

| | | |
|---|---|---|
|  | <p>Contents lists available at www.innovativejournal.in</p> <p>INTERNATIONAL JOURNAL OF NURSING DIDACTICS</p> <p>homepage: http://innovativejournal.in/ijnd/index.php/ijnd</p> |  |
|---|---|---|

Benson's Relaxation Therapy: Its effect on Stress and Coping among Mothers with High Risk Pregnancy

Hanan El-Sayed Mohamed El-Sayed ¹, Hanan Awad M Elmashad ¹, Adel Al-Wehedy Ibrahim ²

¹ Woman's Health & Midwifery Nursing Department, Faculty of Nursing- Mansoura University, Egypt.

² Public Health & Community Medicine Department, Faculty of Medicine- Mansoura University, Egypt.

DOI: <http://dx.doi.org/10.15520/ijnd.2017.vol7.iss6.226.16-25>

Aim: This study aimed to investigate the effects of Benson's relaxation therapy on stress and coping among mothers with high risk pregnancy.

Methods: Design: A quasi - experimental Pre-Post-test design. **Sample type:** Purposive sampling was applied. **Setting:** The study was carried out at High Risk Pregnancy Unit in Mansoura University Hospital on 50 mothers with high risk pregnancy between 24 to 36 weeks of gestation in a period from October, 2016 to March, 2017. **Tools:** A Structured Interviewing Questionnaire, Perceived Stress Scale and Coping Patterns Scale.

Results: The average score of stress scale was significantly decreased post-intervention (13.84 ± 2.53) compared to (24.62 ± 2.84) pre-intervention and the average scores of all domains of coping were significantly improved post- intervention ($P = 0.001$). There was a significant difference between the average score of stress scale with education of the mothers pre-intervention ($P = 0.001$) and it was eliminated post-intervention. Also, there was a significant difference between the average score of coping with stress and gravidity of the mothers pre-intervention ($p = 0.05$) and it was eliminated post-intervention. There was a significant negative moderate correlation between total stress score and total coping score pre and post-intervention ($r = -0.511$, $r = -0.651$, $p = 0.001$, respectively) that it means when the stress decreases, the coping is better.

Conclusion: It has been proved that the Benson's relaxation therapy serves as a resource for improving maternal psychological health by reducing stress and enhancing coping among high risk pregnant mothers.

Recommendation: The maternity nursing services are recommended to use the Benson relaxation therapy as one of the standard non-pharmacological managements in a high risk unit.

Keywords: Benson's Relaxation Therapy, Coping, High risk pregnancy, Stress.

INTRODUCTION

Pregnancy state is a wonderful period in a woman's life where she spends every day in pleasurable anticipation, waiting to hold her bundle of joy in her forearms at the end of the ninth month. But every pregnancy may not always progress smoothly. Sometimes it can be complicated by medical conditions or other health problems that termed "high risk".^[1]

A pregnancy may be defined as "high risk" on the basis of an increased probability of fetal anomaly, compromises to mother's or fetal health, and significant risk of maternal or fetal death.^[2] The identification of a high risk pregnancy may introduce extra stress, depressive symptoms, anxiety and uncertainty on a pregnant woman. Specific stresses such as lack of activity, hospitalization, bed rest, investigations, and treatments, feelings of doubt and absence of control will be experienced by high risk pregnant women. Women with high risk pregnancies seem to have high rates of bed rest. Bed rest includes movement restriction, confinement and isolation. These three factors together may have severe serious adverse physiological and psychological effects. Furthermore, bed rest is often an integral component of hospitalization. Prenatal hospitalization is associated with numerous stresses such as separation from family and home.^[3]

A woman, who is diagnosed to have a high risk pregnancy, has diverse psychological responses as stress, low self-esteem and inability to function a part of the normal stress of day to day life. Also, numerous studies focus on the undesirable effects of antenatal stress on the developing fetus. These effects include preterm birth^[4], low birth weight^[5], reduced cognitive ability^[6], increased incidence of respiratory and skin disease in early life and elevated awakening cortisol levels.^[7] Moreover, Kinsella et al.^[8] revealed that fetal heart rate, sleep patterns, activity and movements, all signals of neurobehavioral development were significantly influenced by mother's stress, anxiety and depression.

The mechanisms by which prenatal stress affects the developing fetus are not fully understood, but seem to involve changes in the uterine environment during specific serious periods, which may then alter key processes in the fetus development with long-term consequences. One of the key mechanisms identified in humans is the overexposure of the fetus to glucocorticoids (i.e. the stress hormone cortisol) as a result of the impact of stress on placental functioning. Stress appears to affect the barrier enzyme, which converts cortisol to the inactive cortisone. Increased maternal stress or anxiety reduces the level of this enzyme in the placenta, thus allowing more cortisol to pass through to the fetus. The neurotransmitter serotonin is another mediator of prenatal

stress-induced effects on the child's neurocognitive and behavioral development.^[9,10]

Coping is defined as a continuous change in cognitive and behavioral efforts aimed at addressing the demands of specific attitudes that are attributed as stressful. In the context of pregnancy, coping efforts may affect birth consequences. As a result, the ability to select and apply an appropriate coping response can be a source of flexibility that keeps pregnant mothers and fetus safe from the potentially harmful impacts of prenatal stress.^[11]

Strategies to deal with the stress of pregnancy were as follows: Planning and preparing coping strategies: for example, women seeking information and knowledge about pregnancy and childbirth. Positive spiritual confrontation: Women who choose to pray and go to religious places to face stress with pregnancy. Avoid: Women can discard physical changes during pregnancy and try to hide their feelings about pregnancy.^[11,12] A Proper coping mechanism for stress is essential for pregnant women to protect maternal and fetal health.^[13]

Stress can lead to decrease coping ability. A proper coping mechanism for stress is necessary for pregnant to safeguard the health of both mother and baby.^[13] Coping involves cognitive and behavioral attempts to deal with the demands that are recognized as taxing or going above one's resources. Both situational and interpersonal factors including available resources, competing needs and the perceived control ability of a situation influence how an individual copes with stress.^[14] Coping is also associated with disposition. For example, optimism has been linked to particular ways of coping in pregnant women.^[15]

Because of changes in the pregnancy period, there is a need for psychological compatibility in mothers. Each person's response to stress depends on genetic factors, personality behaviors, and individual handling skills with stress, living conditions and environment, social support structures and the individual previous experience.^[11]

