85, P=0.000* & F=228.22, P=0.000* respectively). The study also clarifies significant increase in the mean scores of the study group outcome expectancy and in the self-efficacy expectancy at the 2nd stage of labor post intervention and in the follow up (118.17±11.57, 124.93±16.45 & 121.07±15.58, 128.87±12.02 respectively) compared to the control group (60.67±9.83, 71.40±16.23 & 56.43±6.93, 65.53±8.67 respectively) with statistically significant difference between both groups (F=216.85, P=0.000* & F=241.79, P=0.000* respectively). The study also demonstrated significant increase in the mean score of pain intensity (6.63±1.586, 9.00±1.259) among the control group compared to decrease (3.17±1.663, 4.33±1.709) among the study group during 1st and 2nd stages of labor with statistically significant difference (t= 8.263, P=0.000* and t= 12.042, P=0.000* respectively).

Conclusion and Recommendation: The childbirth preparation education program positively influenced primigravida women coping with labor process (self-efficacy, pain intensity and outcome expectancy). Thus, Childbirth preparation program should be arranged and applied to all pregnant women especially primigravida to promote their self-efficacy and coping with labor process. Further studies on the effect of childbirth education programs on childbirth experience of women with diseases associated with pregnancy and those who have pregnancy complications or at risk, as well as assessment of pregnant women needs for and perception of childbirth preparation program classes.

Keywords: Childbirth preparation, importance, contents, labor process.

I. INTRODUCTION

Childbirth is a critical and important time in a woman's life, during which most women experience high intensity pain. Pregnant women during the last trimester face many challenges physically, and psychologically that can interfere with their abilities to cope with and to be well prepared for labor process⁽¹⁾. Coping is a constantly changing cognitive and behavioral efforts aimed to deal with demands of specific situations that are appraised as stressful in the context of pregnancy, coping efforts may influence birth outcomes by serving to minimize or prevent negative emotional, behavioral, cognitive, and physiological responses to stressors⁽²⁾. As a result, the ability to select and implement an appropriate coping response could serve as a resilience resource that buffers expectant mothers and their children from the potentially harmful effects of prenatal stress exposure⁽³⁾.

Pregnant women participation in childbirth preparation programs can affect their self-efficacy expectancy and outcome expectancy of childbirth experience. Preparation for childbirth (PFC) is an educational approach to labor and delivery in which the parents are specially prepared for the event⁽⁴⁾. The aim is for the mother to be awake and cooperative and for the father to assume an active and supportive role during the birth of their child. PFC is a structured antenatal education services conducted by nurses for pregnant women to help women to be informed about pregnancy, childbirth and parenting⁽⁵⁾.

Providing prenatal education programs classes for preparation of childbirth among primigravida women aim to promote positive and better perinatal outcomes, such as reduction in preterm births, higher level of readiness for labor and birth, feeling more satisfied with care and with birth, increase confidence and self-efficacy on coping with labor process, improve communication with maternity care providers, decrease the need for analgesic medication in labor, increase rates of breastfeeding initiation and increase their ability to use adaptive behaviors in response to labor process^(6,7).

Childbirth preparation education should be designed to help pregnant women and their families in an organized way throughout pregnancy, based on their physical and emotional changes occurring during each trimester⁽⁸⁾. Accurate information concerning conception, nutrition, physiologic changes of pregnancy, labor and birth, and newborn care should be included. It should also include information related to their physical and psychological changes in late pregnancy, definition of labor, how to know when labor start, differentiation between true and false labor pain, stages of labor, types of delivery, events and variations that can arise during labor, non-pharmacological, such as effective positions for labor and pharmacological (epidural, spinal and general anesthesia) pain management techniques during labor and birth, preferred place for labor, preparation of labor bag and of her newborn, and medical instruments in delivery room⁽⁹⁾.

Many techniques can be used to prepare primiparas women for to cope with labor process. These include Dick-Read, Lamaze, Bradley, Hypno-birthing and LeBOYER. Dick-Read method/theory assumes that lack of knowledge about childbirth, or incorrect knowledge, leads to fear. This fear causes tension, which then contributes to increased pain. Therefore, understanding how labor affects different parts of the body can help to do away with unnecessary fears^(10,11). Lamaze childbirth classes teach expectant mothers many ways to work with the labor process to reduce the pain associated with childbirth and promote normal (physiological) birth including the first moments after birth^(12,13). Techniques include allowing labor to begin on its own, movement and positions, massage, aromatherapy, hot and coldpacks, breathing techniques, the use of a "birth ball" (yoga or exercise ball), spontaneous pushing, upright positions for labor and birth, breastfeeding techniques, and keeping mother and baby together after childbirth. Dr. Robert Bradley emphasizes the father's role as coach, based on the belief that the father's active participation is vital to the childbirth experience. Couples learning the Bradley method often attend classes much earlier in the pregnancy, some starting as soon as the pregnancy is confirmed. Bradley believes that the special breathing techniques used in other methods can lead to exhaustion, dizziness, hyperventilation, and possibly a decrease in oxygen to the fetus. Instead, he believes a woman should continue to breathe normally through labor and on to delivery. The coach's role is to constantly monitor the woman's relaxation and redirect her to find the relaxation state if he notes tension^(14,15).

Self-efficacy in labor is defined as a woman's personal evaluation of her own capabilities or confidence in her ability to deal with labor and to carry out the required behaviors during labor and delivery^(1,12). Confidence in one's ability to cope with labor is critical and a significant factor affects a woman's coping with labor process. Women who have higher confidence in their ability to manage the labor are more likely to have a positive childbirth experience, less pain, and use less analgesia. Self-efficacy is composed of two parts: self-efficacy expectancy and outcome expectancy. Self-efficacy

expectancy is defined as a belief in the ability to organize and execute types and performances. Outcome expectancy is defined as a judgment that certain behavior will produce a particular outcome⁽¹⁶⁾. Self-efficacy in coping with labor pain is the woman's personal evaluation of her abilities to cope with labor and perform required behaviors during childbirth. Therefore, the belief in relaxing the body will reduce pain during labor is an example of outcome expectancy and the example of self-efficacy expectancy is the pregnant woman's assessment that she will be able to relax during labor⁽¹⁷⁾.

