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"A QUASI EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF SLOW BREATHING EXERCISE (SBE) VERSUS PROGRESSIVE MUSCLE RELAXATION (PMR) TECHNIQUE TO REDUCE PHYSIOLOGICAL AND PSYCHOLOGICAL STRESS AMONG ANC MOTHERS ATTENDING ANC CLINICS AND HOSPITALS AT DURG, DISTRICT (C.G.)."

BY

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ABSTRACT

"**Act like you expect to get into the end zone"**

Christopher Morley

BACKGROUND OF THE STUDY

This influence to take up from the present scenario "A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.). was undertaken by Mrs. Manisha Mathew in partial fulfilment of the requirement for M.Sc. Nursing degree at Government College of Nursing, Durg (C.G.) affiliated to Pandit Deendayal Upadhyay Memorial Health Sciences and Ayush University of Chhattisgarh, Raipur (C.G.) during the year 2023-2025.

OBJECTIVES OF THE STUDY

1. To assess the effectiveness of (SBE) slow breathing exercise technique in reducing physiological and psychological stress among ANC mothers.

2. To assess the effectiveness of (PMR) progressive muscle relaxation technique in reducing physiological and psychological stress among ANC mothers.

3. To compare the effectiveness of (SBE) slow breathing exercise (exp I) and (PMR) progressive muscle relaxation (exp II) technique in reducing stress among ANC mothers.

4. To find the association on effect of stress among ANC mothers with their sociodemographic variables.

METHODS

This study was conducted in months of April; Formal permission was brought and obtained. A total of 120 patients among ANC mothers in selectedDistrict hospital, Durg (C.G.). The purpose of the study was explained among ANC mothers informed consent was obtained, confidentiality of information was assured.

Data was collected using self-structured stress measuring tool (checklist) to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers.

FINDINGS

1. **Socio-demographic Characteristics**

- Majority of ANC mothers were aged between 25–28 years, representing the typical reproductive age group.
- 50.83% of the mothers and 45.83% of their husbands had completed high school education.
- Most of the participants (90.83%) were housewives, and nearly half of their husbands (44.16%) were labourers.

- 47.5% of the families had a monthly income below ₹10,000, and 62.5% belonged to joint families.
- All ANC mothers were in the third trimester of pregnancy, and most (49.17%) had one child.
- 78.33% of participants were from urban areas.

2.Assessment of Physiological and Psychological Stress

- The mean pre-test stress score among ANC mothers was 0.43, and the mean post-test score was 0.28.
- The mean difference (0.16) indicates a noticeable reduction in overall stress after the intervention.
- Both physiological and psychological stress levels reduced post-intervention, showing the effectiveness of relaxation techniques.

3. Effectiveness of SBE and PMR Techniques

- In the SBE group, the mean stress score reduced from 0.45 (pre-test) to 0.28 (post-test) with a t-value = 5.70 ($p < 0.001$).
- In the PMR group, the mean stress score reduced from 0.43 (pre-test) to 0.22 (post-test) with a t-value = 7.70 ($p < 0.001$).
- Comparison between groups using unpaired t-test ($t = 2.10$, $p < 0.05$) revealed that the PMR technique was slightly more effective than SBE in reducing stress levels among ANC mothers.

4. Association Between Stress Reduction and Socio-Demographic Variables

- There was no significant association found between post-test stress levels and variables such as age, education, occupation, type of family, or income.
- This indicates that stress reduction was primarily influenced by the interventions (SBE and PMR) rather than by demographic factors.

CONCLUSION

This chapter deals with the summary of the study undertaken, conclusion draw from the finding's implication of the study in various areas of nursing, limitation of the study in various area of nursing and recommendation for the future research.

CHAPTER – I

INTRODUCTION

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Pregnancy is a vital phase in a woman's life that involves complex physiological and psychological changes. While it is often a time of joy and anticipation, it also brings about stress due to hormonal fluctuations, lifestyle changes, concerns about childbirth, and fetal development. Antenatal stress, if left unaddressed, may contribute to adverse outcomes such as preterm labor, low birth weight, postpartum depression, and complications during delivery.

Psychological stress includes feelings of anxiety, fear, and emotional instability, whereas physiological stress may manifest through elevated blood pressure, increased heart rate, and hormonal imbalances such as elevated cortisol levels. Both forms of stress can negatively impact maternal and foetal health.

In developing countries like India, where access to mental health support is limited, especially in semi-urban and rural areas such as Durg district in Chhattisgarh, pregnant women often lack proper awareness and tools to manage stress effectively. As a result, there is a critical need for cost-effective, easy-to-implement, non-pharmacological interventions that can be integrated into routine antenatal care.

Non-pharmacological interventions are increasingly favoured during pregnancy to avoid medication-related risks. Among such interventions, Slow Breathing Exercises (SBE) and Progressive Muscle Relaxation (PMR) techniques have shown promising results in promoting relaxation, lowering stress, and improving overall well-being. While both techniques have individual merits, limited comparative studies have been conducted to assess their relative effectiveness among antenatal mothers, particularly in the Indian context.

This study aims to assess and compare the effectiveness of SBE and PMR in reducing psychological and physiological stress among ANC mothers in Durg District, where awareness of such simple, cost-effective practices can contribute to better maternal care.

1.2 NEED FOR THE STUDY

Stress during pregnancy is a growing public health concern. Studies show that approximately 10-25% of pregnant women experience high levels of stress, which may adversely affect both maternal and fetal outcomes. In semi-urban and rural areas such as Durg District, many ANC mothers may not have access to psychological support or relaxation techniques.

Introducing relaxation interventions such as SBE and PMR through ANC clinics and hospitals could provide significant physical and emotional benefits. Since both techniques are safe, cost-free, and easy to practice, integrating them into prenatal care routines may empower mothers to manage stress independently.

This study will help healthcare professionals, particularly midwives and community health nurses, to identify effective non-pharmacological methods to improve maternal mental health and physiological stability, ultimately leading to safer pregnancy outcomes.

Stress during pregnancy, particularly if prolonged or intense, can have adverse outcomes, including **preterm birth**, **low birth weight**, **preeclampsia**, and increased risk of **postpartum depression**. Psychological stress may also negatively impact fetal development and maternal bonding. Therefore, managing stress effectively during pregnancy is a crucial component of antenatal care.

In India, particularly in semi-urban and rural districts like **Durg (C.G.)**, awareness about non-pharmacological stress management techniques is limited. Most antenatal care services focus on physical health parameters, with relatively less emphasis on maternal mental well-being. Moreover, the accessibility of trained mental health professionals is low, making **low-cost, self-administered interventions** highly valuable.

Slow breathing exercises (SBE) and **progressive muscle relaxation (PMR)** are two simple, evidence-based relaxation techniques that can be taught easily, require no special equipment, and have shown benefits in reducing stress and anxiety in various populations. However, there is a lack of comparative studies evaluating the effectiveness of these two techniques specifically among **pregnant women in low-resource settings**.

By conducting a **quasi-experimental study** comparing slow breathing exercises and PMR among **ANC mothers in Durg district**, this research aims to:

- Generate **context-specific evidence** on the effectiveness of both techniques.
- Provide insights to **healthcare providers** for incorporating effective stress-relief interventions into routine ANC services.
- Empower pregnant women with **self-care tools** to improve their emotional and physical well-being during pregnancy.

Thus, this study is necessary not only for filling the **research gap** in maternal mental health in the Indian context but also for promoting **holistic antenatal care** that supports both the **physiological and psychological health** of expectant mothers.

1.3 PROBLEM STATEMENT

A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.).

1.4 OBJECTIVES OF THE STUDY

1.To assess the effectiveness of (SBE) slow breathing exercise technique in reducing physiological and psychological stress among ANC mothers.

2. To assess the effectiveness of (PMR) progressive muscle relaxation technique in reducing physiological and psychological stress among ANC mothers.

3. To compare the effectiveness of (SBE) slow breathing exercise (exp I) and (PMR) progressive muscle relaxation (exp II) technique in reducing stress among ANC mothers.

4. To find the association on effect of stress among ANC mothers with their socio -demographic variables.

1.5 HYPOTHESIS

NULL HYPOTHESIS (H0)

There will be no significant difference in the levels of stress among ANC mothers who receive slow breathing exercise **(SBE)**and progressive muscle relaxation **(PMR)** technique.

ALTERNATIVE HYPOTHESIS

ANC mothers who receive slow breathing exercise will have significantly lower levels of stress compared to those who receive progressive muscle relaxation technique. **(H1)**

ANC mothers who receive progressive muscle relaxation (PMR) technique will have significantly lower levels of stress compared to those who receive slow breathing exercise (SBE). **(H2)**

1.6 OPERATIONAL DEFINITION

1. ANC mothers– ANC mothers refer to Antenatal care mothers, which includes pregnant women receiving prenatal care and support during their pregnancy.

2. Slow Breathing Exercise (SBE) – A specific technique involving slow, deep breaths, with defined duration and frequency.

3. Progressive Muscle Relaxation (PMR) – A technique involving systematic muscle tensing and relaxing, with specified muscle groups and duration.

4. Physiological stress – Physiological stress refers to the body's response to stressors, which can be physical, emotional or environmental. It involves changes in various physiological systems, including:
a. Nervous system – Activation of the sympathetic nervous system, releasing stress hormones like cortisol and adrenaline.
b. Cardiovascular system – Increased heart rate, blood pressure and cardiac output.
c. Endocrine system – Release of stress hormones, which can disrupt normal hormonal balances.
d. Immune system – Suppression of immune function, making the body more susceptible to illness.

5. Psychological stress–Psychological stress refers to the emotional and mental strain experienced when an individual perceives a situation as overwhelming or threatening. It can manifest as:
a. Anxiety – feelings of worry, nervousness or apprehension.
b. Emotional distress – Irritability, mood swings or emotional reactivity.
c. Cognitive strain – Difficulty concentrating, memory issues or decreased problem-solving ability.

1.7 ASSUMPTIONS

1. ANC mothers experience a certain level of physiological and psychological stress during pregnancy.
2. Both slow breathing exercise and progressive muscle relaxation techniques are effective non-pharmacological interventions that can help in reducing stress.
3. Participants will follow the instructions and perform the interventions regularly as guided during the study period.
4. The tools used to measure psychological and physiological stress (e.g. Self-structured stress measuring tool) are valid and reliable indicators of stress levels.
5. Participants will give honest and accurate responses to self-reported psychological assessments.
6. There will be minimal influence from external stress-relief factors (e.g. counselling, medications, lifestyle changes) during the intervention period.
7. Demographic and obstetric variables may influence the level of stress and the effectiveness of the interventions.
8. The environment in which interventions are practiced (home/clinic) will not significantly affect the outcomes.

1.8 DELIMITATIONS

1. Geographic Delimitation:

The study is confined to selected ANC clinics and hospitals in **Durg district, Chhattisgarh**, and findings may not be generalizable to other districts or states.

2. Population Delimitation:

Only **antenatal mothers** are included. Pregnant women with **normal pregnancies** are considered; high-risk pregnancies are excluded.

3. Intervention Delimitation:

The interventions (slow breathing and PMR) are administered for a **short duration of 20minutes for one week**, which may limit long-term conclusions about their effects.

4. Technique Delimitation:

The study focuses only on **two stress reduction techniques**—slow breathing exercise and progressive muscle relaxation. Other techniques like yoga, mindfulness, or guided imagery are not considered.

5. Time Delimitation:

The study has a **short intervention and follow-up period**, which may not capture long-term physiological and psychological changes.

6. Tool Delimitation:

Stress is measured using **Self-structured tool**. Other psychological tools or biochemical stress markers (like cortisol) are not used.

1.9 CONCEPTUAL FRAMEWORK

1. THEORETICAL BASIS

Roy's Adaptation Model views the individual as a bio-psycho-social being who constantly interacts with a changing environment. The goal of nursing is to promote adaptation in four modes: **physiological, self-concept, role function, and interdependence**. This model is appropriate for evaluating interventions like Slow Breathing Exercise and Progressive Muscle Relaxation which aim to restore physiological and psychological balance.

2. FRAMEWORK COMPONENTS

A. STUMULI

Focal Stimuli: The immediate stress by ANC (e.g. anxiety, tension, elevated BP, pulse rate)

Contextual Stimuli: Factors influencing stress such as age, parity, education, occupation, family support and gestational age.

Residual Stimulus: Previous pregnancy experiences, personality traits, cultural beliefs and coping habits.

B. INTERNAL PROCESSES ADAPTIVE MODES

REGULATOR AND COGNATOR:

Regulator Subsystem– Physiological processes affected by interventions (e.g., autonomic nervous system, respiratory patterns).

Cognator Subsystem– Cognitive–emotional coping, perception, learning, and decision-making involved in relaxation and self-control.

Physiological Physical Mode- Fatigue, insomnia, restlessness, ↑BP, ↑HR, hormonal stress.

Self - Concept-Body image, body sensation, self-ideal, self-esteem.

Role Function- Becoming a mother, Wife, employee, homemaker.

C. CONTROL PROCESS (INTERVENTIONS)

Group 1: Slow Breathing Exercise (10–15 minutes)

Group 2: Progressive Muscle Relaxation Technique (10–15 minutes)

D. OUTPUT (ADAPTIVE RESPONSES)

1. PHYSIOLOGICAL PHYSICAL MODE: Stabilization of blood pressure, heart rate, respiration.

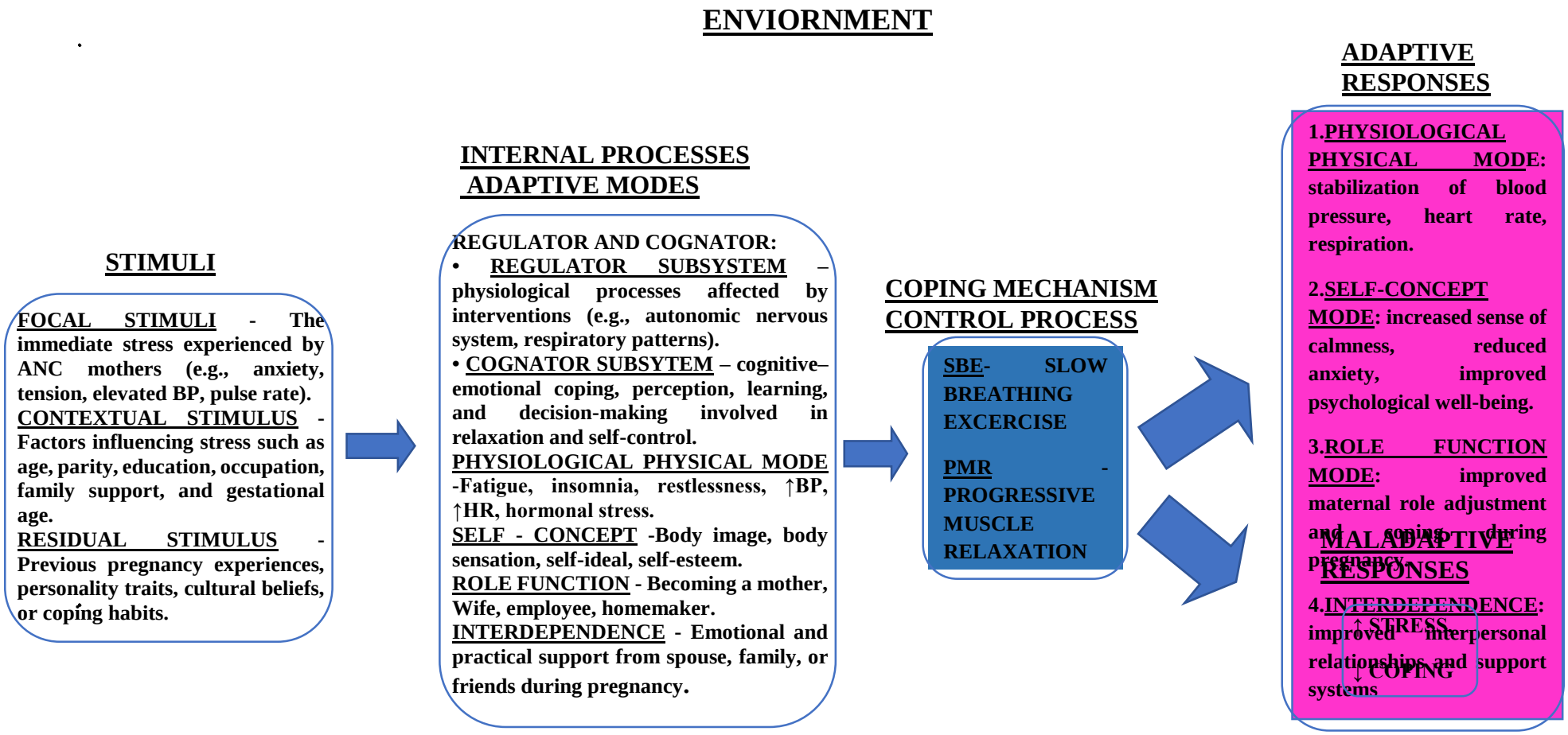
2. SELF CONCEPT MODE: Increased sense of calmness, reduced anxiety, improved psychological well-being**.**

3. ROLE FUNCTION MODE: Improved maternal role adjustment and coping during pregnancy.

4.INTERDEPENDENCE: Improved interpersonal relationships and support systems

E. MALADAPTIVE RESPONSES: Increased stress, decreased coping.

CONCEPTUAL FRAMEWORK



MODIFIED ROYS ADAPTATION MODEL

CHAPTER – II

REVIEW OF LITERATURE

INTRODUCTION

ACCORDING TO POLIT AND HUNGLER

The task of reviewing research literature involves the identification, selection, critical analysis, and written description of existing information on the topic. The review of literature was done from the published articles, textbooks, reports and Medline search. Literature review is organised and presented under the following headings. The investigator carried out an extensive review of literature on the research topic in order to gain insight into the problem and to collect maximum relevant information for building up the study in a scientific manner so as to achieve the desired results.

ANA, (2020) good research does not exist in vacuum. Research finding should be an extension of previous knowledge and theory as well as guide for future research activity. It gives an overview idea about the particular topic. It is a body of text that aims to review the critical points of knowledge on a particular topic of research.

