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Effect of Implementing Childbirth Preparation Classes on Women's Self-efficacy and Pregnancy Outcomes

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ABSTRACT

Background: Giving birth is a major event in life that many women undergo and have long-term effects. Childbirth classes are one of the most effective ways to assist women with increasing their self-efficacy and managing their pain levels during labour. **Objective:** To assess and ascertain how women's self-efficacy and pregnancy outcomes are affected by the implementation of childbirth preparation classes. **Methods:** A quasi-experimental research design was used. This study was conducted at the University Hospital of the Sohag Governorate's prenatal clinics. The study included 100 convenient primigravida pregnant who were split into two equal groups (intervention) who received child preparation classes and control (who received routine clinic care). A structured interview questionnaire, the Childbirth Self-Efficacy Inventory, and pregnancy outcome tools were used. **Results:** The study showed that at a *p*-value <0.01, there were significant statistical differences between the study and control groups' overall childbearing self-efficacy during the first and second stages of labour. **Conclusion:** Primigravida women attending the class demonstrated higher levels of self-efficacy in managing labour pain compared to those not attending childbirth classes. Recommendation: Birth preparation classes must be encouraged at every antenatal clinic and hospital because they significantly increase women's confidence in managing and reducing labour pain and enhance the outcomes of the childbirth process.

Keywords: Childbirth Preparation Classes; Pregnancy Outcomes; Women Self-Efficacy

INTRODUCTION

The goal of childbirth preparation classes is to support expectant mothers in making decisions before and during labour, in addition to using the skills they have acquired for childcare, nursing, self-control over labour pain, and parenting. The effectiveness of childbirth preparation classes, intended to supplement or replace the knowledge and information women traditionally receive from their "female network," remains a subject of ongoing debate. The length of the courses varies according to the structural changes in the health system and financial limitations. Childbirth preparation classes have been shown to generally reduce mothers' stress, fear, and anxiety and boost women's self-efficacy (Bostan & Kabukcuoğlu, 2022).

Natural childbirth (labour) decreases healthcare costs and increases benefits for women and their families physiologically and psychologically (Tu *et al.*, 2024). Furthermore, compared to women who have already given birth previously, primigravida women have a higher level of experience of delivery phobia and may be at greater risk for adverse pregnancy outcomes. Providing timely and closely monitored support during pregnancy is essential for maintaining the psychosocial well-being of expectant mothers and assisting with labour preparations (Elsharkawy *et al*., 2024).

Following recommendations from the World Health Organisation (WHO, 2022), all expectant mothers must receive psychological assistance to increase their ability to give birth. In addition, giving primigravida women tangible physical, informational and emotional support prior to giving birth increased their satisfaction with labour and delivery. Additionally, satisfaction during birthing was primarily linked to the presence of birth

preparation classes, which boost women's positive emotions and, as a result, produce positive pregnancy outcomes in terms of woman and newborn experiences and self-efficacy (Khan, Hameed & Avan, 2023).

Self-efficacy is the conviction that acts successfully in a specific situation. There is a positive correlation between mental and physical health outcomes and the self-efficacy of women. Low-risk pregnancies, low caesarean sections, fewer pains during labour and difficulty, and lower rates of postpartum depression and anxiety were all linked to high levels of self-efficacy at birth (Hewitt & Murray, 2024). Women who had low self-efficacy were more demanding of a caesarean section for subsequent pregnancies and selected this option over a vaginal delivery (Varnakioti *et al.*, 2022).

Standard prenatal care often includes formal prenatal education programs and seminars, which nurses and midwives can help plan and administer. A midwife, an obstetrician, and a psychotherapist, qualified to offer suitable counselling and interventions for women with decreased birthing efficacy can be immediately assigned to form multidisciplinary teams. Furthermore, midwives and nurses can be crucial in helping expectant mothers and their families understand the importance of education. They can establish trustworthy sources of knowledge about pregnancy, labour, and delivery through a variety of platforms and internet applications, including social media and smartphones (AlSomali, Bajamal & Esheaba, 2023).