Primigravida Maternal Self-Efficacy (MSE) during childbirth is a crucial factor for facilitating the smooth transition into motherhood, as it can affect her physical and psychological well-being. MSE plays an important role in women's ability to cope with labor and delivery process⁽¹⁸⁾. It is a belief held by mothers of their capabilities to perform specific tasks under a set of conditions. MSE is defined as a set of organized actions to produce a set of situation-specific tasks under difficult circumstances. Mothers who have a high level of MSE are more persistent when they face difficulties or challenges and are more likely to initiate productive courses of actions and adaptive coping. Mothers' needs should be considered in future interventions to facilitate their smooth transition into motherhood and ultimately improve their self-efficacy in self- and newborn care^(19,20).

The level of MSE determines the initiation of maternal efforts and maintenance of performance in tasks during labor process⁽²¹⁾. Maternal self-efficacy is influenced by multiple factors and attributes including socio-economic status, prior experiences, and emotional state, as well as environmental contexts, such as family functioning, marital satisfaction, and social and cultural background⁽²⁰⁾. Parenting self-efficacy is important for parents' sense of well-being, is a possible predictor of parenting practices and might be an indicator of risk. Assessment of self-efficacy is recommended to identify at-risk groups. More research is recommended to find out the effect of fathers' presence and social support from personnel and self-efficacy. Parental attributes influence mothers' parenting self-efficacy. At-risk parents can be supported by conducting face-to-face discussions about significant topics⁽¹⁹⁾.

Significance of the study

Participation in childbirth preparation programs can affect birth experience and coping with labor process in terms of lower levels of pain and use of epidural analgesia, reduce anxiety about birth, increase the rate of correct self-diagnosis of labor, use of coping strategies, increase partner involvement and increase childbirth self-efficacy during labor process. On the other hand, some pregnant women gained knowledge from antenatal education but that the effect of this knowledge on coping with labor process remains largely⁽²²⁾. Additionally, one study summarized that there was no association between childbirth education and labor and birth outcomes, another detected decreased use of pain medications among attendees, and the third study found that non-attendees were significantly more likely to be induced. Childbirth education classes conferred no benefits in terms of reducing interventions during labor and birth⁽⁷⁾. Moreover, little is known about preparation of Tanta primiparas' women for childbirth and their coping with labor process. Thus, implementation of educational program about childbirth preparation is necessary in order to promote primigravida self-efficacy and outcome expectancy coping responses to labor process.

II. SUBJECTS AND METHOD

Subjects Study aim:

This study aims to determine the effect of implementing educational program for pregnant women about childbirth preparation on coping with labor process.

Research Hypothesis:

Pregnant women who will participate in the childbirth preparation educational program are expected to cope with labor process better than those who didn't.

Research Design:

A quasi experimental research design was used to conduct this study.

Study setting:

The study was conducted at the antenatal outpatient clinic and the inpatient unit in the obstetric and gynecological department at Tanta University Hospital and El-Menshawey Hospital, and El-Mehala ElKopra General Hospital affiliated to Ministry of Health, Egypt.

Subjects:

A convenient sample of this study consist of 60 women was selected from the previously mentioned setting with type I error (α) 5% and power of test 90% {type II error (β) 10%} from September 2018 to May 2019. They were divided randomly into two groups (study and control).

1. **Group I:** 30 pregnant women to who received the educational program in addition to the routine ante natal care.
2. **Group II:** 30 pregnant women who obtain only the routine ante natal care.

The subjects of this study were selected according to the following **inclusion criteria:**

- Pregnant women at the 3rd trimester.
- Age ranged from 18-35 years.
- Primigravida women.
- Free from medical and obstetrical complications.
- Singleton fetus in vertex presentation.
- Willing and able to participate in the study.
- Have ability to read and write.

Tools:

To achieve the aim of the study, four tools were used for data collection as follows:

Tool (I): Woman' structured interview schedule:

It was developed by the researcher after review of relevant literatures to collect basic data related to: -

Part one: Woman' bio-sociodemographic characteristics:

It included age, marital status, level of education, occupation, residence, family income, telephone number and E-mail address.

Part two: Woman' current pregnancy characteristics:

It was used to collect data related to last menstrual period (LMP), gestational weeks, and expected date of delivery (EDD).

Tool (II): Woman' structured knowledge interview schedule:

It was developed by the researcher after reviewing of related literature ^(8,13,15,23). It was used to assess woman's knowledge about stages of normal labor process, true & false signs of labor pain, types of deliveries, appropriate place for labor, responsible person for labor, source of information about labor, source of support during labor, methods which can be used to relieve labor pain.

- **Scoring system of knowledge was as follows:**
 - Correct and complete answers was scored as (2)
 - Correct and incomplete answers was scored as (1)
 - Incorrect answers and don't know was scored as zero (0)
- **Total score for the knowledge was calculated as follows:**
 - Low level of knowledge: 0 - to less than 50%.
 - Moderate level of knowledge: 50 - to less than 75%.
 - High level of knowledge: 75 - 100%.

Tool (III):**Childbirth Self-Efficacy scale (CBSEI):**

This tool was used as a self-report instrument to measure outcome expectancies and self-efficacy expectancies for coping with labor process at first and second stages of labor and in the follow up 24 to 48 hours after delivery. The CBSEI scales have excellent internal consistency reliability (0.86 to 0.96) and factor analysis suggested that each CBSEI scale is unidimensional. Validity of the CBSEI was supported by significant positive correlations with the criterion variables of generalized self-efficacy, self-esteem, and internal health locus of control (Lowe, 1993) ⁽²⁴⁾. CBSEI measures maternal confidence in coping abilities during labor and identifies women who require extra support in labor and pregnancy. Responses was provided on 10 Likert scale from "not at all helpful (score =1)" to "completely helpful (score=10)" for outcome expectancy scales and "not at all sure (score =1)" to "completely sure (score=10)" for the self-efficacy expectancy scales. This scale composed of 62 items divide into four subscales that were categorized into two parts:

- **Part one:** consists of two subscales that measures self-efficacy experiences and outcome expectancies during the first stage of labor when contractions are not more than 5 minutes apart (during active labor), each of the two active labor subscales has 15 items as follows:

1. Relax my body
2. Get ready for each contraction
3. Use breathing during labor contraction
4. Keep myself in control
5. Think about relaxation
6. Concentrate on an object in the room to distract myself
7. Keep myself calm
8. Concentrate on thinking about the body
9. Stay on top of each contraction.
10. Think positively
11. Not think about the pain
12. Tell myself that I can do it
13. Think about others in my family
14. Concentrate in getting through one contraction at a time
15. Listen to encouragement from the person helping me. Thus, it yields a scale score ranges from 0 to 150.