Relaxation techniques are powerful tools for coping with stress and promoting long term health in mothers with high risk pregnancy by slowing down the body and quieting the mind. Benson's relaxation therapy is a meditation technique which was pioneered by the physician Herbert Benson during 1970 and it is based on his observation that relaxation therapy procedures are single relaxation responses characterized by diminished sympathetic arousal. It trains the individuals daily to enhance the relaxation for improving the mood, bringing down blood pressure and stressful events in life.^[16]

Benson relaxation as a nursing intervention is significantly reducing the levels of depression of women in hospitals with high risk pregnancies.^[17] Furthermore, it creates a significant increase in women's immune A (IgA) levels among postnatal women.^[18] Also, it reduces blood pressure, nervousness and depression.^[19] In addition, anxiety decreases and maternal fetal attachment increase in primagravida women.^[20]

Midwifery nurses have a vital position in aiding to meet the emotional and physical needs of women with high risk pregnancy and the feeling of comfort requirements.^[21] The nursing role is collaborating with other health teams, as well as interventions to lessen stress, evaluated the result of interventions, performing as a counselor and educator for women by instructing them to handle the issues and training of Benson relaxation techniques.^[22]

Significance of the study:

The high risk pregnant woman has diverse psychological responses as anxiety, low self-esteem and stress.^[13] One in five pregnant women may be experiencing symptoms of stress.^[23] The level of the severe stress among pregnant women with heart disease was 42.5% in Beni Suef, Egypt.^[24]

Stress in pregnancy causes side effects such as depression and mood disorders after childbirth^[25], chronic increase in blood pressure^[26] and increases the likelihood of unplanned cesarean delivery.^[12] So the identification of antenatal stress is beneficial for the antenatal women and this can support further therapeutic management in order to inhibit further complications and adverse outcome. So the pregnant women require coping strategies during pregnancy to combat with these created challenges.^[27] The coping situation adopted to maintain a complex dynamic equilibrium/ homeostasis is challenged by the internal and external forces which may threaten the state of equilibrium.^[28]

Regarding the problems mentioned above and as there were no studies in Mansoura University that have investigated the research on the effect of Benson relaxation therapy to relieve stress among high risk mothers in the hospital. This technique is relatively simple, does not require a fee, and does not consume a lot of time.

Aim of the study:

This study aimed to investigate the effects of Benson's relaxation therapy on stress and coping among mothers with high risk pregnancy

Study hypothesis:

H1: There will be a significant difference (decrease) in stress score among the high risk pregnant mothers after applying Benson's relaxation therapy.

H2: There will be a significant difference (increase) in the level of coping with stress among mothers with high risk pregnancy undergo to the Benson's relaxation therapy.

Operational definition:

Stress: Stress can be defined operationally as the means by which the body's coping mechanism adapts to external stimuli and changes in the surrounding environment. Common physical symptoms of stress include low energy, headaches, fatigue, insomnia, muscle tension, an increase in breathing rates, nervousness.

Coping: Taking steps as positive thinking, spiritual support, denial, acceptance, irony, life style changes and social support to remove the stressor.

Benson's Relaxation Therapy (BRT): A form of meditation which focuses on breathing. The woman asked to sit quietly in a comfortable position and close her eyes and breathe in and breathe out slowly through the nose. As they breathe

out, they should say the word “Allah” silently. The technique is practiced for 20 minutes twice daily in the morning and evening.

High risk pregnancy: The conditions that put mothers and fetus or both at a higher risk than normal for any complications arising during antepartum period such as pregnancy induced hypertension, placenta previa and gestational diabetes.

SUBJECTS AND METHOD

Research Design: A quasi - experimental (pre- posttest) design was used.

Study Setting: The study was carried out at High Risk Pregnancy Unit in Mansoura University Hospital.

Study Subjects: Fifty mothers were chosen by purposive sampling according to inclusion & exclusion criteria:

Inclusion criteria:

- High risk hospitalized pregnant mothers.
- 24 to 36 weeks of gestation.

Exclusion Criteria:

- Mothers who had complications of high risk pregnancy.
- Mothers who were already practicing relaxation techniques.
- Mothers who complaining from family and social trouble.

Sample size: Using Dss.research.com software program to calculate sample size with decreasing pain score from 4.10 ± 1.03 at 24 hours after CS in women not using Benson relaxation technique to 3.57 ± 1.01 among women using the Benson relaxation technique [29] and at 5.0% ∞ error (95.0 significance) and 20.0 β error (80.0% power of the study); the calculated sample size is 46 subjects. We add 10.0% for better data quality, so the sample size will be 50 women.

Tools of Data Collection:

Data were collected through

Tool I: A Structured Interviewing Questionnaire

Schedule: It was designed by the researchers after reviewing related literatures; to be filled from each mother. It consisted of two parts:

Part 1: This part covered the data related to general characteristics (age, education, occupation and residence).

Part 2: This part included obstetric variable as (gravid, abortion, the number of deliveries, and number of children).

Tool II: Perceived stress scale (PSS)

It was adapted from Cohen *et al*, (1983). [30] It was used to measure the perception of stress. It consisted of 10 items. The total score was calculated by finding the sum of 10 items; reverse coding questions 4, 5, 7, & 8 as table down. The PSS had a range of scores between 0 and 30. A higher score indicates more stress.

| Score | Never | Sometime | Often |
|------------------------|-------|----------|-------|
| Questions 1,2,3,6,9,10 | 1 | 2 | 3 |
| Questions 4,5,7,8 | 3 | 2 | 1 |

Tool III: Coping Patterns Scale: Adopted from Genedy (2011) [31]

It was used to assess different coping patterns among high risk pregnant mothers. It included 26 statements that cover six coping mechanisms; positive attitude, spiritual support,

denial, acceptance, irony, lifestyle change and social support. The mother was asked to give scores for each statement ranged from never, sometimes, and always as follow 1, 2, and 3 respectively according to the previous mentioned scale.

Validity of the Tool:

Tools were reviewed by three jury experts and specialized university professors in maternity nursing field to test the content validity. According to their comments, modifications were considered.

Reliability of the Tools:

Reliability of the two tools was done through the researchers by conducting pilot study on 10 mothers to calculate Chronbach's alpha and test retest for each tool.

- Second tool (Perceived Stress Scale): Chronbach's alpha was 0.722 and test retest $r = 0.792$, $P 0.001$.
- Third tool (Coping Patterns Scale): Chronbach's alpha was 0.887 and test retest ($r = 0.861$, $P 0.001$).

So both tools were reliable and valid.

