

# Embracing Motherhood: Impact of Nurse Led Fear and Apprehension Related to Labour or Childbirth Improving Intervention (FALCI) in Reducing Childbirth Fear Among Pregnant Women

Shivangi Mudgal; M.Sc.<sup>1</sup>, Naseema Shafqat; Ph.D.<sup>1</sup>, Geeta Bhardwaj; Ph.D.<sup>1</sup>,  
Arun Kumar Dora; M.D.<sup>2</sup>

1 Department of Obstetrics and Gynaecological Nursing College, AIIMS Bhopal, Madhya Pradesh, India

2 Department of Obstetrics and Gynaecology, AIIMS Bhopal, Madhya Pradesh, India

Received September 2023; Revised and accepted November 2023

## Abstract

**Objective:** Childbirth is a complex process with various dimensions including physical, psychological, emotional, social, and cultural aspects. The study intended to assess the effectiveness of Nurse led FALCI (Fear and Apprehension related to Labour or Childbirth Improving) Intervention in reducing childbirth fear among pregnant women.

**Materials and methods:** A quasi-experimental study was conducted among 115 pregnant women (selected through purposive sampling) at antenatal OPD of tertiary care hospital of Bhopal. Data was collected using Wijma Delivery Expectancy Questionnaire (DEQ) and self-structured questionnaire on socio-demographic and clinical variables. The intervention (FALCI) was carried out in two phases, each lasting for 30 minutes conducted at week 3-4 and week 5-6 and information booklet was provided for reinforcement. The data was analysed using two-way repeated measures mixed ANOVA (within group and between groups).

**Results:** Findings revealed that most of the pregnant women in both experimental (68.5%) and control (90.2%) group had high level of childbirth fear. Post-intervention data revealed mean of pretest, posttest 1 and posttest 2 were 73.85, 46.94 and 37.90 in experimental group and the mean of pretest, posttest 1 and posttest 2 were 75.49, 72.59 and 72.67 in control group respectively and found that there is significant difference in childbirth fear (within group, F value=114.69,  $p < 0.001$  in experimental group and  $F = 0.575$ ,  $p = 0.564$  in control group) and between groups (F value= 81.52, p value  $< 0.001$ ). However, no significant association was found between childbirth fear and sociodemographic/clinical variables.

**Conclusion:** The study findings revealed that Nurse led FALCI intervention was effective in reducing childbirth fear among the pregnant women and it is recommended that such intervention must be planned at all levels and implemented as routine protocol in maternity services.

**Keywords:** Childbirth Apprehension; Childbirth Fear; Fear and Apprehension Related to Labour or Childbirth Improving; Pregnant Women; Tokophobia; Wijma Delivery Expectancy Questionnaire

## Introduction

Childbearing is a significant milestone in a woman's

life, encompassing various dimensions such as physical, psychological, emotional, social, and cultural aspects. Each woman's childbirth experience is unique, influenced by her social background. While childbirth can bring joy, it can also be accompanied

## Correspondence:

Dr. Naseema Shafqat

Email: [naseema.nursing@aiimsbhopal.edu.in](mailto:naseema.nursing@aiimsbhopal.edu.in)



Copyright © 2023 Tehran University of Medical Sciences. Published by Tehran University of Medical Sciences.

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license (<https://creativecommons.org/licenses/by-nc/4.0/>).

Noncommercial uses of the work are permitted, provided the original work is properly cited.

by apprehension and fear. Even women who desperately desire to have a baby or conceive often harbour fear related to childbirth, which is a commonly overlooked aspect among pregnant women. Childbirth fear refers to the feelings of uncertainty and anxiety surrounding pregnancy and impending childbirth (1). It encompasses a range of concerns, including fear of pain, complications, loss of control, and perceived inadequacy in coping with the birthing process (2, 3).

Unfortunately, the fear of childbirth is a critical health concern for expectant mothers and their caregivers. It can lead to stress symptoms, a desire to avoid pregnancy and labor, requests for cesarean sections, and other adverse consequences (4). This fear can manifest as stress symptoms, aversion to pregnancy and childbirth, and even requests for unnecessary medical interventions such as cesarean sections (5). Studies have shown that approximately 20% of childbearing women report high levels of childbirth fear, which can be influenced by personal and external factors such as anxious personality traits, history of sexual abuse, past traumatic birth experiences, or traumatic encounters within the healthcare system. Researches also noted that 78% women expressed fear related to pregnancy or childbirth which are associated with various factors such as undesirable mood, negative stories told by friends, family or others, distressing information, some diseases/disorders related to mother and baby, while in multipara, negative experiences of previous pregnancy, childbirth, and the health of the baby are the most common reasons for childbirth fear (6-8).