- **Part two:** consists of two subscales that measure self-efficacy experiences and outcome expectancies in the second stage of labor, each of these subscales has 16 items, thus it yields a scale score from 0 to 160.

The four subscales consist of the same items which address common non pharmacological coping behaviors for childbirth. A total childbirth outcome expectancy score was computed by summing the outcome active labor and outcome second stage scale scores. A total self-efficacy expectancy score was computed by summing the efficacy active labor and efficacy second stage scale scores. High scores indicate a higher level of self efficacy or outcome expectancy for birth.

Tool (VI): Visual analogue scale (VAS):

Visual analogue scale was used to assess labor pain severity. It is a self-reported device consisting of 10 cm straight line, which represents a continuum of pain intensity and has verbal anchors at opposite ends representing no pain, to pain is bad as it can be. Pain intensity was evaluated by asking women to point to the line that represented the intensity of their pain. The scores corresponding to the pain intensity as shown: - No pain (0), Mild pain (1-3), Moderate pain (4-6), Severe

International Journal of Novel Research in Healthcare and Nursing

Vol. 7, Issue 1, pp: (385-401), Month: January - April 2020, Available at: www.noveltyjournals.com

pain (7-10). This tool was used during active phase of the 1st stage and 2nd stage of labor for the study and control groups.

Method

The study was implemented according to the following steps:

1- Approval:

Official letter clarifying the purpose of the study was obtained from the Faculty of Nursing and was submitted to the responsible authorities of the study setting.

2- Development of the tool:

The tools were developed after reviewing recent relevant literature. Then, they translated and tested for content and construct validity. All tools tested for reliability by eight women using appropriate statistical method.

3- Consent:

Ethical and legal consideration:

- Meeting with participants who participate in the study to explain the purpose of the study.
- An informed consent from the participants for participation in the study was obtained from the entire sample.
- The researcher was ensuring that the nature of the study don't cause any harm and/or pain for the entire sample.
- Also, confidentiality and privacy are put into consideration regarding the data collection and the participants' rights to withdraw at any time if desire.

4- The pilot study:

After the development of the tool, a pilot study was carried out on 10% of the sample (6 women) from the previously mentioned setting to ascertain the feasibility and applicability of the tools. The data was obtained, excluded from the study.

The purposes of the pilot study are to:

- Ascertain the relevance and content validity of the tool.
- Detect any problem peculiar to the statement as sequence and clarity.
- Estimate the time was needed to complete the study.

5- Collection of data: The data was collected through 4 phases as follows:

A- Assessment Phase / Pre-intervention:

It was conducted individually for each pregnant woman in both groups at previously mentioned settings using **Tool I**. The women were assessed regarding their knowledge about stages of normal labor process, true & false signs of labor pain, types of deliveries, appropriate place for labor, responsible person for labor, source of information about labor, source of support during labor, methods which can be used to relieve labor pain and complications during labor using **Tool II** at pretest for both group. **Tool III** Childbirth Self-Efficacy in coping with labor was measured using the CBSEI developed by (*Lowe, 1993*) and translated into the Arabic language by the researchers. Then, it was validated by a jury of five experts in the field of maternal and neonatal health nursing. It used as an initial baseline assessment for both groups. The date and time for the next data collection period was described, the researchers were informing the participants of the time, date, and place of classes for the study group. Then they were attending three childbirth class sessions. Classes were hold during the day mornings to accommodate the service hours of the antenatal care. The researchers were contacted with the control group to determine their appointment for childbirth.

B- Planning phase:

The educational program was developed by the researcher based on women's needs and recent literature review to help women to build their confidence and can successfully accomplish behaviors for coping with child stress and pain and will

foster a sense of self control over the childbirth process. The educational program was developed based on the philosophical perspective of self-efficacy by *Bandura (1995)*. The content and the structure were guided by *Dick-Read* "natural labor", *Lamaz* "Psychoprophylaxis" and *Mongan's* "hypobirthing" (^{10,12,15}). It included:

- Different methods of teaching as lecture, group discussion, posters, power point, animation videos, demonstration and re-demonstration for participants. Instructional media will include, educational booklet was prepared by the researcher, it will include educational guidelines to pregnant women regarding information labor, source of support during labor, methods which can be used to relieve labor pain and Childbirth Self-Efficacy.

C- Implementation phase (educational program sessions):

- The educational program was conducted of four sessions for the pregnant women, the duration of each session, was 60- 90minutes.
- The sessions were applied individually or in group session according to the availability of cases.

Outline	Supplies	Technique
<p>Session 1: Time: 90 Minutes (Overview of Labor and Delivery)</p> <p>(a) Anatomy & Physiology (b) Birth plan (c) Premonitory signs of labor (d) True a and false labor pain (e) What to bring to the Hospital. (f) Overview of stages and phases of labor.</p>	<p>1. Power point Presentation 2. Pelvic Models 3. Childbirth preparation brochure</p>	<p>1. Explain the purpose of this program and childbirth preparation brochure 2. Encourage participants to express their feeling about labor and delivery to the group. 3. Lecture by utilizing power point presentation and models. Answering questions.</p>
<p>Session 2: Time: 90 Minutes (Coping with Labor Pain)</p> <p>(a) Nature of labor pain (b) Medications used in labor (c) Non-medical coping with labor pain (d) Practicing log.</p>	<p>1. Power point Presentation 2. Pelvic models 3. Childbirth preparation brochure</p>	<p>1. Lecture by utilizing Power point presentation and models. 2. Demonstration of non-medical coping with labor pain including exercise, position changes, breathing control and relaxation. 3- Re-demonstrations by all participants and then, they were advised and encouraged to practice all these techniques daily so that they were prepared to use the technique during labor and delivery</p>
<p>Session 3: Time: 90 Minutes</p> <p>(1). Delivery variations - Episiotomy and C-section (3). Newborn care and breast feeding</p>	<p>1 .Power point Presentation 2. Pelvic models 3. Episiotomy models 4. Childbirth preparation brochure</p>	<p>1. Revision of contents from class one and class two. 2. Discussion of any problem. 3. Lecture by utilizing power point presentation and models.</p>

Evaluation phase: The women were assessed regarding their knowledge using **Tool II**, immediate posttest for the study group only. **Tool III** Childbirth Self-Efficacy used in immediate posttest and follow up 24 to 48 hours after delivery for both groups. **Tool IV** Visual analogue scale used for assessing labor pain during first and second stage of labor of both groups.

