

Effect of a Training Program about Maternal Fetal Attachment Skills on Prenatal Attachment among Primigravida Women

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Abstract

Aim: to assess effect of a training program about maternal fetal attachment skills on prenatal attachment among primigravida women.

Subjects and Methods: A quasi experimental research design was utilized. From a specific private Antenatal Clinic in Mansoura city-Egypt eighty primigravida women aged 20 to 35 years, at 30th week gestation, had singleton pregnancy and can read and write were selected purposively between of January and August 2011 and was equally divided into two groups; intervention group: received a training program on two MFA skills and control group: received the routine antenatal care. Using interview sheet and Cranley's Maternal Fetal Attachment Scale (MFAS) the data were collected at baseline and after two and four weeks of the enrollment.

Results: MFAS score had significantly increased in the intervention group from 61.6 ± 5.9 at the baseline to 68.5 ± 6.8 and 69.6 ± 5.9 at 32nd, 34th week gestation respectively. While the changes of the MFAS total score in the control group were insignificant.

Conclusion: MFAS total scores had significantly increased in the intervention group at 32nd and 34th week gestation compared to the baseline score. Conversely, the MFAS total score did not differ significantly between the baseline and two and four weeks after enrollment among the control group.

Recommendations: Enhancing the health care providers' awareness of the MFA skills to utilize in the promotion of the prenatal MFA and motivate the active role of the nurses in helping the pregnant women to adhere to the appropriate MFA skills are recommended.

Keywords: Prenatal attachment, maternal fetal attachment skills, primigravida women

I. Introduction

Prenatal attachment has been defined as "the emotional tie or bond which normally develops between the pregnant woman and her unborn child" [1]. Quality of attachment directly affects maternal and fetal health. Higher prenatal maternal fetal attachment (MFA) has been associated with positive health practices such as obtaining regular prenatal care, maintaining a nutritionally-sound diet, obtaining adequate rest and sleep; engaging in regular exercise, abstaining from illegal substances, and learning about pregnancy and childbirth, which contributes to positive pregnancy outcome [2-4]. Conversely, women with lower MFA attachment are less likely to engage in positive health practices during pregnancy [5].

Over the past 20 years, it has been recognized that MFA begins in early pregnancy and increases gradually with advancing gestational age, especially in response to fetal movements [5, 6]. Research studies reveal many attachment behaviors or skills that may contribute to stronger prenatal attachment. Such behaviors include; but are not limited to, fetal parts palpation, counting the fetal movements, acquiring the expectant parents with the child care knowledge, and speaking to the fetus [7-10]. Nurses are in an optimal position to enhance the MFA level through pregnant women's education, training and applying MFA skills that may contributes to stronger prenatal attachment.

Since, weak attachment have been associated with inefficient maternal health practices beside their adverse pregnancy outcomes, the current research study tried to break this cycle by providing a training program on two skills, namely fetal movements count (FMC) and fetal parts palpation to enhance prenatal attachment and consequently improve the maternal health practices.

Significance of the study

Applying attachment skills by the pregnant woman could help to strengthen the prenatal attachment towards the fetus and motivates the pregnant woman towards adopting healthy practices which in turn results in positive pregnancy outcome. Research studies related to this subject were carried out in western countries. In Egypt, there were no researches on training the pregnant mothers on applying such skills. Because this study may enable obstetricians to provide interactive antenatal care services and add to nursing's body of knowledge by enabling the nurses to identify pregnant mothers at risk for parenting deficits and be able to provide appropriate guidance for them the current study was carried out.

Research hypothesis

Pregnant women who attend the MFA skills training program exhibit higher prenatal attachment than those who do not attend the training program.

II. Subjects And Methods

2.1 Aim of the study

This study aimed to assess effect of a training program about maternal fetal attachment skills on prenatal attachment among primigravida women.

2.2 Research design

A quasi experimental research design was utilized.

2.3 Setting

This study was carried out in a specific private Antenatal Clinic at Mansoura city, Egypt.

2.4 Sampling

Purposive sample was used to recruit the participants based on the subjects' inclusion and exclusion criteria. Eligible women were equally divided into two groups according to the following technique; using the client's record, even numbers represents the intervention group while the odds numbers identified the control group. A sample size of 80 subjects, were enrolled in this study. The sample size was calculated according to the following formula: $n = 2(Z_{\alpha/2} + Z_{\beta})^2 \sigma^2 / \Delta^2$

Where: n= the number of pregnant women in each arm of the trial, $Z_{\alpha/2}$ is the value of normal distribution which cuts off an upper tail probability of $\alpha/2$. (If $\alpha=0.05$ then $Z_{\alpha/2}=1.96$), Z_{β} is the value of normal distribution which cuts off an upper tail probability of β . (If $\beta =0.2$, then $Z_{\beta}=0.84$), σ is the presumed standard deviation of the outcome and Δ is the difference sought between the means of the two groups.