Despite the alarming prevalence of childbirth fear, there remains a relative lack of well-designed interventions aimed at reducing childbirth fear, supporting normal birth, and improving overall birth experiences. Insufficient knowledge about pregnancy complications and worries about potential adverse outcomes for the baby contribute to childbirth fear (9, 10). Educating women during antenatal visits about possible complications and their associated signs can help boost the confidence of pregnant women. Consequently, there is a pressing need for targeted interventions to alleviate apprehension and concerns related to childbirth, ultimately leading to improved birth outcomes (11).

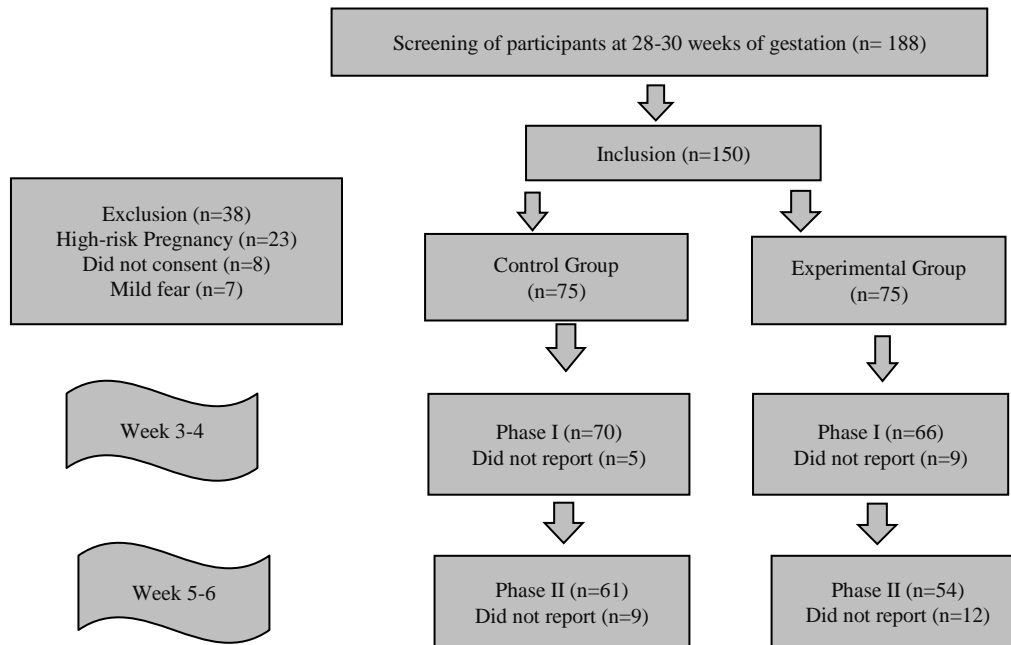
In light of this, the present study aims to evaluate the effectiveness of a nurse-led intervention, known as the Fear and Apprehension related to Labour or Childbirth Improving (FALCI) Intervention, in

reducing childbirth fear among pregnant women. The FALCI Intervention entails comprehensive antenatal education, personalized counselling, and the provision of coping mechanisms to alleviate fear and anxiety related to childbirth. By addressing childbirth fear through a nurse-led approach, this research seeks to empower pregnant women and equip them with the necessary knowledge and tools to navigate the birthing process confidently. The study aims to contribute valuable insights to the existing body of knowledge and inform future interventions aimed at reducing childbirth fear and foster a nurturing and supportive environment conducive to positive birth outcomes and maternal well-being (11-13).

## **Materials and methods**

Quasi-experimental research with a pretest-posttest non-equivalent group design was conducted at Antenatal OPDs of the tertiary care hospital of Bhopal. Pregnant women attending the Antenatal OPDs at AIIMS Bhopal were included in the study if they met the following criteria: aged between 18 to 40 years, completed 28 to 30 weeks of gestation with a single live fetus, had the ability to understand, speak, read, and write in Hindi and/or English languages, and scored >37 on the Wijma Delivery Expectancy Questionnaire. High-risk pregnant women with high risk pregnancy, those unable to spare extra time at the OPDs and those unavailable during data collection period were excluded. Ethical clearance for the study was obtained from the IHEC-PGR, AIIMS Bhopal (LOP Ref. Number: IHEC-PGR/2021/MSc Nursing/July/25 dated 23rd February 2022). Informed consent was obtained from all participants after providing detailed information about the study. The sample size was calculated based on a significance level of 5% and a power of 80%. A total of 188 participants were initially screened, out of which 157 pregnant women provided informed consent and completed a pre-test. Seven participants reported mild fear and were subsequently excluded from the study. Ultimately, 150 participants (75 in each group) were included and allocated to the experimental and control groups. During Phase II of the intervention, 115 participants completed the study (54 in the experimental group and 61 in the control group). Refer to Figure 1 for a visual representation of participant enrolment and allocation.