Significance of the Study

In Egypt, antenatal education is not widely integrated into the healthcare system, leaving pregnant women vulnerable to misinformation (Mkandawire *et al.*, 2019). However, providing expectant mothers with accurate knowledge enables them to make informed decisions, facilitating a more natural birthing process. Research indicates that maternal and neonatal morbidity and mortality rates do not decline when caesarean section rates exceed 10% (Betran *et al.*, 2021). Notably, Egypt has the highest rate of caesarean deliveries in the Middle East, with C-sections accounting for 75–80% of births, significantly exceeding the global average of 25–30% (McCall *et al.*, 2021).

For all pregnant women to be able to make their own decisions throughout pregnancy and have a fulfilling birth, self-efficacy is a crucial idea, they feel like giving birth vaginally as opposed to through a caesarean section (Murugesu, Damman & Derksen, 2021). Therefore, evaluating the effect of these sessions on women's self-efficacy for coping with labour pains and outcomes is crucial.

Aim of the Study

This research aimed to assess the effect and impact of implementing childbirth preparation classes on women's self-efficacy and their pregnancy outcomes.

Research Hypotheses

Women who attend childbirth preparation classes will report a higher level of self-efficacy and pregnancy outcomes than others who don't attend.

METHODOLOGY

Four design models were used to discuss the topic and methodology of the current study

Research Design

Quasi experimental research design was used for this study.

Setting

The study has been carried out at Sohag University Hospital's prenatal outpatient clinics.

Sample

A convenience sample of one hundred primigravida women was included. It was split into two equal groups: the intervention group (who attended classes on child preparation) and the control group (who received normal hospital treatment). The total number of primigravida women who attended antenatal outpatient clinics

in 2022 was 600. The sample size calculation was performed using the formula with the following parameters: DEFF (design effect) = 1, N (population) = 600, p (hypothesized percentage) = 10% ± 5, d (tolerated margin of error) = 0.05, Z (confidence level) = 1.96, and α (*alpha*) = 0.05. Participants were selected based on the criteria of being 32–34 weeks gestational age without complications, aged 20–35 years, and having no prior labour experience, although a history of previous abortion was allowed.

Tools of Data Collection

Tool I: Includes Two Parts

Part 1: Women's characteristics. Such as: age, telephone number, living area, educational level, function, height, weight, and years of marriage.

Part 2: Obstetric data includes information such as previous abortions, weeks of gestation, regular follow-up during the current pregnancy, and any counselling received regarding delivery preparation.

Tool II: Childbirth Self-Efficacy Inventory Scale (CBSEI)

The study consists of 32 questions. These self-reports evaluate the labour and delivery outcome expectancy (OE) and self-efficacy expectancy (EE). This consist of outcome expectancies (OE) and efficacy expectancies (EE), with a total score ranging from 31 to 310. Pregnant women who score highly on each sub-dimension are likely to have high hopes for efficacy (Ip *et al*., 2008; Schmidt *et al*., 2015).

Tool III: Pregnancy outcome. It included two parts:

The First Part—maternal, labour and delivery data as weeks of gestation at delivery, maternal mode of delivery, duration of labour, analgesics or oxytocin—used any complication that occurred to the mother.

Second Part: Neonates data such as neonate sex, weight, health problems, admission in ICU and Apgar score (The Apgar score is used to evaluate the health of newborns immediately after birth).

Tools Validity and Reliability

Three specialists from the department of Obstetrics and Gynaecological Nursing at the Faculty of Nursing at Assiut University evaluated the study's instruments to ensure that they met the intended criteria for face and content validity. The Cronbach's alpha test was used for reliability and the results were 0.758, 0.847, and 0.792 for the pregnancy outcome scale, childbirth self-efficacy, and personal and obstetric characteristics, respectively.

Operational Design

It includes three phases

Preparatory Phase

The development and preparation of the educational program were guided by the identified needs and literature review. It was written in Arabic and covered a variety of subjects to advance the knowledge of mothers enrolled in childbirth preparation classes. The investigator also created PowerPoint slides. A variety of teaching techniques, including lectures, group discussions, and brainstorming, were employed. The researcher created a handout that was handed to all pregnant women in the first class of the educational program, along with instructional media.

