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Effectiveness of Foot Reflexology on anxiety among primigravid mothers in a selected rural area at Mangalore

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Abstract

Introduction: All women consider pregnancy as a special time in their lives. Many changes occur in a woman's body during this time, her emotions, and during different events in the life of the woman. All these changes lead to stress and anxiety in pregnant women. Reflexology is one of the most effective techniques for reducing the severity of anxiety. **Objectives:** The objectives of the study were to determine the anxiety level on primigravid mothers and to find the effectiveness of Foot Reflexology on anxiety. **Methodology**: Quantitative evaluative approach with a quasi-experimental two group pre-test – post-test design was used for the study. Thirty samples were selected by purposive sampling technique from a selected rural area of Mangalore. Pre-test was done using modified Zung Self-Rating scale and Foot Reflexology was administered to the experimental group on the same day following pre-test for 20 minutes duration. Post-test was conducted using the same scale after seven days of intervention. **Results:** In the experimental group, a majority 93.3% of primigravid mothers had moderate anxiety and the remaining 6.67% of sample had severe anxiety before administering Foot Reflexology and after administering Foot–Reflexology 6.67% had moderate anxiety and 93.3% of them had mild anxiety. In the experimental group, the mean post-test score (38.87±6.31) was less than the mean pre-test score (53.27±6.75). **Conclusion:** The present study concluded that a regular practice of Foot Reflexology had high effectiveness in reducing anxiety level among primigravid mothers.

Key words: Effectiveness, Foot Reflexology, anxiety, primigravid mothers

Introduction

Many changes occur in the woman's body, emotions, and in life events of woman during this time. Major physiologic changes include cardiovascular, haematologic, metabolic, renal, and respiratory changes, which become very important in the event of complications during this time (Kunz, 2013). Stress and anxiety are the major outcomes of these changes among carrying mothers. When stress and anxiety grows to distressing levels that could be dangerous for the health of a pregnant woman, they can cause fatigue, sleeplessness, and headaches. (Laura, 2000).

A study on antenatal stress and anxiety, and the neuro behavioural development of the foetus and child revealed that there is a direct link between maternal moods of a pregnant woman with the foetal behaviour, as noticed by the result of ultrasound from 27 to 28 weeks of conception onwards, which was well established. The study had shown a relationship between maternal stress and emotional disturbance problems in the child. Women have to recognize the various sources of stress and anxiety and stay away from them or learn to handle them successfully (Vander, Mulder, Mennes, & Glover, 2005).

Stress during pregnancy is the twin sister of pregnancy because of the responsibility of taking a new life into this confused and unpredictable world, which is not a healthy side effect of pregnancy (Long , 2008). Luckily, we do not have to waste every minute thinking, obsessing, and stressing over during pregnancy. Plenty strategies are there to adopt in order to reduce stress and anxiety during pregnancy, which include yoga,

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pranayama, music therapy, and reflexology (Long , 2008).

A prospective study was conducted to examine the psychosocial factors, including the major life events, pregnancy-related stress and anxiety and the effect of various stress relieving measures among 1,962 antenatal mothers in central North Carolina. There was an increase threat of preterm birth among antenatal, with abnormal levels of stress and anxiety on the pregnancy or with other life events. The levels of neither social support nor of the degree of depression were associated with preterm birth. Preterm birth initiated by labour or ruptured membrane was associated with pregnancy related stress and anxiety among women, assigning a high level of depression. One lesson learned from this community-based study was that one-on-one stress reduction strategies can reduce stress in this population in a greater amount (Picciotto, Riz, Dole, & Savitz, 2003).

An experimental study was conducted among 74 pregnant outpatients in Health centres of Agakhan University Hospital in Karachi, Pakistan. The result was that the average of tiredness intensity in pregnant women showed a significant difference between pre-test and post-test scores. After the reflexology treatment, there was a significant reduction in tiredness intensity (r=.46, p=.002). The research study concluded that reflexology reduces tiredness in pregnant women significantly (Ghaffari & Ghaznein, 2010).

With extensive literature review, the investigator found that the prevalence of anxiety is common among antenatal women, especially in primigravid mothers. In this study, the investigator has selected Foot Reflexology which is a non-medicinal, natural form of treatment to reduce anxiety in women during pregnancy, particularly those who have poor family relationships to ensure the health of both the mother and the baby. The objectives of study were to find out the level of anxiety among the primigravid mothers in both control and experimental group using a modified Zung Self – Rating scale; find the effectiveness of Foot Reflexology on anxiety among the primigravid mothers using the same modified Zung Self – Rating scale; find the association between the anxiety level among the primigravid mothers and selected baseline variables.