The intervention was conducted in two phases, each lasting for 30 minutes. Phase I took place at weeks 3-4 after the pre-test, while Phase II occurred at weeks 5-6.



**Figure 1:** Sample recruitment process

An information booklet was provided for reinforcement. During Phase I, antenatal education was delivered using various teaching methods. The content covered topics such as pregnancy, changes during pregnancy, normal labor, differentiation between true and false labor pain, an overview of labor stages, preparation for labor, and non-pharmacological methods of pain relief. The researcher used slide presentations, lectures, and group discussions to explain the content, followed by distribution of an information booklet with detailed information. Feedback was obtained, and participant doubts were clarified at the end of Phase I. Phase II focused on addressing childbirth fear and providing measures to reduce it. The teaching included education on the causes of fear and how to cope with it, along with a demonstration of breathing techniques and relaxation exercises. The researcher conducted a follow-up session with the participants at 34-36 weeks of gestation (near term) and collected post-interventional data.

Data analysis was performed using SPSS Version 20. The normality of the data was assessed using the Kolmogorov-Smirnov test and Shapiro-Wilk test. Descriptive statistics were generated for all socio-demographic and clinical variables, presenting the frequency and percentage in tabulated form, as well as tables, graphs, and figures. The effectiveness of the Nurse-led FALCI intervention in reducing

childbirth fear among pregnant women was determined using two-way repeated measures mixed ANOVA, with an alpha level of 0.05.

## Results

**Participant Characteristics:** Table 1 provides a summary of the participant characteristics. In the experimental group, most 87% (47) of the pregnant women and 90.2% (55) in the control group were between the ages of 21-30 years. The majority 42.6% (23) of participants in the experimental group, and 31.1% (19) in the control group, had a graduate-level education or above. In terms of employment status, mostly 90.7% (49) of women in the experimental group and 90.2% (55) in the control group were unemployed. Out of the total 115 pregnant women, most 96.3% (52) in the experimental group and 95.1% (58) in the control group were multigravida and preferred vaginal delivery.

**Level of Childbirth Fear:** Figure 2 presents an overview of the level of childbirth fear among pregnant women. The results indicate that a majority of participants, 68.5% (37) in the experimental group and 90.2% (55) in the control group, reported high levels of childbirth fear.

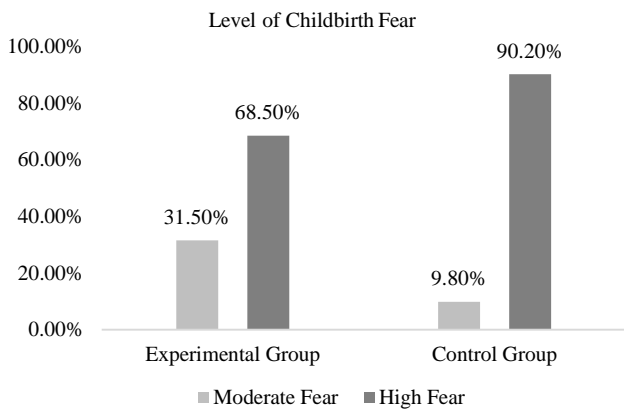
**Effectiveness of Nurse-led Intervention:** Table 2 shows the scores for childbirth fear before and after the intervention, as assessed through two-way repeated measures mixed ANOVA.

**Table 1:** Information on Sample characteristics (f= Frequency, %= Percentage)

Variables		Experimental group		Control group	
		f	%	f	%
<b>Socio-Demographic Variables</b>					
Age (in years)	<20	2	3.7	5	8.2
	21-30	47	87	55	90.2
	31-40	5	9.3	1	1.6
	>40	0	0	0	0
Religion	Hindu	49	90.7	55	90.2
	Muslim	5	9.3	6	9.8
	Christian	0	0	0	0
	Sikh	0	0	0	0
	Others	0	0	0	0
Educational Qualification	No formal education	4	7.4	6	9.8
	Primary School	5	9.3	5	8.2
	Middle School	9	16.7	16	26.2
	High School	13	24.1	15	24.6
	Graduate and above	23	42.6	19	31.1
Educational Qualification of the husband	No formal education	3	5.6	5	8.2
	Primary School	4	7.4	3	4.9
	Middle School	6	11.1	5	8.2
	High School	22	40.7	26	42.6
	Graduate and above	19	35.2	22	36.1
Employment Status	Government Employee	0	0	0	0
	Private Employee	5	9.3	6	9.8
	Self Employed	0	0	0	0
	Unemployed	49	90.7	55	90.2
Employment Status of the husband	Government Employee	3	5.6	1	1.6
	Private Employee	27	50.0	32	52.5
	Self Employed	20	37.0	24	39.3
	Unemployed	4	7.4	4	6.6
Type of family	Nuclear family	31	57.4	36	59.0
	Joint family	23	42.6	25	41.0
	Extended family	0	0	0	0
Distance from home to nearby facility where they prefer to/may have to deliver	Less than 5 km	35	64.8	43	70.5
	5-15 km	11	20.4	12	19.7
	16-25 km	0	0	0	0
	More than 25 km	8	14.8	6	9.8
Monthly family income (in rupees)	Less than 20,000	34	63.0	36	59.0
	20,001-35,000	12	22.2	19	31.1
	35,001-50,000	5	9.3	2	3.3
	More than 50,000	3	5.6	4	6.6
<b>Clinical Variables</b>					
Gravida	Primigravida	2	3.7	3	4.9
	Multigravida	52	96.3	58	95.1
If multigravida, place of last delivery	At home	1	1.9	1	1.6
	Primary care facility	1	1.9	3	4.9
	Secondary care facility	22	40.7	28	45.9
	Tertiary care facility	28	51.9	26	42.6
Parity	Nulliparous	2	3.7	3	4.9
	Primiparous	48	88.9	55	90.2
	Multiparous	4	7.4	3	4.9