6- Statistical analysis:

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package

version 25. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test (χ^2). For comparison between means of variables for two groups, an independent sample T-test was used. For comparison between means for variables pre and post intervention in a group, paired sample T-test was used. For comparison between means for variables during three periods of intervention in a group, or for more than two variables, the F-value of analysis of variance (ANOVA) was calculated. Correlation between variables was evaluated using Pearson and Spearman's correlation coefficient r. A significance was adopted at $P < 0.05$ for interpretation of results of tests of significance (*). Also, a highly significance was adopted at $P < 0.01$ for interpretation of results of tests of significance (**)⁽²⁵⁾.

III. RESULTS

Table (1): Sociodemographic characteristics of the studied women:

Characteristics	The studied women (n=60)				χ^2 P
	Control group (n=30)		Study group (n=30)		
	N	%	N	%	
Age (in years)					
<20	2	6.7	3	10.0	0.800
20-<30	24	80.0	21	70.0	0.670
≥30	4	13.3	6	20.0	
Range	(19-34)		(19-34)		t=0.030
Mean ± SD	23.97±3.961		24.00±4.654		P=0.976
Residence					
Rural	18	60.0	16	53.3	FE
Urban	12	40.0	14	46.7	0.795
Marital status					
Married	25	83.3	25	83.3	0.476
Divorced	4	13.3	3	10.0	0.788
Widow	1	3.3	2	6.7	
Educational level					
Primary	5	16.7	7	23.3	1.083
Secondary	18	60.0	14	46.7	0.582
University	7	23.3	9	30.0	
Occupation					
Housewife	17	56.7	16	53.3	0.489
Worker	9	30.0	8	26.7	0.783
Employee	4	13.3	6	20.0	
Length (in cm)					
(150-160)	12	40.0	13	43.3	FE 1.00
(161-170)	18	60.0	17	56.7	
Weight (in kg)					
Range	(56-100)		(58-105)		t=0.303
Mean ± SD	82.33±11.938		83.37±14.361		P=0.763
Income					
Enough	14	46.7	9	30.0	FE
Not enough	16	53.3	21	70.0	0.288

FE: Fisher, Exact test

Table (1) shows the socio-demographic characteristics of the studied women. It was demonstrated that there were no statistically significant differences between the control and the study groups in all of the sociodemographic domains. Regarding the age of the studied women, it was noticed that most of the control group women (80%) their age ranged

from 20 to less than 30 with a mean of 23.97 ± 3.961 years compared to more than two thirds (70%) in the study group with a mean of 24.00 ± 4.654 years. Concerning their residence, more than one half of women among control and study groups were living in rural area (60%, 53.3% respectively). The majority of women in the control and study groups (83.3%, 83.3% respectively) were married, while the minority of them (3.3%, 6.7%) was widow respectively. Most of the women in the control and study groups had secondary education (60%, 46.7% respectively), while nearly one third of study group 30% had university education compared to 23.3% among control group.

Regarding the occupation, it was found that more than one half of women among the control and study groups were housewives (56.7% and 53.3% respectively), while nearly one third (30%) of the control group were working compared to 26.7% among the study group. The length of more than one half of the control and study groups (60% and 56.7% respectively) ranged from 161-170 cm, while the weight of the studied women ranged from 56-100 kg in the control group with a mean of 82.33 ± 11.938 and from 58-105 kg in the study group with a mean of 83.37 ± 14.361 . It is evident that gestational age of women among the control group ranged from 23-35 weeks with a mean of 31.33 ± 2.354 compared to 29-36 weeks with a mean of 31.87 ± 1.697 among the study group.

Table (2): Studied women' current pregnancy characteristics:

Current pregnancy characteristics	The studied women (n=60)				χ^2 P
	Control group (n=30)		Study group (n=30)		
	N	%	N	%	
<u>Pregnancy weeks</u>					t=1.007 P=0.318
Range	(23-35)		(29-36)		
Mean \pm SD	31.33 \pm 2.354		31.87 \pm 1.697		
<u>Birth official</u>					FE 0.596
nurse	13	43.3	10	33.3	
midwife	17	56.7	20	66.7	
<u>Support source</u>					3.462 0.629
Mother	2	6.7	2	6.7	
sister	9	30.0	6	20.0	
husband	8	26.7	9	30.0	
relative	5	16.7	8	26.7	
Neighbor	4	13.3	5	16.7	
Friend	2	6.7	0	0.0	
<u># Source of knowledge</u>					0.635 0.426
Doctors	15	50.0	18	60.0	
Nurses	27	90.0	27	90.0	
Friends	23	76.7	23	76.7	
Curriculum	10	33.3	9	30.0	
Books	7	23.3	6	20.0	
Media	14	46.7	9	30.0	
Neighbors	16	53.3	16	53.3	

FE: Fisher, Exact test

More than one answer was chosen.

Table (2) shows the studied women' current pregnancy characteristics. Concerning the birth official, it was interested noticed that slightly more than two thirds of the study group and more than one half of the control group (66.7%, 56.7% respectively) attended by midwives. Nearly one third (30%) of women in the control group received support from their sisters, while (30%) of the study groups received support from their husband. Most of women (90%) in the control and study groups reported that nurses were the main source of their knowledge, in addition to their friends as reported by slightly more than three quarters (76.7%) of the studied women.