Ethical Considerations:

- Prior to data collection, an ethical approval was obtained from the research ethics committee of the faculty of the nursing Mansoura University.
- An official permission was obtained from the head of obstetrics and gynecology department at Mansoura University hospital.
- Written informed consent was obtained from the mothers who participated in the study after explaining the purpose of the study.
- The mothers were reassured about the confidentiality of the information. They were informed about their rights to refuse participation or withdraw at any time. The study maneuvers couldn't entail any harm to participants.

Pilot Study:

A pilot study was conducted on 10 mothers in order to test the applicability and relevance of the study tools and to test the clarity of the designed questionnaire as well as to estimate the time needed to answer them and then the necessary modifications were done as change the options of second tool from five to three. These mothers were excluded from the study sample.

Method:

- This research was done at inpatient unit among high risk pregnancy mothers at Mansoura University hospital in a period from October, 2016 to March, 2017.
- The researchers introduced themselves to the mother and explained the aim of the study before data collection.
- First, each mother was interviewed individually to collect data related to general characteristics, obstetric variables, stress and coping. Each interviewing time ranged from 30 - 45 min.
- Second, the researcher clarified the Benson's relaxation technique for mothers and made a demonstration and asked mothers to demonstrate it under observation of the researchers. The steps of Benson's relaxation were as follows:

- The researchers asked the mother to sit quietly in a suitable comfortable position, then close the eyes, then deeply relax all muscles, starting from the feet and continuing up to the face and retain them relaxed. After that, the researcher told the mother to breathe through the nose and become aware of breathing. While breathing out, she should say any comfortable word silently to herself. For example, they told her to breathe in and then out and say "Allah" in and out and to repeat "Allah". She breathed easily and naturally.
- Also, the researcher told the mother to continue for twenty minutes. After finishing, she was told to sit silently for numerous minutes, at first with closed eyes and later with open eyes and not to stand up for even a few minutes.
- The researcher asked the mother not to worry about whether she was successful in achieving a deep level of relaxation. Maintain a passive attitude and permit relaxation to occur at its own pace. When confusing thoughts occur, try to ignore them by not dwelling upon them and return to repeat "Allah".
- Benson's relaxation therapy was done over 20 minutes twice a day for 14 days. It was applied in the first week under the supervision of the researchers,

followed a week without supervision. The mothers performed themselves with a telephone reminder every two days from the researcher. The mothers received intervention plus routine hospital care.

- On the 15th day the post test was done by using the same stress and coping tool

Statistical Analysis:

Statistical Package for Social Sciences (SPSS) version 20.0 was used for data analysis. Quality control was done at the stages of coding and data entry. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. Quantitative data were initially tested of normality using Shapiro-wilk test. Data will be consider normally distributed if $p > 0.05$. Qualitative variables were compared using (χ^2) test while paired (t) test and one way ANOVA (F) tests were used for comparison of quantitative data. Correlation coefficient (r) was done to find Pearson's correlation between two quantitative variables. Statistical significance was considered at p-value < 0.05 .

RESULTS

Table (1): Frequency distribution of the studied sample according to their general characteristics and obstetric history

| Characters | Items | No | % |
|--------------------------|--|----|------|
| Age (years) | < 20 | 7 | 14.0 |
| | 20- | 32 | 64.0 |
| | 30- | 10 | 20.0 |
| | 40+ | 1 | 2.0 |
| | Range 17.0- 42.0 years Mean \pm SD 26.3 \pm 5.73 y | | |
| Education | Basic & below | 5 | 10.0 |
| | Secondary | 9 | 18.0 |
| | Technical | 18 | 36.0 |
| | University | 18 | 36.0 |
| Occupation | Working | 14 | 28 |
| | Not working | 36 | 72 |
| Residence | Rural | 37 | 74.0 |
| | Urban | 13 | 26.0 |
| Obstetric history | | | |
| Gravid | Once | 16 | 32.0 |
| | 2 - 3 | 22 | 44.0 |
| | > 3 | 12 | 24.0 |
| Abortion | No | 34 | 68.0 |
| | Once | 10 | 20.0 |
| | 2 - 3 | 3 | 6.0 |
| | > 3 | 3 | 6.0 |
| Number of delivery | No | 20 | 40.0 |
| | Once | 16 | 32.0 |
| | 2 - 3 | 14 | 28.0 |
| Number of children | N0 | 20 | 40.0 |
| | Once | 16 | 32.0 |
| | Two | 10 | 20.0 |
| | Three | 4 | 8.0 |

Table (1) shows the general characteristics and obstetric history of the study sample. It was found that the age ranged from 17.0 to 42.0 years with average 26.30 ± 5.73 years, 54.0% had secondary and technical education, 28.0% of them were working and 74.0% from rural areas. About

32.0% of the studied sample got pregnant for the first time while 44.0% got pregnant 2-3 times, 68.0% had no abortion and 40.0% had no deliveries. The high risk pregnancy problems encountered by mothers were pregnancy induced hypertension, gestational diabetes mellitus and heart disease.

Table (2): Comparison of the frequency distribution of the items of stress evaluation scale and its average pre and post- intervention

| Items | Time | Stress scale | | | Significance test |
|---|------------------|-----------------------|------------------------|------------------------|---------------------------------|
| | | Seldom | Sometime | Always | |
| 1. How often have you been upset because of something that happened unexpectedly? | Pre Post | ----- 34 (68.0) | 14 (28.0) 16 (32.0) | 36 (72.0) ----- | $\chi^2 = 70.130, P = 0.001$ |
| 2. How often have you felt that you were unable to control the important things in your life? | Pre Post | 6 (12.0) 38 (76.0) | 14 (28.0) 10 (20.0) | 25 (50.0) 2 (4.0) | $\chi^2 = 46.660, P = 0.001$ |
| 3. How often have you felt nervous and "stressed"? | Pre Post | 2 (4.0) 33 (66.0) | 15 (30.0) 17 (34.0) | 33 (66.0) ----- | $\chi^2 = 60.580, P = 0.001$ |
| 4. How often have you felt confident about your ability to handle your personal problems? | Pre Post | 4 (8.0) ----- | 21 (42.0) 23 (46.0) | 25 (50.0) 27 (54.0) | $\chi^2 = 4.170, P = 0.124$ |
| 5. How often have you felt that things were going you way? | Pre Post | 33 (66.0) ----- | 15 (30.0) 27 (54.0) | 2 (4.0) 23 (46.0) | $\chi^2 = 54.02, P = 0.001$ |
| 6. How often have you found that you could not cope with all the things that you had to do? | Pre Post | 2 (4.0) 31 (62.0) | 23 (46.0) 17 (34.0) | 25 (50.0) 2 (4.0) | $\chi^2 = 45.980, P = 0.001$ |
| 7. How often have you been able to control irritations in your life? | Pre Post | 34 (68.0) 4 (8.0) | 14 (28.0) 17 (34.0) | 2 (4.0) 29 (58.0) | $\chi^2 = 24.050, P = 0.001$ |
| 8. How often have you felt that you were on top of things? | Pre Post | 32 (64.0) 8 (16.0) | 16 (32.0) 17 (34.0) | 2 (4.0) 25 (50.0) | $\chi^2 = 34.020, P = 0.001$ |
| 9. How often have you been angered because of things that were outside of your control? | Pre Post | 5 (10.0) 39 (78.0) | 17 (34.0) 11 (22.0) | 28 (56.0) ----- | $\chi^2 = 55.560, P = 0.001$ |
| 10. How often have you felt difficulties were piling up so high that you could not overcome them? | Pre Post | 3 (6.0) 45 (90.0) | 17 (34.0) 5 (10.0) | 30 (60.0) ----- | $\chi^2 = 73.100, P = 0.001$ |
| Average stress score | | | | | |
| Pre- intervention stress score (mean \pm SD) | 24.62 \pm 2.84 | | | | Paired t = 18.680, p = 0.001 |
| Post- intervention stress score (mean \pm SD) | 13.84 \pm 2.53 | | | | |