The review of literature for present study is divided into following section: -

2.1 Literature related to prevalence of stress among ANC mothers.

2.2 Literature related to relaxation techniques in pregnancy.

2.1 LITERATURE RELATED TO PREVELANCE OF STRESS.

1. **Slow breathing for reducing stress: The effect of extending exhale** - We conducted a 12-week randomized, single-blinded trial among 100 participants to compare if yoga-based slow breathing with an exhale greater inhale versus an exhale equals inhale produces measurable differences in physiological and psychological stress among healthy adults. The intervention was slow breathing exercise (SBE). While slow breathing significantly reduces psychological stress, breath ratios do not have a significant differential effect on stress reduction among healthy adults

   (Gurjeet Birdee, et, al. 2023 Mar)

2. **Effectiveness of mindfulness-based interventions on psychosocial well-being and occupational-related outcomes among nurses in the intensive care unit: A systematic review and meta-analysis** - A total of 29 studies were included in the meta-analysis to evaluate the effects of mindfulness-based interventions across different timeframes: immediate-term effects (within 10 days post intervention), short-term effects (10 days-3 months), medium-term effects (3-6 months), and long-term effects (beyond 6 months). The results showed that mindfulness-based interventions significantly alleviated anxiety (mean difference [MD]: -10.80, 95% confidence interval [CI]: [-16.76, -4.83], $I^2 = 78\%$, $P < 0.001$) and depression (MD: -12.02, 95% CI: [-12.43, -11.61], $I^2 = 0\%$, $P < 0.001$) in the medium term for ICU nurses. Significant immediate-term effects were observed on well-being (standardised mean

difference [SMD]: 0.58, 95% CI: [0.40, 0.76], I^2 = 0%, P < 0.001), resilience (MD: 14.41, 95% CI: [9.71, 19.11], I^2 = 91%, P < 0.001), and death anxiety (MD: -2.35, 95% CI: [-4.39, -0.31], I^2 = 30%, P = 0.02). Mindfulness-based interventions also showed significant short-term effects on well-being (SMD: 0.54, 95% CI: [0.10, 0.99], I^2 = 43%, P = 0.02), sleep quality (MD: -1.19, 95% CI: [-2.32, -0.05], I^2 = 50%, P = 0.04), and stress (SMD: -0.75, 95% CI: [-1.34, -0.17], I^2 = 79%, P = 0.01). Significant effects were observed across immediate-term, short-term, and medium-term timeframes for stress reduction (medium-term effects: MD: -9.69, 95% CI: [-10.18, -9.21], I^2 = 0%, P < 0.001) and mindfulness improvement (medium-term effects: MD: 9.28, 95% CI: [7.20, 11.37], I^2 = 0%, P < 0.001). Additionally, mindfulness-based interventions significantly reduced burnout in the immediate term (SMD: -1.28, 95% CI: [-2.31, -0.25], I^2 = 92%, P = 0.01). **Conclusions:** Mindfulness-based interventions have a positive effect in improving psychosocial well-being and occupational-related outcomes for ICU nurses. Nursing managers may consider integrating mindfulness-based interventions into ICU nurses' practice to enhance their well-being.

(Meilin Liu, Epub 2025 May 26)

3. **Laughter therapy: A humor-induced hormonal intervention to reduce stress and anxiety** - Laughter therapy may be used for both preventive and therapeutic purposes. Laughter can also be a clinical predictor of functional disability. Laughter has been shown to exert stress-reducing effects by suppressing the bioactivities of epinephrine, cortisol, and 3,4-dihydrophenylacetic acid. The intervention given was Laughter therapy. Therapeutic laughter is a non-invasive, cost-effective and easily implementable intervention that can be used as an effective complementary therapy to reduce the intensity of many mental illnesses and stress.

(Nuraly S Akimbekov, Epub 2021 Apr 30)

4. **Nature and Mindfulness to Cope with Work-Related Stress: A Narrative Review**

- In recent years, work-related stress has grown exponentially and the negative impact that this condition has on people's health is considerable. The effects of work-related stress can be distinguished in those that affect workers (e.g., depression and anxiety) and those that affect the company (e.g., absenteeism and productivity). It is possible to distinguish two types of prevention interventions. Individual interventions aim at promoting coping and individual resilience strategies with the aim of modifying cognitive assessments of the potential stressor, thus reducing its negative impact on health. Mindfulness techniques have been found to be effective stress management tools that are also useful in dealing with stressful events in the workplace. Organizational interventions modify the risk factors connected to the context and content of the work. It was found that a restorative workplace (i.e., with natural elements) reduces stress and fatigue, improving work performance. Furthermore, practicing mindfulness in nature helps to improve the feeling of wellbeing and to relieve stress. In this paper, we review the role of mindfulness-based practices and of contact with nature in coping with stressful

situations at work, and we propose a model of coping with work-related stress by using mindfulness in nature-based practice.

(Elisa Menardo 2022 May 13)

5. **Effectiveness of a relaxation intervention (progressive muscle relaxation and guided imagery techniques) to reduce anxiety and improve mood of parents of hospitalized children with malignancies: A randomized controlled trial in Republic of Cyprus and Greece - Purpose:** To explore the effect of Progressive Muscle Relaxation (PMR) and Guided Imagery (GI),in reducing anxiety levels among parents of children diagnosed with any type of malignancy receiving active treatment at a Paediatric Oncology Unit in Republic of Cyprus and in Greece. **Method:** A randomized non-blinded control trial was conducted between April 2012 to October 2013, at two public paediatric hospitals. Fifty-four eligible parents of children hospitalized with a malignancy were randomly assigned to the intervention (PMR and GI) (n = 29) and a control group (n = 25). The study evaluated the changes in anxiety levels (HAM-A) and mood changes (POMSb). **Results:** There was a statistically significant difference in the mean scores of the subjects in the intervention group in HAM-A scale between the T0 (14.67 ± 9.93) and T1 (11.70 ± 8.15) measurements (p = 0.008) compared to the control group in which a borderline difference (16.00 ± 11.52 vs 13.33 ± 8.38) was found (p = 0.066). The effect size for the intervention group was low to moderate (0.37). Regarding mood changes, there was a statistically significant difference in tension for parents in the intervention group between T0 and T1 (11.15 ± 5.39 vs 9.78 ± 4.26), (p = 0.027). Furthermore, the parents in the intervention group were significantly less sad following the intervention (T1) (2.81 ± 1.07 vs 2.19 ± 1.21), (p = 0.001), and felt significantly less tense (2.93 ± 0.91 vs 2.26 ± 0.90), (p = 0.001) and anxiety (2.63 ± 1.21 vs 2.19 ± 1.07), (p = 0.031) compared to those in the control group. **Conclusions:** These findings provided evidence on the positive effect of the combination of PMR and GI in reducing anxiety and improving mood states in parents of children with malignancy.

(Theologia Tsitsi Epub 2016 Nov 18)

6. **Behavioural strategies to reduce stress reactivity in opioid use disorder: Study design - Method:** We will recruit 120 adults with opioid use disorder and randomly assign them to brief training in (a) cognitive reappraisal, (b) affect labelling, or (c) a psychoeducational control. Participants will receive the training intervention followed by a laboratory stressor during which they will be instructed to apply the trained skill. **Results:** Subjective and physiological responses to stress will be measured as indices of stress reactivity and the stressor task will include a behavioural persistence component as a measure of distress tolerance. **Conclusions:** The ultimate goal of this study is to inform the development of behavioural interventions that can be used as an adjunct to medication-based treatment for opioid use disorder. (PsycInfo Database Record (c) 2020 APA, all rights reserved).

(R Kathryn McHugh, 2020 Sep)

7. **Stress management training program for stress reduction and coping improvement in public health nurses: A randomized controlled trial-** A cluster-randomized controlled trial was carried out in eight comprehensive healthcare centres in Amman city, Jordan; four centres were randomly assigned to each experimental and control group. One hundred and seventy nurses were selected randomly from March 2019 - August 2019 and data were collected by using the Nursing Stress Scale & brief COPE over three data collection times. Both descriptive and inferential statistics (repeated measure ANOVA, Independent t test, and chi-squared) were used to answer the research questions of this study. **Results:** The results showed that both the levels of occupational stress and coping strategies were significantly different between the two study groups over the three data collection points ($p < 0.05$). **Conclusion:** Based on the findings of this study, the stress management program is an effective non-invasive method that can be used to reduce stress levels and improve coping strategies for public health nurses. The implementation of stress management interventions in health care is likely to help nurses manage occupational stress in practice.

(Ja'far M Alkhawaldeh, 2020 Nov)

8. **Efficacy of occlusal splint versus sleep hygiene and progressive muscle relaxation on perceived stress and sleep bruxism: A randomized clinical trial - Purpose:** The objective was the comparison of an occlusal device (OD), and sleep hygiene and progressive muscle relaxation (SH & PMR) on perceived stress and sleep bruxism activity (burst/episode and episode/hour) in participants with sleep bruxism. **Material and methods:** Sixty-six participants with self-reported sleep bruxism were selected and randomly allocated into two groups: OD group or SH & PMR group. Assessment of perceived stress and sleep bruxism activity were the primary outcomes. The Perceived Stress Scale-10 (PSS-10 scale) was used to measure perceived stress and bruxism episodes/hour and bursts/episode recorded by electromyography of masseter and temporalis. These outcomes were assessed at baseline, 1 month, 6 months, and 1 year. The paired t-test assessed changes in PSS-10 scores and sleep bruxism activity within the same group over different time points (baseline, 1 month, 6 months, and 1 year). The unpaired t-test compared scores between two groups (OD and SH & PMR) at each time point to evaluate intervention differences. The chi-square test compared gender distribution between both groups. **Results:** PSS-10 scores were found to decrease with the OD at 1 month and 6 months compared to baseline and SH & PMR at all subsequent follow-ups. This decrease was not statistically significant ($p > 0.05$) between the OD and SH & PMR groups at all follow-ups. OD and SH & PMR significantly reduced bruxism episodes/hour and bursts/episode at all follow-ups ($p < 0.05$). There were no adverse effects related to any intervention. **Conclusions:** The OD and SH & PMR both effectively reduced PSS-10 scores over 6 months and significantly decreased bruxism episodes and bursts per episode. Both methods are safe and effective for managing sleep bruxism and reducing stress.

(Ayushi Tandon Epub 2024 Aug 1)

9. **Mindfulness-based interventions to reduce burnout and stress in physicians: a study protocol for a systematic review and meta-analysis - Introduction:** Physicians often suffer from burnout and stress, not only affecting themselves, but also their patients and the healthcare system in general. An increasing number of studies suggest that mindfulness-based interventions improve physicians' well-being as well as the quality of care they deliver. However, the evidence is scattered, and a systematic review and meta-analysis is lacking. To the best of our knowledge, this systematic review and meta-analysis will be the first to assess the effectiveness of mindfulness-based interventions in reducing burnout and stress among physicians. Further, it aims to uncover potential moderators of intervention effectiveness.**Methods and analysis:** MEDLINE, Embase, PsycINFO, PSYINDEX, Web of Science, CINAHL and the Cochrane Central Register of Controlled Trials will be screened without language or publication date restrictions. In addition, backward and forward citation searches of included studies and relevant reviews will be conducted. Studies examining the effect of interventions for physicians explicitly based on mindfulness will be included. Primary outcomes will be pre-post changes in burnout and stress if assessed with validated measures. Two reviewers independently search, select and extract data, and rate the methodological quality of the studies. Both controlled and uncontrolled studies will be included. Randomised controlled trails will be meta-analysed separately using between-group effect. In addition, non-randomised trials including non-controlled before-after studies will be meta-analysed using within-group effect. Potential moderators and sources of between-study heterogeneity will be tested using meta-regression and subgroup analyses. Furthermore, a narrative synthesis will be pursued. The Grading of Recommendations Assessment, Development and Evaluation system (GRADE) will be used to assess the quality of the cumulated evidence.

(Johannes Caspar Fendel 2019 Nov 21)

10. **Depression, anxiety and stress among HIV-positive pregnant women in Ethiopia during the COVID-19 pandemic - Background:** Assessing the maternal mental health status during the coronavirus disease 2019 (COVID-19) pandemic is necessary to prevent the occurrence of severe mental disorders. Prenatal depression, anxiety and stress disorders are prominent in pregnant women living with human immunodeficiency virus (HIV) and highly associated with poor maternal and neonatal outcomes. Therefore, this study aimed to assess the level of depression, anxiety, and stress among HIV-positive pregnant women in Ethiopia during the COVID-19 pandemic. **Methods:** An institution-based cross-sectional study was conducted in Amhara region referral hospitals from 17 October 2020 to 1 March 2021. A systematic random sampling technique was used to select 423 eligible women. A structured, pretested and interviewer-administered questionnaire was employed to collect the data. A multivariable logistic regression analysis was implemented to identify factors associated with women's depression, anxiety and stress. Statistical association was certain based on the adjusted odds ratio (AOR) with its 95% confidence interval (CI) and p-values ≤0.05. **Results:** Prenatal depression, anxiety and stress among HIV-positive pregnant women were 37.6% (95% CI 33 to 42.3), 42.1 (95% CI 37.7 to 46.7) and 34.8% (95% CI 30.3 to 39.2), respectively. Having

an HIV-negative sexual partner (AOR 1.91 [95% CI 1.16 to 3.15]) and being on antiretroviral therapy >1 year (AOR 2.18 [95% CI 1.41 to 3.36]) were found to be statistically significant with women's antenatal depression, while unplanned pregnancy (AOR 1.09 [95% CI 1.02 to 2.33]) and did not discuss with the sexual partner about HIV (AOR 3.21 [95% CI 2.12 to 7.07]) were the factors associated with prenatal anxiety. **Conclusions:** In this study, more than one in three HIV-positive pregnant women had depression and anxiety. Thus, implementing strategies to prevent unplanned pregnancy and advocating open discussion with sexual partners about HIV will play a large role in reducing pregnancy-related depression and anxiety.

(Nebiyu Solomon Tibebu 2023 May 2)

11. **Effects of a Brief Electronic Mindfulness-Based Intervention on Relieving Prenatal Depression and Anxiety in Hospitalized High-Risk Pregnant Women: Exploratory Pilot Study - Background:** Peripartum depression and anxiety disorders are highly prevalent and are correlated with adverse maternal and neonatal outcomes. Antenatal care in Germany does not yet include structured screening and effective low-threshold treatment options for women facing peripartum depression and anxiety disorders. Mindfulness-based interventions (MBIs) are increasingly becoming a focus of interest for the management of such patients. Studies have shown a decrease in pregnancy-related stress and anxiety in expectant mothers following mindfulness programs.**Objective:** The aim of this study was to explore the clinical effectiveness of a 1-week electronic course of mindfulness on prenatal depression and anxiety in hospitalized, high-risk pregnant women. We hypothesized that participating in a 1-week electronic MBI (eMBI) could alleviate symptoms of depression and anxiety during the hospital stay.**Methods:** A prospective pilot study with an explorative study design was conducted from January to May 2019 in a sample of 68 women hospitalized due to high-risk pregnancies. After enrolling into the study, the participants were given access to an eMBI app on how to deal with stress, anxiety, and symptoms of depression. Psychometric parameters were assessed via electronic questionnaires comprising the Edinburgh Postnatal Depression Scale (EPDS), State-Trait Anxiety Inventory (STAI-S), and abridged version of the Pregnancy-Related Anxiety Questionnaire (PRAQ-R).**Results:** We observed a high prevalence of peripartum depression and anxiety among hospitalized high-risk pregnant women: 39% (26/67) of the study participants in the first assessment and 41% (16/39) of the participants in the second assessment achieved EPDS scores above the cutoff value for minor/major depression. The number of participants with anxiety levels above the cutoff value (66% [45/68] of the participants in the first assessment and 67% [26/39] of the participants in the second assessment) was significantly more than that of the participants with anxiety levels below the cutoff value, as measured with the STAI-S. After completing the 1-week electronic course on mindfulness, the participants showed a significant reduction in the mean state anxiety levels (P<.03). Regarding pregnancy-related anxiety, participants who completed more than 50% of the 1-week course showed lower scores in PRAQ-R in the second assessment (P<.05). No significant changes in the EPDS scores were found after completing the intervention.**Conclusions:** Peripartum anxiety and

depression represent a relevant health issue in hospitalized pregnant patients. Short-term eMBIs could have the potential to reduce anxiety levels and pregnancy-related anxiety. However, we observed that compliance to eMBI seems to be related to lower symptoms of pregnancy-related stress among high-risk patients. eMBIs represent accessible mental health resources at reduced costs and can be adapted for hospitalized patients during pregnancy.

(Maren Goetz2020 Aug 11)

12. **Alternate Nostril Breathing to Reduce Stress: An Option for Pregnant Women Survivors of Intimate Partner Violence? -**Background: Stress resulting from intimate partner violence (IPV) on pregnant women causes and sustains poor health and contributes to poor pregnancy and birth outcomes. Appropriate interventions to reduce stress in this population of women are warranted. Objective: To present a systematic review and the state of the science of evidence on alternate nostril breathing (ANB) as a holistic intervention for stress reduction for pregnant survivors of IPV, framed by complex adaptive systems theory and psychoneuroimmunology. Data sources: Eight databases and reference lists of potential articles. Study eligibility criteria: Randomized controlled trials published between January 2013 and July 2019. Participants: Adults. Intervention: ANB. Study appraisal and synthesis method: PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Results: ANB is effective in reducing stress, as measured by psychological and biological indicators. Limitations: Studies were limited in ethnic and gender diversity, most of the populations being Asian Indian and predominately male. Conclusions: Use of ANB as a safe and effective holistic intervention for stress reduction shows promise, but research in pregnant survivors of IPV is limited. Implications: Stress reduction benefits may be significant for pregnant survivors of IPV and their foetuses, with minimal risk**.**

(Ottilie Rung 2021 Dec)

13. **Acupuncture for perceived stress in pregnant women: an intervention study - Objective:** To analyse the effects of acupuncture in the treatment of perceived stress in pregnant women. **Method:** A before-after intervention study, carried out in a primary health unit in Fortaleza-Ceará, with 56 pregnant women. The pregnant women underwent six acupuncture sessions, with two 30-minute sessions per week. Before the first session, an instrument to collect sociodemographic, clinical, and obstetric data was applied. The Global Perceived Stress Scale (PSS10) was applied weekly to monitor the progression of stress during treatment. **Results:** After the intervention, there was a significant decrease in the scores of the following scale items: being upset, inability to control, nervousness, tiredness, anger, and inability to overcome stress. ($p < 0.05$). There was a significant increase in the score of the item control of situations ($p = 0.003$). There was a significant difference in the mean perceived stress of the initial session compared to the 1st, 2nd and 3rd week sessions ($p < 0.001$). **Conclusion:** The use of acupuncture to treat stress during pregnancy reduced the stress perceived by pregnant women.