Table (3): Total knowledge level of the studied women regarding natural childbirth at pre and post the intervention:

Total knowledge level	The studied women (n=60)						t P
	Control group (n=30)		Study group (n=30)				
	N	%	Pre		Post		
• Low level of knowledge (<60%)	30	100.0	30	100.0	0	0.0	60.00 0.000*
• Moderate level of knowledge (60-75)%	0	0.0	0	0.0	3	10.0	
• High level of knowledge (>75%)	0	0.0	0	0.0	27	90.0	

* Significant at level P<0.05

Table (3) Shows the total knowledge level of the studied women regarding natural childbirth pre and post intervention. It was noticed that all of the women (100%) in each of the control and study groups had low level of knowledge before implementation of the educational program, while most of the women (90%) in the study group had high level of knowledge and only 10% of them had moderate level of knowledge post implementation of the educational program with a statistically significant difference ($\chi^2 = 60.00, P = 0.000^*$).

Table (4): Mean total knowledge domains scores of the studied women about natural childbirth at pre and post the intervention:

Knowledge domains	The studied women Range Mean ± SD			t P
	Control group	Study group		
		Pre	Post	
1. Natural childbirth	(1-6) 2.70±1.179	(0-4) 2.10±1.094	(6-10) 8.30±1.022	22.683 0.000*
2. Preparing for childbirth	(0-6) 2.30±1.149	(0-4) 1.93±1.048	(7-10) 8.70±1.022	25.314 0.000*
3. Methods used to relieve labor pain	(0-2) 0.77±0.626	(0-2) 0.60±0.724	(1-4) 3.20±0.664	14.493 0.000*
Mean total knowledge score	(3-10) 5.77±1.832	(0-8) 4.63±2.125	(17-23) 20.20±1.690	31.404 0.0-00*

* Significant at level P<0.05.

Figure (1): Mean total knowledge domains scores of the studied women about natural childbirth throughout periods of the study (pre, post, and follow up):

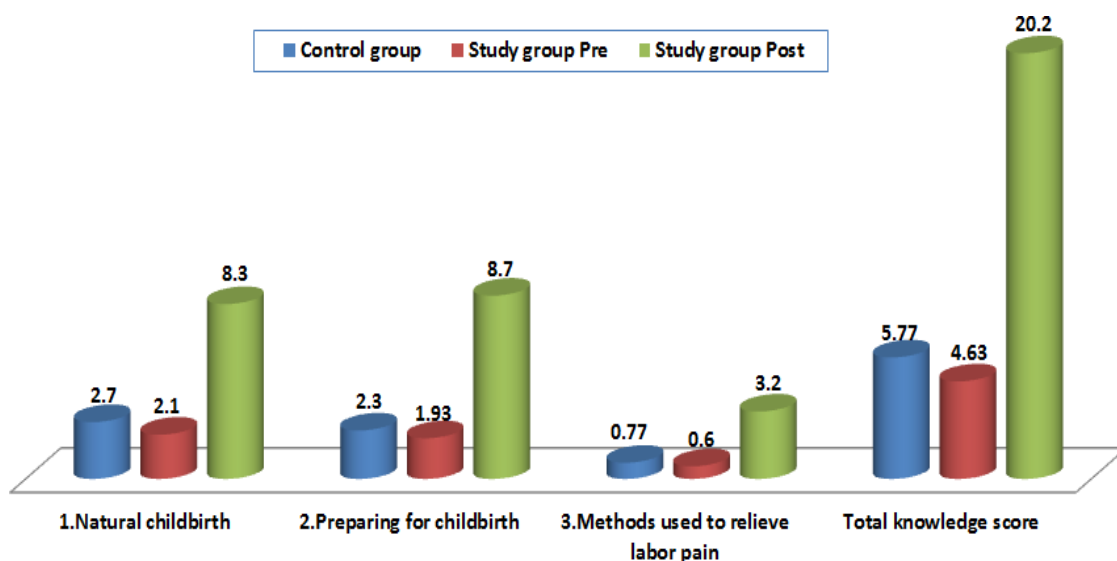


Table (4) and Figure (1) show the mean total knowledge domains scores of the studied women about natural childbirth pre and post intervention. It was evident that there is a significant increase in the mean total knowledge domains scores (8.30±1.022) regarding natural childbirth among study group after implementation of the educational program compared to control group (2.70±1.179) with a statistically significant difference (t = 22.683, P=0.000*). The table also reveals that there is significant increase in the mean total knowledge domains scores regarding preparing for childbirth and methods used to relieve labor pain (8.70±1.022, 3.20±0.664 respectively) among study group post intervention compared to the control group (2.30±1.149, 0.77±0.626 respectively) with a statistically significant difference (t = 25.314, P=0.000* and t = 14.493, P=0.000* respectively). Moreover, this table and figure (1) illustrates an increase in the mean total knowledge score (20.20±1.690) among the study group post the educational program compared to the control group (5.77±1.832) with a statistically significant difference (t = 31.404, P=0.000*).

Table (5): Mean scores of Childbirth self-efficacy inventory (CBSEI) domains of the studied women throughout periods of the study (pre, post, and follow up):

Child self-efficacy inventory (CBSEI) Domains	The studied women								
	Control group			Range		Study group			F
	Pre	Post	Follow up	F	P	Pre	Post	Follow up	P
At 1st stage									
Outcome Expectancy	(25-48) 38.30±7.01	(37-68) 56.60±8.30	(37-86) 67.73±12.20	74.48 0.000**		(19-93) 36.77±20.13	(64-138) 111.37±19.54	(84-138) 115.23±13.26	182.85 0.000*
Self-efficacy Expectancy	(20-46) 32.70±5.09	(43-75) 54.70±8.54	(41-74) 62.07±8.18	126.87 0.000**		(19-77) 38.97±17.24	(76-131) 113.63±15.76	(95-132) 120.20±9.55	288.22 0.000*
At 2nd stage									
Outcome Expectancy	(28-47) 40.30±5.03	(40-76) 60.67±9.83	(37-96) 71.40±16.23	58.28 0.000**		(23-92) 41.73±22.00	(87-136) 118.17±11.57	(93-178) 124.93±16.45	216.65 0.000*
Self-efficacy Expectancy	(26-40) 33.30±3.49	(44-69) 56.43±6.93	(51-82) 65.53±8.67	183.63 0.000**		(23-99) 42.23±21.63	(85-137) 121.07±15.58	(103-145) 128.87±12.02	241.79 0.000*
Total									
Outcome Expectancy	(65-91) 78.60±8.38	(89-139) 117.27±14.59	(93-174) 139.13±24.65	94.92 0.000**		(44-185) 78.50±40.689	(169-274) 229.53±28.63	(177-284) 240.17±24.37	240.01 0.000*
Self-efficacy Expectancy	(55-79) 66.00±5.68	(92-136) 111.13±9.06	(104-148) 127.60±11.15	383.59 0.000**		(53-176) 81.20±37.127	(172-264) 234.70±29.91	(216-275) 249.07±18.65	297.46 0.000*

* Significant at level P<0.05.