Materials and Methods

Quantitative evaluative approach was found helpful for the achievement of objectives of the study. Quasi-experimental design with two group pre-test post-test design judges the effectiveness of the treatment on experimental as well as control group. The study was conducted in a selected rural area under Suratkal PHC, at Mangalore. In this study, a non-probability purposive sampling technique is found appropriate to select 30 primigravid women living in a selected rural area under PHC, with mild to severe level of stress and anxiety.

Selection and development of the tool : An intense search of related literature, extensive consultation with the experts in the field of Nursing, Medicine, and Yoga was done for developing an appropriate tool. It was found that symptomatic type of rating scale (Zung Self-rating scale) was appropriate to find the effectiveness. Zung Self-rating scale was originally developed by William W K Zung, a well-known Professor in Psychiatry, to measure the level of anxiety among people. Permission was granted by the author for the non-economical profit use of the tool. The tool was opted for modification to use for this study. The first draft of the tool consisted of 20 items in the modified Zung Self-rating scale. These items were collected, scrutinized, selected, and checked for any overlapping, cross checking was done and modification was made in consultation with Nursing and Medicine experts. Based on the suggestions and recommendations, some items were modified in view of simplifying the language. Thus, the modified Zung Self–rating scale was used to measure the stress and anxiety level of primigravid women in a selected rural area under Suratkal PHC.

The tool consists of two parts:

Part I: It was intended to bring out the general information of the respondents and it consisted of thirteen items related to demographic characteristics of the samples.

Part II: It consisted of twenty items to assess the stress and anxiety level of primigravid women.

Modified Zung Self- rating scale: The investigator asks question to the respondents and they must put a tick mark against the corresponding places according to their stress and anxiety level. The modified Zung Self-rating scale is a four point scale with a minimum

score of twenty and a maximum score of eighty. To establish the reliability, the modified Zung Self-rating scale was administered to five samples other than the study samples. Cronbach's alpha was used to find out the reliability of the present tool and it has been found to be reliable ($r = .86$).

Data collection procedure: Prior administrative permission was obtained from the District Health Officer, Mangalore and from the Medical Officer of PHC, Surathkal. In order to keep the ethical aspect of the research, written consent was taken from subjects before the data was collected. The researcher herself has collected data from primigravid women by ensuring the anonymity and confidentiality of the information provided by the subjects. The study samples consist of 30 primigravid women. For maximum cooperation, the investigator introduced her to the respondents and the willingness of the participants was ascertained. Baseline data was collected by administering Modified Zung Self-rating scale. Foot Reflexology was administered on the same day, following the pre-test, for 20 minutes duration to the experimental group. The treatment was given by the researcher every day for 20 minutes for one continuous week. The post-test was conducted by administering the same modified Zung Self-rating scale after seven days, for both experimental and control groups. The data was collected and recorded systematically on each item and was organised in a way that facilitated computer entry.

Results

Description of demographic characteristics of Primigravid mothers.

The demographic characteristics of study sample is presented in table 1.

Table 1:
Frequency and Percentage Distribution of Sample According to Demographic Characteristics

N=30

Demographic variables	Frequency	Percentage
Age in years		
Below 20	7	23.30
21 − 25	7	23.30
26 − 30	9	30.00
31 − 35	6	20.00
Above 35	1	3.40
Religion		
Hindu	11	36.67
Muslim	13	43.30

Demographic variables	Frequency	Percentage
Christian	6	20.00
Educational status		
Non-formal education	4	13.33
Primary	6	20.00
Secondary	6	20.00
Pre-university	8	26.67
Degree and above	6	20.00
Educational status of husband Non-formal education	5	16.67
Primary	3	10.00
Secondary	10	33.30
Pre-university	10	33.40
Degree and above	2	6.67
Occupational status House wife	11	36.67
Daily wages	6	20.00
Private sector	10	33.33
Government sector	3	10.00
Occupational status of husband Unemployed	6	20.00
Daily wages	13	43.30
Private sector	7	23.30
Government sector	4	13.40
Type of family Joint family	16	53.33
Nuclear family	14	46.67
Monthly family income (In rupees) Below 5,000	3	10.00
5,001 − 10,000	13	43.33
10,001 − 15,000	11	36.67
Above 15,001	3	10.00
Years of marital life Below two years	11	36.67
2 − 5 years	13	43.33
Above 5 years	6	20.00
Gender preference in family? Yes	8	26.67
No	22	73.33
If yes, specify the gender . . Male	6	75.00
Female	2	25.00
Who prefers the gender of child? Husband	4	50.00
Wife	2	25.00
Both a and b	1	12.50
In-laws	1	12.50

Data presented in Table 1, shows that more than one fourth (30%) of the participants were in the age group of 26-30. Nearly half of them (43.3 %) belonged to the Muslim religion. One fourth of the inmates (26.67%) possessed pre-university education. More than one forth (36.67%) of them were house wives. All samples expressed that it was a well-planned pregnancy and 73.3% of them were not having any gender preferences.