(Nicolau da Costa2022 May 30)

14. **Stress and coping among pregnant black women during the COVID-19 pandemic** - **Objective:** This study explored stress and coping among pregnant Black women prior to and during the COVID-19 pandemic. **Design:** Prospective, longitudinal, cohort study. **Sample:** Thirty-three women enrolled in the Biosocial Impact on Black Births study prior to the COVID-19 pandemic and who were still pregnant during the pandemic. **Measurements:** Questionnaires included the Perceived Stress Scale, Prenatal Coping Inventory, and questions related to sociodemographic characteristics, worry about COVID-19, and coping strategies used during the pandemic. **Results:** Women reported very much being worried about my child getting COVID-19 (46%) and my family member getting COVID-19 (46%). Women reported specific active coping strategies very much reduced their feelings of discomfort during COVID-19: God, religion, or spirituality (24%), social media (24%), and following government advice (24%). Higher use of avoidance coping prior to the pandemic was associated with higher levels of stress both prior to ($r = 0.60$, $p < .001$) and during ($r = 0.47$, $p < .01$) the pandemic. **Conclusion:** Women reported worries about COVID-19 and used various strategies to cope with feelings of discomfort due to the pandemic. Nurses should assess the stress level of pregnant Black women and recommend active coping strategies during the pandemic.

(Jenna M WheelerEpub 2021 Apr 12)

15. **Music interventions to reduce stress and anxiety in pregnancy: a systematic review and meta-analysis** -**Background:** Stress and anxiety are common in pregnancy and shown to have adverse effects on maternal and infant health outcomes. The aim of this review and meta-analysis was to assess the effectiveness of music-based interventions in reducing levels of stress or anxiety among pregnant women. **Methods:** Six databases were searched using key terms relating to pregnancy, psychological stress, anxiety and music. Inclusion criteria were randomised controlled or quasi-experimental trials that assessed the effect of music during pregnancy and measured levels of psychological stress or anxiety as a primary or secondary outcome. Two authors independently assessed and extracted data. Quality assessment was performed using The Cochrane Collaboration risk of bias criteria. Meta-analyses were conducted to assess stress and anxiety reduction following a music-based intervention compared to a control group that received routine antenatal care. **Results:** Five studies with 1261 women were included. Music interventions significantly reduced levels of maternal anxiety (Standardised Mean Difference (SMD): -0.21; 95% Confidence Interval (CI) -0.39, -0.03; $p = 0.02$). There was no significant effect on general stress (SMD: -0.08; 95% CI -0.25, 0.09; $p = 0.35$) or pregnancy-specific stress (SMD: -0.02; 95% CI -0.19, 0.15; $p = 0.80$). The methodological quality of included studies was moderate to weak, all studies having a high or unclear risk of bias in allocation concealment, blinding and selective outcome reporting. **Conclusions:** There is evidence that music-based interventions may reduce anxiety in pregnancy; however, the methodological quality of the

studies was moderate to weak. Additional research is warranted focusing on rigour of assessment, intensity of interventions delivered and methodological limitations.

(Kyrsten Corbijn van Willenswaard 2017 Jul 27)

2.2 LITERATURE RELATED TO RELAXATION TECHNIQUES

1. **Effect of slow breathing exercise and progressive muscle relaxation technique in the individual with essential hypertension: A randomized controlled trial** – Sixty-four participants diagnosed with essential hypertension were randomly allocated into SBE, PMR, SBE-PMR, and Control groups, with 16 subjects each. All 3 groups received different treatments according to their name; however, the Control group received no treatment. They were randomly classified into 4 groups viz. SBE group, Progressive Muscle Relaxation (PMR) group, SBE + PMR group, and Control group by an independent researcher not affiliated with this study. Therefore, the combined treatment of the SBE plus PMR technique can effectively reduce the HR, RR, SBP, DBP, and anxiety in essential hypertensive patients compared to both interventions.

   (Farhan Khan M Pathan, et, al. 24 Nov 2023)

2. **Investigating the Effects of the Progressive Muscle Relaxation-Guided Imagery Combination on Patients with Cancer Receiving Chemotherapy Treatment: A Systematic Review of Randomized Controlled Trials -** The application of both PMR and GI through a randomized trial on patients receiving chemotherapy wereincluded. Those using PMR or GI alone and those combining other techniques together with PMR and GI were excluded. A search for relevant records was carried out in four electronic databases (AMED, Cochrane Library, Pubmed and Scopus). After removing the duplicates 342 publications were screened and 71 were considered as potentiallyrelevant. The flow of information of this study was in line with the PRISMA statement. Independent trials indicate that the PMR-GI combination is an effective way to tackle the impact of nausea and vomiting and to improve patient's mental state.

   (August Kapogiannis, et, al. 2017)

3. **Hypnosis and progressive muscle relaxation for anxiolysis and pain control during extraction procedure in 8-12-year-old children: a randomized control trial -** Sixty children aged 8-12 years undergoing primary molar extractions were randomly allocated to three groups-H, PMR, and control (C). The anxiety (proposed Visual Facial Anxiety scale), HR, and SPO2 were measured pre/post-operatively with/without interventions (H, PMR, C) at 4 intervals. The BP and pain (Wong-Baker faces pain scale) were recorded pre- and post-operatively. Need for analgesic post- operatively was assessed. The intervention given was Hypnosis exp 1 and PMR progressive muscle relaxation technique exp2 and control group. Hypnosis and PMR are effective techniques for anxiolysis and pain control in paediatric dental patients.

   (P Sabherwal, et, al. 2021 Mar 29)

4. **The effects of yoga and progressive muscle relaxation exercises on premenstrual syndrome: a randomized controlled trial -** A total of 68 students participated in a randomized controlled trial. They were divided into four parallel groups: a yoga intervention group (*n* = 17), a PMR intervention group (*n* = 17), a yoga and PMR intervention group (*n* = 17), and a control group (*n* = 17). The intervention given was Yoga and Progressive muscle relaxation (PMR). The results suggest that yoga and PMR interventions are beneficial non-pharmacological treatments for PMS, depression, anxiety, and stress.

(Arzu Abic, et al. 2024 Feb 11)

5. **Effectiveness of progressive muscle relaxation technique on anxiety caused by Covid-19 in pregnant women: A randomized clinical trial -** A total of 126 pregnant women were randomly allocated to the intervention group (N = 63) and control group (N = 63). All participants completed demographic questionnaires and the Corona Disease Anxiety Scale electronically. The intervention was held in six sessions through Sky Room (three times a week). It consisted of training and practicing the PMR. The intervention group was re-evaluated with the related questionnaires immediately after the intervention and 2 weeks later, and the control group 2 and 4 weeks after the baseline. There was a significant difference between the control and intervention groups at the baseline (P = .05). Progressive muscle relaxation is used asa useful intervention to reduce anxiety in pregnant women during coronavirus pandemics educated.

(Mojgan Zendehdel, et al. 2022 Jun)

6. **The Effects of Intraoperative Progressive Muscle Relaxation and Virtual Reality Application on Anxiety, Vital Signs, and Satisfaction: A Randomized Controlled Trial -** This study was conducted with 93 patients who consented to participate in the study. **Findings:** The State-Trait Anxiety Inventory-S anxiety scale (STAI-S) scores were increased in all the three groups after the surgery. When the preoperative and postoperative STAI-S scores in the group were examined; intragroup STAI-S scores in the PMR and VR groups were statistically significant (P < .05). There was a significant difference between the control group and the PMR and VR groups in mean satisfaction scores (P < .05). The differences between blood pressure and pulse rate were statistically significant in the PMR and VR groups (P < .05). **Conclusions:** Intraoperative PMR and VR can be used as nursing interventions to increase satisfaction and positively affect vital signs in patients who undergo surgery with spinal anaesthesia.

(Gul Sahin, Epub 2020 Mar 4)

7. **Benefits from one session of deep and slow breathing on vagal tone and anxiety in young and older adults -** Anxiety is recognized as a major health issue and is quite prevalent among older adults. An efficient way to manage anxiety is abdominal breathing. Breathing exercises seem to reduce anxiety and to increase parasympathetic activity assessed by HRV indexes. Yet, the effect of

abdominal breathing on physiological stress (HRV) and anxiety in older adults remains poorly understood. Therefore, the aim of this study is to test the effects of deep and slow breathing (DSB, low inhale/exhale ratio) on physiological stress and anxiety in older adults (n = 22) in comparison with younger ones (n = 25). DSB increased significantly HF power and reduced state anxiety in both younger and older adults. Interestingly, the increased in HF power was significantly higher among older adults than younger ones. As expected, the ratio inhale/exhale being not equal, RMSSD did not increase following DSB. Thus, we provide evidence suggesting that DSB is more beneficial to older adults than younger ones to restore vagal outflow. Despite future work being required, those results provide relevant clinical application leads to manage state anxiety among older adults and to promote successful aging.

(Guillaume T Vallet © 2021)

8. **Effects of Diaphragmatic Breathing on Health: A Narrative Review -** Background: Breathing is an essential part of life. Diaphragmatic breathing (DB) is slow and deep breathing that affects the brain and the cardiovascular, respiratory, and gastrointestinal systems through the modulation of autonomic nervous functions. However, the effects of DB on human health need to be further investigated. Methods: The author conducted a PubMed search regarding the current evidence of the effect of DB on health. Results: This review consists of a total of 10 systematic reviews and 15 randomized controlled trials (RCTs). DB appears to be effective for improving the exercise capacity and respiratory function in patients with chronic obstructive pulmonary disease (COPD). Although the effect of DB on the quality of life (QoL) of patients with asthma needs to be investigated, it may also help in reducing stress; treating eating disorders, chronic functional constipation, hypertension, migraine, and anxiety; and improving the QoL of patients with cancer and gastroesophageal reflux disease (GERD) and the cardiorespiratory fitness of patients with heart failure. Conclusions: Based on this narrative review, the exact usefulness of DB in clinical practice is unclear due to the poor quality of studies. However, it may be a feasible and practical treatment method for various disorders.

(Hidetaka Hamasaki2020 Oct 15)

9. **Meta-Analysis of Effects of Voluntary Slow Breathing Exercises for Control of Heart Rate and Blood Pressure in Patients with Cardiovascular Diseases -** Rising heart rate (HR) and elevated blood pressure (BP) cause a greater frequency of cardiovascular events. Many patients cannot maintain target HR and BP using pharmacological therapies. To evaluate the effectiveness of voluntary slow breathing exercises in reducing resting HR and BP, we searched Embase (1974 to April 2016), PubMed (1966 to April 2016), the Cochrane Central Register of Controlled Trials (issue 4, April 2016), and Pedro (www.pedro.org.au; 1999 to April 2016). The primary outcome was the mean change in HR at rest. Secondary outcomes included changes in systolic blood pressure (SBP) and diastolic blood pressure (DBP) as well as compliance with the breathing training. Finally, we included 6 studies consisting of 269 subjects. Practice of the breathing exercises resulted in statistically significant HR

reduction (mean difference: -1.72 beats/min, 95% CI -2.70 to -0.75). Reductions were seen in SBP (mean difference: -6.36 mm Hg, 95% CI -10.32 to -2.39) and DBP (mean difference: -6.39 mm Hg, 95% CI -7.30 to -5.49) compared with the controls. Trial durations ranged from 2 weeks to 6 months. In conclusion, the existing evidence from randomized controlled trails demonstrates that short-term voluntary slow breathing exercises can reduce resting HR, SBP, and DBP for patients with cardiovascular diseases.

(Am J Cardiol,2017 Jul 1)

10. **The effect of breathing exercise on hemodynamics and heart rate variability parameters in hypertensive patients: A systematic review** - Several types of breathing exercise (BE) have demonstrated effect on hemodynamics and heart rate variability (HRV) parameters in hypertension (HT). However, the effectiveness of each breathing pattern requires greater study. The purpose of this review is to explore the benefits of BE in hypertensive patients. Randomized controlled trials (RCTs) and clinical trials were retrieved from six electronic databases (PubMed, ScienceDirect, Web of Science, Scopus, ProQuest, and Cochrane Library). The risk of bias and quality of evidence was assessed using the modified Downs and Black checklist and the GRADE approach, respectively. Eight RCTs and three clinical trials were included in this review. All studies were high-quality studies, comprising four breathing groups: deep and slow breathing, manipulated nostril breathing, cycle of breathing, and prolonged expiration breathing. The findings suggest low to high-quality evidence for the effectiveness of four subgroups of BE. When stratified by outcome, the level of evidence on the benefit of BE was low to moderate on attenuating systolic blood pressure (SBP) and diastolic blood pressure (DBP). The evidence for heart rate (HR) reduction was low to high. Furthermore, there was moderate-quality evidence on lowering mean arterial blood pressure (MAP) and modulating HRV parameters. In conclusion, BE elicits a positive effect on hemodynamics and HRV parameters in hypertensive patients .**(SirinutChaiduang,2024 Oct:04**)

11. **A mixed-method randomized feasibility trial evaluating progressive muscle relaxation or autogenic training on depressive symptoms and quality of life in people living with human immunodeficiency virus (HIV) who have depressive symptoms - Background:** Progressive muscle relaxation (PMR) and autogenic training (AT) are effective relaxation techniques to reduce depressive symptoms. However, no studies on their effectiveness have been conducted among people living with HIV and depressive symptoms. The primary aim of this pilot study was to assess the feasibility and acceptability of PMR and AT interventions among people living with HIV who have depressive symptoms. A secondary aim was to assess the potential effectiveness of these interventions on depressive symptoms and quality of life. **Methods:** This study was a three-arm pilot randomized control trial with mixed methods. Participants were randomized to PMR, AT, or a control group (CG), with four assessments (baseline, and at one, three, and six months). The PMR and AT interventions consisted of six 1 h sessions of individual training over 12 weeks, plus home practice. Recruitment, attrition, and completion rates were calculated. Depressive symptoms and quality of life were assessed

at all times. Participants' perceptions of the interventions were collected in semi-structured interviews. **Results:** Following the screening, 54/63 people met the inclusion criteria, and 42/54 were randomly allocated to the PMR group (n=14), AT group (n=14), and CG (n=14). Six participants (43%; 95% CI 18-71%) in the PMR group and 10 (71%; 95% CI 42-92%) in the AT group completed the intervention. Participants reported better emotion management and improvements in depressive symptoms and quality of life. **Conclusions:** The pilot study suggests that a randomized trial to test the effectiveness of these interventions is feasible.

(Maria Pilar Ramirez-Garcia, 2020 Jul 3)

12. **Effect of Benson and progressive muscle relaxation techniques on sleep quality after coronary artery bypass graft: A randomized controlled trial** - **Objective:** This study aimed to investigate the effect of Benson relaxation (BR) and progressive muscle relaxation (PMR) techniques on the sleep quality of patients undergoing coronary artery bypass graft (CABG) surgery. **Method:** This study was a three-arm, parallel, randomized controlled trial. 120 patients who underwent CABG surgery at two academic hospitals in an urban area of Iran were randomly allocated into three groups (40 per group): the BR, PMR, and control groups. Patients in the BR and the PMR groups performed relevant exercises twice a day for four weeks. Sleep quality was measured before and immediately after the intervention using Pittsburgh Sleep Quality Index. **Results:** Within-group comparison in the BR ($t = 3.51$, $p = 0.001$) and the PMR ($t = 4.58$, $p < 0.001$) group showed that the overall sleep quality showed a significant improvement after the intervention when compared to baseline. The between-group comparison showed that both the BR and PMR groups showed significant improvements in subjective sleep quality ($F = 3.75$, $p = 0.02$), habitual sleep efficiency ($F = 4.81$, $p = 0.01$), and overall sleep quality ($F = 5.53$, $p = 005$) when compared to the control group after the intervention. However, no statistically significant differences were identified among the three study groups in terms of sleep latency, sleep duration, sleep disturbances, sleeping medication, and daytime dysfunction after the intervention ($p > 0.05$). **Conclusion:** The study showed that a four-week program of both PMR and BR can be effective in the overall improvement of sleep quality in patients following CABG. Further research is required to replicate the findings of the present study.

(Hossein Bagheri, 2021 Dec)

13. **Efficacy of Progressive Muscle Relaxation on Pregnancy Outcome among Anxious Indian Primi Mothers**- A randomized controlled study was conducted from May 2015 to June 2017 with 250 primigravidae. The women were assigned using a lottery method to intervention and control groups, 125 in each group. Information on background variables, pregnancy outcome, maternal complications, fetal complications, and postpartum depression was collected during the interval following delivery. PMR was the intervention (video) installed on one-to-one basis for two consecutive days. Pearson correlation, ANOVA, and regression analysis were used to evaluate the data to determine pregnancy outcome and performance of PMR. **Results:** There was a significant reduction (($F_3 = 24.81$, $p < 0.001$)

in all aspects of stress among the intervention and control groups during the posttest. The mean gestational age at birth was significantly different ($F_2 = 6.08$, $p = 0.014$) in the control group. There was significant increase in the occurrence of fetal complications such as birth asphyxia ($F_2 = 5.67$, $p < 0.050$), respiratory distress ($F_2 = 8.68$, $p < 0.050$), and jaundice ($F_2 = 3.91$, $p < 0.050$) in the control group. There was a negative correlation between PMR and stress ($r = -0.22$, $p < 0.001$), and PMR and state anxiety ($r = -0.26$, $p < 0.001$). There was an increased occurrence of maternal complications among the control group in comparison with the intervention group. **Conclusions:** The study suggests that PMR practice is useful during pregnancy to decrease stress, anxiety, and for reducing the occurrence of postpartum complications.

(Singaravelu Rajeswari, 2019 Dec 27,)

14. **The effect of progressive muscle relaxation and nature sounds on blood pressure measurement skills, anxiety levels, and vital signs in nursing students-** This randomized controlled study conducted at the nursing department of a university in February 2020. During skill training, one group was given PMR and one group was given PMR + NS. The routine teaching procedure was applied to the control group. **Findings:** The PMR (37.80 ± 10.1) and PMR + NS (31.19 ± 6.15) groups had lower mean postintervention anxiety scores compared with the control group (40.86 ± 9.13). The PMR + NS group had higher mean postintervention knowledge test score than other. **Practice implications:** PMR + NS and PMR helped reduce nursing students' anxiety levels and pulse rates. PMR + NS helped increase their blood pressure knowledge test scores.

(Sevda Korkut, Epub 2021 Feb 26)

15. **The effect of slow breathing exercise on heart rate and blood pressure in patients undergoing percutaneous coronary intervention: a randomized controlled trial - Aim:** To determine the effects of slow breathing exercise (SBE) on heart rate (HR) and blood pressure (BP) in patients after percutaneous coronary intervention (PCI). **Methods and results:** The study is a single-blind, randomized controlled trial. Seventy-eight eligible patients after primary PCI were divided randomly into either the control group or the trial group. The control group only received routine post-PCI care. In addition to routine care, participants in the trial group performed SBE at home, two to three times for a total of 30 min every day for 12 weeks. The main outcomes were HR and BP measured in the office and at home. The secondary outcome was compliance with the breathing exercise. Patients allocated to the trial group, on average, performed 5.21 days/week for 26.00 min/day. The trial group showed a significant reduction in HR of 3.95 b.p.m. (P = 0.004) measured in the office. The reduction in HR measured in the office was greater for the trial group, with a significant difference between the two groups (P = 0.005). There was no significant difference between the two groups in HR measured at home. There was also no significant difference in BP measured in the office or at home between the two groups. **Conclusion:** Slow breathing exercise is an effective non-pharmacological method to

reduce HR in patients undergoing PCI. Further study is needed to confirm whether the intervention is effective on BP.