Pilot Study

Following questionnaire preparation, 10% (10) of pregnant women participated in a pre-test to determine the reliability and validity of the research tools. Since the study tools did not undergo any significant changes, the studied women from the pilot study were added.

Field Work

The process of gathering data took place over the course of six months, from February 2023 to July 2023.

Pre-intervention, intervention, and evaluation were the three phases that it involved.

Procedure

In this phase, the researcher conducted individual assessments of the pregnant women and used the study tool to collect data early in the morning before sessions. It took every woman between five and ten minutes.

Pre-intervention Phase

The investigator was accessible in the study setting four days a week, from 9:00 a.m. to 1:00 p.m. It took six to seven instances a day for four weeks to get a group of one hundred women. The intervention group met for the first two days of the week, while the control group met for the second two. Each group included fifty pregnant women.

For Intervention Group

In a classroom next to the clinic, the researcher conducted individual interviews with each woman in the intervention group. Women were told about the nature and purpose of the study before voluntarily agreeing to take part. After two weeks, the researcher gives the woman's phone number and the appointment for the first lesson.

Two weeks later, the researcher saw the pregnant women in the intervention group in the outpatient clinic lecture room between 10 and 11 a.m. They delivered them the first childbirth education course, covering topics such as the definition and physiology of labour, premonitory labour signals, and phases of labour. A pamphlet with information on how to relieve labour pain naturally and pharmaceutically and how to position oneself optimally during labour was given to them by the researcher.

The women attended the second class after two weeks, which included the following topics: the nature of labour pain, medications used during labour, non-medical ways to cope with labour pain, and variations in delivery. It took two hours, from 10 a.m. to 12 p.m. After the second class, the researcher scheduled a follow-up meeting with the intervention group two weeks later to collect the first part of the questionnaire answers. The researcher filled out the second and third sections of the form and decided with each lady to phone him when it was time for her labour to be attended during the evaluation.

For the Control Group

The control group only received prenatal care at the outpatient clinic. The researcher collected the medical and obstetric histories during the first appointment. After two weeks, at their second meeting, the researcher got each woman ready for labour by asking her to call her when it was time to go into labour so she could fill out the second and third sections of the form.

Evaluation Phase

The researcher assessed expectant mothers using the pregnancy outcome and the Childbirth Self-Efficacy Inventory instrument, which was completed by all study participants (intervention and control groups) during the first 24 hours of labour.

Administrative Design

The director of Sohag University Hospital and the manager of the department of obstetrics and gynaecology provided formal approval for the study to be conducted.

Statistical Analysis

The collected data was arranged, classified, coded, tabulated, and analysed using the Statistical Package for Social Sciences (SPSS) version 26 to determine whether two quantitative variables were related. The data was presented in figures and tables using numbers, percentages, means, standard deviations, and the chi-square test of significance. For statistical significance, a P-value of less than 0.05 was used. All missed cases were excluded from the study.

Ethical Consideration

This research proposal was approved by the Faculty of Nursing's Ethical Committee at Assuit University, Egypt, with reference number 1120240522 on 25th December, 2022.

RESULTS

Table 1: Personal Characteristics of the Pregnant Women in Both Groups (n=100)

Socio-Demographic Data	Study Group (50)		Control Group (50)		*p*-value
	N	%	N	%	
Age Groups / Years					
22≤	15	30.0	17	34.0	0.668
23 or more	35	70.0	33	66.0	
Age/ years (Mean±SD)	23.9±2.01		23.72±2.16		
Living Area					
Rural	25	50.0	19	38.0	0.227
Urban	25	50	31	62.0	
Level of Education					
Illiterate	7	14.0	8	16.0	0.844
Basic Education	9	18.0	9	18.0	
High School	24	48.0	20	40.0	
University Education	10	20.0	13	26.0	
Occupation					
Housewife	37	74.0	36	72.0	0.822
Employee	13	26.0	14	28.0	
Years of Marriage					
≤ 1 year	37	74.0	35	70.0	0.656
More than One Year	13	26.0	15	30.0	
Months of Marriage (Mean±SD)	14.38±5.83		14.62±5.96		0.776

Table 1 reports that, with a mean and SD of 23.9±2.01 and 23.72±2.16, in the study and control groups respectively in that order. About 48.0% and 40.0%, respectively, of the study and control groups had finished high school. About 74.0% and 72.0% of the studied women in the study and control groups, respectively, were housewives; At p-value > 0.05, there was no statistically significant difference between the groups.