Table (2) shows the items of stress evaluation scale pre and post intervention. It was found that there was a significant change in frequency of all items of the scale post-intervention to the direction of minimizing stress. The

average score of stress scale was significantly decreased post-intervention (13.84 ± 2.53) comparing to (24.62 ± 2.84) pre-intervention.

Table (3): Comparison between the average score of coping items pre and post-intervention

| Items of coping | Pre-intervention | Post-intervention | Paired t test |
|--------------------|------------------|-------------------|---------------------|
| | Mean \pm SD | Mean \pm SD | |
| Positive thinking | 10.36 \pm 2.62 | 17.64 \pm 2.13 | t = 11.945, P 0.001 |
| Spiritual support | 3.36 \pm 0.63 | 4.04 \pm 0.49 | t = 7.366, P 0.001 |
| Denial | 8.04 \pm 1.64 | 10.76 \pm 1.22 | t = 8.762, P 0.001 |
| Acceptance | 7.50 \pm 1.98 | 10.84 \pm 1.43 | t = 9.721, P 0.001 |
| Irony | 1.60 \pm 0.61 | 1.18 \pm 0.39 | t = 4.063, P 0.001 |
| Life style changes | 8.08 \pm 1.90 | 12.82 \pm 1.71 | t = 15.157, P 0.001 |
| Social support | 6.92 \pm 1.56 | 10.00 \pm 1.32 | t = 9.806, P 0.001 |
| Total coping score | 45.86 \pm 8.32 | 67.28 \pm 4.58 | t = 12.937, P 0.001 |

Table (3) shows the average score of coping items pre and post-intervention. It was clear from this table that the average scores of all domains were significantly improved post-intervention (P = 0.001).

Table (4): Relationship between average score of stress scale and general & obstetric characteristics of the studied sample pre and post-intervention

| Variable | Characters | No | Pre-intervention | Post-intervention | Significance Paired t test |
|-------------------|-----------------------|----|------------------|-------------------|----------------------------|
| | | | Mean ± SD | Mean ± SD | |
| Age | < 20 | 7 | 23.00 ± 2.71 | 14.57 ± 2.15 | t=6.362, P0.001 |
| | 20 – | 32 | 25.22 ± 2.35 | 13.78 ± 2.52 | t=16.267, P0.001 |
| | 30+ | 11 | 23.91 ± 3.81 | 13.54 ± 2.88 | t=7.675, P0.001 |
| Significance test | | | F=2.309, P0.111 | F=0.367, P0.695 | |
| Education | Basic & less | 5 | 21.20 ± 1.30 | 15.00 ± 2.55 | t=5.568, P 0.005 |
| | Secondary & technical | 27 | 25.85 ± 1.92 | 13.81 ± 2.65 | t=17.692, P 0.001 |
| | University | 18 | 23.72 ± 3.25 | 13.56 ± 2.38 | t=10.028, P0.001 |
| Significance test | | | F=9.503, P0.001 | F=0.638, P0.536 | |
| Occupation | Working | 14 | 23.57 ± 2.41 | 14.64 ± 2.37 | t=9.213,P0.001 |
| | Not working | 36 | 25.03 ± 2.92 | 13.38 ± 2.55 | t=16.935,P0.001 |
| Significance test | | | t=1.565,P0.104 | t=1.416,P0.163 | |
| Residence | Rural | 37 | 24.94 ± 2.63 | 14.00 ± 2.47 | t=16.256, P 0.001 |
| | Urban | 13 | 23.69 ± 3.30 | 13.38 ± 2.72 | t=8.808, P 0.001 |
| Significance test | | | t=1.381, P0.174 | t=0.752, P0.456 | |
| Gravidity | Once | 16 | 25.38 ± 2.13 | 13.37 ± 2.42 | t=19.817,P0.001 |
| | 2-3 | 22 | 24.41 ± 2.68 | 14.59 ± 2.54 | t=10.561,P0.001 |
| | >3 | 12 | 24.00 ± 3.84 | 13.08 ± 2.47 | t=7.409,P0.001 |
| Significance test | | | F=0.907,P0.411 | F=1.842,P0.170 | |
| Abortion | No | 34 | 24.32 ± 2.86 | 13.97 ± 2.64 | t=15.240,P0.001 |
| | Yes | 16 | 25.25 ± 2.76 | 13.56 ± 2.42 | t=10.793,P0.001 |
| Significance test | | | t=1.077,P0.287 | t=0.529,P0.599 | |
| Parity | No | 20 | 24.95 ± 2.61 | 13.50 ± 2.37 | t=14.882,P0.001 |
| | Once | 16 | 24.94 ± 2.49 | 14.31 ± 2.55 | t=9.353,P0.001 |
| | 2-3 | 14 | 23.79 ± 3.51 | 13.78 ± 2.81 | t=8.272,P0.001 |
| Significance test | | | F=0.832,P0.441 | F=0.454,P0.638 | |
| Children No | No | 20 | 24.95 ± 2.61 | 13.50 ± 2.37 | t=14.882,P0.001 |
| | Once | 16 | 24.94 ± 2.49 | 14.31 ± 2.55 | t=9.353,P0.001 |
| | 2-3 | 14 | 23.79 ± 3.51 | 13.78 ± 2.81 | t=8.272,P0.001 |
| Significance test | | | F=0.832,P0.441 | F=0.454,P0.638 | |

Table (4) shows the relationship between the average score of stress scale and general & obstetric characteristics of the studied sample pre and post-intervention. It was found that there was a significant difference between the average score of the stress scale with education of the mothers pre-

intervention (P= 0.001) and it was eliminated post-intervention. Also, the average stress scale score showed a significant decrease post- intervention in different with different items of characteristics and obstetric history of the studied sample.