**Table 1:** Information on Sample characteristics (f= Frequency, %= Percentage) (continue)

Variables		Experimental group		Control group	
		f	%	f	%
History of previous abortions	No	51	94.4	58	95.1
	Yes	3	5.6	3	4.9
Type of pregnancy	Planned pregnancy	47	87.0	55	90.2
	Unplanned pregnancy	7	13.0	6	9.8
Preferred mode of delivery	Vaginal delivery	52	96.3	58	95.1
	Operative delivery	2	3.7	3	4.9
Any family member in health care profession	No	53	98.1	60	98.4
	Yes	1	1.9	1	1.6
Any information regarding Antenatal care, pregnancy and childbirth	No	14	25.9	19	31.1
	Yes	40	74.1	42	68.9
Accompany during childbirth	Husband	14	25.9	19	31.1
	Friends	2	3.7	2	3.3
	Support groups	0	0	0	0
	Any female in the family	38	70.4	40	65.6



**Figure 2:** Level of childbirth fear

The mean scores of pre-test, post-test 1 and post-test 2 were 73.85, 46.94 and 37.90 in experimental group, while in the control group, the mean scores were 75.49, 72.59 and 72.67 which was depicting no significant difference in level of childbirth fear in control group.

Within the experimental group, a significant difference in childbirth fear scores was observed before and after the intervention (within group,

F- value is 114.69,  $p < 0.001$ ). However, within the control group, no significant difference was found (within group, F- value is 0.575,  $p = 0.564$ ). The F value between the groups is 81.52,  $p < 0.001$ . These findings suggest that the Nurse-led FALCI intervention was effective in reducing childbirth fear among pregnant women.

**Association of childbirth fear with Sociodemographic and Clinical Variables:** Table 3 presents the association between childbirth fear and selected sociodemographic and clinical variables. Fisher’s exact test was carried out to identify factors associated with childbirth fear which showed both sociodemographic variables and clinical variables were not significantly associated with childbirth fear as  $p > 0.05$  which may be attributed to the non-normal distribution of the collected data. The pre-test scoring of childbirth fear with sociodemographic variables through Fisher’s exact test (age,  $p = 0.146$ ; educational qualification,  $p = 1.000$ ; employment status,  $p = 0.117$ ; type of family,  $p = 0.345$ ) and with clinical variables (gravidia,  $p = 1.000$ ; parity,  $p = 0.513$ ; type of pregnancy,  $p = 0.132$ ; preferred mode of delivery,  $p = 1.000$ ).

**Table 2:** Comparison of mean childbirth fear score

Groups	Time points	Mean	SD	Within groups comparison	Between groups comparison
				F value, (p value)	F value (p value)
Experimental Group	Pretest	73.85	7.10	114.69, ( $p < 0.001^*$ )	81.52 ( $p < 0.001^*$ )
	Posttest 1	46.94	16.60		
	Posttest 2	37.90	12.47		
Control Group	Pretest	75.49	6.14	0.575, ( $p = 0.564$ )	
	Posttest 1	72.59	8.44		
	Posttest 2	72.67	12.13		