Level of stress and anxiety among primigravid women

The overall stress and anxiety level among primigravid mothers was assessed by using Modified Zung Self-rating scale and was analyzed using descriptive statistics, as presented in Figure 1.

Figure 1: Pie diagram showing the distribution of sample according to the level of stress and anxiety
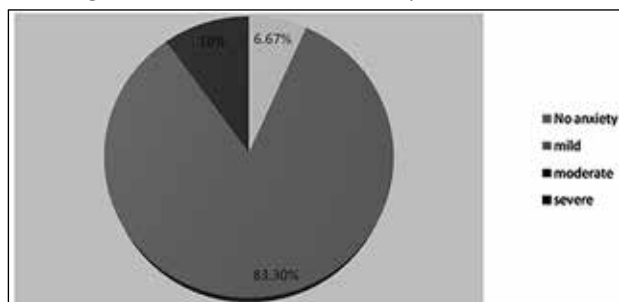

Figure 1 shows that the majority (83.3%) of primigravid mothers were having moderate stress and anxiety, 6.67% of the primigravid mothers were having mild stress and anxiety and 10% of them were having severe stress and anxiety.

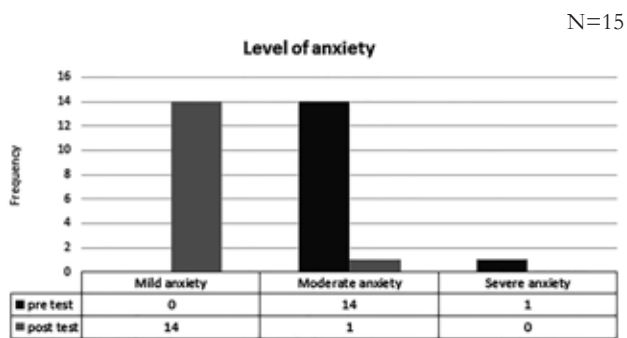**Effectiveness of Foot Reflexology on anxiety among primigravid mothers**

N=15

Figure 2: Frequency and percentage distribution of sample according to the level of anxiety in experimental group

Data in the Figure 2 shows that in the experimental group, a majority 14 (93.3%) of primigravid mothers

had moderate anxiety in the pre-test. It is shown that the very minimal of 1 (6.67%) of them had moderate anxiety in post-test after the intervention. It is observed that in the experimental group 1 (6.67%) of them had severe anxiety in the pre-test, whereas in the post-test none of them had severe anxiety. It also shows that 14 (93.3%) of them had mild anxiety in post -test. Hence, we can state that the Foot Reflexology has good effectiveness in reducing the anxiety among primigravid mothers.

Table 2:
Range, Mean, Median and SD of Pre-Test and Post-Test Anxiety Score of Experimental Group

N=15

Group	Range of score	Mean	Median	SD	Mean difference	't' value
Experimental group						
Pre–test	41 – 62	53.27	56	6.75	14.4	6.78
Post-test	31 – 60	38.87	39	6.31		

The data in Table 2 shows that in the experimental group, the mean post-test score (38.87±6.31) is less than that of the mean pre-test score (53.27±6.75). The mean post-test score (38.87) was lower than the mean pre-test score (53.27) in experimental group. The calculated 't' value (t=6.78) was greater than the table value (t$_{(14)}$=2.15) at .05 level of significance. Hence, the research hypothesis is accepted.

Comparison of post-test score of experimental and control group
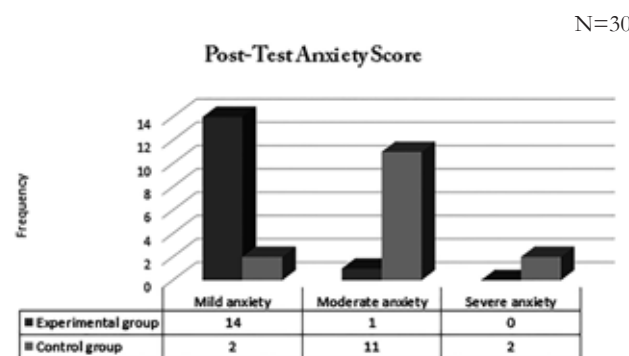
N=30

Figure 3: Frequency and percentage distribution of sample according to the post-test anxiety score in experimental and control group

Data in Figure 3 shows that in the experimental group a majority of 14 (93.3%) of the sample had mild anxiety and the lowest of 1 (6.67%) of the sample

had moderate anxiety in the post-test whereas in the control group the lowest of 2 (13.33%) of the sample had mild anxiety, less than one fourth of 11 (73.33%) of them had moderate anxiety and 2 (13.33%) of them had severe anxiety in the post-test.

