The Effect of Training Based on Travelbee Human-Human Relations Model on Prenatal Attachment, Fear of Childbirth And Anxiety In Pregnant Women With Fear of Childbirth: A Randomized Controlled Trial

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ABSTRACT

PURPOSE: The aim of the research is to investigate the effect of education given according to the Travelbee's model on fear of birth, prenatal attachment and anxiety.

METHOD: This is a prospective, randomized controlled study. The study was conducted between June and August 2023. 62 pregnant women were included. Pregnant primiparous women who had fear of childbirth were selected for the training program. An 8-session of training program based on Travelbee's model was applied to the intervention group.

RESULTS: At the end of the training program, lower fear of childbirth, lower anxiety scores and higher prenatal attachment were detected in the intervention group. The results showed a statistically significant difference in the intervention group compared to the control group.

CONCLUSION: Birth preparation training prepared according to Travelbee's model is an effective method in reducing pregnant women's fear of childbirth and anxiety, also increases prenatal attachment level.

Keywords

Antenatal education, Anxiety, Fear of birth, Prenatal attachment, Travelbee human-to-human relations

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INTRODUCTION

As a human care science, nursing is among the professions where human-to-human relations are intense (Mc Crae, 2012). Professions providing healthcare services are founded on human relations, also the quality and effectiveness of care are directly related to the communication skills of the caregiver (Gray, 2009; Bezerra et al., 2015). According to Travelbee's theory, nursing is a person-to-person relationship-building process and has goals that take into consideration the uniqueness of those involved in human relationships. In this context, nurses help patients cope with their problems. Individuals develop their self-perceptions regarding their experiences, increase their individuality and allow them to confront self problems. The nurse should help the patients integrate socially and find meaning in their own illnesses (Bezerra et al., 2015, Parola et al., 2020). Travelbee states that nursing is carried out through person-to-person relationship. First stage of this relationship begins with the encounter between the nurse and the patient. The second stage is the emergence of identities where the nurse and the patient perceive each other's uniqueness. The third stage is the empathy stage, where the person shares his or her experiences. The fourth stage is the sympathy stage where the nurse determines the problems and seeks solutions. The last stage consists of the harmony stage where the nurse and the patient can talk about thoughts and feelings and approach each other with respect (Travelbee, 1963). It is stated that the human-human relationship model can be used in all areas of health where care is provided to help people. (Broca & Ferreira, 2015; Sosa et al., 2012). It has been found to have positive effects on improving interpersonal relationships and empathy between nurses and families (Jahuancama

Villagaray & Espinoza Moreno, 2017). Positive results were also obtained in interpersonal relations in a study conducted on elderly individuals (Lascano De la Torre & Cusme Torres, 2022). It has been observed that care plans made using the Travelbee model have produced effective results for children receiving hospital treatment. (Bezerra et al., 2015). One of the areas where the model can be used effectively is on pregnant women who have fear of childbirth.

Pregnancy is an experience with many dimensions and is unique to every woman. During this biological process, many physiological and psychological changes may occur. Although it is considered normal to feel some anxiety with these changes during pregnancy, it may also negatively affect the psychological resilience of the expectant mother and her adaptation to pregnancy (Kuo et al., 2022; Massae et al., 2022). Fear of childbirth is psychologically and socially affected by many factors such as lack of self-confidence towards birth, hearing negative birth stories, history of depression and anxiety, young maternal age, lack of social support, fear of birth pain and loss of control (O'Connell et al., 2021). Studies show that women with fear of childbirth often show symptoms of anxiety and 10-20% of pregnant women experience more symptoms of psychological strain during pregnancy more than expected (Lilliecreutz et al., 2021; Hildingsson & Rubertsson, 2022). There are studies in the literature supporting that mental disorders during pregnancy reduce mother-infant attachment (Yılmaz & Kızılkaya Beji, 2013; Özbek & Pınar, 2022). It is essential for nurses to be able to recognize situations such as fear of childbirth and anxiety and to plan appropriate training (Wan-Lin et al., 2018; Metinoğlu et al., 2021). Psychotherapy practices (Abdollahi et al., 2020), antenatal education programs (Çankaya & Şimşek, 2020), cognitive behavioral therapy practices (Poorjandaghi et al., 2022), psychoeducation (Yuen et al., 2022) and mindfulness (Zhang et al., 2019) applications are used to reduce fear of childbirth and stress and increase prenatal attachment. The education given to pregnant women by health professionals plays an

important role in coping with fear related to childbirth in the prenatal period. These trainings aim to prepare families for natural vaginal birth and to create a positive perception about birth, transition to parenthood, newborn care and parenthood (Wan-Lin et al., 2018; Metinoğlu et al., 2021). In the literature there seems to be no training given to pregnant women about Trabelbee's interpersonal relationship model.