SD= Standard Deviation

**Table 3:** Association of childbirth fear scoring with socio-demographic and clinical variables

S.NO	Variables	Wijma-DEQ Pre-test scoring			
		Moderate Fear	High Fear	Fishers Exact test p value	
<b>Socio-Demographic Variables</b>					
1.	Age (in years)	<20	1	6	0.146
		21-30	19	83	
		31-40	3	3	
		>40	0	0	
2.	Religion	Hindu	20	84	0.458
		Muslim	3	8	
		Christian	0	0	
		Sikh	0	0	
		Others	0	0	
3.	Educational Qualification	No formal education	2	8	1.000
		Primary School	2	8	
		Middle School	5	20	
		High School	6	22	
		Graduate and above	8	34	
4.	Educational Qualification of the husband	No formal education	2	6	0.808
		Primary School	2	5	
		Middle School	3	8	
		High School	9	39	
		Graduate and above	7	34	
5.	Employment Status	Government Employee	0	0	0.117
		Private Employee	0	11	
		Self Employed	0	0	
		Unemployed	23	81	
6.	Employment Status of the husband	Government Employee	2	2	0.353
		Private Employee	10	49	
		Self Employed	9	35	
		Unemployed	2	6	
7.	Type of family	Nuclear family	11	56	0.345
		Joint family	12	36	
		Extended family	0	0	
8.	Distance from home to nearby facility where they prefer to/may have to deliver	Less than 5 km	17	61	0.767
		5-15 km	3	20	
		16-25 km	0	5	
		More than 25 km	3	11	
9.	Monthly family income (in rupees)	Less than 20,000	21	77	0.365
		20,001-35,000	7	25	
		35,001-50,000	3	7	
		More than 50,000	0	10	
<b>Clinical Variables</b>					
10.	Gravida	Primigravida	1	4	1.000
		Multigravida	22	88	
11.	If multigravida, place of last delivery	At home	0	2	0.939
		Primary care facility	0	4	
		Secondary care facility	10	40	
		Tertiary care facility	12	42	
12.	Parity	Nulliparous	1	4	0.513
		Primiparous	22	81	
		Multiparous	0	7	



**Table 3:** Association of childbirth fear scoring with socio-demographic and clinical variables (continue)

S.NO	Variables		Wijma-DEQ Pre-test scoring		
			Moderate Fear	High Fear	Fishers Exact test p value
13.	History of previous abortions	No	22	87	0.655
		Yes	1	5	
14.	Type of pregnancy	Planned pregnancy	18	84	0.132
		Unplanned pregnancy	5	8	
15.	Preferred mode of delivery	Vaginal delivery	22	88	1.000
		Operative delivery	1	4	
16.	Any family member in health care profession	No	22	91	0.361
		Yes	1	1	
17.	Any information regarding Antenatal care, pregnancy and childbirth	No	8	25	0.454
		Yes	15	67	
18.	Accompany during childbirth	Husband	6	27	1.000
		Friends	1	3	
		Support groups	0	0	
		Any female in the family	16	62	

## Discussion

The present study aimed to assess the effectiveness of Nurse-led FALCI in reducing childbirth fear among pregnant women. The findings of the study demonstrated that the intervention was effective in reducing childbirth fear. Additionally, the study explored the sociodemographic and clinical characteristics of the participants and their association with childbirth fear. These findings are discussed in the context of existing literature.

The demographic characteristics of the participants in this study align with previous research conducted in various countries. Similar to findings of a cross-sectional study in China where a significant number of pregnant women were in the age group of 21-30 years, had higher education levels, and were unemployed (14). A descriptive study in Trabzon, Turkey, also revealed comparable findings, with a majority of pregnant women in the age group of 26-35 years, unemployed, and belonging to nuclear families (15). Another study conducted in Ethiopia showed similar trends, with the majority of women being between 18-35 years old and married (16).

Our findings are in line with the outcome of other cross-sectional study conducted among Italian primiparous pregnant women with participant's mean age was 34.4 years, having a high level of education (being graduate or postgraduate specialization) (17). Similar findings are reported in a descriptive correlational design at Al-Nasiriya city, Pakistan that revealed pregnant women have an average age of 30 years (18). The findings of present study were also

consistent with outcome of an observational survey in Netherland which revealed that maternal age lies in 28-33 years with high educational level (71.7%) and most of them had planned pregnancy (66.5%) (19).

On the other hand, contradictory findings were suggested from a cross-sectional study conducted in Malawi among 152 pregnant women that revealed majority of pregnant women were having primary school education (65.1%) and were employed (84.2%). It also revealed that most of the pregnant women were multiparous (80.3%) which was contradictory with our present study but preferred normal vaginal delivery (95.4%) (2). These findings indicate that the characteristics of the participants in this study are consistent with those reported in previous studies, suggesting that the sample represents a typical population of pregnant women.

**Level of childbirth fear:** The assessment of childbirth fear using the Wijma-Delivery Expectancy Questionnaire Version A revealed that a significant proportion of pregnant women in both the experimental and control groups experienced moderate to high levels of fear corresponding to the findings of a cross-sectional study in Malawi, which reported that a majority of pregnant women had moderate levels of fear (2). Similarly, a descriptive study in Trabzon, Turkey, found varying levels of fear among pregnant women, with a considerable percentage experiencing severe/clinical levels of fear (15). Likewise, a descriptive study conducted at antenatal clinics in 5 primary health care centres in Port Said city among 200 pregnant women reveals

that more than half of the women had high levels of childbirth fear of using Wijma-DEQ (20).