Table 2: The Studied Women Who Passed the First and Second Stage of Labour in the Study and Control Groups (n=100)

Items	Study Group (50)		Control Group (50)		*P*-value
	N	%	N	%	
Passing the First Stage of Labour					0.001**
Yes	49	98.0	28	56.0	
No	1	2.0	22	44.0	
Passing the Second Stage of Labour					0.001**
Yes	44	88.0	21	42.0	
No	6	12.0	29	58.0	

Table 2 shows that 98.0% and 56.0% of the investigated women were in the study and control groups, respectively, with highly statistically significant differences at p-value <0.01. They successfully completed the first stage of labour, with 88% and 42.0% of them advancing to the second stage.

Table 3: Mean and Standard Deviation of Total Childbirth Self-Efficacy in the First and Second Stage of Labour in the Study and Control Groups (n=77)

	Mean and Standard Deviation		*T*-test
	Study Group (49)	Control Group (28)	*p*-value
Total Childbirth Self - Efficacy	442.71±125.81	263.68±107.56	0.001**

Table 3 shows that, at *p*-value <0.01, there were significant differences in total childbirth self-efficacy between the two groups of the study in both the first and second stages of labour.

Table 4: The Maternal Outcomes in The Study and Control Groups (n=100)

Maternal Outcomes	Study Group (50)		Control Group (50)		*p*-value
	N	%	N	%	
Week of Gestation at Delivery					
< 36	2	4.0	2	4.0	1.000
36 or more	48	96.0	48	96.0	
Week of Gestation (Mean±SD)	38.52±1.29		38.46±1.528		0.485
Analgesics Used During Labour					0.534
Yes	17	34.0	20	40.0	
No	33	66.0	30	60.0	
Receiving Oxytocin					
Yes	39	78.0	26	*52.0*	0.006**
No	11	22.0	24	48.0	
Duration of labour (Mean±SD)	19.32±4.18		10.30±9.212		0.001**
Causes of Caesarean Section					
Woman demand	0	0.0	8	26.7	
Sever pre-eclampsia	1	14.3	2	6.7	
Fatal distress	3	42.8	3	10.0	
Maternal distress	1	14.3	2	6.7	0.198
Maternal hypertension	1	14.3	1	3.3	
Decrease amniotic fluid	0	0.0	5	16.7	
Contracted pelvis	1	14.3	5	16.7	
Post-term	1	0.0	4	13.2	
Complications Happened During Labour					0.053
Yes	7	14.0	15	30.0	
No	43	86.0	35	70.0	
If Yes, Type of Complication					0.783
Laceration	4	57.1	8	53.3	
Bleeding	*3*	*42.9*	*6*		
Retained placenta	0	0.0	1	6.7	

Table 4 demonstrates that 96% of research participants gave birth at or before 36 weeks in both groups. Additionally, there was a statistically significant difference (*p*-value<0.01) between the two groups regarding the amount of oxytocin received and the length of labour.
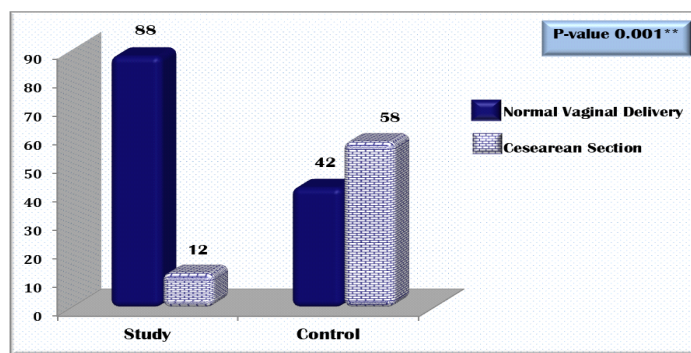
Figure 1: Maternal Mode of Delivery in the Study and Control Groups (n=100)

Figure 1 indicates that 12% and 58.0% of the investigated women in the study and control groups had a caesarean section, while 88.0% and 42.0% had a normal vaginal delivery, with highly statistically significant differences at *p*-value <0.01.