Table (5): Relationship between average score of coping with stress and general & obstetric characteristics of the studied sample pre and post-intervention

| Variable | Characters | No | pre-intervention | post-intervention | Significance test |
|-------------------|--------------|----|------------------|-------------------|-------------------|
| | | | Mean ± SD | Mean ± SD | |
| Age | < 20 | 7 | 46.43 ± 5.80 | 67.86 ± 2.79 | t=6.672,P0.001 |
| | 20 – | 32 | 45.00 ± 7.82 | 67.16 ± 4.91 | t=10.578,P0.001 |
| | 30+ | 11 | 48.00 ± 11.05 | 67.91 ± 4.78 | t=4.764,P0.001 |
| Significance test | | | F=0.540,P0.586 | F=0.140,P0.870 | |
| Education | Basic & less | 5 | 51.80 ± 7.40 | 65.60 ± 2.97 | t=3.295,P0.030 |
| | 2ndry & tech | 27 | 44.22 ± 6.00 | 67.44 ± 4.59 | t=12.394,P0.001 |
| | University | 18 | 46.67 ± 10.79 | 67.50 ± 5.04 | t=6.144,P0.001 |
| Significance test | | | F=1.954,P0.153 | F=0.364,P0.697 | |
| Occupation | Working | 14 | 46.92 ± 7.64 | 66.00 ± 4.87 | t=6.110,P0.001 |
| | Not working | 36 | 45.44 ± 8.64 | 67.78 ± 4.44 | t=11.400,P0.001 |
| Significance test | | | t=0.562,P0.577 | t=1.238,P0.222 | |
| Residence | Rural | 37 | 45.70 ± 7.14 | 67.14 ± 4.72 | t=11.499,P0.001 |
| | Urban | 13 | 46.31 ± 10.85 | 67.69 ± 4.35 | t=5.844,P0.001 |
| Significance test | | | t=0.223,P0.855 | t=0.374,P0.710 | |
| Gravidity | Once | 16 | 41.81 ± 4.72 | 67.44 ± 4.21 | t=12.644,P0.001 |
| | 2-3 | 22 | 47.23 ± 7.45 | 67.00 ± 5.01 | t=7.936,P0.001 |
| | >3 | 12 | 48.75 ± 11.64 | 67.58 ± 4.60 | t=4.381,P0.001 |
| Significance test | | | F=3.170,P0.051 | F=0.074,P0.926 | |
| Abortion | No | 34 | 45.68 ± 8.86 | 67.38 ± 4.26 | t=10730,P0.001 |
| | Yes | 16 | 46.25 ± 7.29 | 67.06 ± 5.34 | t=7.009,P0.001 |
| Significance test | | | t=0.225,P0.823 | t=0.228,P0.821 | |
| Parity | No | 20 | 42.90 ± 5.21 | 67.55 ± 4.36 | t=13.104,P0.001 |
| | Once | 16 | 47.00 ± 8.49 | 67.19 ± 5.59 | t=5.868,P0.001 |
| | 2-3 | 14 | 48.79 ± 10.67 | 67.00 ± 3.90 | t=5.294,P0.001 |
| Significance test | | | F=2.411,P0.101 | F=0.062,P0.940 | |
| Children No | No | 20 | 42.90 ± 5.21 | 67.55 ± 4.36 | t=13.104,P0.001 |
| | One | 16 | 47.00 ± 8.49 | 67.19 ± 5.59 | t=5.868,P0.001 |
| | 2-3 | 14 | 48.79 ± 10.67 | 67.00 ± 3.90 | t=5.294,P0.001 |
| Significance test | | | F=2.411,P0.101 | F=0.062,P0.940 | |

Table (5) shows the relationship between the average score of coping with stress and general & obstetric characteristics of the studied sample pre and post-intervention. It was found that there was a significant difference between the average score of coping with stress with gravidity of the mothers

pre-intervention ($P = 0.05$) and it was eliminated post-intervention. Also, the average coping with stress score showed a significant increase post-intervention in different with different items of general characteristics and obstetric history of the studied sample.

Table (6) Correlation matrix between scores of stress and coping scales pre and post- intervention

| | Coping score pre-intervention | Coping score post-intervention |
|---------------------------------|-------------------------------|--------------------------------|
| Stress score pre-intervention | $r = - 0.511, P 0.001$ | $r = 0.213, P 0.137$ |
| Stress Score post- intervention | $r = - 0.590, P 0.001$ | $r = - 0.651, P 0.001$ |
| Coping score pre-intervention | | $r = - 0.613, P 0.001$ |

Table (6) and figures (1) and (2) shows the correlation between stress scale and coping scale scores pre and post-intervention. There was a significant negative moderate

correlation between total stress score and total coping score pre and post- intervention (it means that when the stress decrease the coping will be better).

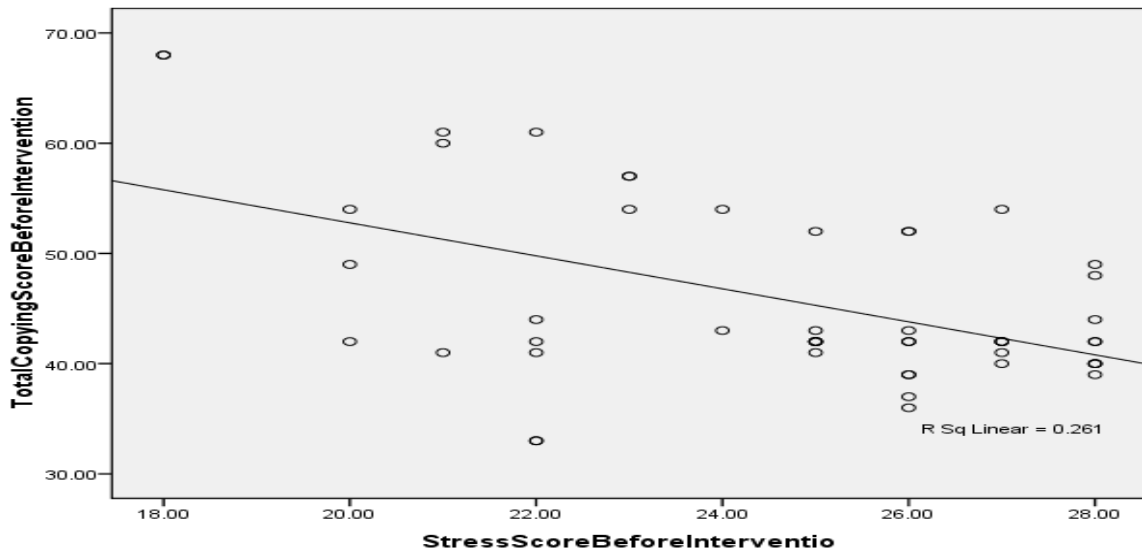


Figure (1): Correlation between stress score and total coping score before intervention ($r = - 0.511, p 0.001$)