The positive aspect of the study was that most findings were similar to other study findings such as descriptive correlational design at AL-Nasiriya city, Pakistan showed that vast majority were having high level of childbirth fear (18). Consistently, the findings of cross-sectional study conducted at Ethiopia depicted that 10.3% had low degree fear, 39.8% had moderate fear, 25.3% had high degree fear and 24.55 had severe degree of childbirth fear using Wijma-DEQ (21). One more similar study conducted at Siriraj hospital, Thai revealed that the prevalence of low, moderate, high, and severe FOC using Thai version of Wijma DEQ were 18.4%, 64.9%, 16.1%, and 0.7%, respectively (22).

The results of above studies portray that maximum number of pregnant women were having moderate and high fear using Wijma DEQ version A. It is discussed here that childbirth fear is common in both primigravida and multigravida irrespective of gravidity. The psychological aspect of normal physiological birth process is somewhere often neglected due to central line of focus on the physical aspects. These findings indicate that childbirth fear is a common concern among pregnant women and further emphasize the need for interventions to address this issue (23-26).

***Effectiveness of Nurse led intervention in reducing childbirth fear:*** The effectiveness of the Nurse-led FALCI intervention in reducing childbirth fear was demonstrated through statistical analysis. Two-way repeated measures mixed ANOVA revealed a significant difference in childbirth fear scores before and after the intervention in the experimental group, while no significant difference was observed in the control group. This suggests that the intervention had a positive impact on reducing childbirth fear among pregnant women. These findings are consistent with the results of previous studies that evaluated the effects of antenatal education and counselling on childbirth fear. For instance the findings of a quasi-experimental study in Turkey on the effect of antenatal education on childbirth fear, maternal self-efficacy and post-traumatic stress disorder found that the group who received antenatal education had greater self-efficacy, greater perceived support and control in birth as well as less fear of birth following childbirth ( $p < 0.05$ ) (27). Consistent to the results of a pilot project in Queensland, Australia among 1200 pregnant women

with high childbirth fear, which revealed that the intervention Birth Emotions - Looking to Improve Expectant Fear was helpful in reducing women's childbirth fear (28). Similar findings were noted in another study on sixty-three pregnant women with eight weeks of antenatal education reduced the childbirth fear (29).

The findings of above studies conclude that the pregnant women who received antenatal education or midwife led educational material on childbirth preparation was effective in reducing childbirth fear, maternal self-efficacy (30-32). There is need of simple interventions on routine basis for the pregnant women including their comfort. It is also concerned that intervention does not seem to harm the physiological birth process but to make the normality in birth process. The findings collectively highlight the importance of incorporating antenatal education as a routine practice to alleviate childbirth fear and enhance maternal self-efficacy (33-35).

Although no significant associations were found between sociodemographic/clinical variables and the level of childbirth fear in this study, contradictory findings have been reported in other studies. A cross-sectional study in Malawi identified factors such as illiteracy, unemployment, and lack of social support to be significantly associated with higher levels of fear (2). These inconsistencies may be attributed to differences in sample characteristics, cultural factors, or measurement instruments used to assess childbirth fear (36, 37).

One limitation of this study is the lack of randomization, as time constraints and participants' unwillingness to spend extra time in antenatal OPD hindered the random allocation of participants. Additionally, the study did not include high-risk or critically ill pregnant women due to ethical concerns and emerging complications. Future research could address these limitations by implementing randomization techniques and considering a broader range of participants.

## **Conclusion**

In conclusion, the findings of the present study revealed that childbirth fear and apprehension among pregnant women is a health concern which may have impact on birth outcomes. Hence, there is a need to administer nurse led intervention so as to reduce childbirth fear in form of childbirth preparation. Considering the childbirth fear as a prevailing concern among pregnant women, the assessment of



level of childbirth fear revealed that moderate and high childbirth fear was found using standardized tool Wijma DEQ-A. This study highlights the effectiveness of Nurse-led FALCI in reducing childbirth fear among pregnant women. The pregnant women with moderate and high childbirth fear received nurse led intervention FALCI and present study findings illustrated that there is significant difference in childbirth fear among pregnant women after implementing Nurse led FALCI (within group and between the group). The findings align with previous research, emphasizing the need for routine antenatal education to address childbirth fear and enhance maternal well-being. The study contributes to the existing literature on childbirth fear and provides insights into the sociodemographic and clinical characteristics associated with fear. Further research is recommended to explore additional factors that may influence childbirth fear and to evaluate the long-term effects of interventions on maternal and neonatal outcomes.

### Conflict of Interests

Authors declare no conflict of interests.