The aim of this study is to measure the effectiveness of the psychoeducational intervention based on the nursing model on the fear of childbirth and anxiety problems experienced by pregnant women and to develop a model that predicts health-related quality of life improvements.

METHOD

The aim of this study is to examine the training given to pregnant women with fear of childbirth based on the Travelbee Human-Human Relations Model and to investigate the effects of the training on fear of childbirth, prenatal attachment and anxiety levels.

Study Design

The research was conducted as a prospective, randomized controlled study to examine the effect of training based on Travelbee’s model on fear of birth, prenatal attachment and anxiety in primiparous pregnant women with fear of birth. The trial was registered with ClinicalTrials.gov (NCT05969535).

The Institutional Review Board of the hospital where the study was conducted approved this study, and informed consent was obtained from all patients.

Participants

Pregnant women who attended routine pregnancy follow-up at the gynecology and obstetrics outpatient clinic of a hospital in Turkey between June and August 2023 were included. It was determined with the pre-evaluation form whether the pregnant women received medium or high scores on the Wijma birth expectation/experience scale version A (W-DEQ-A), which is the main parameter of the study, and whether they met the inclusion criteria. Written informed consent was obtained by contacting pregnant women who met the inclusion criteria of the study and agreed to participate in the study.

G*Power 3.1.9.7 package program was used in the sample size calculation. For the sample of the research, the results of the study conducted by Çankaya and Şimşek were taken as basis. It was decided to include 68 pregnant women in the sample, 34 in both groups. After pre-test survey forms were administered to pregnant women in the first training session, 4-week training program was applied to the intervention group on coping with the fear of birth and preparing for birth according to the Travelbee's model. The CONSORT flowchart for the research is shown in figure 1 (Fig 1).

Inclusion Criteria

The inclusion criteria for this study were being a primiparous woman with a gestational age between 20-34 weeks. Participants were required to be at least 18 years of age and capable of signing written informed consent. Other inclusion criteria were having a middle or higher score from W-DEQ-A, not having a risky pregnancy, and not having an indication for cesarean section.

Risky pregnant women were excluded from the study because they may have higher anxiety and fear levels and therefore may have difficulties in ensuring homogeneity during the adaptation period with other pregnant women.

Randomization

Stratified randomization technique was used to assign participants to groups. Stratification randomization technique was used to ensure homogeneity according to the data received from the pregnant women (educational status, age and level of fear of childbirth). In the application, pregnant women were stratified according to age (18-24 and 25 and above), education level (primary education + high school and university) and level of fear of birth (moderate level, severe level and clinical level). For the assignment of groups, random numbers were given to the pregnant women in the group in the stratification created by a person other than the researcher. With these numbers, assignments were made to the experimental and control groups using the website www.randomizer.org. After randomization, a comparison was made with the chi-square test in the experimental and control groups according to age, fear of birth and education level in order to verify the homogeneity within the group. It was determined that there was no statistically significant difference between the groups.

Implementation of the Training Program to the Intervention Group

During the preparation process of the training program, studies and training contents were examined to help primiparous women cope with fear of childbirth, to identify and reduce the negative emotional state caused by fear of childbirth, and to increase prenatal attachment (Firouzan et al., 2020; Lewis-Jones et al., 2023). The training content of the study was created in line with the five stages of the Travelbee model. While creating these stages, psychoeducational approaches were examined in line with the literature. In the training content, awareness of dysfunctional thoughts, asking questions, awareness of automatic thoughts, homework and feedback techniques were examined and used (Ricchi et al., 2020; Metinoğlu et al., 2021). The Travelbee Human-Human Relations Model-Based Training Program to Reduce Fear and Anxiety of Childbirth and Increase Prenatal Attachment was applied to women at 20