(Yan Zou 2022 Apr 9)

16. **Aromatherapy intervention on anxiety and pain during first stage labour in nulliparous women: a systematic review and meta-analysis -** This systematic review and meta-analysis aimed to critically evaluate and summarise all available evidence derived from randomised clinical trials (RCTs) regarding aromatherapy's effects on labour pain and anxiety relief. Literature search was performed in MEDLINE/PubMed, Cochrane library, Cochrane Central Register of Controlled Trials (CENTRAL) and Scopus since their respective inception to January 2019. Additionally, Google Scholar was also searched to explore citations of eligible final studies which were subsequently included in the systematic review. The search strategy used was: (pregnancy or pregnant or prenatal or antenatal or perinatal or maternal) AND (aromatherapy or essential oils or aroma therapy). Per inclusion and exclusion criteria established by the current study, nine RCTs were included in the systematic review. Results from the current study suggested that aromatherapy significantly decreased pain and anxiety in the first stage of labour. IMPACT STATEMENT **What is already known on this subject?** Several studies have shown aromatherapy's effectiveness in relieving pain and anxiety for hospitalised patients and on relieving nausea and vomiting for women during pregnancy. Some results have further indicated that aromatherapy was effective in facilitating episiotomy healing and in reducing pain, fatigue and distress. Aromatherapy was also found to play a role in improving maternal moods; reducing post-caesarean pain; and preventing or mitigating stress, anxiety and depression after childbirth. Though most non-pharmaceutical pain management options were considered non-invasive and presumably safe for mothers and their foetuses, their exact efficacies remained unclear due to a lack of high-quality evidence. **What the results of this study add?** This systematic review and meta-analysis summarise all evidence derived from RCTs wherein aromatherapy was performed as a supportive analgesic method during labour. Results of this meta-analysis identified more credible evidence validating that aromatherapy could significantly decrease labour pain both in early active and late active phases. **What the implications are of these findings for clinical practice and/or further research?** Availability of credible evidence supporting aromatherapy's effectiveness on reducing physiological and psychological stress during pregnancy and childbirth would be useful, both theoretically and practically, for all stakeholders concerned, such as pregnant women, medicine and midwifery students, midwives, nurses, gynaecologists and health policymakers.

(Ching-Chu LiaoEpub 2020 Jul 15)

17. **Lifestyle interventions to prevent adverse pregnancy outcomes in women at high risk for gestational diabetes mellitus: a randomized controlled trial - Objective:** To examine the effects of lifestyle interventions, including dietary guidance, health education and weight management, on pregnancy outcomes in women at high risk of gestational diabetes mellitus (GDM). **Methods:** Our study included 251 women at high risk of GDM and 128 randomized to lifestyle interventions (dietary

guidance, health education, and weight management); One hundred and twenty-three people were randomly assigned to a control group (regular pregnancy check-ups). Counts between groups were compared using either chi-square test or Fisher's exact test. **Results:** Compared with the control group, the risk of GDM was reduced by 46.9% (16.4% vs 30.9%, $P = 0.007$) and the risk of pregnancy induced hypertension (PIH) was reduced by 74.2% (2.3% vs 8.9%, $P = 0.034$) in the intervention group. There were no significant differences in macrosomia, caesarean section, or preterm birth ($P > 0.05$). **Conclusion:** The lifestyle intervention in this study helped pregnant women to better understand knowledge related to pregnancy, reduce stress and anxiety, and increase intake of adequate prenatal nutrition. This intervention prevented metabolic abnormalities that may occur due to inadequate nutrient intake during pregnancy. In addition, it helped women to control weight gain, maintain appropriate weight gain during pregnancy, and reduce the risk of excessive or insufficient weight gain, ultimately lowering the incidence of GDM and PIH. This highlights the importance of early screening and intervention for high-risk pregnant women.

(Jiawei Xu2023 Aug 22)

18. **Mind-body interventions on stress management in pregnant women: A systematic review and meta-analysis of randomized controlled trials** - **Aim:** To quantify the effect of mind-body interventions on stress in pregnant women. **Design:** A systematic review and meta-analysis of randomized controlled trials was performed. **Data sources:** PubMed, Embase, CENTRAL, Web of Science and PsycINFO were searched from each database inception to January 2020. **Review methods:** Randomized controlled trials regarding mind-body interventions for stress in pregnant women were included. Methodological quality was evaluated using the Cochrane Collaboration 'Risk of Bias' tool and meta-analysis was performed via RevMan 5.3. Subgroup analysis and publication bias assessment were conducted. Post hoc sensitivity analysis was performed to investigate the source of heterogeneity. **Results:** In total, 28 studies comprising 1944 participants were included. The overall meta-analysis showed that antenatal stress of pregnant women in the mind-body intervention's groups showed significant high improvements (SMD=-0.94; 95% CI [-1.25, -0.63]; $p < .00001$) compared with the control groups. Results of subgroup analyses indicated that all types of mind-body interventions including mindfulness intervention, cognitive behavioural therapy, relaxation techniques and yoga were beneficial to antenatal stress. Both groups and individual formats mind-body interventions were effective. 4-8 weeks mind-body interventions were seemed as the optimal choice. Moreover, mind-body interventions were concomitant with reducing antenatal anxiety and depression. **Conclusion:** Mind-body interventions are promising approaches for stress reduction in pregnant women. Nevertheless, the results should be interpreted with caution because of high heterogeneity and publication bias. Further high-quality studies are needed to verify the findings.

(Pingping Guo Epub 2020 Oct 13)

19. **Internet-Based Interventions for Preventing Premature Birth Among Pregnant Women: Systematic Review -** A comprehensive search of the MEDLINE, Embase, CINAHL, and Cochrane Library databases was conducted to identify randomized trials and quasi-experimental studies evaluating internet-based interventions for premature birth prevention in pregnant women. The search was inclusive, with no restrictions based on language or geographical location, allowing for a comprehensive global perspective. The time frame for the inclusion of studies extended until February 2023. The risk of bias (RoB) in each study was independently assessed by 3 authors forming pairs, using the revised Cochrane RoB tool (RoB 2) for randomized trials, as per the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Owing to heterogeneity in populations, measurements, and interventions, a meta-analysis was not conducted.**Results:** This review included 26 articles, comprising 12 intention-to-treat and 14 per-protocol studies. The overall RoB was high in most intention-to-treat studies and of some concern in most per-protocol studies. The target populations varied, including nonspecific pregnant women, those with gestational diabetes mellitus (GDM) or those at risk of GDM, individuals with anxiety or depression, and those experiencing preterm labor. Psychosocial, physiological, and wellness health outcomes were evaluated. Internet-based interventions effectively reduced stress/distress in nonspecific pregnant women but not in those experiencing preterm labor. Their effectiveness in reducing anxiety and depression varied, with inconsistent results among different groups. In women with GDM or those at risk of GDM, interventions successfully controlled fasting plasma glucose and 2-hour postprandial plasma glucose levels but did not consistently manage glycated hemoglobin levels. These interventions did not reduce the incidence of premature births across the various populations studied. The effectiveness of these internet-based interventions in addressing substance or alcohol abuse and insomnia also varied.**Conclusions:** Internet-based interventions show promise in improving psychosocial health and managing blood sugar to prevent premature birth, highlighting variability in effectiveness across different risk factors. Further research, including clinical trials, is vital for developing, evaluating, and disseminating effective, safe internet-based interventions. Establishing standardized measurement tools and rigorous evaluation processes is crucial for enhancing these interventions' effectiveness and reliability in clinical practice, significantly contributing to preventing premature births and improving maternal health outcomes.

(Sun-Hee Kim2024 Apr 2)

20. **The effect of audio-visual video with korotkoff sounds on anxiety levels and blood pressure measurement skills of nursing students: A randomized controlled study-** This research was conducted with 130 (intervention group: 67, control group: 63) nursing students in the nursing department of a university in March 2022. Before the skill practice, the students in the intervention group listened to the korotkoff sounds using an audio-visual video containing the korotkoff sounds and then the practice was made. Data of the study were collected using the short version of the State-Trait Anxiety Inventory, the student introduction form and the blood pressure measurement evaluation

form. **Results:** The mean age of the students was 19.41 (SD 1.75) in the intervention group and 19.20 (SD 1.04) in the control group. The State-Trait Anxiety Inventory mean scores of both groups were similar before the skill practice. At the end of the skill practice, the state anxiety score of the intervention group 0.56 (SD 1.03) was lower than the control group 1.30 (SD 1.81) and the difference was statistically significant ($p < 0.05$). When the blood pressure measurements of the students in both groups were compared, the rate of hearing korotkoff sounds and measuring blood pressure correctly was higher in the students in the intervention group and the difference was statistically significant ($p < 0.05$). **Conclusion:** The korotkoff sounds presented with audio-visual video increased the skill levels of the students and reduced the anxiety level. In this direction; it is recommended to use audio-visual video containing korotkoff sounds for students to gain blood pressure measurement skills.

(Türkan Ülker,2023 Oct)

CHAPTER – III

Methodology

CHAPTER III : METHODOLOGY

"Carrying a baby is the most rewarding experience a woman can enjoy."

~Jayne Mansfield

Research methodology is a way systematically solves the research problem. It may be understood as a science of studying how research is done scientifically. It includes the various steps that are adopted by a researcher in studying his research problem along with the logic behind them. In order to achieve the stated objectives and test hypothesis, the following research design and methods were used. It includes research approach, research design, population study, setting sample and sampling technique, inclusion criteria and exclusion criteria, data collection method, development of tools and plan for data analysis.

According to **Polit and Beck (2004)** "Methodology refers to way of obtaining, systematizing and analyzing data."

Creswell (2003) portrays methodology as a coherent group of methods that harmonize one another and that have the capability to fit to deliver data and findings that will reflect the research question and suits the researcher's purpose.

This chapter deals with the methodology of"A Quasi-Experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (C.G.)."

It includes the description of research approach, research design, setting of the study, sample and sample technique, development of data collection tools, procedure of data collection and plan for data analysis.

3.1 RESEARCH APPROACH–A **Quasi-Experimental design** is used to study the **cause-and-effect relationship** between an intervention and an outcome **without randomly assigning participants** to groups. Unlike true experimental designs, which use randomization, quasi-experiments allow group assignment based on availability, practicality, or ethical reasons.

According to Burns and Nancy, research approach indicates the procedure for conducting the study in order to accomplish the objective of the study was adopted.

The present study adopted a **quantitative research approach**. This approach was selected as the study aimed to assess and compare the effectiveness of two specific interventions — Slow Breathing Exercise (SBE) and Progressive Muscle Relaxation (PMR) — on reducing physiological and psychological stress among antenatal mothers. Numerical data were collected using self-structured tools and analysed statistically to determine the impact of each intervention.

3.2 RESEARCH DESIGN

The research design is the master plan specifying the methods and procedures for collecting and analysing the needed information in a research study. **(Suresh K. Sharma)**

It is a planned structure and strategy of investigation of answering the research questions is the overall plan or blue print of research select to carry out this study.**(BT Basavanthappa)**

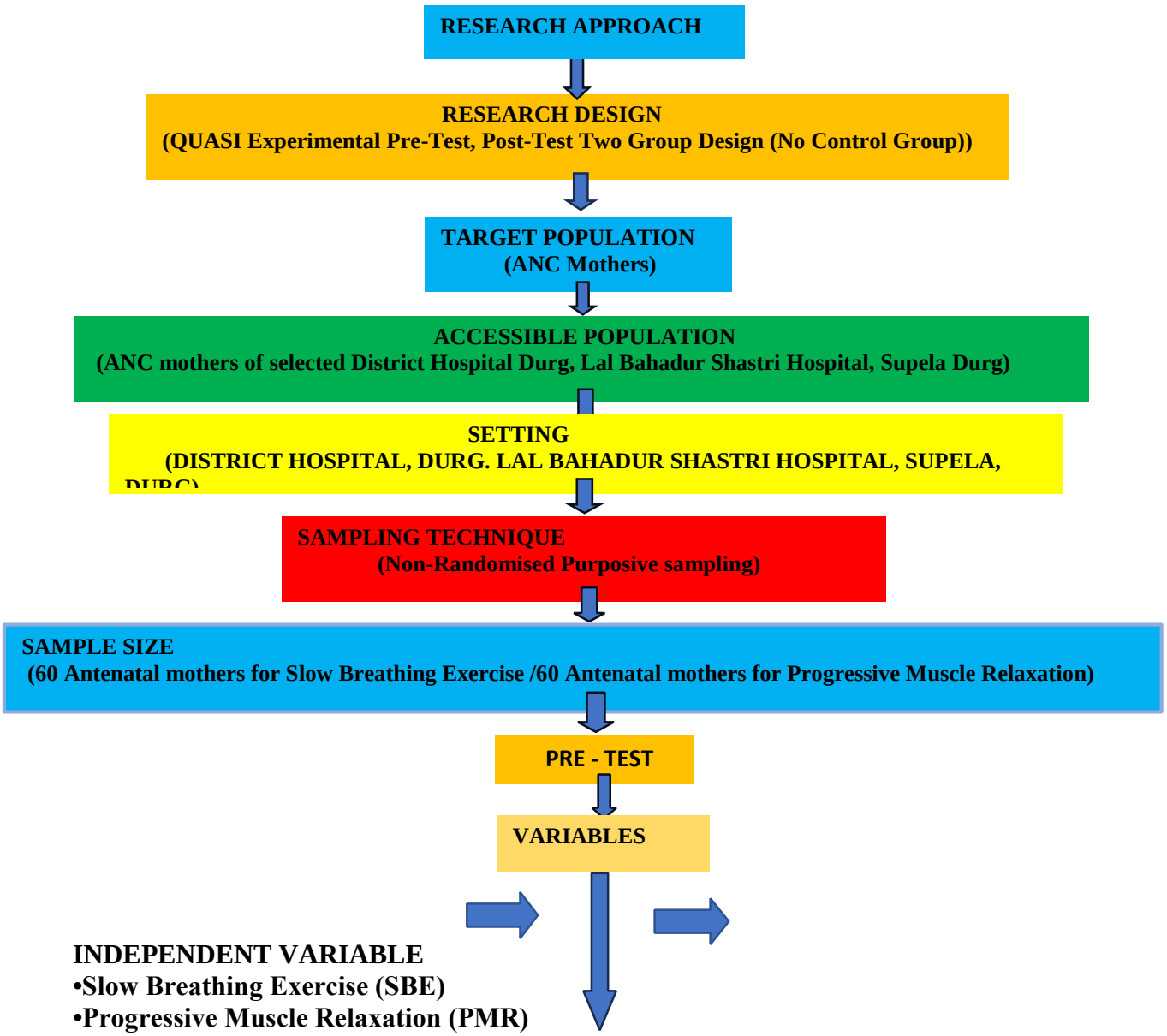
The study employed a **quasi-experimental, two-group pre-test post-test design**. This design was chosen to assess and compare the effectiveness of two stress reduction techniques — **Slow Breathing Exercise (SBE)** and **Progressive Muscle Relaxation (PMR)** — on physiological and psychological stress among antenatal mothers.

In this design:

- Participants were **non-randomly assigned** to one of two groups:
  - **Group A (SBE Group)** received slow breathing exercises
  - **Group B (PMR Group)** received progressive muscle relaxation
- A **pre-test** was administered to both groups to assess baseline stress levels
- Each group received the respective intervention for a defined period (e.g., 7–10 days)
- A **post-test** was conducted after the intervention to measure changes

This design allows the comparison of **within-group changes** (pre-test vs post-test) and **between-group differences** (SBE vs PMR), thereby evaluating the effectiveness of the interventions even without random assignment.

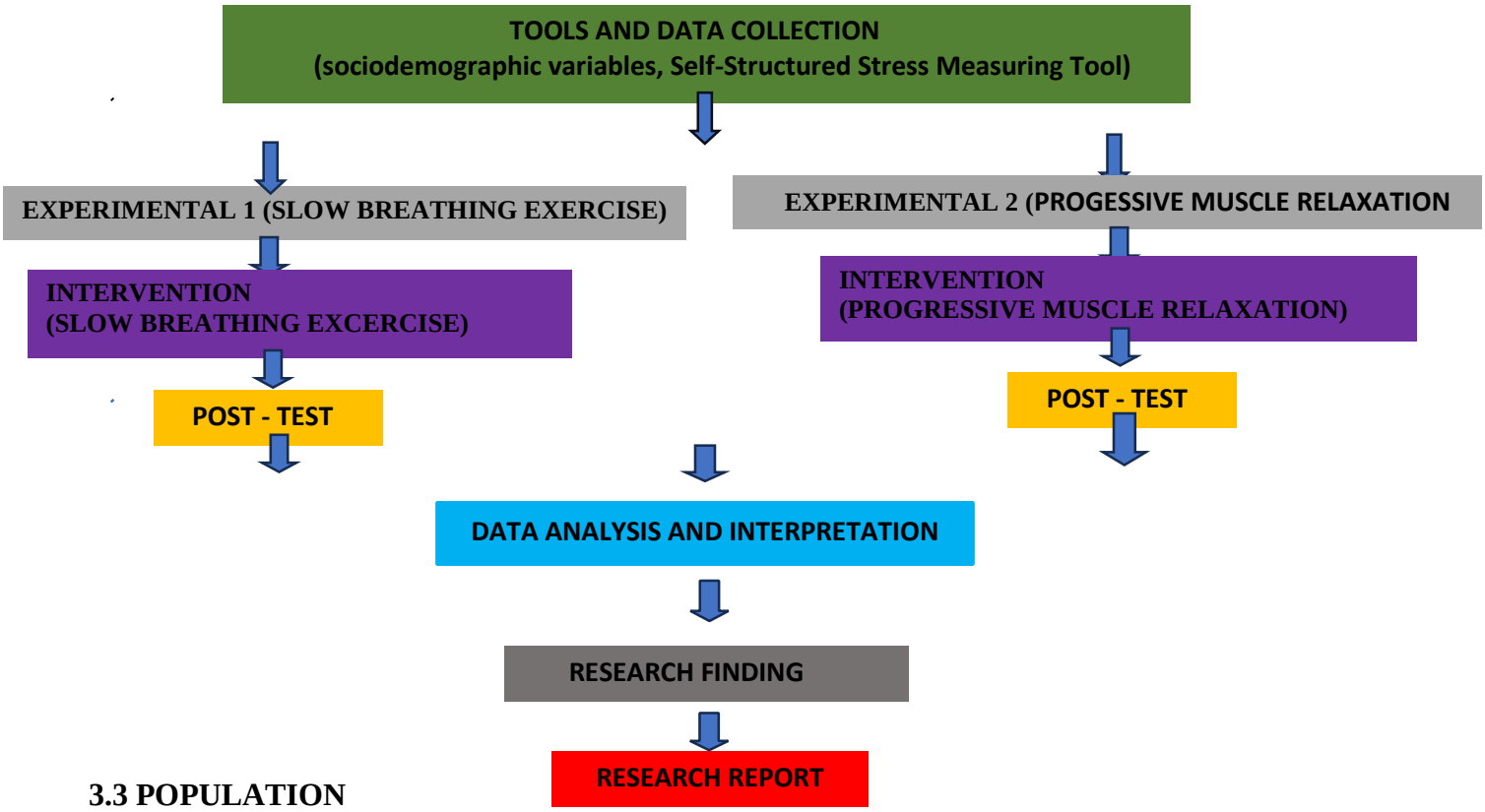
The schematic representation of the study research design given as follows: -



INDEPENDENT VARIABLE
•Slow Breathing Exercise (SBE)
•Progressive Muscle Relaxation (PMR)

DEPENDENT VARIABLE

- **Physiological Stress**
- **Psychological Stress**



3.3 POPULATION

Polit and Hungler (1999) define population as the totality of all subjects that conform to a set of specifications, compromising the entire group of persons that is of interest to the researcher and whom the research results can be generalized.