The independent variable in this study is Cranley's Maternal Fetal Attachment Scale (MFAS). If the clinically relevant difference in the MFAS between the intervention and control groups is presumed to be 7.5 and the standard deviation 11; and if two-sided significance level of 0.05 (or 5%) is to be used and the power should be 0.8 (or 80%) then by substitution of these data in the sample size formula: $2(11)^2(1.96+0.84)^2/(7.5)^2=33.7$. So, at least 34 primigravida women were required per each arm, by assuming that some participants may drop out from the study 40 participants per each arm were enrolled.

Inclusion criteria

Primigravida women who were booked in a specific private Antenatal Clinic at Mansoura city for prenatal care between of January and August 2011; were eligible to participate in the current research when they fulfilled the following inclusion criteria: 1) Aged 20 to 35 years, 2) At 30th week gestation, 3) Had singleton pregnancy and 4) Can read and write. While were excluded from this study females with obstetric and/or psychological problems, or unplanned pregnancy, and pregnancies resulting from advanced assisted reproductive technology.

2.5 Measures of data collection

2.5.1 Interview sheet

It was concerned with general characteristics such as age, length of marriage, education level, employment status, and income and obstetric history such as parity and gravidity.

2.5.2 Cranley's MFAS

Cranley's MFAS [11] is a tool intends to measure prenatal maternal fetal attachment. It is a self rated scale with 24-items; concerned with thoughts indicative of MFA, that were divided into five subscales namely (i) Differentiation of self (4 items), (ii) Interaction with the fetus (4 items), (iii) Attributing characteristics and intentions (5 items), (iv) Giving of Self (6 items) and (v) Role taking (5 items).

Respondents select one of 5 choices for each item; including 1 (definitely no), 2 (No), 3 (Uncertain), 4 (Yes), and 5 (definitely yes). Each subscale score is the sum of scores of all items representing the subscale. The total score is the sum of scores of the five subscales, and ranges from 24 to 120. Higher total score indicates higher levels of MFA. For the current study the researchers translated the MFAS scale into the Arabic language, the scale was revised by 3 maternity nursing university professors and their comments were considered.

2.6 Ethical considerations

This study protocol was approved by the Ethics Committee of Nursing Faculty-Mansoura University. Informed consent was obtained from each participant after clarifying the study nature and they were assured about the confidentiality of the collected data as well the participants were informed that they have the right to withdraw during the study period.

2.7 Pilot study

A pilot study was conducted with 10 primigravida to test the clarity of measure's items and to estimate the time needed to complete the tools. The results of the pilot indicated that the statements of the tools were clear and no items were modified. Thus, the pilot sample included within the study.

2.8 Procedure of Data Collection

Before the groups assigning, the primigravida women were interviewed to confirm legibility to participate in the study. After full general and obstetric clinical evaluation, eligible clients received full explanation about the aim and method of the study and gave informed consents to participate in this study, and then were instructed on how to fill in Cranley's MFAS, eligible women completed the MFAS during the antenatal clinic visit at 30th week gestation (baseline) and returned back to the researchers within 20-25 minutes, and then each woman assigned to one group; intervention group or control group. Both groups were instructed to fill in the same measure at 32nd and 34th week gestation and return them to the researchers during the subsequent antenatal clinic visits thereafter.

2.9 The MFA skills training program

The Intervention group was provided with the training program. It entailed training on palpating the fetal parts using Leopold's Maneuvers and counting the fetal movements. The program was provided through two sessions.

Session one

It was theoretical; using a power point presentation MFA concept, benefits of improving MFA and the different skills for enhancing MFA were clarified. During the same session, a videotape about applying Leopold's Maneuvers and counting the fetal movements had been shown. This session was conducted in a separate room in the clinic for approximately 30-45 minutes on small groups (n= 3-6).

Session two

It was started immediately after the first session in the same room and took approximately 10-15 minutes for each participant. During this session each participant was individually trained by the nursing researcher on performing the Leopold's Maneuvers through the following steps: instructing the client to void and lie in supine position, then the researcher took the hand of each participant to help in touching the fetal buttocks and back together with one hand and fetal limbs with the other hand [12], so that expectant mothers were actually able to touch the fetal body parts. The enrolled pregnant mothers were asked to perform this procedure once weekly.