Table 5: The Foetal Outcomes in the Study and Control Group (n=100)

Maternal Outcomes	Study Group (50)		Control Group (50)		*P*-Value
	N	%	N	%	
Sex					
Male	20	40.0	22	44.0	0.534
Female	30	60.0	28	56.0	
Body Weight (grams)					
< 2500	4	8.0	3	6.0	
2500-3500	38	76.0	36	72.0	0.715
> 3500	8	16.0	11	22.0	
Body weight (grams) (Mean±SD)	3095.10±342.12		3038.09±412.88		
Neonatal Admission to the Intensive Care Unit					0.714
Yes	7	14.0	8	16.0	
No	43	86.0	42	84.0	
Occurrence of Neonatal Health Problems					0.806
Yes	10	20.0	11	22.0	
No	40	80.0	39	78.0	
If Yes What are the Problems					
Respiratory problem	9	90.0	10	90.9	0.943
Central nervous problem	1	10.0	1	9.1	
Apgar Score					
Normal	44	88.0	43	86.0	0.766
Abnormal	6	12.0	7	14.0	

Table 5 reveals that regarding baby sex, weight, admission to the intensive care unit, neonatal health issues, and Apgar scores, there was no statistically significant difference between the two groups at *p*-value > 0.05.

DISCUSSION

Participation in childbirth education classes has been associated with improved maternal and neonatal outcomes, including enhanced breastfeeding success, reduced anxiety during labor, decreased pain perception, and a lower reliance on analgesics. Additionally, these classes foster better communication and relationships between women and healthcare providers (Said, Hassan & Salama, 2022). The findings of this study support these associations, highlighting the positive impact of antenatal education on women's self-efficacy in managing labor pain and improving overall pregnancy outcomes. These results underscore the importance of integrating structured childbirth education programs into maternal healthcare services to enhance both physiological and psychological aspects of childbirth.

The study found that there were highly statistically significant differences between the study group and the control group in their overall childbirth self-efficacy in both the first and second stages of labour. This was based on the standard deviation and mean of total childbirth self-efficacy in both groups. This could be explained by the fact that knowing the phases and procedures of normal labour is a prerequisite for self-efficacy in childbirth, which represents the achievement of the main program goal.

This outcome was consistent with research done by Sunay and Uçar (2022) to assess the impact of birth plan and education on the self-efficacy of childbirth. The study discovered that the study group's pregnant women's birth self-efficacy levels increased significantly when self-efficacy mean scores were compared after the intervention. Antenatal education improved women's overall self-efficacy during labour and delivery as well as their capacity to manage pain and stress, according to a study by İsbir *et al*. (2016). The findings of this study were comparable to those. Women's self-confidence and self-trust rise with education.

The results of this study regarding maternal outcomes within study groups and control groups show that most of the women in those groups gave birth at or before 36 weeks of gestation. Analgesics were used during labour by more than one-third of the women of the study group and two-fifths of the control group's women. More than 75% in the study group and more than 50% of the control group of women were surveyed about the administration of oxytocin. Regarding the causes of caesarean sections, more than 25% of the study group and more than 25% of the control group had CSs due to foetal distress and women's demands. Labour-related complications affected less than one-sixth of the study group and less than one-third of the control group. There was a highly significant difference between the study and control groups regarding the administration of oxytocin, with a p-value of less than 0.01. This may be the result of mothers opting for caesarean sections over common labour issues. Furthermore, when mothers in the study group gain an understanding of the implementation of the program, their fear of drug administration decreased.