TARGET POPULATION

The entire population in which the researchers are interested and to which they would like to generalize the research findings. In this study the target population includes ANC mothers.

ACCESSIBLE POPULATION

The aggregate of cases that conform to designated inclusion or exclusion criteria and that are accessible as subjects of the study. In the present study, Accessible population included ANC mothers attending ANC clinics and hospitals at Durg, District (C.G.).

3.4 SETTING OF THE STUDY

The setting of the study refers to the location for conducting research; can be natural, partially controlled, or highly controlled. **(Suresh K Sharma)**

The setting of the present study is Lal Bahadur Shastri Hospital, Supela and District Hospital, Durg.

3.5 SAMPLE AND SAMPLING TECHNIQUE

SAMPLE

Sample may be defined as the representative unit of a target population which is to be worked upon by the researchers during the study.**(Suresh K Sharma)**

In this study a total of **120 antenatal mother's** samples will be selected for the study. They will be divided equally into two intervention groups:

- **Group A (n=60):** Slow Breathing Exercise (SBE)
- **Group B (n=60):** Progressive Muscle Relaxation (PMR)

SAMPLING TECHNIQUE

Suresh K. Sharma stated "Sampling is the process of selecting a representative segment of the population under study"

In this study a **non-probability purposive sampling** technique will be used to select the participants based on the following inclusion and exclusion criteria.

SAMPLING SIZE

A total 120 samples who are present at the time of study and who satisfy and who satisfy the required criteria.

3.6 SAMPLING CRITERIA

In sampling criteria, the researcher specific the characteristics of the population under study by detailing the inclusion and exclusion criteria. Inclusion criteria are defined as the key features of the target population that the investigators will use to answer their research questions.

The samples were selected with the following criteria: -

INCLUSION CRITERIA

- Pregnant women aged 19 – 35 years and not more than 35 years.
- Gestational age: 0-36 weeks.
- Willingness to participate in the study.

EXCLUSION CRITERIA

- Pregnant women with a history of mental illness
- Pregnant women with high-risk cases may interfere with the study.

3.7 VARIABLES UNDER STUDY

Variables are qualities, properties or characteristics of person, things or situation that can change or vary.

Chinn and Kramer stated that variables are concepts at different level of abstraction that are concisely defined to promote their measurement or manipulation within study.

They are independent and dependent variable.

Independent variable – The independent variable is a stimulus or activity that is manipulated or varied by researcher to create the effect on dependent variable. In this study the these are the interventions applied to the participants.

- **Slow Breathing Exercise (SBE)**
- **Progressive Muscle Relaxation (PMR)**

Dependent variable –The dependent variable is an outcome or response due to the effect of the dependent variable, which researcher wants to predict or explain. In this study the outcomes being measured are physiological and psychological stress using self-structured stress measuring tool (checklist).

Socio demographic variable –The characteristics and attributes of the study subject is considered as demographic variable. These are characteristics of the sample that could influence stress levels and will be described to ensure group comparability.

- Age
- Gestational age
- Parity (primigravida/multigravida)
- Education level
- Occupation
- Socioeconomic status
- Type of family (nuclear/joint)
- Area of residence (urban/rural)

3.8 SELECTION AND DEVELOPMENT OF RESEARCH TOOL

The research tool are the devices used to collect the data. (**Sukhpal Kaur)**

A research instrument is a device used to measure the concept of interest in a research project that a researcher uses to collect data. **(Suresh K Sharma)**

SELECTION OF THE TOOL

To assess the effectiveness of **Slow Breathing Exercise (SBE)** and **Progressive Muscle Relaxation (PMR)** in reducing **physiological and psychological stress** among antenatal mothers, a **self-structured checklist** was developed. The tool was selected based on the nature of the study, population characteristics, and the specific research objectives.

Considering that stress can manifest in both **psychological** and **physiological** forms, and that many existing tools are either culturally insensitive or not pregnancy-specific, a **customized, self-structured tool** was found to be appropriate. The tool was designed in simple language to ensure clarity and ease of understanding by antenatal mothers in the Indian context, especially those attending clinics and hospitals in **Durg District, Chhattisgarh**.

DEVELOPMENT OF THE TOOL

The development process of the tool involved the following steps:

1. Review of Literature:

An extensive review of national and international research studies, textbooks, journals, and WHO guidelines on maternal mental health and stress management during pregnancy was conducted. This helped identify the common signs and symptoms of stress in antenatal mothers.

2. Tool Construction:

Based on the findings from the literature and expert advice, the tool was developed in two parts:

Part A: Demographic Profile

Includes age, gestational age, parity, education, occupation, income, type of family, and area of residence.

Part B: Self-Structured Stress Checklists

Section I: Psychological Stress Checklist (15 items)

Section II: Physiological Stress Checklist (15 items)

Each item is rated as **Yes = 1** and **No = 0**.Higher scores indicate higher levels of stress.

3.9 DESCRIPTION OF THE TOOL

The tool used for the present study is a **self-structured stress checklist** developed by the researcher to assess **psychological and physiological stress** among antenatal mothers. The tool was designed based on an extensive review of literature, consultation with subject experts, and validation through a pilot study.

The tool consists of the following parts:

Part I: Demographic Data Sheet

This section collects background information about the participants. It includes variables that may influence stress levels, such as:

Age

Gestational age (in weeks)

Parity (primigravida/multigravida)

Education level

Occupation

Monthly income

Type of family (nuclear/joint)

Area of residence (urban/rural)

Part II: Self-Structured Stress Assessment Checklist

Section A: Psychological Stress Checklist

Number of items: 15

Type of questions: Close-ended (Yes/No format)

Purpose: To assess emotional and cognitive signs of stress, such as anxiety, worry, sadness, concentration issues, and social withdrawal.

Section B: Physiological Stress Checklist

Number of items: 15

Type of questions: Close-ended (Yes/No format)

Purpose: To assess physical symptoms of stress, such as headaches, sleep disturbances, fatigue, palpitations, dizziness, and muscle tension.

Scoring Procedure:

Each item is scored as:

Yes = 1

No = 0

Total maximum score = **30** (15 psychological + 15 physiological)

Interpretation of Scores:

SCORE RANGE	CATEGORY
0 – 9	**MILD STRESS**
10 - 18	**MODERATE STRESS**
19 - 30	**SEVERE STRESS**

Language and Format:

The tool was developed in **English** and later translated into **Hindi** (or local language if applicable) to ensure comprehension among all participants.

Simple and culturally appropriate language was used to suit the literacy level of antenatal mothers in the selected region.

3.10 CONTENT VALIDITY OF TOOL

Validity refers to the appropriateness, completeness and usefulness of an attribute measuring research instrument.

According to Polit and Hungler "Validity refers to the degree to which an instrument measures what is supposed to be measuring".

The initial draft of the tool was submitted to a panel of **7 experts** from the fields of Obstetrics and Gynaecology. Based on their suggestions, necessary modifications were made.

3.11 RELIABILITY OF THE TOOL

Reliability refers to the **consistency and stability** of a research instrument in measuring what it is intended to measure. In the present study, reliability testing was conducted to ensure that the **self-structured stress checklist** used for assessing **psychological and physiological stress** among antenatal mothers provides consistent and dependable results.

RELIABILITY OF PHYSIOLOGICAL STRESS TOOL

By Cronbach alpha

No of question/ component	**15**
sum of the item variance	**3.145833**
variance of total score	**10.576**
Cronbach alpha	**0.78**

FORMULA

Cronbach "alpha" = (k)* (1-sum of item variation) = 0.78 (good internal
k-1 sum of sample variation consistency)

RELIABILITY OF PSYCHOLOGICAL STRESS TOOL

By Cronbach alpha

No of question/ component	**15**
sum of the item variance	**1.6**
variance of total score	**6.2**
Cronbach alpha	**0.79**

FORMULA

Cronbach "alpha" = (k) * (1-sum of item variation) = 0.79 (good internal
k-1 sum of sample variation consistency)

3.12 PILOT STUDY

Pilot study referred to a small-scale preliminary try-out of the method to be used in an actually large study which acquaints the researcher with problems that can be corrected in proportion for the large research study or is done to provide researcher with an opportunity to try out the procedure, methods and tools of data collection.

SETTING

The pilot study was conducted at **Lal Bahadur Shastri Hospital, Supela**, located in **Durg District, Chhattisgarh**.

SAMPLE

A total of **12 antenatal mothers** were selected using **purposive sampling** based on inclusion criteria. They were equally divided into two groups:

- **Group I – Slow Breathing Exercise (SBE):** 6 participants
- **Group II – Progressive Muscle Relaxation (PMR):** 6 participants

These participants were **excluded from the main study** to avoid contamination

DESIGN AND PROCEDURE

The pilot followed a **quasi-experimental pre-test post-test design**.

- **Pre-test:** Participants were assessed using a **self-structured physiological and psychological stress checklist**.
- **Intervention:**
  - Group I received **Slow Breathing Exercise (SBE)**.
  - Group II received **Progressive Muscle Relaxation (PMR)**.
- **Post-test:** Stress levels were reassessed using the same tools.

INTERPRETATION

- **Calculated t = -1.34**
- **Critical t = ±2.228**

Since **|t| = 1.34 < 2.228**,
The difference in mean reduction between **SBE** and **PMR** is **not statistically significant** at the 0.05 level.

ASSOCIATION WITH EDUCATIONAL QUALIFICATION

COMPARISON

Since the calculated Chi-Square value (1.776) is less than the table value (21.026), we fail to reject the null hypothesis.

INTERPRETATION OF ASSOCIATION

There is no significant association between the variables at **α = 0.05.**

ASSOCIATION WITH MONTHLY INCOME

COMPARISON

Since the calculated Chi-Square value (**25.304**) is larger than the table value (**16.473**), we can reject the null hypothesis.

INTERPRETATION OF ASSOCIATION

There is statistically significant association between the variables at **α = 0.05.**

ASSOCIATION WITH FAMILY TYPE

COMPARISON

Since the calculated Chi-Square value (**0.1142**) is so much smaller than the table value (**7.815**), we fail to reject the null hypothesis.

INTERPRETATION OF ASSOCIATION

There is no significant association between the variables at **α = 0.05.**

FINAL RESULT

While PMR had a higher average stress reduction (20.17%) compared to SBE (15.17%), this difference **is not statistically significant** ($p > 0.05$). Thus, **both interventions were effective**, but **neither was significantly better** in this small pilot sample.

3.13 DATA COLLECTION METHODS

Data collection is a critical component of any research study, as it ensures the systematic gathering of relevant information to meet the study objectives. For this quasi-experimental study, the following data collection methods were employed:

1. Setting of the Study:

The data was collected from selected ANC clinics and hospitals in Durg District, Chhattisgarh, including Lal Bahadur Shastri Hospital and affiliated antenatal clinics that serve a large number of pregnant women.

2. Study Participants:

A total of **120** antenatal mothers meeting the inclusion criteria were selected using non-probability purposive sampling and were randomly assigned to two groups:

Group A (n = 60): Received Slow Breathing Exercise (SBE)

Group B (n = 60): Received Progressive Muscle Relaxation (PMR)

3. Tools for Data Collection:

The following tools were used:

PartI: Demographic Data Sheet

Collected information such as age, gestational age, education, occupation, parity, income, type of family, and area of residence.

Part II:

Self-Structured Psychological Stress Checklist (15 items)

Self-Structured Physiological Stress Checklist (15 items)

Each item had binary responses: Yes = 1, No = 0

Higher scores indicate higher levels of stress.

4. Data Collection Procedure:

Pre-Intervention Phase:

The researcher obtained administrative permission from the hospital authorities and ethical clearance.

Informed consent was taken from all participants.

Pre-test stress levels (psychological and physiological) were assessed using the self-structured checklists for both groups.

Intervention Phase:

Group A underwent Slow Breathing Exercises.

Group B underwent Progressive Muscle Relaxation Techniques.

Sessions were conducted under the supervision of the researcher, either individually or in small groups.

Post-Intervention Phase:

After the intervention period, the post-test stress levels were measured using the same self-structured checklists.

5. Duration of Data Collection:

The entire data collection was conducted in one day, depending on participant availability and institutional schedules.

3.14 PLAN FOR DATA ANALYSIS

The data collected will be **organized, coded, and analysed** using descriptive and inferential statistics with the help of **Microsoft Excel and SPSS software**.

1. Descriptive Statistics

- **Frequency and percentage:** To describe socio-demographic variables of ANC mothers.

- **Mean and standard deviation:** To assess the levels of physiological and psychological stress in pre-test and post-test within each group (SBE and PMR).

2. Inferential Statistics

- **Paired t-test:**
  To assess the effectiveness of SBE and PMR techniques **within each group** by comparing pre-test and post-test stress scores.
- **Unpaired t-test (Independent t-test):**
  To compare the **effectiveness between SBE and PMR groups** post intervention.
- **Chi-square test:**
  To find the **association between stress reduction and selected socio-demographic variables** among ANC mothers.

Level of Significance

- The hypotheses will be tested at **0.05 level of significance**.

3.15 ETHICAL CONSIDERATION

Ethical approval was obtained from the appropriate **Institutional Ethics Committee**, prior permission was obtained from our Principal, Government College of Nursing, Durg (C.G).Confidentiality and anonymity of the participants were maintained. Participants had the right to withdraw at any stage of the study without any consequences.

3.16 SUMMARY

This chapter has deal with the research approach, research design, variables under the study, setting, population, sample and sampling technique, development of data collection instrument, pilot study, data collection procedure and plan for data analysis.

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

DEFINITION

According to Suresh K Sharma Analysis is the process of organising and synthesizing the data so as to answer research questions and hypothesis. Without the aid of statistics, the quantitative data collected in a research project would be more than chaotic mass of numbers. Statistical methods include 'collection, presentation, analysis and interpretation of numerical data.

This chapter presents the analysis and interpretation of data. Assess theeffectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.). The data analysis was carried out based on the objectives and hypothesis set by the invigilator. The data collected were organised, tabulated, analysisand interpreted by the statistical tables and graphs.

OBJECTIVES OF THE STUDY

1. To assess the effectiveness of (SBE) slow breathing exercise technique in reducing physiological and psychological stress among ANC mothers.

2. To assess the effectiveness of (PMR) progressive muscle relaxation technique in reducing physiological and psychological stress among ANC mothers.

3. To compare the effectiveness of (SBE) slow breathing exercise (exp I) and (PMR) progressive muscle relaxation (exp II) technique in reducing stress among ANC mothers.

4. To find the association on effect of stress among ANC mothers with their sociodemographic variables.

ORGANISATION OF DATA

The data was organised under following section

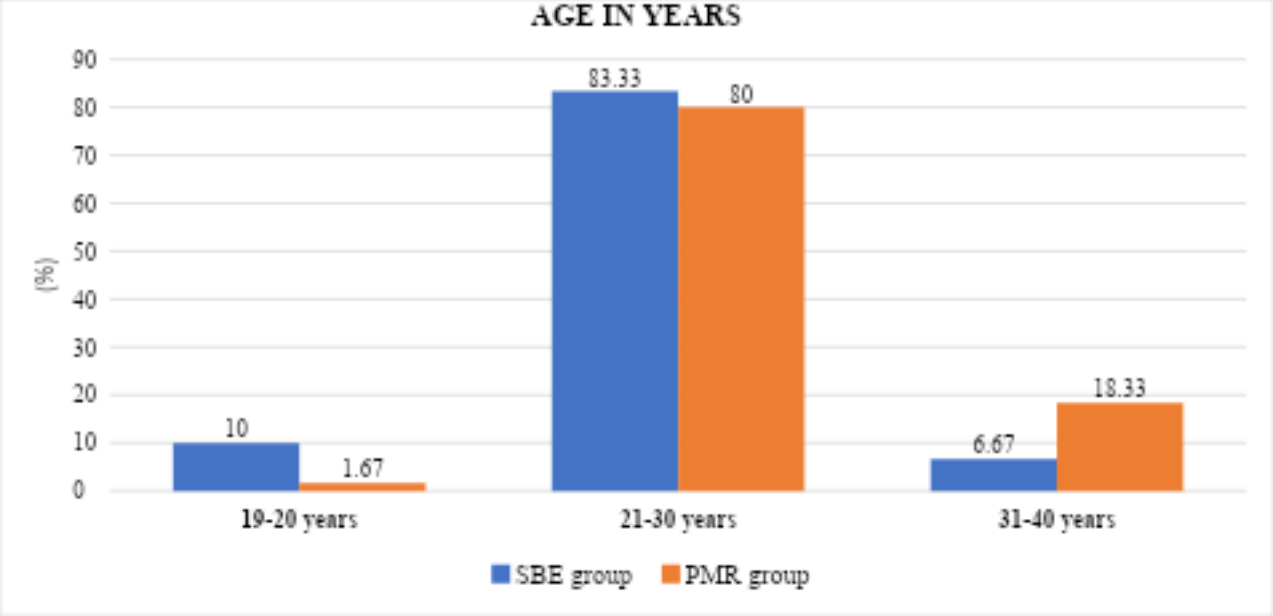
- **SECTION I –** Distribution of subjects according to socio-demographic variables in frequency and percentage.
- **SECTION II –**It deals with the effectiveness of SBE and PMR techniques.
- **SECTION III –**It deals with the comparison of effectiveness of SBE and PMR techniques.
- **SECTION IV** -Association between stress reduction and sociodemographic variables.