and 34 weeks of pregnancy twice a week for four weeks. During the application, pregnant women were divided into three groups (N1=10, N2=11, N3=11). Training was planned for each group on specific days and times (N1= Monday-Wednesday Time: 10.00, N2: Monday-Wednesday Time: 14.00, N3= Tuesday-Friday Time: 13.00). Trainings were provided by two researchers in the pregnant education school. One researcher participated as an educator and one researcher participated as an observer. Each training session varied between 60 to 90 minutes. Participation was carried out entirely on a voluntary basis by pregnant women. No incentive payment was provided. After the data was collected at the end of the study, the same training was carried out for the pregnant women in the control group. (Table 1).

Control Group

The control group received no intervention other than routine pregnancy checks. The control group was also not included in the routine prenatal education provided by the hospital where the study was conducted. After the study was completed, the control group members were included in the routine prenatal education provided by the hospital.

Data Collection

At the first interview, a personal information form was applied to determine the socio-demographic characteristics (age, education and income level) and obstetric characteristics (gestational week, information about birth, voluntary pregnancy) of the pregnant women.

Wijma Birth Expectation/Experience Questionnaire Version-A was applied to determine the childbirth fear. W-DEQ-A, which was used in the research and validated in Turkish, consists of 33 items. It is a six-point Likert type scale and is scored between 0 and 5. Zero means “completely” and five means “none”. A minimum of 0 and a maximum of 165 points are received from the survey. A high total score indicates a high level of fear. The Cronbach's alpha

coefficient of the survey was found to be 0.95 for primiparous pregnant women (Körükçü et al., 2012).

Prenatal Attachment Inventory (PAI) was developed to explain the thoughts and feelings experienced by pregnant women and to determine the mother-infant attachment levels. Validity and reliability were conducted by Yılmaz and Beji in 2013. The inventory is applied to pregnant women at 20-40 weeks of gestation. The scale consists of 21 items. A minimum of 21 and a maximum of 84 points can be obtained from the scale. As the score increases, the level of attachment to the baby also increases (Yılmaz & Kızılkaya Beji, 2013). Cronbach Alpha reliability coefficient was found to be 0.86.

Beck Anxiety Inventory (BAI) was developed to measure anxiety symptoms and reveal the cognitive aspects of anxiety. Turkish validity and reliability studies of the scale were conducted by Ulusoy et al. It is a four-point Likert-type scale consisting of 21 items and scored between 0-3. The lowest score on the scale is 0 and the highest score is 63. 13 items evaluate physiological symptoms, 5 items describe the cognitive aspect, and 3 items symbolize both somatic and cognitive symptoms. A high total score from the scale indicates the severity of anxiety experienced by the individual (Ulusoy et al., 1996). Cronbach Alpha reliability coefficient was found to be 0.91.

Statistical Analysis

All statistical analyzes of the study were performed by statistics experts using SPSS version 21. Statistical description and testing of the data were based on the characteristics of the data and the selected valid descriptive indices and testing methods. Quantitative data were described as means, standard deviations, and percentages. Comparison of the general situation of the two groups was analyzed using appropriate methods according to indicator type. Intergroup comparisons of quantitative information were made using group t-test (chi-square,

normal distribution) according to the distribution of the data. The relationship between categorical variables was evaluated with the Pearson correlation test and regression tests were used to determine the effectiveness of the training. A p value less than or equal to 0.05 was considered statistically significant.

Ethical Considerations

This study was approved by the Tokat Gaziosmanpaşa University Clinical Research Ethics Committee (83116987-174). The researchers gave detailed information to the pregnant women about the purpose and duration of the study, their questions were answered, and they were informed that they could withdraw from the study at any time. They were assured that their personal information would be kept confidential and the data would be used for academic purposes only. An informed consent form was signed by all participants.

RESULTS

Characteristics of the Sample

A total of 62 pregnant women were included in a single center and the data were analyzed with the full analysis set. The differences between both groups in terms of sociodemographic characteristics and obstetric characteristics were similar and not statistically significant ($p > 0.05$) (Table 2).