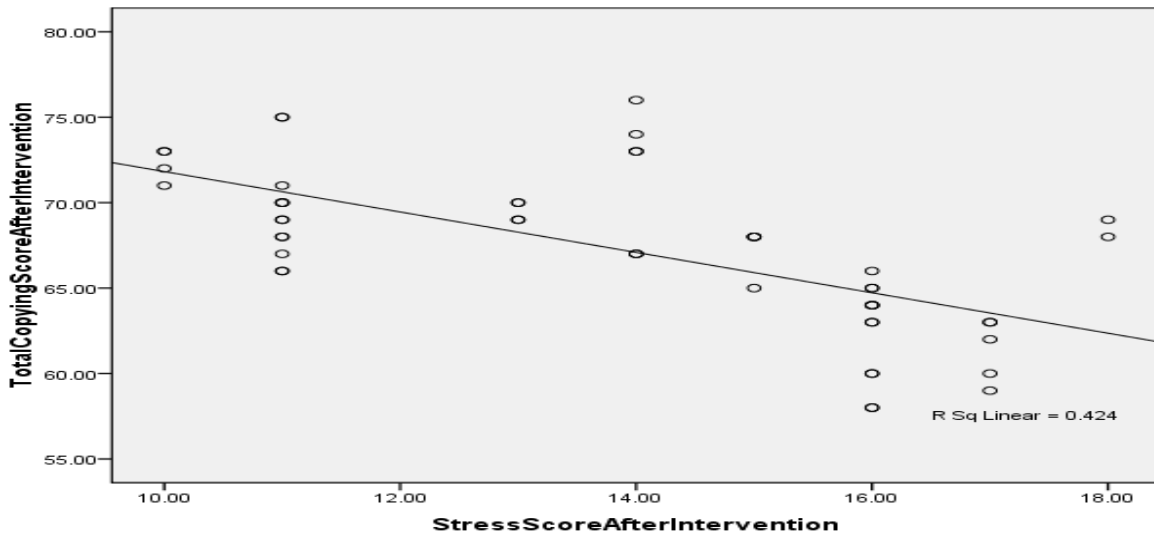


Figure (2): Correlation between stress score and total coping score after intervention ($r = - 0.651, p 0.001$)

DISCUSSION

This study aimed to investigate the effects of Benson’s relaxation therapy on stress and coping among mothers with high risk pregnancy. The findings of the study indicated the

effectiveness of Benson’s relaxation technique in decreasing level of stress and enhancing coping among high risk pregnant women. So the research hypotheses were accepted.

The current study findings revealed that the majority of the study sample age was 20–<30 years, more than two thirds of them had technical and university educational level and not working. The study findings were in agreement with **Kumar *et al.***^[32] who studied the prevalence of high risk pregnancy in rural Dharwad, India and stated that the majority of women's age ranged from 20–<30 years and more than half of them had higher and secondary educational level. Also, the present study result was in the same line with **Hafez *et al.***^[33] who studied the profile of high risk pregnancy among Saudi women in Taif-KSA and reported that the majority of women did not work. The agreement of the present study results with other studies may be due to age from 20–<30 which is the most suitable age of pregnancy.

Concerning the average score of stress scale pre and post-intervention, the present study results revealed that the level of stress among the study sample was significantly decreased after practicing Benson's relaxation therapy. This may be interpreted by practicing Benson's relaxation therapy leading to improve the relaxation response which is personal ability to make the body release chemicals and brain signals that make the muscles and organs slow down and increases blood flow to the brain. Also, all relaxation-response techniques are characterized by reduced stress hormones and reduced central nervous system activity in the form of measurable brain wave changes.

The present study finding was supported by the study conducted by **Paramban *et al.***^[34] about the effectiveness of Benson's relaxation therapy for reduction of stress among primigravid mothers in Fathima hospital, Kannur, India and found that there was a significant difference in stress scores before and after practicing intervention among primigravid mothers. Also the present study finding was concordant with a similar study carried by **Padmavathi**^[35] who studied the effectiveness of Benson relaxation on stress among antenatal mothers at Namakkal district and reported that there was significant reduction of stress among antenatal mothers after Benson relaxation.

Moreover, **Jazna *et al.***^[36] study about the effectiveness of Benson relaxation on blood pressure and stress among women with pregnancy induced hypertension at Madurai who confirmed that the stress level of women was highly significantly reduced after administration of breathing relaxation as mean of score reduced from 21.9 ± 4.2 to 12.9 ± 3.23 . Similarity, **de Araújo *et al.***^[17] study about effects of relaxation on depression levels among Brazilian women with high-risk pregnancies and stated that relaxation as a nursing intervention was effective and significantly decreasing the levels of depression of hospitalized women with high risk pregnancies.

Additionally, study results were supported by **Bastani *et al.***^[37] who conducted a study to evaluate the effects of applied relaxation training on reducing anxiety and perceived stress in pregnant women and reported significant declines in stress scores after relaxation therapy among the primigravid mothers. Also, a study finding was in agreement with a study was conducted in Thailand by **Khianman *et al.***^[38] on relaxation therapy for preventing and treating preterm labour

and reported that relaxation during pregnancy reduced stress and anxiety.

Moreover, the current study results were concordant with study was conducted by **Reshma *et al.***^[39] at government hospital, Mangalore in India to evaluate the effectiveness of relaxation therapy on mild pregnancy induced hypertension and showed that the mean of stress pre-relaxation score was significantly higher than the mean of stress post relaxation scores.

Regarding the coping of high risk pregnant mothers in the current study, the average scores of all domains were significantly improved post-intervention and changed towards better coping after practicing BRT. That confirms the positive effects of Benson's relaxation technique on enhancing coping among high risk mothers. As well, BRT leads to increase relaxation, which in turn leads to symptom reduction and improved well-being of mothers.