### Acknowledgments

Special thanks to all the participants and the faculty and staff of OBG department, AIIMS Bhopal.

All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Self-funded by researchers. This research did not receive any specific grant from funding agencies in the public, commercial or not for profit sectors.

### References

- Munkhondya BMJ, Munkhondya TE, Msiska G, Kabuluzi E, Yao J, Wang H. A qualitative study of childbirth fear and preparation among primigravid women: The blind spot of antenatal care in Lilongwe, Malawi. *Int J Nurs Sci*. 2020;7(3):303-312.
- Khwepeya M, Lee GT, Chen SR, Kuo SY. Childbirth fear and related factors among pregnant and postpartum women in Malawi. *BMC Pregnancy Childbirth*. 2018;18(1):391.
- O'Connell MA, Leahy-Warren P, Khashan AS, Kenny LC, O'Neill SM. Worldwide prevalence of tocophobia in pregnant women: systematic review and meta-analysis. *Acta Obstet Gynecol Scand*. 2017;96(8):907-920.
- Eriksson C, Westman G, Hamberg K. Content of childbirth-related fear in Swedish women and men—analysis of an open-ended question. *J Midwifery Womens Health*. 2006;51(2):112-8.
- Saisto T, Halmesmäki E. Fear of childbirth: a neglected dilemma. *Acta Obstet Gynecol Scand*. 2003;82(3):201-8.
- Melender HL, Lauri S. Fears associated with pregnancy and childbirth—experiences of women who have recently given birth. *Midwifery*. 1999;15(3):177-82.
- Aksoy AN, Ozkan H, Gundogdu G. Fear of childbirth in women with normal pregnancy evolution. *Clin Exp Obstet Gynecol*. 2015;42(2):179-83.
- Nilsson C, Lundgren I, Karlström A, Hildingsson I. Self reported fear of childbirth and its association with women's birth experience and mode of delivery: a longitudinal population-based study. *Women Birth*. 2012;25(3):114-21.
- Sharma B, Jungari S, Lawange A. Factors Affecting Fear of Childbirth Among Urban Women in India: A Qualitative Study. *SAGE Open*. 2022;12(2): <https://doi.org/10.1177/21582440221089485>
- Runnals JJ, Vrana SR. Fear of Childbirth in Pregnant Women in the United States *Journal of pregnancy and reproduction*. 2018;2(2): 1-5. doi:10.15761/JPR.1000135. Available from: <https://www.oatext.com/fear-of-childbirth-in-pregnant-women-in-the-united-states.php>
- Bakhteh A, Jaberghaderi N, Rezaei M, Naghibzadeh ZA, Kolivand M, Motaghi Z. The effect of interventions in alleviating fear of childbirth in pregnant women: a systematic review. *J Reprod Infant Psychol*. 2022 ;18:1-17.
- Souto SPAD, Silva RCGD, Prata AP, Guerra MJ, Couto C, Albuquerque RS. Midwives' interventions for reducing fear of childbirth in pregnant women: a scoping review. *JBIM Evid Synth*. 2022;20(12):2867-2935.
- Kananikandeh S, Amin Shokravi F, Mirghafourvand M, Jahanfar S. Factors of the childbirth fear among nulliparous women in Iran. *BMC Pregnancy Childbirth*. 2022;22(1):547.
- Zhou X, Liu H, Li X, Zhang S. Fear of Childbirth and Associated Risk Factors in Healthy Pregnant Women in Northwest of China: A Cross-Sectional Study. *Psychol Res Behav Manag*. 2021 Jun 9;14:731-741.
- Erkaya R, Karabulutlu Ö, Çalık KY. Defining Childbirth Fear and Anxiety Levels in Pregnant Women. *Procedia - Social and Behavioral Sciences*. 2017;237:1045–52.
- Dereje A, Dheresa M, Desalew A, Tura AK. Fear of childbirth among pregnant women in Eastern Ethiopia: A community-based study. *Midwifery*. 2023 Jan;116:103515.
- Molgora S, Fenaroli V, Prino LE, Rollè L, Sechi C,