Table (5) shows the mean scores of child self-efficacy inventory (CBSEI) domains of the studied groups throughout periods of the study (pre, post, and follow up). There were significant increases in the mean scores of the study group outcome expectancy and in the self-efficacy expectancy at the 1st stage of labor post intervention and in the follow up (111.37±19.54, 115.23±13.26 & 113.63±15.76, 120.20±9.55 respectively) compared to the control group (56.60±8.30, 67.73±12.20 & 54.70±8.54, 62.07±8.18 respectively) with statistically significant difference between both groups (F=182.85, P=0.000* & F=228.22, P=0.000* respectively).

The table also clarifies that there were significant increases in the mean scores of the study group outcome expectancy and in the self-efficacy expectancy at the 2nd stage of labor post intervention and in the follow up (118.17±11.57, 124.93±16.45 & 121.07±15.58, 128.87±12.02 respectively) compared to the control group (60.67±9.83, 71.40±16.23 & 56.43±6.93, 65.53±8.67 respectively) with statistically significant difference between both groups (F=216.85, P=0.000* & F=241.79, P=0.000* respectively).

Moreover, there were significant increases in the total mean scores of the study group outcome expectancy and in the self-efficacy expectancy post intervention and in the follow up (229.53±28.63, 240.17±24.37 & 234.70±29.91, 249.07±18.65 respectively) compared to the control group (117.27±14.59, 139.13±24.65 & 111.13±9.06, 127.60±11.15 respectively) with statistically significant difference between both groups (F=240.01, P=0.000* & F=297.46, P=0.000* respectively).

Table (6): Childbirth pain intensity among the studied women regarding at 1st and 2nd stages of labor according to the Visual Analogue Scale (VAS):

Visual analogue scale	The studied women (n=60)				χ^2 P
	Control group (n=30)		Study group (n=30)		
	N	%	N	%	
At 1st stage	0	0.0	22	73.3	36.20 0.000*
(1-3) Mild pain	14	46.7	6	20.0	
(4-6) Moderate pain	14	46.7	2	6.7	
(7-9) Sever pain	2	6.7	0	0.0	
(10) Unbearable pain					
Range Mean ± SD	(4-10) 6.63±1.586		(2-9) 3.17±1.663		t= 8.263, P=0.000*
At 2nd stage	0	0.0	15	50.0	40.518 0.000*
(1-3) Mild pain	3	10.0	12	40.0	
(4-6) Moderate pain	14	46.7	3	10.0	
(7-9) Sever pain	13	43.3	0	0.0	
(10) Unbearable pain					
Range Mean ± SD	(6-10) 9.00±1.259		(2-8) 4.33±1.709		t=12.042, P=0.000*

* Significant at level P<0.05.

Table (6) shows distribution of the studied women regarding childbirth pain intensity at 1st and - of labor according to the visual analogue scale. It was noticed that nearly three quarters (73.3%) of women in the study group had mild pain at 1st stage of labor compared to 0.0% in the control group with statistically significant differences ($\chi^2 = 36.20$, $P = 0.000^*$). On the other hand, nearly one half (43.3%) of women in the control group had unbearable pain at 2nd stage of labor compared to 0.0% in the control group with statistically significant differences ($\chi^2 = 40.518$, $P = 0.000^*$). The table also clarifies that there is an increase in the mean score of pain intensity (6.63±1.586, 9.00±1.259) among the control group compared to decrease (3.17±1.663, 4.33±1.709) among the study group during 1st and 2nd stages of labor with statistically significant difference ($t= 8.263$, $P=0.000^*$ and $t= 12.042$, $P=0.000^*$ respectively).

Table (7): Relation between childbirth pain intensity and outcome expectancy and self-efficacy expectancy according to visual analogue scale and CBSEI domains among the studied groups at 1st and 2nd stages of labor:

(CBSEI) Domains	The studied women Visual analogue scale							
	Control group				Study group			
	1 st stage		2 nd stage		1 st stage		2 nd stage	
	R	P	r	P	R	P	r	P
Pre								
Outcome Expectancy	-0.263	0.160	-0.179	0.343	0.057	0.766	-0.365	0.047*
Self -efficacy Expectancy	-0.159	0.402	-0.127	0.503	-0.163	0.388	0.157	0.407
Post								
Outcome Expectancy	-0.215	0.253	-0.115	0.546	-0.297	0.111	-0.465	0.010**
Self -efficacy Expectancy	-0.077	0.688	-0.301	0.106	-0.024	0.901	0.032	0.868
Follow up								
Outcome Expectancy	-0.325	0.080	0.077	0.686	0.234	0.214	-0.272	0.147
Self -efficacy Expectancy	-0.100	0.600	-0.139	0.464	0.279	0.136	0.145	0.444

* Significant at level P<0.05.

** Highly significant at level P<0.01.

Table (7) shows the correlation between childbirth pain intensity according to the visual analogue scale and CBSEI domains among the studied groups at 1st and 2nd stages of labor. It was found that there were no statistically significant relation between the control and study pain intensity according to visual analogue scale and CBSEI domains at 1st stage of labor. It was also evident that there is a statistically significant relation between the control and study groups at the and 2nd stage of labor regarding childbirth pain intensity and outcome expectancy pre and post intervention ($r = -0.365$, $P = 0.047^*$, & $r = -0.465$ $P = 0.010^{**}$ respectively), while there was no statistically significant relation between the control and study groups regarding childbirth pain intensity and outcome expectancy follow up ($r = -0.272$, $P = 0.147$) and regarding childbirth pain intensity and self -efficacy expectancy pre, post intervention and at the follow up ($r = 0.157$, $P = 0.407$ and $r = 0.032$, $P = 0.868$ and ($r = 0.145$, 0.444).