Participants' Fear of Childbirth, Anxiety and Prenatal Attachment

In the first evaluation before the training, there was no significant difference in W-DEQ A score average between the intervention and control groups ($p>0.05$). After the training program, the average score of the intervention group decreased, while the average score of the control group increased. It was determined that there was a statistically significant difference

in W-DEQ A version mean scores between the groups ($p<0.001$) (Table 3). In the first evaluation before the training, the mean PAI score was not statistically significant in both groups ($p>0.05$). After the training program, there was an increase in scores in both groups, but it was determined that there was a statistically significant difference in the mean score values ($p <0.001$) (Table 3). BAI scale mean score was not statistically significant before the training program ($p>0.05$). After the training program, the average score of the intervention group decreased and the average score of the control group increased. It was determined that there was a statistically significant difference in BAI mean score values between the groups ($p<0.001$) (Table 3).

Correlation and Regression Analysis

A weak, negative, and not statistically significant relationship was found between WDEQ-A and PAI in the intervention group ($p>0.05$). A moderately positive, statistically significant relationship between WDEQ-A and BAI was determined ($p<0.05$). A weak, negative, and not statistically significant relationship between PAI and BAI was determined ($p>0.05$) (Table 4).

According to the regression model, the PAI posttest score affected the WDEQ-A scale insignificantly and the BAI posttest score significantly affected the WDEQ-A posttest score (Table 4).

DISCUSSION

This study was conducted using the human-human relations model of Travelbee, one of the nursing theorists. This model was used as a basis in the prenatal education given by nurses.

It was seen that it could be easily applied in a clinical setting to reduce the fear of childbirth in pregnant women and to increase prenatal attachment. Our research showed that as an independent nursing role of psychological preparation for birth through training in pregnant women, education is effective in changing negative perceptions about childbirth. Therefore, interventions by nurses to reduce fear of birth should be offered as part of routine pregnancy care in the prenatal period. It is found that effective nursing practices facilitate a comfortable pregnancy in the prenatal period, reduce anxiety and fear, fill in information gaps, and facilitate the pregnant woman's adaptation to motherhood and her baby. As a result, it is anticipated that pregnancy, birth and the postpartum period may be more smooth and comfortable.

It Is known that fear of childbirth is accompanied by cognitive distortions such as unrealistic fears about normal vaginal birth and the idea of not being able to give birth. This situation is an increasing factor on the severity of fear of childbirth (Poorjandaghi et al., 2022; Shand et al., 2022). Abdollahi et al. stated that fear of childbirth has a negative impact on the emotional health of pregnant women and increases the likelihood of birth turning into an undesirable experience (Abdollahi et al., 2020). Considering the high prevalence of fear of childbirth, it was concluded that an effective nursing childbirth education program should be implemented to reduce this fear. This study confirms the effectiveness and feasibility of the prenatal education program, based on Trabelbee’s model, to reduce the fear of birth in primiparous pregnant women.

Within the scope of the study, the W-DEQ Version A score averages of the pregnant women in both groups were similar before the training. After the training program, it was found that the mean W-DEQ Version A scores of the pregnant women in the intervention group decreased significantly, while the mean scores of the pregnant women in the control group increased. In line with the results, it seems that birth preparation training prepared according to

Trabelbee's human-to-human relations model for pregnant women with fear of birth is an effective method in reducing the level of fear of birth. There are different results in the literature regarding the effectiveness of prenatal preparation training. There are studies showing that training given for birth preparation is effective in reducing the fear of birth (Serçekuş & Başkale, 2016; Çankaya & Şimşek, 2020) and studies showing a limited or negative effect on reducing the fear of birth (Stoll & Hall, 2012). Therefore, it is necessary to support with both cognitive and behavioral strategies in addition to information in the birth preparation training given by nurses. It was stated that in the birth preparation program of Poorjandaghi et al., which focused on eight sessions of cognitive behavioral therapy with 48 pregnant women in Iran, the pregnant women in the experimental group felt better psychologically, their self-confidence increased and their fear of birth decreased (Poorjandaghi et al., 2022). Based on the findings of our study, it may be concluded that the psychosocial well-being of primiparous pregnant women is improved and their ability to give birth is improved by informing them about birth, supporting them psychologically, and sharing their emotions with other pregnant women in the group.