The findings of the study have been discussed with reference of objectives and hypothesis stated in chapter – I and with findings of the other studies.

SECTION I

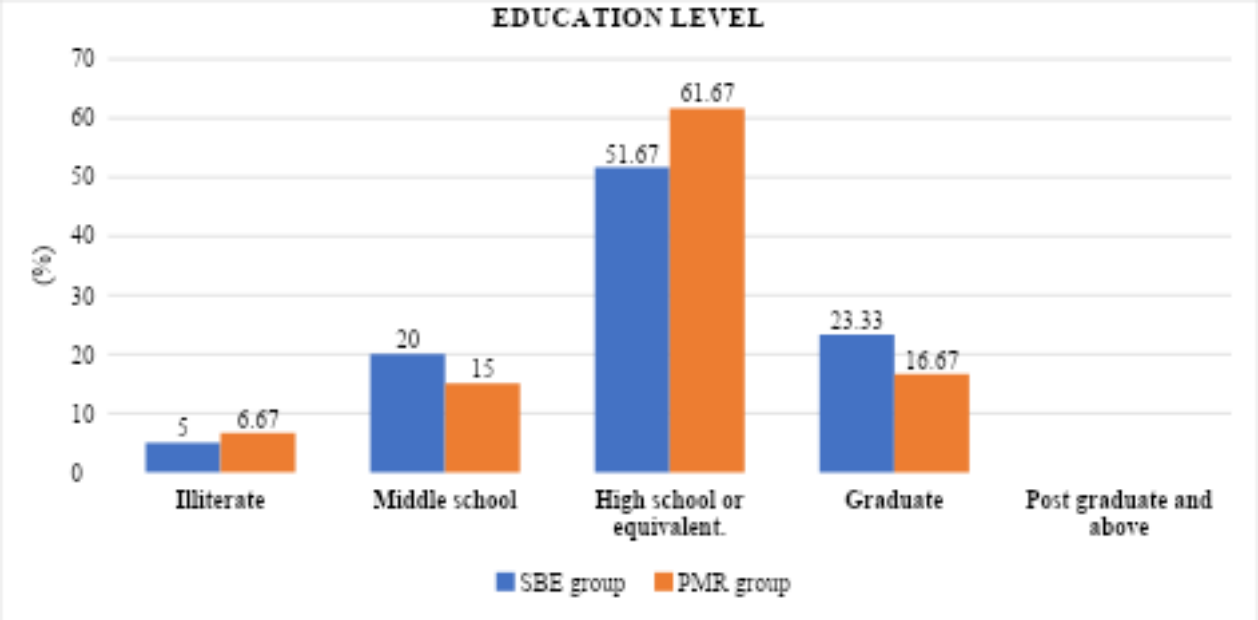
DISTRIBUTION OF SUBJECTS ACCORDING TO SOCIO-DEMOGRAPHIC VARIABLES IN FREQUENCY AND PERCENTAGE

1. AGE IN YEARS	SBE GROUP		PMR GROUP	
	N	%	N	%
19-20 YEARS	6	10	1	1.67
21-30 YEARS	50	83.33	48	80
31-40 YEARS	4	6.67	11	18.33
TOTAL	60	100	60	100



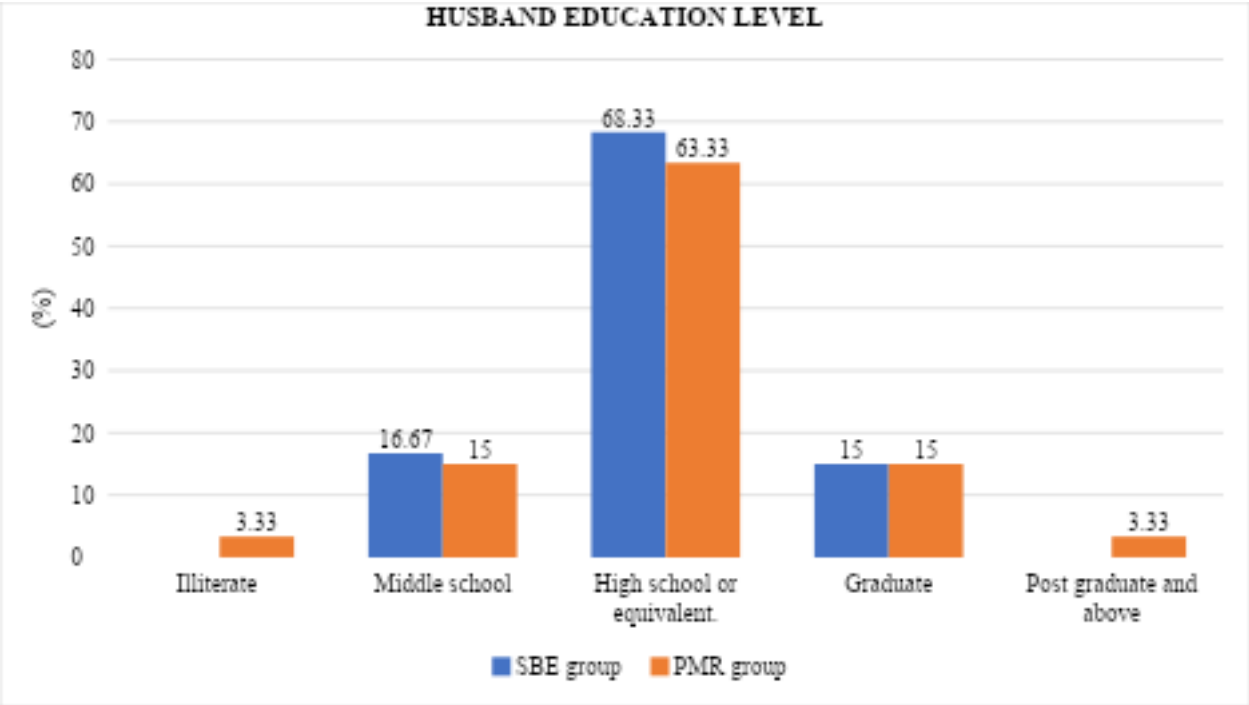
In the SBE group, the majority of ANC mothers (83.33%) were in the age group of 21–30 years, followed by 10% in 19–20 years, and 6.67% in 31–40 years. In the PMR group, a similar trend was observed — most participants (80%) were 21–30 years, 18.33% were 31–40 years, and only 1.67% were 19–20 years. This indicates that most participants in both groups were aged 21–30 years, which represents the common reproductive age group for ANCmothers.

2.EDUCATION LEVEL	SBE GROUP		PMR GROUP	
	N	%	N	%
ILLITERATE	3	5	4	6.67
MIDDLE SCHOOL	12	20	9	15
HIGH SCHOOL OR EQUIVALENT.	31	51.67	37	61.67
GRADUATE	14	23.33	10	16.67
POST GRADUATE AND ABOVE		0		0
TOTAL	60	100	60	100



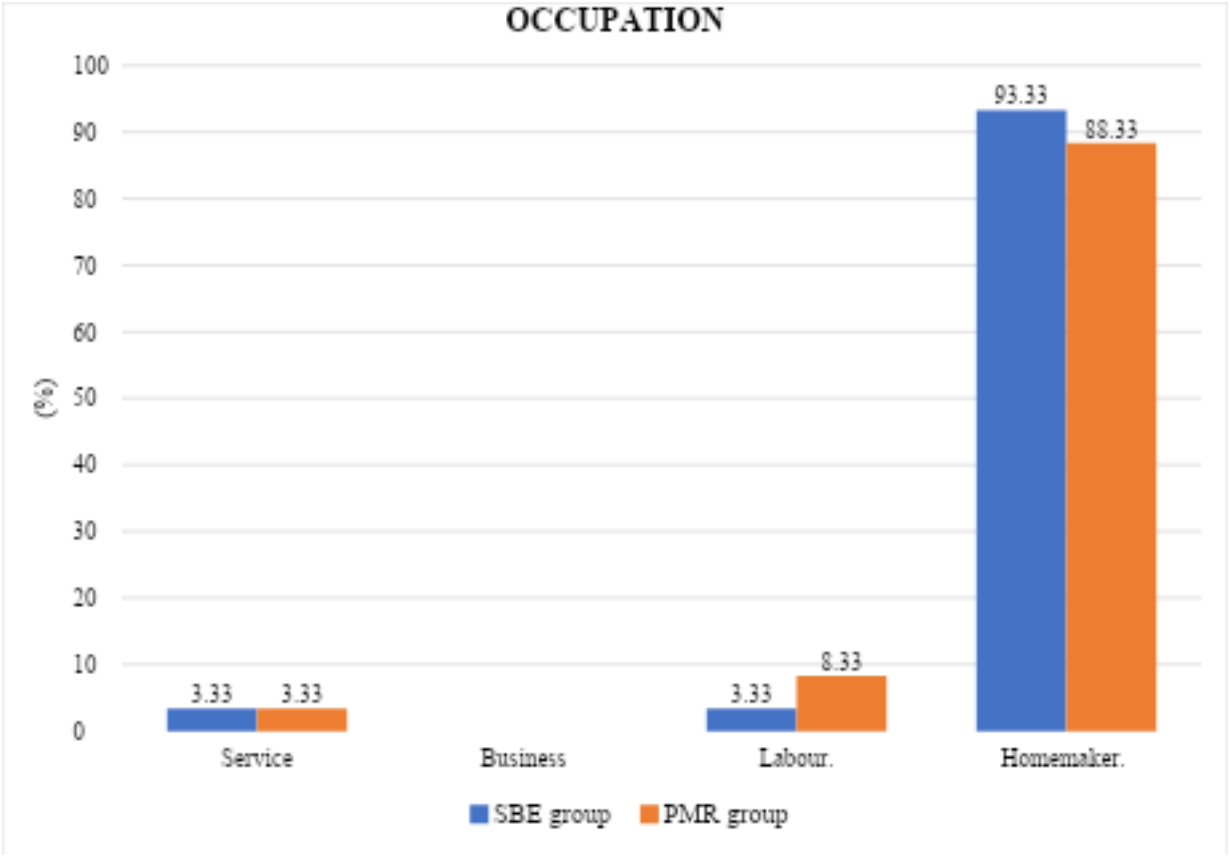
In the SBE group, the majority of ANC mothers (51.67%) had completed high school or equivalent, followed by 23.33% graduates, 20% with middle school education, and 5% who were illiterate. In the PMR group, the majority (61.67%) were high school educated, followed by 16.67% graduates, 15% middle school, and 6.67% illiterate. No participants in either group were postgraduates or above. Overall, most participants in both groups were high school educated, indicating a moderate educational background among ANC mothers in the study sample.

3.HUSBAND EDUCATION LEVEL	SBE GROUP		PMR GROUP	
	N	%	N	%
ILLITERATE		0	2	3.33
MIDDLE SCHOOL	10	16.67	9	15
HIGH SCHOOL OR EQUIVALENT.	41	68.33	38	63.33
GRADUATE	9	15	9	15
POST GRADUATE AND ABOVE		0	2	3.33
TOTAL	60	100	60	100



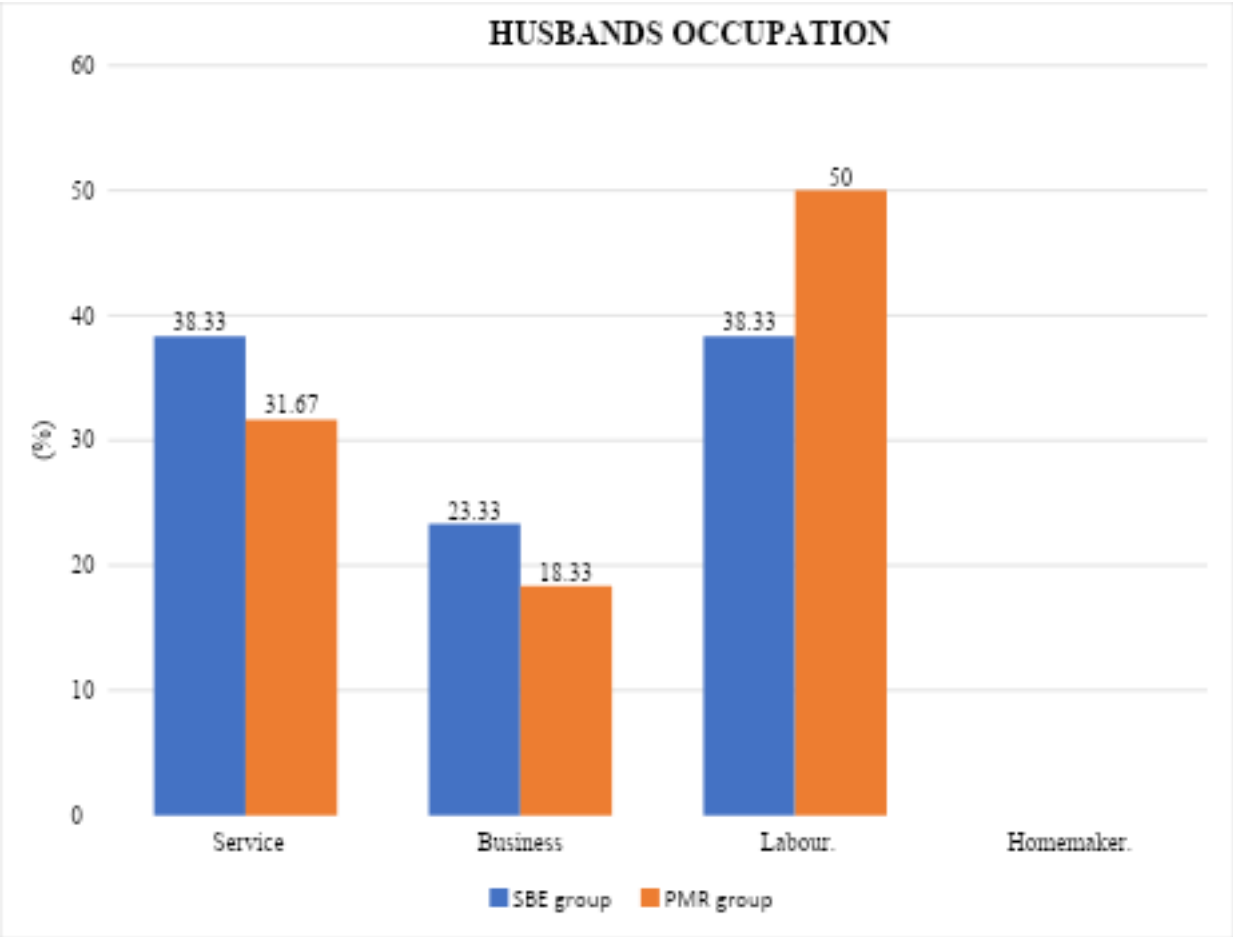
In the SBE group, the majority of husbands (68.33%) were high school educated or equivalent, followed by 16.67% who had completed middle school, and 15% who were graduates. In the PMR group, 63.33% of husbands were high school educated, 15% had middle school education, 15% were graduates, and 3.33% were postgraduates or above, while 3.33% were illiterate. The findings show that most husbands in both groups had a high school education, indicating a moderate educational background among male partners of ANC mothers.

4.OCCUPATION	SBE GROUP		PMR GROUP	
	N	%	N	%
SERVICE	2	3.33	2	3.33
BUSINESS		0		0
LABOUR.	2	3.33	5	8.33
HOMEMAKER.	56	93.33	53	88.33
TOTAL	60	100	60	100



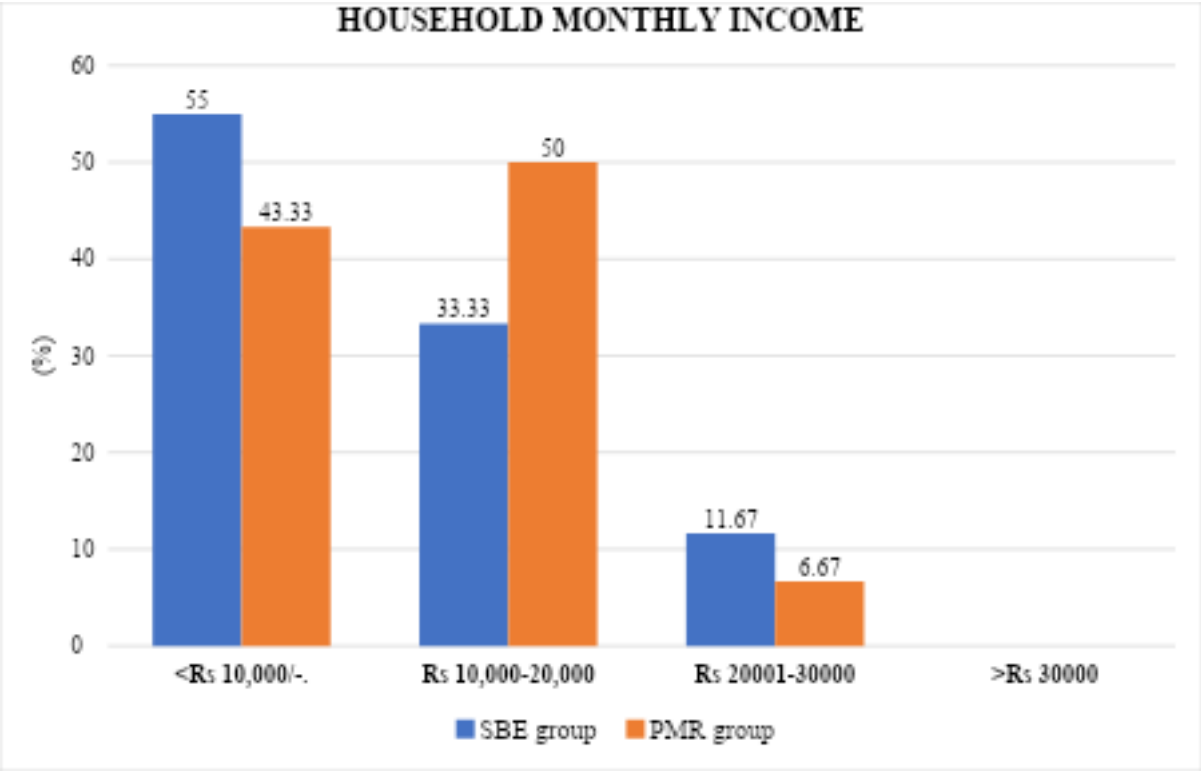
In the SBE group, the majority of ANC mothers (93.33%) were home makers, followed by 3.33% who worked as labour, and 3.33% who were in service. In the PMR group, 83.33% of ANC mothers were homemakers, 8.33% who worked as labour, 3.33% were in service and 0% were doing business. The findings show that most of the ANC mothers were homemakers and only some of them were doing service.