The current study result was in adherence with **Philip & Sumathi**^[40] study about the effectiveness of Benson's relaxation of stress and coping among high risk mothers in India who revealed that after practicing Benson relaxation for four weeks the coping improved and good coping was experienced by majority of mothers. Moreover, **Feyzi *et al.***^[41] supported this result in their study about the effects of Benson's relaxation technique on the quality of life among patients receiving hemodialysis who revealed that Benson's relaxation technique significantly improved patients' general and total quality of life.

Moreover, the present study results were in agreement with **Azizi**^[42] who studied effects of doing physical exercises on stress-coping strategies and the intensity of the stress experienced by university students in Zabol, Iran and showed that exercise had an effect in selecting efficient and appropriate coping strategies and reduced the intensity of stress.

Regarding the relationship between the average score of stress scale and general & obstetric characteristics of the studied sample pre and post-intervention, it was found that there was a significant difference between the average score of the stress scale with education of the mothers' pre-intervention and it was eliminated post-intervention. This may be due to more than half of the mothers had technical and secondary educational level. The present study findings were in accordance with **Paramban *et al.***^[34] who reported that the educational status highly influenced the stress level of primigravid mothers. Also, the present study result was in agreement with **Pais *et al.***^[43] who study stress among antenatal woman in India and stated that there was a significant association between the level of antenatal stress and educational status.

Regarding the relationship between the average score of coping scale and obstetric characteristics of the studied sample, it was found that there was a significant difference between the average score of coping with stress with gravidity of the mothers before intervention and it was eliminated after intervention. This result was in agreement with **Ruiz *et al.***^[44] who studied coping in pregnant minority

women at USA and revealed that there was a significant negative predictor between gravidity and active coping.

In relation to the correlations between stress scale and coping scale scores pre and post-intervention, the present study results showed that there was a significant negative moderate correlation between total stress score and total coping score pre and post-intervention and this reflected that when the stress decreased, the coping was better. These study results were consistent with Philip & Sumathi^[40] who reported that there was a moderate negative correlation between stress and coping in posttest of Benson relaxation and a weak negative correlation between stress and coping in pretest of Benson relaxation and this highlights that when stress decreases, coping among high risk pregnancy mothers increases.

CONCLUSION

It was evident that the Benson's relaxation therapy serves as a resource for improving maternal psychological health by reducing stress and enhancing coping among high risk pregnant mothers.

RECOMMENDATIONS

- The maternity nursing services are recommended to use the technique of Benson relaxation as one of the standard non pharmacological management in a high risk unit.
- Benson relaxation training can be used as training material for nurses in the maternity hospital.
- Continuing nursing workshop could be conducted to enhance nurse's skills in providing competent care for those women who experience stress due to various causes and decreased coping ability at the hospital.
- Applying the Benson's relaxation technique among normal pregnant woman with stress
- Applying the Benson's relaxation technique in the different fields of clinical nursing.

For further study:

- Assess factors and cofactors that increase stress among high risk hospitalized pregnant women

Limitations:

The only limitation in this study was utilization of quasi experimental method without control group.

ACKNOWLEDGMENT

A grateful appreciation to all high risk mothers participated in the study and all health team members for their cooperation during the study period.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

REFERENCES

- [1]. Bódecz T, Horváth B, Szilágyi E, et al. Effects of depression, anxiety, self-esteem, and health behavior on neonatal outcomes in a population-based Hungarian sample. *Eur J Obstet Gynecol.* (2011); 154: 45-50.
- [2]. Gourounti K., Karapanou V., Karpathiotaki N., et al. Anxiety and depression of high risk pregnant women hospitalized in two public hospital settings in Greece. *International Archives of Medicine.* (2015); 8(25): 1-6.
- [3]. Qiao YX, Wang J, & Ablat, A. The prevalence and related risk factors of anxiety and depression symptoms among Chinese pregnant women in Shanghai. *Austr New Zeal J Obstet Gynaecol.* (2009); 49: 185-190.
- [4]. Sanchez SE, Puente GC, Atencio G, et al. Risk of spontaneous preterm birth in relation to maternal depressive, anxiety and stress symptoms. *J Reprod Med.* (2013); 58: 25–33.
- [5]. Dunkel C & Tanner L. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Curr Opin Psychiatry.* (2012); 25: 141–148.
- [6]. Bergman K, Sarkar P, O'Connor TG, et al. Maternal stress during pregnancy predicts cognitive ability and fearfulness in infancy. *J Am Acad Child Adolesc Psychiatry.* (2007); 46: 1454–1463.
- [7]. Beijers R, Jansen J, Riksen-Walraven M, et al. Maternal prenatal anxiety and stress predict infant illnesses and health complaints. *Pediatrics.* (2010); 126: e401–9. Available: <http://www.ncbi.nlm.nih.gov/pubmed/20643724> . Accessed 17 July 2014.doi:
- [8]. Kinsella MT & Monk C. Impact of maternal stress, depression & anxiety on fetal neurobehavioral development. *Clinical Obstetric Gynecology.* (2013); 52: 1–15.
- [9]. O'Donnell KJ, Bugge Jensen A, Freeman L, et al. Maternal prenatal anxiety and downregulation of placental 11betaHSD2. *Psycho neuroendocrinology.* (2012); 37(6):818-26.
- [10]. Glover V, Barlow J. Psychological adversity in pregnancy: what works to improve outcomes? *J Children's Services.* (2014);9(2):96-108. Available from: dx.doi.org/10.1108/JCS-01-2014-0003.
- [11]. Guardino CM & Schetter CD. Coping during pregnancy: a systematic review and recommendations. *Health Psychol Rev.* 2013 (10):37-41.
- [12]. Hamilton JG, & Lobel M. Types, patterns, and predictors of coping with stress during pregnancy: Examination of the revised prenatal coping Inventory in a diverse sample. *J Psychosom Obstet Gynaecol.* (2008); 29(2):97-104.
- [13]. Holly & Cassey L. Stress and coping in pregnancy. *International Journal of Nursing Care.* (2010); 2 (2) 63.
- [14]. Yali, AM & Lobel M. Stress resistance resources and coping in pregnancy. *Stress and coping.* (2002); 15(3): 289-309.
- [15]. De Longis A & Hoitzman S. Coping in context: The role of stress, social support and personality in coping. *Journal pers.* (2005); 37(6): 1-24.
- [16]. Marty S. Relaxation control blood pressure, American psychological association. (2008); 39, (9) 32.
- [17]. De Araújo, Romero WG, Zandonade E & et al.: Effects of relaxation on depression levels in women with high-risk pregnancies: A randomized clinical trial. *Rev. Latino-Am.*