Prenatal attachment starts from the beginning of pregnancy and continues in the postpartum period (Yuen et al., 2022). Feeling the baby's movements, the increase in the pregnant woman's feelings and development of thoughts towards her baby, the fact that the pregnancy is a voluntary pregnancy, the pregnant woman touching her abdomen and talking to her baby contribute greatly to the establishment of the maternal identity of the pregnant woman and the development of prenatal attachment (Ozbek & Ertekin Pınar, 2022; Yuen et al., 2022). In our study, in order to support prenatal attachment, it is found that the practices of training program such as listening to music and imagining the baby, touching the belly and talking to the baby, counting and following the baby's movements were positive. Data in the literature showing that prenatal preparation education positively affects prenatal attachment supports our study results (Ozbek & Ertekin Pınar, 2022; Çelik & Ergin, 2020).

It was observed that the anxiety levels of the pregnant women in the intervention group decreased as their false beliefs and fears about childbirth decreased by the help of the education program. In the control group, it is observed that fear and anxiety levels increase as the obscurity increases and the time of birth approaches. Our intervention differs from previous studies in that it does not focus solely on childbirth education but also includes mindfulness practices. Additionally, throughout the program, participants were encouraged to share their feelings with other participants during peer discussions. Allowing participants to share feelings of doubt or anxiety gives them a sense of control over their emotions and the ability to cope with potential mental problems (Zhang et al., 2019). The significantly lower anxiety levels of pregnant women in the experimental group are consistent with other studies on the effectiveness of educational practice in reducing the anxiety of pregnant women (Kuo et al., 2022; Zhang et al., 2019).

According to our study results, as the fear of birth increases, anxiety symptoms increase and prenatal attachment decreases. Garthus-Niegel et al. and Uğurlu and Çoban found results similar to our study finding that prenatal attachment decreases as the fear of birth increases (Garthus-Niegel et al., 2019; Uğurlu & Çoban, 2022). Gürol et al. study found a positive relationship between fear of birth and prenatal attachment, contrary to our results (Gürol et al., 2020). Studies have shown that prenatal attachment is affected by the level of anxiety and that there is an inverse relationship (Alhusen et al., 2021). According to the regression model, it is seen that prenatal attachment does not have a significant effect on fear of birth, but anxiety has a significant effect. Kuo and his colleagues also concluded that fear of birth and anxiety significantly affect each other, similar to our results (Kuo et al., 2022). Tata and his colleagues concluded that their training was not effective on anxiety (Tata et al., 2022). Including the steps to be taken during birth in the training content allows pregnant women to have a more positive birth process. Among outcome measures, the largest change from baseline for participants in the intervention group was in the fear of childbirth score, which also helped reduce anxiety.

These results reveal that the integrated birth education intervention is an effective program in increasing the perception of the birth process as a positive event. These differences in the results are thought to be due to the perceptions of pregnant women, their educational status, different education methods, measurements taken at different times, and age differences between pregnant groups.

CONCLUSION

Childbirth preparation training prepared by psychiatric nurses based on Travelbee's model has been shown to be effective in reducing childbirth fear and anxiety symptoms and also increasing prenatal bonding. It is thought that as a result of this training, pregnant women may prefer normal vaginal birth instead of caeserean and this result may contribute to reducing the hospital stay and costs. Regular follow-up of pregnant women in clinics by nurses is important to identify those who have a fear of childbirth. It is noted that prenatal training based on Travelbee's human-to-human relations model reduces the fear of childbirth and increases the connection between mother and baby.

RELEVANCE FOR CLINICAL PRACTICE

Regular follow-up of pregnant women in clinics by nurses is important to identify those who have a fear of childbirth,

Incorporating an antenatal education program and interventions to reduce fear of childbirth into nursing practices,

Supporting initiatives to increase prenatal attachment of pregnant women with practices within trainings,

It is recommended to support health professionals and provide training with up-to-date information regarding antenatal training, and to provide antenatal training to different ages and different pregnant groups.

LIMITATIONS

This study was conducted in a single hospital, which may limit the generalizability of the findings to other settings and populations with different cultural, socioeconomic, or health structures. The study assessed short-term effects of the intervention but did not examine long-

term effects on fear of childbirth, anxiety, or prenatal attachment. High-risk pregnancies were excluded to ensure homogeneity, but this limits the applicability of the findings to a broader obstetric population with medical complications.