5.HUSBANDS OCCUPATION	SBE GROUP		PMR GROUP	
	N	%	N	%
SERVICE	23	38.33	19	31.67
BUSINESS	14	23.33	11	18.33
LABOUR.	23	38.33	30	50
HOMEMAKER.		0		0
TOTAL	60	100	60	100



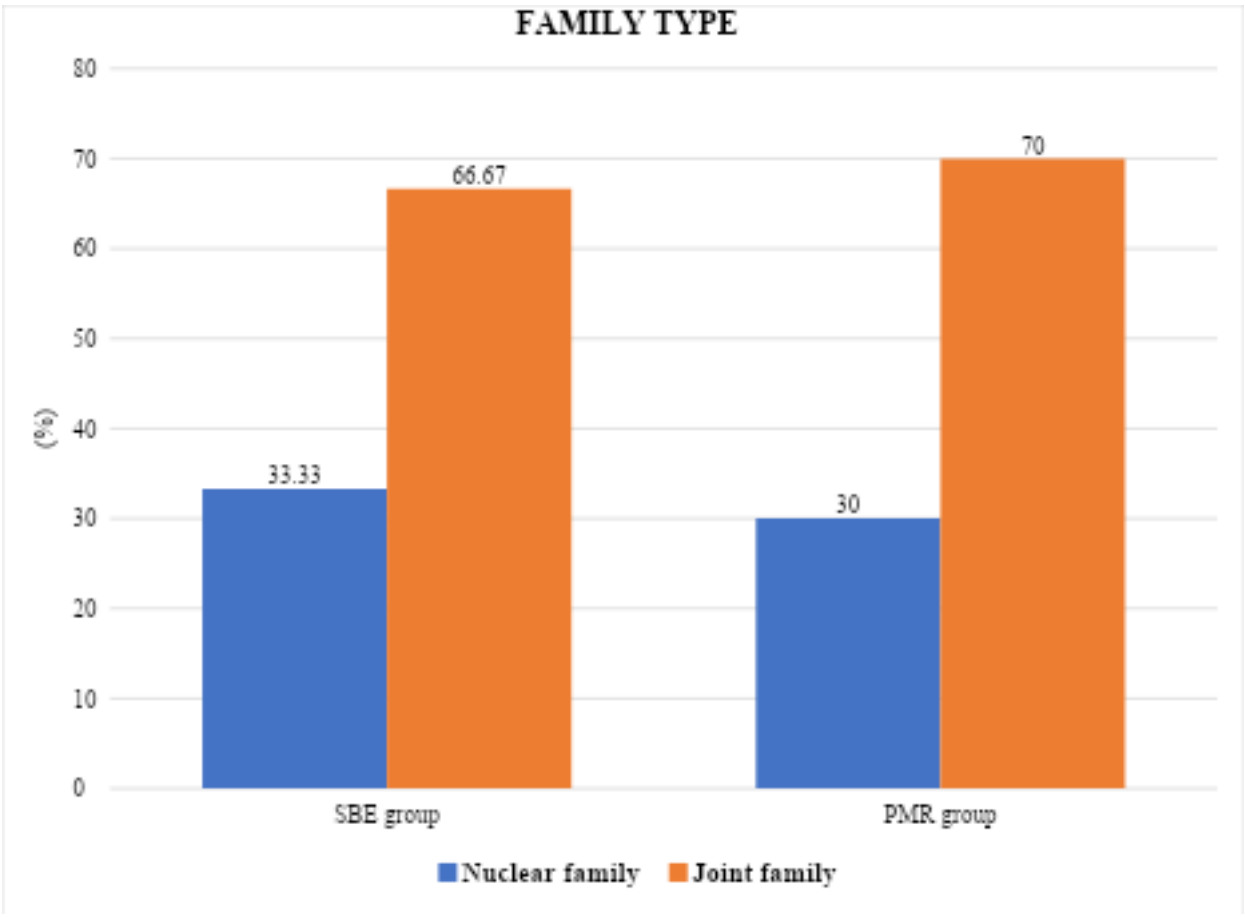
In the SBE group, the majority of husbands (38.33%) were in service and in labour work, followed by 23.33% who were doing buisness. In the PMR group, 50% of husbands were doing labour work, 31.67% were in service, 18.33% were graduates, and 3.33% were postgraduates or above, while 3.33% were illiterate. The findings show that most husbands were doing buisness, indicating most of the husbands are doing labour work.

6.HOUSEHOLD MONTHLY INCOME	SBE GROUP		PMR GROUP	
	N	%	N	%
<RS 10,000/-.	33	55	26	43.33
RS 10,000-20,000	20	33.33	30	50
RS 20001-30000	7	11.67	4	6.67
>RS 30000		0		0
TOTAL	60	100	60	100



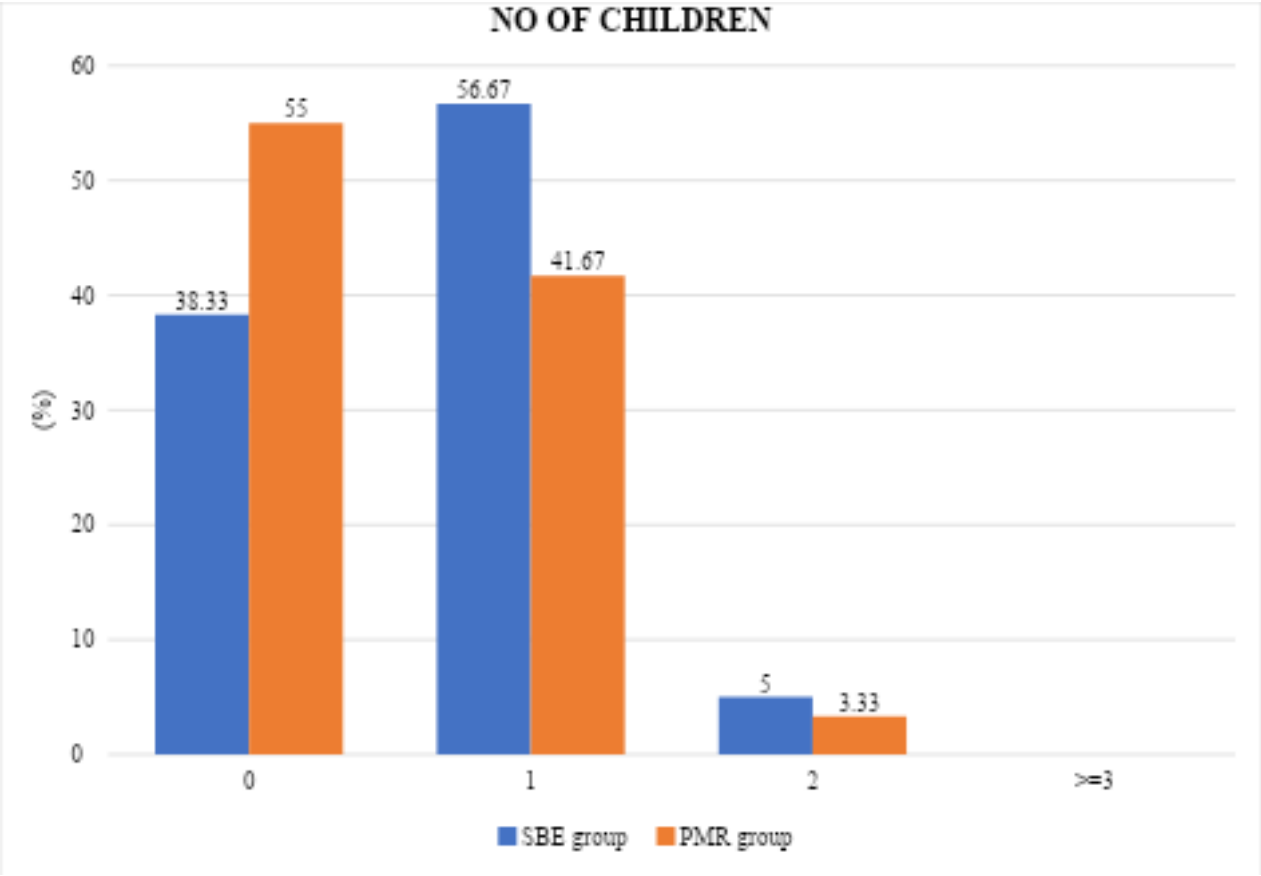
In the SBE group, the majority (55%) were having monthly household income <10,000RS, followed by 33.33% were having 10,000-20,000RS and 11.67% were having monthly household income from 20001-30000RS. In the PMR group, 50% were having 10,000-20,000RS , 43.33%were having monthly household income <10,000RS, 6.67% were having monthly household income from 20001-30000RS. The findings show that most of the family income ranges <10,000RS and 10,000-20,000RS and 0% of monthly household income is above 30000RS.

7. FAMILY TYPE	SBE GROUP		PMR GROUP	
	N	%	N	%
NUCLEAR FAMILY	20	33.33	18	30
JOINT FAMILY	40	66.67	42	70
TOTAL	60	100	60	100



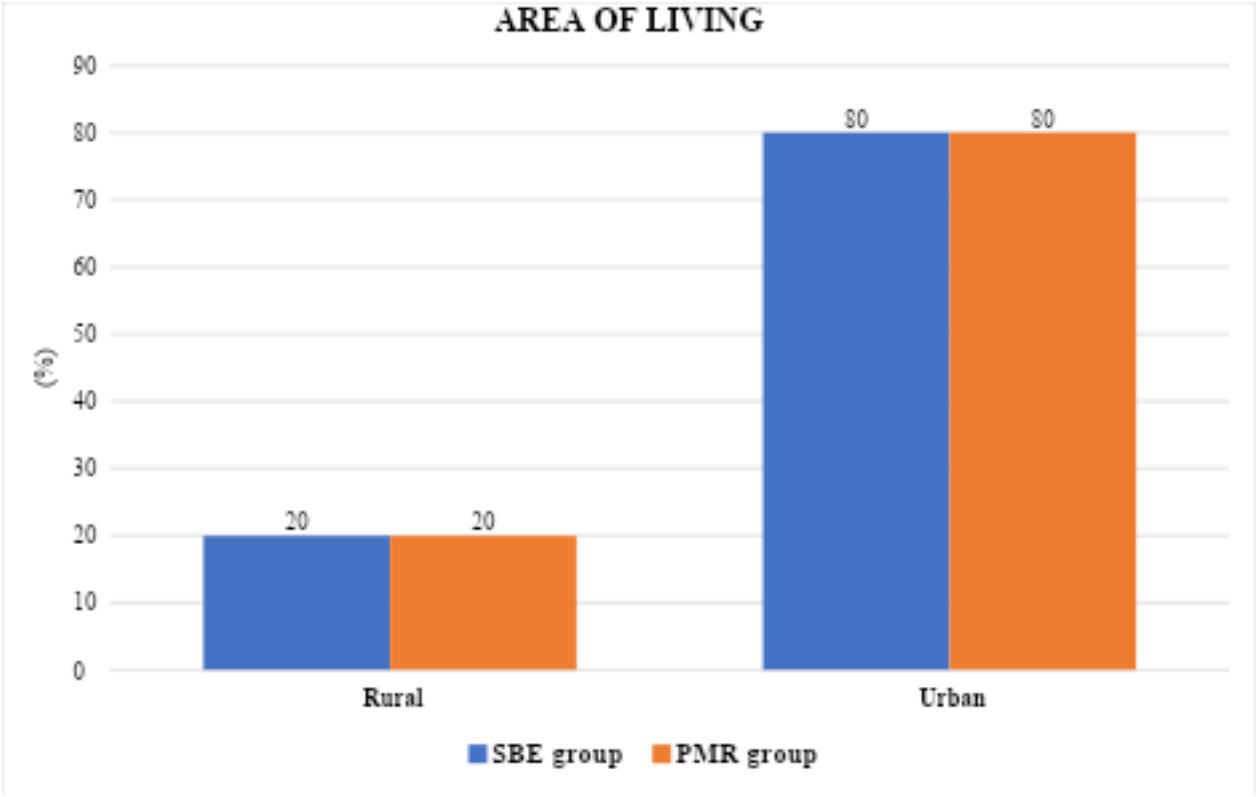
In the SBE group, the majority (66.67%) of family type were joint family and (33.33%) were from nuclear family. In PMR group, Majority where in 70% in Joint family and Minority where in in 30% in nuclear family. The finding shows that the majority of family in Joint family.

8.NO OF CHILDREN	SBE GROUP		PMR GROUP	
	N	%	N	%
0	23	38.33	33	55
1	34	56.67	25	41.67
2	3	5	2	3.33
>=3		0		0
TOTAL	60	100	60	100



In the SBE group, 56.67% of ANC mothers having 1 children, 38.33% of ANC mothers having no children and 5.0% of ANC mothers having two children. In PMR group 55.0% of ANC mothers having no children, 41.67% of ANC mothers having 1 children and 3.33% of ANC mothers having 2 children. The findings shows that most of the ANC Mothers are having One children and 0% ANC mothers are having 3 or more than 3 children.

9. AREA OF LIVING	SBE GROUP		PMR GROUP	
	N	%	N	%
RURAL	12	20	12	20
URBAN	48	80	48	80
TOTAL	60	100	60	100



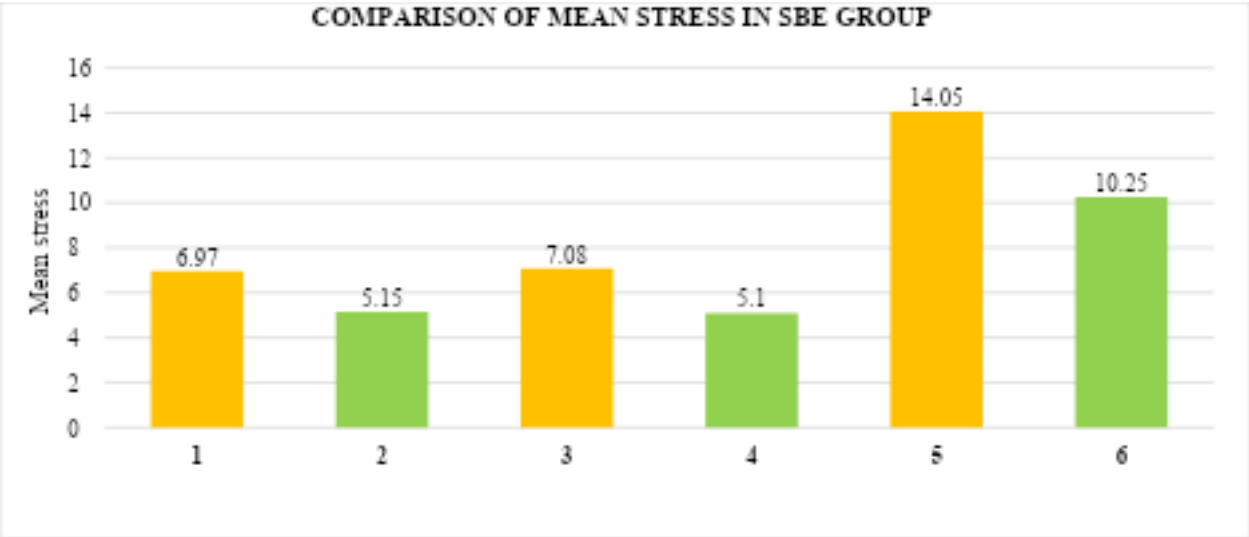
In the SBE group and PMR group majority 80% of ANC mothers belongs to Urban area and 20% ANC mothers belongs to Rural area. The findings shows that most of the ANC mothers belongs to Rural area.

SECTION II

DEALS WITH THE EFFECTIVENESS OF SBE AND PMR TECHNIQUES.

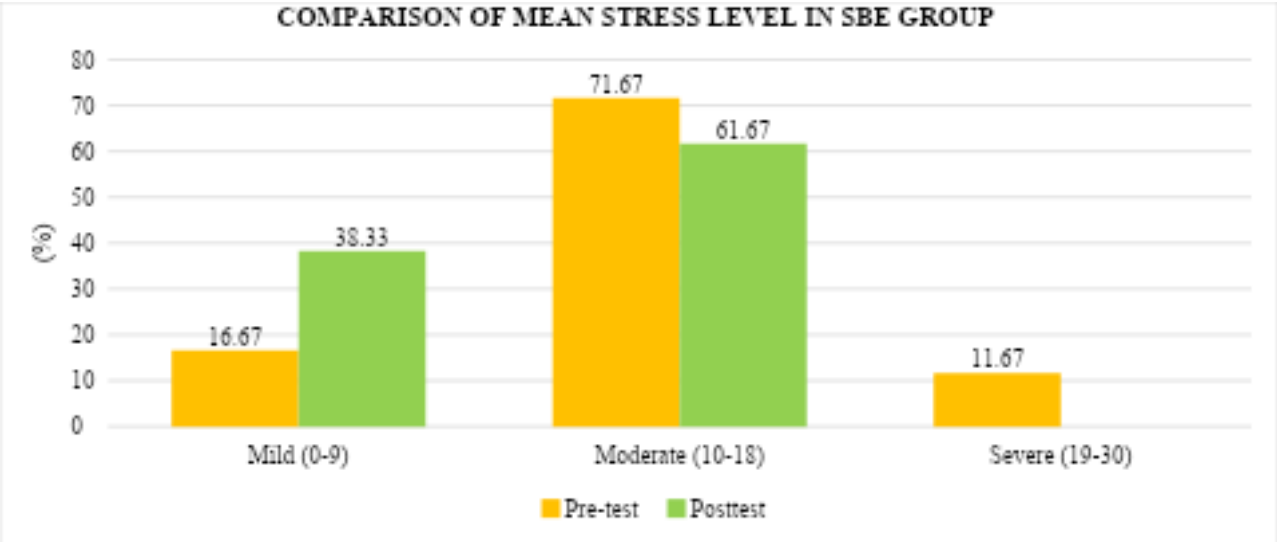
1. **To assess the effectiveness of (SBE) slow breathing exercise technique in reducing physiological and psychological stress among ANC mothers.**

Area of stress		**Effectiveness of (SBE) slow breathing exercise technique in reducing physiological and psychological stress among ANC mothers**							
		Min-Max	Median	Mean	Mean%	SD	Mean reduction in stress (%)	Paired 't' value/Critical value	Significance
Physiological stress	Pre-test	3-11	8	6.97	46.47	2.1	1.82(12.14 %)	15.49/3.46	P<0.001 HS
	Posttest	1-9	5	5.15	34.33	1.91			
Psychological Stress	Pre-test	3-11	8	7.08	47.2	2.13	1.98(13.2%)	15.81/3.46	P<0.001 HS
	Posttest	1-7	5.5	5.1	34	1.83			
Total	Pre-test	7-21	16	14.05	46.83	4.02	3.8(12.66%)	20.87/3.46	P<0.001 HS
	Posttest	2-14	11	10.25	34.17	3.53			



The above table compares pretest and posttest mean stress scores regarding slow breathing exercise technique in reducing physiological and psychological stress among ANC mothers using paired t-tests. On applying the test, the difference in mean was found to be highly significant in physiological stress, psychological stress and total stress. This shows that slow breathing exercise technique (SBE) was highly effective (p<0.001) in reducing physiological stress, psychological stress and total stress among ANC mothers.