During the same session the enrolled pregnant mothers were trained on counting the fetal movements using Cardiff method, that consists of instructing the pregnant woman to empty her bladder, drink a cup of juice and immediately lie on left side and start counting the fetal movements [13,14]. The enrolled pregnant mothers were asked to perform this procedure once daily, the findings were recorded on fetal movements counting chart and provided to the researcher at the next antenatal clinic visit to monitor clients' compliance with the skill performance.

The control group

This group received the routine prenatal care that was received by the intervention group but without attending the training sessions and the participants of this group was not aware of the training sessions during the study period.

2.10 Strengths and limitations

Using a valid tool for data collection, enough sample size as indicated by power analysis, and measuring MFA score at different gestation weeks without drop out rate (i.e., that may be attributed to selecting booked participants who pay for the antenatal care visits as a package; motivating them to attend their antenatal visits regularly compared to the other method of paying in which the woman pay on each visit) are acting as the factors that strengthen the present study. While lack of Egyptian research studies related to the study subject that results in poor national references in the discussion section and conducting the study with very homogeneous

sample; all were primigravida, planned pregnancy and all from one institution; which limits the generalizability of the findings, were considered as limitations of this study.

2.11 Data Analysis

Statistical analyses were performed using SPSS for windows version 17.0 (SPSS, Chicago, IL). Continuous data were expressed as mean \pm standard deviation (SD), while categorical data were expressed in number and percentage. The differences between the intervention group and control group were determined by independent samples student's t test for continuous data or chi-square test for categorical data. The MFAS scores within each group at the 30th, 32nd, and 34th weeks of gestation were compared using the repeated measure ANOVA test. Statistical significance was set at $p < 0.05$.

III. Results

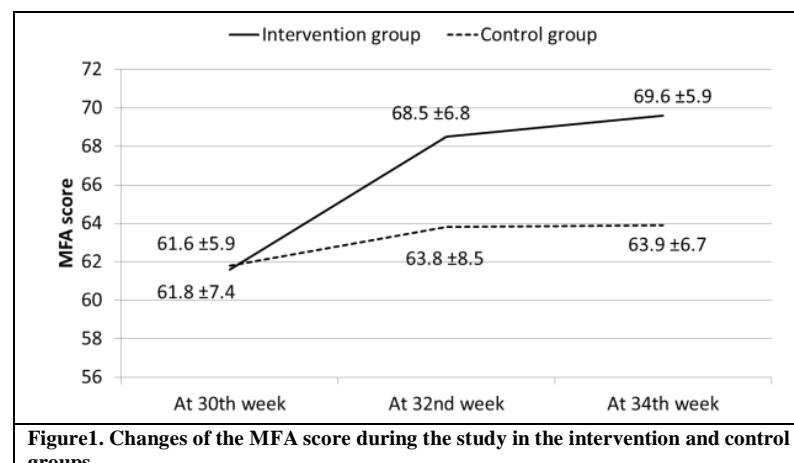
Table1 shows the general characteristics of the intervention and control groups. The both groups were almost similar at baseline as regards age (27.9 ± 4.6 & 28.8 ± 4.7) and length of marriage (3.1 ± 1.4 & 3.4 ± 1.4) respectively. The same table also revealed that three quarters of the intervention group had secondary education compared to 82% of the control group; 45% of the intervention group had a job compared to 40% in the control group. Additionally, slightly more than half (52%) of the intervention group had reported less than enough income compared to 47.5% in the control group who were reported the same status. Differences observed between the two groups were not significant ($p > 0.05$).

According to both Table 2 and Fig.1 the MFAS score in the intervention group was 61.9 ± 5.9 at baseline (at 30th gestation week). After two weeks of applying the training program, the score was then increased to 68.5 ± 6.8 and was further increased to 69.6 ± 5.9 after another two weeks. These improvements in the MFAS scores were highly significant ($P < 0.001$). On the other hand, the changes of the MFAS score in the control group by the end of the course were insignificant ($p > 0.05$).

Table1. General characteristics of the intervention and control groups				
Variables	Intervention Group	Control Group	t	P
Age	27.9 ± 4.6	28.8 ± 4.7	0.864	0.391
Length of marriage	3.1 ± 1.4	3.4 ± 1.4	0.945	0.348
Education level				
Secondary	30 (75%)	33 (82.5%)	0.672*	0.412
University/graduated	10 (25%)	7 (17.5%)		
Employed	18 (45%)	16 (40%)	0.205*	0.651
Less than enough income	21 (52.5%)	19 (47.5%)	0.200*	0.655