- Trovato A, Vismara L, Volpi B, Brustia P, Lucarelli L, Tambelli R, Saita E. Fear of childbirth in primiparous Italian pregnant women: The role of anxiety, depression, and couple adjustment. *Women Birth*. 2018;31(2): 117-123.
18. Mahnoosh HA, Fadhil SN. Assessment of Childbirth Fear Associated with Childbirth Satisfaction among Pregnant Women in Al-Nasiriyah City. *Pakistan Journal of Medical and Health Sciences*. 2022;16(3):1004-7.
19. Hendrix YMGA, Baas MAM, Vanhommerig JW, de Jongh A, Van Pampus MG. Fear of Childbirth in Nulliparous Women. *Front Psychol*. 2022;13:923819.
20. Nasr EH, Alshehri N, Almutairi MA, Abd Elmenim FM. Fear from Childbirth among Pregnant Women. *Open Access Library Journal*. 2020;07(07):1-13. doi: 10.4236/oalib.1106427.
21. Gelaw T, Ketema TG, Beyene K, Gurara MK, Ukke GG. Fear of childbirth among pregnant women attending antenatal care in Arba Minch town, southern Ethiopia: a cross-sectional study. *BMC Pregnancy and Childbirth*. 2020;20(1):672.
22. Ölmez F, Oğlak SC. The Prevalence and Associated Factors of Fear of Childbirth among Pregnant Adolescents in Turkey: A Cross-Sectional Study. *Journal of Clinical Obstetrics & Gynecology*. 2021;31(4):103-10.
23. Halperin O. Women's Perspectives of Childbirth in Kiboga, Uganda. *J Obstet Gynecol Neonatal Nurs*. 2021;50(3):300-306.
24. Toker E, Aktaş S. The childbirth experiences of Syrian refugee mothers living in Turkey: a qualitative study. *J Reprod Infant Psychol*. 2021;39(5):544-560.
25. Olza I, Uvnas-Moberg K, Ekström-Bergström A, Leahy-Warren P, Karlsdottir SI, Nieuwenhuijze M, et al. Birth as a neuro-psycho-social event: An integrative model of maternal experiences and their relation to neurohormonal events during childbirth. *PLoS One*. 2020;15(7):e0230992.
26. Chabbert M, Panagiotou D, Wendland J. Predictive factors of women's subjective perception of childbirth experience: a systematic review of the literature. *J Reprod Infant Psychol*. 2021;39(1):43-66.
27. Gökçe İsbir G, İnci F, Önal H, Yıldız PD. The effects of antenatal education on fear of childbirth, maternal self-efficacy and post-traumatic stress disorder (PTSD) symptoms following childbirth: an experimental study. *Appl Nurs Res*. 2016;32:227-232.
28. Fenwick J, Gamble J, Creedy DK, Buist A, Turkstra E, Sneddon A, et al. Study protocol for reducing childbirth fear: a midwife-led psycho-education intervention. *BMC Pregnancy and Childbirth*. 2013;13(1).
29. Serçekuş P, Başkale H. Effects of antenatal education on fear of childbirth, maternal self-efficacy and parental attachment. *Midwifery*. 2016;34:166-172.
30. Karabulut Ö, Coşkuner Potur D, Doğan Merih Y, Cebeci Mutlu S, Demirci N. Does antenatal education reduce fear of childbirth? *Int Nurs Rev*. 2016;63(1):60-7.
31. Johnson AR, Kumar G M, Jacob R, Jessie MA, Mary F, Agrawal T, et al. Fear of Childbirth among Pregnant Women Availing Antenatal Services in a Maternity Hospital in Rural Karnataka. *Indian Journal of Psychological Medicine*. 2019;41(4):318-22.
32. Saisto T, Salmela-Aro K, Nurmi JE, Könönen T, Halmesmäki E. A randomized controlled trial of intervention in fear of childbirth. *Obstet Gynecol*. 2001;98(5 Pt 1):820-6.
33. Moghaddam Hosseini V, Nazarzadeh M, Jahanfar S. Interventions for reducing fear of childbirth: A systematic review and meta-analysis of clinical trials. *Women Birth*. 2018;31(4):254-262.
34. Webb R, Bond R, Romero-Gonzalez B, Mycroft R, Ayers S. Interventions to treat fear of childbirth in pregnancy: a systematic review and meta-analysis. *Psychological Medicine*. 2021;1-14.
35. Mousavi SR, Amiri-Farahani L, Haghani S, Pezaro S. Comparing the effect of childbirth preparation courses delivered both in-person and via social media on pregnancy experience, fear of childbirth, birth preference and mode of birth in pregnant Iranian women: A quasi-experimental study. *PLoS One*. 2022;17(8):e0272613.
36. Huang J, Huang J, Li Y, Liao B. The prevalence and predictors of fear of childbirth among pregnant Chinese women: a hierarchical regression analysis. *BMC Pregnancy and Childbirth*. 2021;21(1).
37. Berhanu RD, Abathun AD, Negessa EH, Amosa LG. The magnitude and associated factors of childbirth fear among pregnant women attending antenatal care at public hospitals in Ethiopia: a cross-sectional study. *BMC Pregnancy and Childbirth*. 2022;22(1).

**Citation:** Mudgal S, Shafqat N, Bhardwaj G, Dora AK. **Embracing Motherhood: Impact of Nurse Led Fear and Apprehension Related to Labour or Childbirth Improving Intervention (FALCI) in Reducing Childbirth Fear Among Pregnant Women.** *J Family Reprod Health* 2023; 17(4): 240-9.