Table (8): Correlation between total knowledge score and socio characteristics of the studied groups at pre and post intervention:

Characteristics	The studied women total knowledge score					
	Control group		Study group			
	R	P	Pre		Post	
		r	P	r	P	
Age (in years)	0.023	0.905	0.164	0.387	0.294	0.115
Educational level	-0.167	0.377	-0.209	0.267	0.316	0.089
Pregnancy weeks	0.043	0.823	-0.071	0.708	0.286	0.125

Table (8): presents the correlation between socio characteristics of the studied groups pre and post intervention and total knowledge score. It was obvious that there was no significant relation between the control and the study groups related to total knowledge score based on their age, educational level and pregnancy weeks preprogram, immediately post program and in the follow up after labor.

Table (9): Correlation between CBSEI score and socio-demographic characteristics of the studied groups at 1st and 2nd stages of labor throughout the periods of study:

Study period	Socio-demographic characteristics	(CBSEI) domains	Control group				Study group			
			1 st stage		2 nd stage		1 st stage		2 nd stage	
			R	P	r	P	r	P	r	P
Pre program	Age	Outcome Expectancy	-0.202	0.284	0.144	0.447	-0.321	0.084	-0.413	0.023*
		Self-efficacy Expectancy	-0.136	0.475	-0.189	0.317	-0.305	0.101	-0.377	0.040*
Post program		Outcome Expectancy	0.356	0.053	0.248	0.187	-0.054	0.778	-0.162	0.393
		Self-efficacy Expectancy	0.276	0.140	0.217	0.250	0.144	0.447	0.046	0.811
Follow up After delivery		Outcome Expectancy	0.152	0.421	0.318	0.087	-0.141	0.457	-0.379	0.039*
		Self-efficacy Expectancy	0.011	0.955	0.063	0.742	-0.175	0.354	-0.123	0.518
Pre program	Education	Outcome Expectancy	-0.189	0.317	0.012	0.951	0.085	0.653	0.349	0.059
		Self-efficacy Expectancy	-1.116	0.543	0.368	0.046*	0.014	0.943	0.032	0.866
Post program		Outcome Expectancy	0.093	0.624	0.079	0.679	0.132	0.487	0.020	0.915
		Self-efficacy Expectancy	0.307	0.099	-0.041	0.831	-0.170	0.368	0.069	0.718
Follow up After delivery		Outcome Expectancy	-0.197	0.297	0.241	0.199	0.122	0.521	0.107	0.575
		Self-efficacy Expectancy	-0.054	0.775	-0.171	0.367	-0.016	0.933	0.173	0.361

Table (9) continues:

Study period	Socio-demographic characteristics	(CBSEI) domains	Control group				Study group			
			1 st stage		2 nd stage		1 st stage		2 nd stage	
			R	P	r	P	r	P	r	P
<u>Pre program</u>	Weeks of pregnancy	Outcome Expectancy	0.401	0.028*	0.257	0.171	-0.003	0.988	-0.170	0.369
		Self-efficacy Expectancy	-0.055	0.774	-0.076	0.691	-0.019	0.920	0.061	0.749
<u>Post program</u>		Outcome Expectancy	0.016	0.934	-0.020	0.915	0.182	0.335	-0.025	0.895
		Self-efficacy Expectancy	-0.050	0.794	-0.022	0.909	0.084	0.657	0.171	0.366
<u>Follow up After delivery</u>		Outcome Expectancy	0.211	0.263	-0.152	0.424	0.240	0.201	-0.045	0.814
		Self-efficacy Expectancy	0.284	0.129	-0.340	0.066	-0.111	0.559	0.351	0.057

* Significant at level P<0.05.

** Highly significant at level P<0.01.

Table (9): Illustrates the correlation between CBSEI score and socio-demographic characteristics of the studied groups at 1st and 2nd stages of labor (preprogram, immediately post program, and in the follow up after labor). It shows that preprogram, there were significant relations (r= -0.413, p= 0.023 &* & r=-0.377, p= 0.040* respectively) between age and CBSEI (outcome expectancy, self-efficacy expectancy) at 2nd stage of labor among the study group. Moreover, there was a significant relation between age and CBSEI (outcome expectancy) at 2nd stage of labor (r= 0.379- p= 0.039*) among the study group at follow up after labor. While a there was a significant relation between education and CBSEI (self-efficacy expectancy) at 2nd stage of labor (r= 0.368- p= 0.028*) among the control group at preprogram. Furthermore, there was a significant relation between gestational weeks and CBSEI (outcome expectancy) at 1st stage of labor (r= 0.401- p= 0,028*) preprogram among the control group.

IV. DISCUSSION

Childbirth preparation represents a formal means of information transmission to prospective parents regarding the birth process through education classes. This study implemented an educational program classes to prepare primigravida women for the childbirth experience in order to cope with labor process, withhold labor pain and contribute to their overall sense of comfort. It included accurate, up-to-date information and taught them a wide variety of cognitive, behavioral, and sensory interventions. A quasi experimental research design was used in a convenient sample of 60 primigravida women who fulfilled the inclusion criteria of the study to determine the effect of implementing educational program about childbirth preparation on their coping with labor process. They were selected from the antenatal outpatient clinic and inpatient units of the obstetric and gynecological departments at Tanta University Hospital and El-Menshawy Hospital, and El-Mehala El-Kopra General Hospital affiliated to the Ministry of Health in Egypt. They were divided randomly into two groups (study and control), 30 women in each group. To achieve the aim of the study, four tools were used for data collection. Tool (I) Biosocio-demographic and current pregnancy characteristics of the women, tool (II) Structured knowledge interview schedule, tool (III) Childbirth Self-Efficacy Scale (CSES) and tool (IV) Visual analogue scale (VAS) to assess labor pain severity.