Table 3:
Mean, SD, Mean Difference, and 't' Value of Post-Test Score in Experimental and Control Groups

N = 30

Group	Mean score	SD	Mean difference	't' value
Experimental group	38.87	6.31		
Control group	52.47	9.02	13.6	4.79

Data in the table 3 shows that the mean post-test anxiety score (38.87±6.31) in the experimental group after practising Foot Reflexology was lower than the post-test score in the control group (52.47±9.02). The calculated' 't' value (4.79) is greater than the table value (t_{28}=2.05) at .05 level of significance. Hence, the research hypothesis was accepted. This shows that Foot Reflexology was effective in reducing anxiety in the experimental group.

Section C: Analysis of area-wise mean pre-test and post-test score in experimental group

Data in Table 4 shows that the mean post-test anxiety score in all areas were lower than the mean pre-test anxiety score. Comparison of the area wise mean and SD of the anxiety scores showed that the effectiveness of Foot Reflexology techniques in the area of physical manifestations had a 13.82% decrease in the mean percentage anxiety score with the mean and SD of 5.06±0.52. In the area of psychological manifestation, there was a 14.16% decrease in the mean percentage with a mean and *SD* of 3.4±9.94, where the mean percentage of pre-test was (54.70%) and 40.54 % in post-test. In the area of behavioural manifestations and emotional manifestations, a decrease of 16.25% and 30.5% was observed with a mean and SD of (2.6±0.63) and (3.66±0.07), respectively.

Discussion

Assessment of stress and anxiety scores in the pre-test showed that majority of primigravid mothers were having moderate stress and anxiety (83.3%), a lowest (6.67%) of the primigravid mothers were having mild stress and anxiety and less than one fourth (10%) of them were having severe stress and anxiety. The study results showed that there is a significant difference in the anxiety scores of the experimental group before and after administering Foot Reflexology.

The present study was supported by an observational study conducted at Magee Women's Hospital in the USA on stress and its contributing factors among 94 African-American pregnant mothers. Social factors which can cause stress like discrimination, based on sex or culture and crimes, were observed in this study. Study disclosed that the greater stress generating factors were experiences of discrimination, younger age, poorer education, and higher income. However, life events were not connected to apparent stress. (Stancil , Piccioto, & Schram, 2000).

The present study was also supported by an exploratory study conducted on perception of stress and anxiety among rural and urban prenatal women to assess the

Table 4:
Area Wise Mean, Standard Deviation, Mean Percentage of Pre-Test And Post-Test Scores in the Experimental Group

N=15

Anxiety manifestation	Pre-test			Post-test			Effectiveness		
	Mean	SD	Mean%	Mean	SD	Mean%	Mean	SD	Mean%
Physical	20.53	3.74	69.07	15.47	3.22	55.25	5.06	0.52	13.82
Psychological	13.13	2.22	54.70	9.73	12.16	40.54	3.40	9.94	14.16
Behavioural	11.00	2.69	68.75	8.40	2.06	52.50	2.60	0.63	16.25
Emotional	9.33	1.51	77.75	5.67	1.44	47.25	3.66	0.07	30.50
Overall	53.27	6.75	66.59	38.87	6.31	48.59	14.40	0.44	18.00

knowledge and perception of stress and anxiety. The target population consisted of 44 samples, 22 urban participants, and 22 rural participants. The tool used to assess the stress and anxiety perception is 0-10 likert scale to rate the stress and anxiety of samples related to support, financial concerns, and physical self-concerns, about baby, labour, and delivery concerns. By using likert scale urban participants rated their stress and anxiety 100 percent and rural participants 72.7 percent. The study concluded that both urban and rural pregnant mothers have stress and anxiety perception and they have knowledge regarding stress and anxiety. (Song & Jew, 2010).

The present study findings were supported by a quasi-experimental study conducted to examine the effect of Foot Reflexology on anxiety among primigravid mothers. Randomly selected samples were divided into three groups of case, control, and placebo. The case group got the intervention of ten-minute right foot massage. The placebo group got the intervention of ten-minute left foot massage and no intervention administered for the control group. The anxiety was measured by using the anxiety inventory scale. Results showed that average anxiety level in the case group before and after the intervention were 6.4 ($\pm$2.1) and 3.4 ($\pm$5.1), respectively. The average level of anxiety in the control group before and after intervention was 5.1 ($\pm$1.7) and 5 ($\pm$1.9), respectively. Thus, the result says that Foot Reflexology is a useful method for reducing anxiety in primigravid mothers (Kesserling, 2009).

Conclusion

The study was conducted to evaluate the stress and anxiety among prim gravid mothers and to see the effectiveness of foot reflexology on stress. The study concluded that Foot Reflexology can play a major role for the reduction of stress and anxiety among pregnant women.

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