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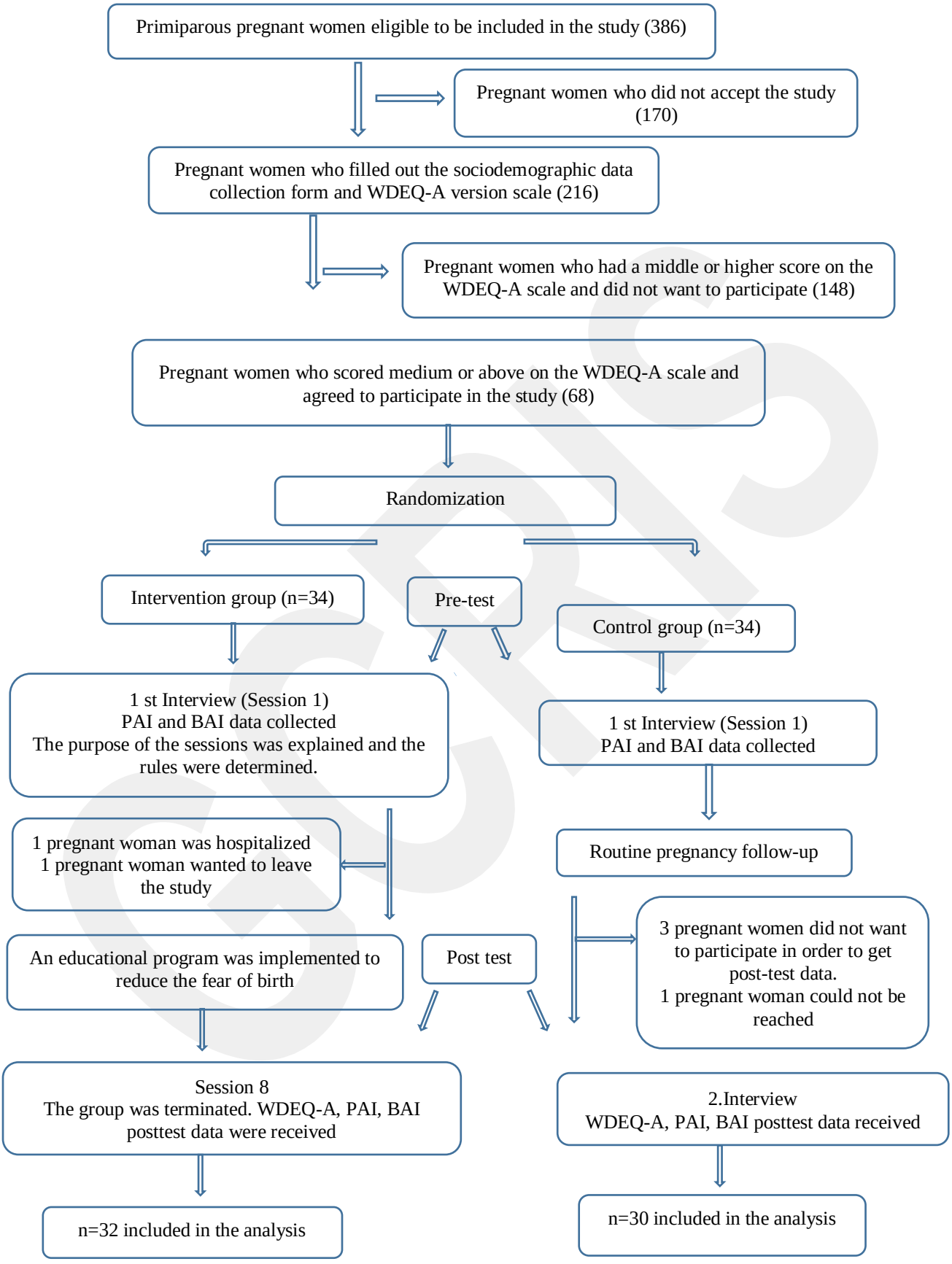

Fig. 1 Study CONSORT flow chart

Table 1 Content of The Birth Preparation Training Program For The Travelbee Human-Human Relations Model