- Enfermagem. 2016;24:e2806 ; Available in DOI: <http://dx.doi.org/10.1590/1518-8345.1249.2806>
- [18]. Primo CC, Amorim MHC, Leite FMC. An intervenção de Enfermagem-Relaxamento e seus efeitos no sistema imunológico de puérperas. *Acta Paul Enferm.* [Internet]. 2011 [Acesso 12 Marh 2016]; 24(6):751-5.
- [19]. Bhasin MK, Dusek JA, Chang BH, Joseph MG, Denninger JW, Fricchione GL, et al. Relaxation response induces temporal transcriptome changes in energy metabolism, insulin secretion and inflammatory pathways. *PLoS One.* [Internet]. 2013 [Access 12 Mar 2016]; 1;8(5):e62817. <http://dx.doi.org/10.1371/journal.pone.0062817>.
- [20]. Toosi M, Akbarzadeh M, Sharif F, Zare N. The Reduction of anxiety and improved maternal attachment to fetuses and neonates by relaxation training in primigravida women. *Women's Health Bull.* [Internet]. 2014 [Access 12 Mar 2016]; 1(1):e18968. Available from: http://womenshealthbulletin.com/?page=article&article_id=18968. <http://dx.doi.org/10.17795/whb-18968>.
- [21]. Royal College of Midwives. High Quality Midwifery Care. (2014). Available at <https://www.rcm.org.uk/sites/default/files/High%20Quality%20Midwifery%20Care%20Final.pdf>
- [22]. Solehati, T,& Rustina, Y. The effect of Benson relaxation on reduction of pain level among post caesarean section mother at Cibabat Hospital, Indonesia. *Journal of Nursing and Health Care (JNHC).* (2013) 1 (1) available at: https://www.dropbox.com/s/8dexhy799q5cc8r/JNHC%20Vol.1%20No%201_Paper%202
- [23]. Scheter D. Psychological science on pregnancy: stress processes, biopsychosocial models, and emerging research issues. *Annu Rev Psychol.* (2010); 62:531–558.
- [24]. Hassan H, Sheha E, & Nasr E. “level of stress among pregnant women with heart problems” *International Journal of Research.* (2016); 4 (7) 220-230.
- [25]. Karacam Z. Depression, anxiety and influencing factors in pregnancy: a study in a Turkish population. *Midwifery.* (2009); 5(4):344-56.
- [26]. Nik Rahan GR, Kajbaf MB, Nori A, Zarean E, et al. Assessment of the relationship between personality traits, coping styles with stress and stress level in pregnant women. *Iran J Obstetr, Gynecol Infertil.*(2010) ;14(5):49.
- [27]. Sarani A, Azhari S, & Mazlom SR, Aghamohammadian Sherbaf HM . The relationship between coping strategies during pregnancy with perceived stress level in pregnant mothers. *J Babol Univ Med Sci.* (2016); 18(7): 7-13.
- [28]. Plytycz B. & Seljelid R. Stress and immunity: Mini review, *Folia Biologica(karkow).* (2002); 50. 181-189.
- [29]. Solehati T & Rustina Y. Benson relaxation technique in reducing pain intensity in women after cesarean section. *Anesthesiology and pain medicine;*5 (3),1-5.with perceived stress level in pregnant mothers. *J Babol Univ Med Sci.* (2015); 18(7): 7-13.
- [30]. Cohen, S, Kamarck, T & Mermelstein R. A Global measure of perceived stress. *Journal of health and social behavior.* (1983); 24(4)385-396.
- [31]. Genedy ASE, Ibrahim RM, & Abo Shabana K R. Coping patterns among pre-eclamptic pregnant women. Unpublished Master Thesis Ain Shams University (2011).
- [32]. Kumar M, Gnanadeep T, Dixit R, et al. Prevalence of high risk pregnancy in rural Dharwad. *Journal of Dental and Medical Sciences.* (2015); 14 (10), 29-32.
- [33]. Hafez, SK, Dorgham, LS & Sayed SA. Profile of high risk pregnancy among Saudi women in Taif-KSA. *World Journal of Medical Sciences.* (2014); 11 (1): 90-97.
- [34]. Paramban S, Bala S, Sowmya K, et al.: Effectiveness of benson's relaxation therapy on reduction of stress among primigravid mothers. *Acta Medica International.* (2016); 3 (2):133-140.
- [35]. Padmavathi, P. Assess the effectiveness of Benson's relaxation on stress among antenatal mothers attending outpatient department in selected PHC at Namakkal District. *International Journal of Advances in Nursing Management.* (2014) ; 2(2): 86-89.
- [36]. Jazna B, Jebakumari R, & Jeyavantha N. A study to assess the effectiveness of Benson relaxation therapy on blood pressure and stress among women with pregnancy induced hypertension in selected hospitals, Madurai. *Asian Journal of Nursing Education and Research.* (2016); 6(2): 167-170.
- [37]. Bastani F, Hidarnia A, Kazemnejad A, et al. A randomized controlled trial of the effects of applied relaxation training on reducing anxiety and perceived stress in pregnant women. *Journal of midwifery & women's health.* (2005); 50(4): 36-40.
- [38]. Khianman B, Pattanittum P, Thinkhamrop J, & Lumbiganon P. Relaxation therapy for preventing and treating preterm labour. *Cochrane Database Syst Rev.* (2012); 8:CD007426.
- [39]. Reshma SS, Salins A, Kiron SS & Saritha M. Effect of relaxation therapy on mild pregnancy induced hypertension.
- [40]. Philip N & Sumathi G. A study to assess the effectiveness of Bensons relaxation on stress and coping among mothers with high risk pregnancies admitted at antenatal words of Sri Ramachandra hospital . *International journal of Allied medical science and clinical research.* (2014); 2(4): 404-409.
- [41]. Feyzi H , Khaledi B , Hadadian F , et al. Investigating the effects of Benson's relaxation technique on quality of life among patients receiving hemodialysis. *Iran J Crit Care Nurs.* (2015); 8(1):13-20.
- [42]. Azizi, M. Effects of doing physical exercises on stress-coping strategies and the intensity of the stress experienced by University students in Zabol, Southeastern Iran. *Procedia - Social and Behavioral Sciences* (2011); 30(1), 372–375.
- [43]. Pais M, Pai MV, Kamath A, George A, et al. Stress among antenatal women in India. *International Journal of Nursing Care.* (2014); 2(2) 63.
- [44]. Ruiz R.J., Gennaro S., O'Connor C., et al. Measuring coping in pregnant minority women. *West J Nurs Res.*(2015); 37(2): 257–275.