Research by Mueller, Webb and Morgan (2020), corroborated this finding by showing that women who attended the class used fewer analgesics during labour and were less likely to be induced. This study was also supported by the findings of Hong *et al.* (2021), who examined views on prenatal education in relation to pregnancy outcomes and found that the group receiving antenatal education had a reduced rate of epidural anaesthesia use. This result, however, was at odds with that of Gluck *et al*. (2020), who examined the effect of birth education programs on the quality of delivery and discovered that the labour induction methods of the study and control groups were identical. Some knowledgeable women who understand the anatomy of normal labour feel prepared for the experience, while others may not.

Most of the women stated taking these classes had an impact on their decision to give birth naturally (Hassanzadeh *et al*., 2021). Furthermore, the results were consistent with a study by Moshki *et al*. (2024), which discovered that women who take classes preparing for a natural childbirth are more likely to want a natural birth. This result was consistent with research by Gluck *et al*. (2020) which showed that women who took part in education programs were less likely to utilize an instrument during labour and more likely to give birth naturally. Because this program informs women about the advantages of natural labour as well as the disadvantages of caesarean sections, it dispels myths and anxieties regarding typical labour.

About half of the women in the control group and three-fifths of the intervention group gave birth to female children, according to the current study, which examined the foetal outcomes in the two groups. Regarding the

weight of the newborn, more than two-thirds of the newborns in the control groups and more than three-quarters of the research group ranged between 3500 and 2500gm in terms of body weight. One-fifth of the study group and more than one-fifth of the control group had problems related to the prevalence of neonatal health issues. There was no statistically significant difference between the two study groups for any of the earlier items at p-value > 0.05, and the majority in both groups had normal Apgar scores. This may be due to regular follow-up of the mothers during the antenatal period, which helped achieved the optimal baby weight at birth.

This conclusion was supported by the findings of the Pinar *et al.* (2018), which discovered that the newborns' Apgar scores were the same in both groups and that there were no statistically significant differences. The investigation done by Aly *et al.* (2022) on the impact of online prenatal education programs on pregnancy outcome, yielded no statistically significant differences in the weights of the newborns in the study and control groups; this supported this finding as well. The neonates' weights ranged from 2500 to 3500 gm. As this program focuses on normal labour education and pregnant women's self-efficacy rather than pregnancy weight and diet.

Limitation

A limited number of participants from the intervention group attended the initial class but did not continue to the subsequent sessions, potentially impacting the consistency of the intervention delivery. Some participants from both the intervention and control groups failed to notify the researcher during the onset of labour, which may have affected the accuracy and completeness of labour-related data collection. To address attrition and maintain the required sample size, participants who discontinued their involvement in the study were replaced with new recruits. While this ensured the sample size was preserved, it may have introduced variability in participant characteristics. A subset of participants in the intervention group expressed a desire to leave the class before its completion, which could have influenced their overall exposure to the intervention and, subsequently, the study outcomes.

CONCLUSION

According to this study, primigravida women who went to birthing classes (the study group) were more confident in their ability to regulate labour pain than those who did not (the control group). Furthermore, in contrast, primigravida women in the control group received standard medical care exclusively, while primigravida women in the study group who attended birthing sessions experienced improved birth outcomes. Further studies should be conducted in different hospitals and other governorates to confirm the importance, positive role, and strong influence of childbirth preparation classes in increasing the number of normal deliveries and positive pregnancy outcomes. All healthcare teams should educate this class and its information to teach it to all pregnant women. Nurses play a crucial role in facilitating childbirth preparation classes, providing women with essential knowledge and skills to enhance their self-efficacy in managing labour. By offering guidance, emotional support, and evidence-based education, nurses contribute to improved pregnancy outcomes and empowered decision-making.

Recommendation

The recommendations have been made in the light of the current study's results:

Based on the findings of this study, it is recommended that birth preparation classes be integrated into all prenatal clinics to improve self-efficacy of women in managing labour pain, ultimately enhancing the quality and outcomes of childbirth. Additionally, providing educational materials, such as posters and pamphlets, outlining simple labour pain management strategies would be beneficial, particularly for primigravida women in outpatient settings. To strengthen the generalizability of the results, it is also suggested that the study be replicated across multiple maternity clinics with a larger, more representative probability sample.

Conflict of Interest

The authors declare that they have no competing interests.

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