* Chi square test

Table2. Changes of the MFA score during the study in the intervention and control groups				
Gestational age	Intervention Group	Control Group	t	P
At 30 th week	61.6 ± 5.9	61.8 ± 7.4	0.083	0.934
At 32 nd week	68.5 ± 6.8	63.8 ± 8.5	2.752	0.007
At 34 th week (d8)	69.6 ± 5.9	63.9 ± 6.7	4.031	<0.001
Dependent ANOVA test				
F	19.475	0.980		
P	<0.001	0.379		



IV. Discussion

The present study aimed to assess effect of a training program about maternal fetal attachment skills on prenatal attachment among primigravida women. This aim was achieved through the present study findings which revealed that the mean total MFAS score had increased in the two studied groups at both points of assessment (32nd, 34th week gestation) compared to the baseline scores (at 30th week gestation). However, this increase in MFAS scores was significant among the intervention group; on the contrary this increase was insignificant among the control group. Accordingly the study hypothesis was accepted "pregnant women who attend the MFA skills training program exhibit higher prenatal attachment than those who do not attend the training program".

The significant improvement of MFAS in the intervention group reflects that training the primigravida expectant mothers on applying attachment skills was effective in improving prenatal attachment. Such findings are consistent with the findings of previous studies. Using the same measure; Cranley's MFAS, Mikhail et al. had found a statistically significant increase in total Cranley's MFAS scores in a randomized controlled observational study on 213 healthy pregnant mothers after counting the fetal movements for one month using Sadofsky method in one group and Cardiff method in the other group ($P < 0.0001$, $F = 46.47$) [15]. In a more recent Iranian study conducted on 83 pregnant women; divided into two groups: the case group subjects were instructed to count the fetal movements daily for one month, while the control group had received the routine pregnancy care, MFAS scores were compared in the both groups before and after the fetal movements count and showed a statistically significant improvement in the MFAS scores among the fetal movements count group ($p < 0.001$) [16].

Additionally, using Prenatal Attachment Inventory (PAI), Nishikawa and Sakakibara [17], investigated whether a training program on fetal parts palpation using Leopold's maneuvers would improve MFA of pregnant women and reported that such attachment skill improves prenatal attachment of pregnant women [17]. Similarly, voluminous research studies found that prenatal education courses; positively influences prenatal MFA [16, 18-20].

The significant improvement of MFAS in the intervention group may be attributed to the notion that fetal movements counting by the enrolled pregnant mothers may increase their awareness with the developing life within beside perception of the fetal viability, as well as fetal parts palpation through the abdomen enhances the pregnant women's awareness of the fetal position and provides more sensitive perception of fetal activity contributing to enhancing MFA. It can be easier to sense fetal movements through the abdominal wall than with the central nervous system [21].

In the present study, the MFAS score had increased in the intervention group from 61.6 ± 5.9 at baseline to 69.6 ± 5.9 with a mean difference of 8 after four weeks of applying the predetermined two attachment skills. It was higher than the significant increase that was reported by Bellieni et al. that was increased from 71.2 ± 11.26 to 78.7 ± 8.91 with a mean difference of 7.5 after applying Taegyo-focused prenatal classes for one month on 49 pregnant women [20], also the MFAS in the present study was higher than that of a more recent randomized controlled trial which reported a significant increase of mean MFAS scores from 55.98 ± 6.99 to 61.90 ± 5.41 with a mean difference of 4.8 by 150 primigravida women after training their husbands on MFA behaviors for six weeks [22].

The nature and content of the attachment skills that has been used, the baseline MFA score, and the targeted group; pregnant women or their husbands, as well as the general characteristics of the studied samples may explain the differences of mean maternal fetal attachment scores after the intervention. It is known that the maternal fetal attachment scores are affected by age, parity, planned pregnancy, education, and income [23]. In the present study those were not different between the both groups, so that both study groups were considered to have similar general characteristics.

The current study and previous studies findings; those used the same attachment behaviors that were used in the present study (fetal movements counting and fetal parts palpation) or those used other attachment behaviors emphasizes that nurses are in an optimal position, which allows client education and anticipatory nursing interventions to improve the concept of MFA during the prenatal care visits.

V. Conclusion

MFAS total score had increased in the two studied groups at both points of assessment (32nd, 34th week gestation) compared to the baseline scores (at 30th week gestation). The increase of MFAS scores was significant in the intervention group and insignificant in the control group.

VI. Recommendations

1. Replicating the research using a larger, random sample that target women from different settings with different parity, age, education level, and both planned and unplanned pregnancy.

2. Enhancing the health care providers' awareness of the most appropriate strategies to utilize in the promotion of the positive MFA at any stage of pregnancy.
3. Nurses should have an active role in helping the pregnant women to adhere to the appropriate MFA skill that consequently affect the healthy practices during pregnancy.

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