Session	Training subject	Training content
1st session	Original Encounter	-Description of group sessions
2nd session	Emerging Identities	-Group members knowing each other and being aware of the purpose of the group -Pregnant women's evaluation of their own processes
3rd – 4th Session	Empathy	-Recognizing and evaluating labor assessing misinformation, beliefs and attitudes towards birth - Defining and evaluating fear of birth
5rd – 6th Session	Sympathy	-Coping with labor contractions -Birth preparation and the ımportance of prenatal attachment
7th Session	Rapport	-Social supports and baby care
8th Session	Assessment	-Obtaining pregnant women's opinions about the group and sessions

Table 2 Comparison of Sociodemographic And Obstetric Characteristics of Pregnant Women

Sociodemographic and Obstetric Characteristics		**Study Groups**				χ^2	p
		Intervention Group (n=32)		Control Group (n=30)			
		n	%	n	%		
Age	18-24	15	46,9	13	43,3	0,259	0,879
	25-34	14	43,8	13	43,3		
	35 and Above	3	9,4	4	13,3		
Educational background	High School and Below	18	56,2	15	50,0	0,057	0,812
	University and Above	14	43,8	15	50,0		
Family Type	Large Family	9	28,1	8	26,7	0,001	0,999
	Nuclear family	23	71,9	22	73,3		
Place of residence	Village Town	10	31,3	16	53,3	2,260	0,133
	Province	22	68,8	14	46,7		
Marriage Age	18-24	27	84,4	23	76,7	0,199	0,656
	25-34	5	15,6	7	23,3		
Intended Pregnancy	Yes	20	62,5	14	46,7	0,993	0,319
	No	12	37,5	16	53,3		
Is there any information about birth?	Yes	20	62,5	16	53,3	0,224	0,636
	No	12	37,5	14	46,7		
If yes, from where?	Internet-Book-Magazine	4	20,0	4	23,5	-	0,999#
	From the environment	16	80,0	13	76,5		

Fear of Birth	Yes	23	71,9	20	66,7	0,029	0,866
Pain	No	9	28,1	10	33,3		

Gestational Age	Intervention Group (n=32)	Control Group (n=30)
	Ort±SS	Ort±SS
	27,16±2,72	27,43±2,3

$\chi 2$: Chi-Square Test. #: Fisher Exact Chi-Square Test

Table 3 Comparison of Pretest-Posttest Score Averages of The Participants

	Intervention Group (n=32)		**Control Group (n=30)**		**t;p**
	Ort±SS	Min-Max	Ort±SS	Min-Max	
WDEQ-A Pretest	77,75±17,53	45-120	78,37±20,32	45-116	0,128;0,898
WDEQ-A Posttest	45,00±9,48	34-71	87,60±15,29	61-115	13,086; <0,001*
PAI Pretest	44,91±4,42	38-53	45,33±6,17	35-56	0,312;0,757
PAI Posttest	63,25±4,26	56-74	46,40±5,91	37-56	12,807;<0,001*
BAS Pretest	29,19±6,57	15-46	29,40±7,15	12-47	0,122;0,903
BAS Posttest	16,53±5,12	8-26	33,63±6,45	17-47	11,607;<0,001*

t: Independent Sample T Test

Table 4 Correlation And Regression Analysis Between Scale Scores After The Training Program (N=62)

			PAI Posttest Score	BAI Posttest Score
Control Group (n=32)	WDEQ-A Posttest Score	r	-0,185	0,503
		p	0,312	0,003*
	PAI Posttest Score	r		0,169
		p		0,355

Model	Unstandardized Coefficients		Standardized Coefficients	t	p	Confidence Range for B		VIF
	B	Std. Error	Beta			Lower Limit	Upper Limit	
Constant	44,578	24,163		1,845	0,075	-4,841	93,997	
PAI Posttest Score	-0,228	0,36	-0,103	-0,634	0,531	-0,965	0,508	1,029
BAI Posttest Score	0,899	0,3	0,485	3	0,005*	0,286	1,512	1,029

t: Independent Sample T Test; r:correlation test; * p value significant at 0.05 level. (F=5.171; p<0.05 R2: 0.212)