The results of this study revealed that there were no significant differences between the study and control groups regarding their bio-sociodemographic characteristics (age, marital status, level of education, occupation, residence, family income) , as well as their current pregnancy characteristics [last menstrual period (LMP), gestational weeks, and expected date of delivery (EDD)]. This means that the subjects of the study were homogenous and any difference in their coping with the labor process is due to effect of the childbirth preparation program. Most of the studied women (control and experimental) were married. Women in the study group were younger and had higher education levels with no statistically

significant difference between the groups. These results are in agreement with **Howharn (2008)** except for the age variable. The researcher confirmed that all participants were married; women in the study group were younger and had higher education. However, age was the only statistically significant difference between the groups⁽¹⁷⁾. This study finding also supported by **El-kurdy et al., (2017)** who studied the effect of antenatal education on childbirth self-efficacy for Egyptian primiparous women. The study revealed no significant differences among the study and control groups regarding age, education, residence, and occupation⁽²⁶⁾.

As regard the total knowledge level of the studied women regarding natural childbirth pre and post program. It was noticed that all of the women (control and study groups) had low level of knowledge before implementation of the program, while most of the study group had high level of knowledge and only one tenth of them had moderate level of knowledge post program with a statistically significant difference. The study results also revealed that there were significant increases in the mean total knowledge domains scores regarding preparation for natural childbirth, as well as regarding natural childbirth, preparing for childbirth and methods used to relieve labor pain among the study group post program compared to the control group. These findings are supported by **Ahmed, 2019**, who reported that both study and control groups had poor knowledge on childbirth before program, while there was significant increase in the level of knowledge among the study group after the program⁽²⁷⁾. This study is also in line with **Nisha et al, 2014**, who assessed and correlated level of knowledge, anxiety and labor process among primiparas. They showed that six percent had low, more than one quarter had average, more than one half had good and one tenth of them had excellent level of knowledge⁽²⁸⁾. The study findings show that there is an association between the level of knowledge and education. Additionally, **Mulik et al., 2014**, found a significant difference in means knowledge scores between pre and posttest. These similarities indicate that teaching programs are effective methods for increasing the knowledge about childbirth process⁽²⁹⁾.

The present study confirmed that there were significant increases in the mean scores of the study group outcome expectancy and in the self-efficacy expectancy at the 1st stage and 2nd stages of labor of labor post program and in the follow up compared to the control group. This agrees with **Serçekuş & Başkale, 2016**, who found significant differences in post education scores between the both groups of the study⁽³⁰⁾. Similarly, **Taheriet et al., (2014)**, found a significant difference between the two groups (study, control) regarding both expectancies after the intervention⁽³¹⁾. This can be explained as women who received antenatal education program classes for preparation for childbirth include techniques to cope with labor pain, as well as learn how to develop self-reliance during labor through the practical skills. Consequently, their self-confidence, self-efficacy and outcome expectancy are increase and their fear of labor process is reduced.

Moreover, there were significant increases in the total mean scores of the study group outcome expectancy and in the self-efficacy expectancy post intervention and in the follow up compared to the control group. This result is supported by **El-Kurdy R., et al. (2017)**, Their study highlighted that, at pretest there were no significant differences between the antenatal education and control groups regarding the mean score of both outcome and self-efficacy expectancies, but at posttest and during follow-up assessment, there were highly significant differences between the two groups⁽²⁶⁾. It was clear that the mean score of both expectancies were higher in the antenatal education group as, the women who received the session of antenatal education classes learns how to develop self-reliance during labour, had practical skill that increased their self-confidence and decreased their fear during whole period of childbirth process. Also, learning the techniques of coping during labor pain can lead to the development of women's self-confidence and childbirth self-efficacy.

The study also shows that there was a significant decrease in the level of childbirth pain intensity at 1st and 2nd stage of labour according to the visual analogue scale. It was also demonstrated that there was an increase in the mean score of pain intensity among the control group compared to decrease among the study group during 1st and 2nd stages of labour with statistically significant difference. This finding is supported by **El-Homosal, 2012**, who confirmed a significant correlation between CBSEI subscales and labor pain in the intervention group compared to the control group who were received only the usual care⁽³²⁾. Also, this is in agreement with **Tangetal.,(2009)** who found decreased pain level in the first stage of labor⁽³³⁾.

The present study revealed that there were no statistically significant differences between the control and study groups in pain intensity according to visual analogue scale and CBSEI domains at the 1st stage of labor and at the and 2nd stages of labor regarding childbirth pain intensity and outcome expectancy pre and immediately post program intervention, while there was no statistically significant difference between the control and study groups regarding childbirth pain intensity

and outcome expectancy in the follow up. Regarding childbirth pain intensity and self-efficacy expectancy pre, post intervention and at the follow up. This study was in agreement with **Berentson et al., (2009)**. They concluded that there was no significant correlation between the CBSEI subscales (outcome and self-efficacy expectancies) and labor pain at pretest, posttest, and follow-up assessment⁽³⁴⁾. This indicates that labor pain increases with decreasing the childbirth self-efficacy and vice versa.

V. CONCLUSION

The childbirth preparation education program implemented in the present study positively influenced primigravida women's coping with labor process (self-efficacy, pain intensity and outcome expectancy). This research added to the bases of knowledge related to primigravida women of certain bio-sociodemographic characteristics. It also participated indirectly in reduction of maternal and neonatal mortality and morbidity rates through implementation of non-pharmacological coping techniques and strategies that enhance maternal abilities to cope with childbirth pain and labor process.

VI. RECOMMENDATIONS

According to the results of the present study, the following recommendations are drawn:

Childbirth preparation should be taught to all categories of the nurse midwives. It should be arranged and applied to all pregnant women especially primigravidas to promote their self-efficacy and coping with labor process. Childbirth preparation content should be available and provided in a written form to all pregnant women during their antenatal visits to maternity hospitals and maternal and child health centers. Further studies on the effect of childbirth education programs on childbirth experience of women with diseases associated with pregnancy and those who have pregnancy complications or at risk, as well as assessment of pregnant women needs for and perception of childbirth preparation program classes.

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International Journal of Novel Research in Healthcare and Nursing

 Vol. 7, Issue 1, pp: (385-401), Month: January - April 2020, Available at: www.noveltyjournals.com

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