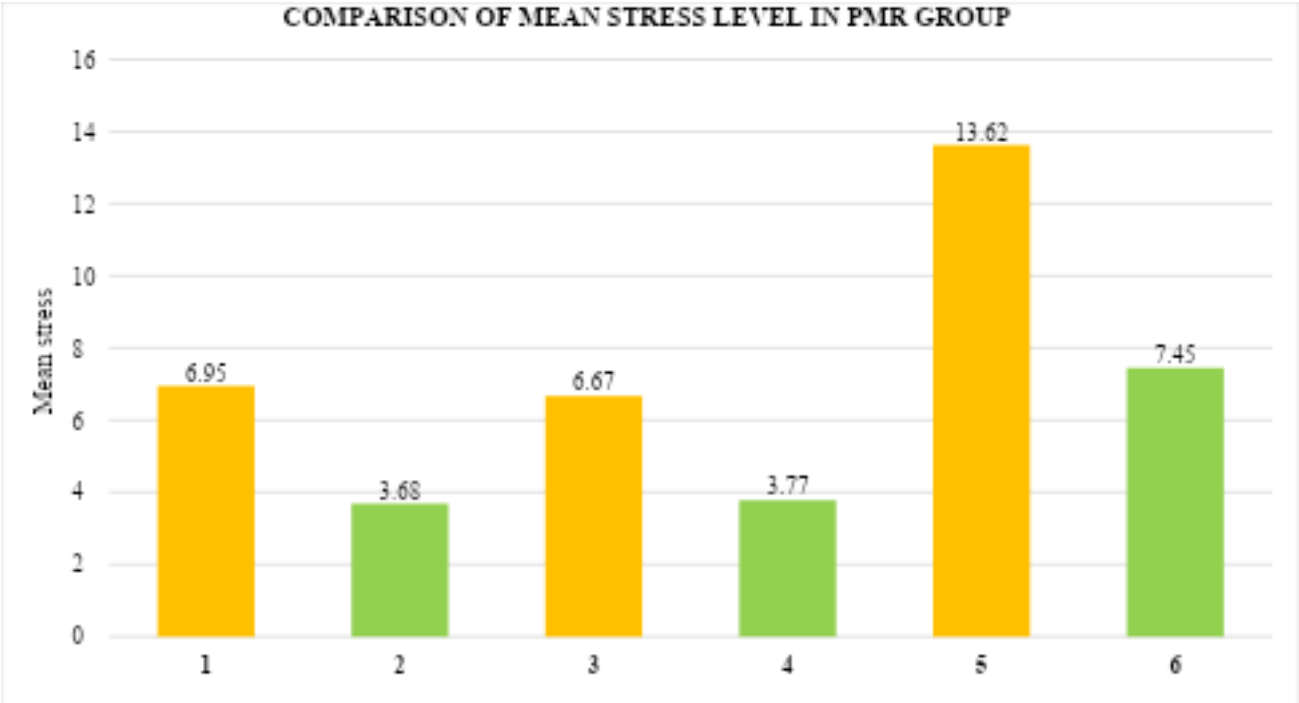
	Effectiveness of slow breathing exercise technique in reducing stress level among ANC mothers in SBE group			Total
	Mild (0-9)	Moderate (10-18)	Severe (19-30)	
Pre-test	10(16.67%)	43(71.67%)	7(11.67%)	60(100%)
Posttest	23(38.33%)	37(61.67%)	0(0%)	60(100%)
Chi square value=12.57, df=2, Critical value=9.21,P<0.001 HS				



The above table compares total stress Level among ANC mothers in SBE group using non-parametric chi-square test. On applying the test, the difference in the distribution of samples according to stress level was found to be highly significant p<0.001. In the pretest maximum of 71.67% were in moderate stress level but in posttest subjects with mild stress level increased from16.67% to 38.33% and severe stress level reduced from 11.67% to 0%.

2. **To assess the effectiveness of (PMR) progressive muscle relaxation technique in reducing physiological and psychological stress among ANC mothers.**

Area of stress		**Effectiveness of (PMR) progressive muscle relaxation technique in reducing physiological and psychological stress among ANC mothers**							
		Min-Max	Median	Mean	Mean%	SD	Mean reduction in stress (%)	Paired 't' value/Critical value	Significance
Physiological stress	Pre-test	4-13	7	6.95	46.33	1.99	3.27(21.8%)	12.41/3.46	P<0.001 HS
	Posttest	1-7	4	3.68	24.53	1.49			
Psychological Stress	Pre-test	3-11	6	6.67	44.47	2	2.9(19.34%)	14.97/3.46	P<0.001 HS
	Posttest	1-7	3.5	3.77	25.13	1.73			
Total Stress	Pre-test	8-21	12.5	13.62	45.4	3.62	6.17(20.57%)	14.22/3.46	P<0.001 HS
	Posttest	3-14	7.5	7.45	24.83	3.13			



The above table compares pretest and posttest mean stress scores regarding progressive muscle relaxation technique in reducing physiological and psychological stress among ANC mothers using paired t-tests. On applying the test, the difference in mean was found to be highly significant in physiological stress, psychological stress and total stress. This shows that PMR technique was highly effective (p<0.001) in reducing physiological stress, psychological stress and total stress among ANC mothers.

	Effectiveness of progressive muscle relaxation technique in reducing stress level among ANC mothers in PMR group			**Total**
	Mild (0-9)	**Moderate (10-18)**	**Severe (19-30)**	
Pre-test	9(15%)	46(76.67%)	5(8.33%)	60(100%)
Posttest	45(75%)	15(25%)	0(0%)	60(100%)
Chi square value=44.75, df=2, Critical value=9.21,P<0.001 HS				

The above table compares total stress Level among ANC mothers in SBE group using non-parametric chi-square test. On applying the test, the difference in the distribution of samples according to stress level was found to be highly significant p<0.001. In the pretest maximum of 71.67% were in moderate stress level but in posttest subjects with mild stress level increased from16.67% to 38.33% and severe stress level reduced from 11.67% to 0%.

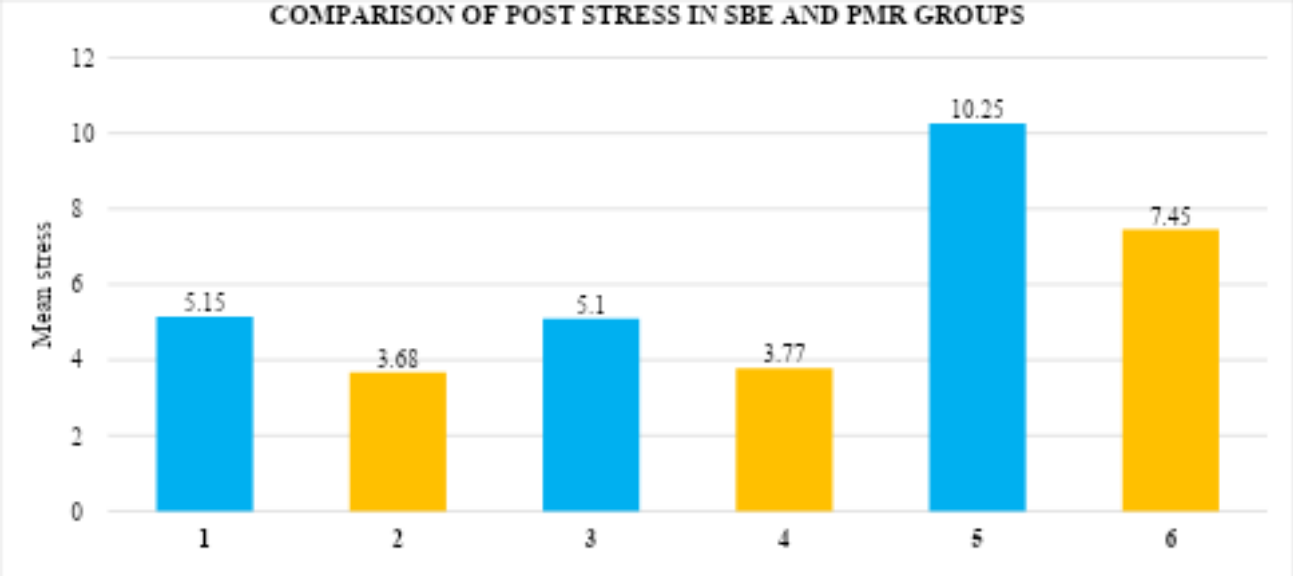
SECTION III

DEALS WITH THE COMPARISON OF EFFECTIVENESS OF SBE AND PMR TECHNIQUES.

Obj 3:To compare the effectiveness of (SBE) slow breathing exercise (exp I), (PMR) progressive muscle relaxation (exp II) technique in reducing stress among ANC mothers.

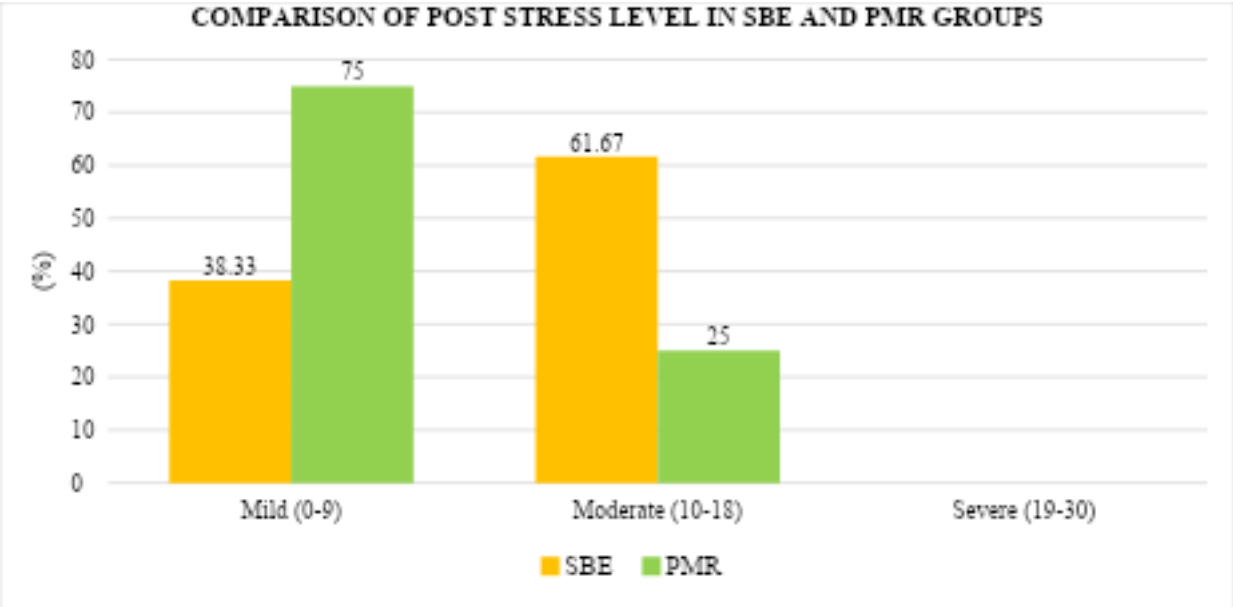
Area of stress	**Posttest**	**To compare post SBE and PMR technique in reducing stress among ANC mothers**							
		Min-Max	Median	Mean	Mean%	SD	Mean reduction in stress (%)	Unpaired 't' value/Critical value	Significance
Physiological stress	**SBE**	1-9	5	5.15	34.33	1.91	1.47(9.8%)	4.7/3.46	P<0.001 HS
	PMR	1-7	4	3.68	24.53	1.49			
Psychological Stress	**SBE**	1-7	5.5	5.1	34	1.83	1.33(8.87 %)	4.09/3.46	P<0.001 HS
	PMR	1-7	3.5	3.77	25.13	1.73			
Total stress	**SBE**	2-14	11	10.25	34.17	3.53	2.8(9.34%)	4.59/3.46	P<0.001 HS
	PMR	3-14	7.5	7.45	24.83	3.13			

The above table compares posttest mean stress scores in SBE and PMR study groups using unpaired t-tests. On applying the test, the difference in mean was found to be highly significant in physiological stress, psychological stress and total stress. Above shows that PMR technique was more effective in reducing physiological stress, psychological stress and total stress among ANC mothers than SBE technique.



	COMPARISON OF POST STRESS LEVEL IN SBE AND PMR GROUPS			TOTAL
	MILD (0-9)	MODERATE (10-18)	SEVERE (19-30)	
SBE	23(38.33%)	37(61.67%)	0(0%)	60(100%)
PMR	45(75%)	15(25%)	0(0%)	60(100%)
Chi square value=16.42, df=1, Critical value=10.83,P<0.001 HS				

The above table compares posttest total stress Level among ANC mothers in SBE and PMR group using non-parametric chi-square test. On applying the test, the difference in the distribution of samples according to stress level was found to be highly significant p<0.001. In the posttest, SBE group showed maximum of 61.67% were in moderate stress level but in PMR subjects there was considerable increase in the mild stress level with 75% subjects, 25% showed in moderate stress level.



SECTION-IV

ASSOCIATION BETWEEN STRESS REDUCTION AND SOCIODEMOGRAPHIC VARIABLES.

Obj 4: To find the pre-test association on effect of stress among ANC mothers with their sociodemographic variables SBR and PMR groups.

AGE IN YEARS	PRETEST STRESS LEVEL AMONG ANC MOTHERS IN SBE GROUP			TOTAL	DF/CRITICAL VALUE	CHI-SQUARE VALUE	INFERENCE
	MILD (0-9)	MODERATE (10-18)	SEVERE (19-30)				
19-20 years	1(16.67%)	3(50%)	2(33.33%)	6(100%)	4/9.49	4.75	P>0.05 NS
21-30 years	9(18%)	37(74%)	4(8%)	50(100%)			
31-40 years	0(0%)	3(75%)	1(25%)	4(100%)			
2.Education level							
Illiterate	1(33.33%)	2(66.67%)	0(0%)	3(100%)	8/15.51	1.93	P>0.05 NS
Middle school	2(16.67%)	8(66.67%)	2(16.67%)	12(100%)			
High school or equivalent.	4(12.9%)	23(74.19%)	4(12.9%)	31(100%)			
Graduate	3(21.43%)	10(71.43%)	1(7.14%)	14(100%)			
Post graduate and above							
3.Husband education level							
Illiterate					4/9.49	6.61	P>0.05 NS
Middle school	2(20%)	7(70%)	1(10%)	10(100%)			
High school or equivalent.	4(9.76%)	32(78.05%)	5(12.2%)	41(100%)			
Graduate	4(44.44%)	4(44.44%)	1(11.11%)	9(100%)			

Post graduate and above							
4.Occupation							
Service	1(50%)	1(50%)	0(0%)	2(100%)	4/9.49	4.75	P>0.05 NS
Business							
Labour.	0(0%)	1(50%)	1(50%)	2(100%)			
Homemaker.	9(16.07%)	41(73.21%)	6(10.71%)	56(100%)			
5.Husbands occupation							
Service	2(8.7%)	19(82.61%)	2(8.7%)	23(100%)	2/5.99	3.75	P>0.05 NS
Business	4(28.57%)	9(64.29%)	1(7.14%)	14(100%)			
Labour.	4(17.39%)	15(65.22%)	4(17.39%)	23(100%)			
Homemaker.							

6. Household monthly income	**PRETEST STRESS LEVEL AMONG ANC MOTHERS IN SBE GROUP**			**TOTAL**	**DF/CRITICAL VALUE**	**CHI-SQUARE VALUE**	**INFERENCE**
	MILD (0-9)	**MODERATE (10-18)**	**SEVERE (19-30)**				
<Rs 10,000/-.	2(6.06%)	24(72.73%)	7(21.21%)	33(100%)	4/9.49	22.71	**P<0.05 S**
Rs 10,000-20,000	3(15%)	17(85%)	0(0%)	20(100%)			
Rs 20001-30000	5(71.43%)	2(28.57%)	0(0%)	7(100%)			
>Rs 30000							
7. Family type							
Nuclear family	2(10%)	14(70%)	4(20%)	20(100%)	2/5.99	2.59	P>0.05 NS
Joint family	8(20%)	29(72.5%)	3(7.5%)	40(100%)			
8.No of children							
0	2(8.7%)	17(73.91%)	4(17.39%)	23(100%)	4/9.49	3.99	P>0.05 NS
1	8(23.53%)	23(67.65%)	3(8.82%)	34(100%)			
2	0(0%)	3(100%)	0(0%)	3(100%)			
>=3							
9. Area of Living							
Rural	2(16.67%)	9(75%)	1(8.33%)	12(100%)	4/9.49	3.72	P>0.05 NS
Urban	8(16.67%)	34(70.83%)	6(12.5%)	48(100%)			

Table No.: Above Table shows the association between the Pretest stress level among ANC mothers in SBE group with selected socio-demographic variables such as Age, education, monthly income.... etc.,using a non-parametric χ2 test.On applying the chi-square test demographic variable, "Household monthly income" was significantly associated with the Pretest stress level among ANC mothers. The χ2 value of the Household monthly income was 22.71, which is greater than the table value (9.49) at P=0.05 for 4 degree of freedom. Hence H1 i.e., there is a significant association between the Pretest stress level among ANC mothers in SBE group with selected socio-demographic variables "Household monthly income" is accepted.Association between the Pretest stress level among ANC mothers in SBE group and other selected sociodemographic variables such as age (χ2=4.75, p>0.05) Level of Education (χ2=1.93, p>0.05), Level of Husband Education (χ2=6.61, p>0.05) ...etc. were found to be statistically not significant. Hence H0 that there is no significant association between selected socio-demographics like age, education, Husband education... with Pretest stress level among ANC mothers in SBE group is accepted.

ASSOCIATION OF PMR GROUP

AGE IN YEARS	PRETEST STRESS LEVEL AMONG ANC MOTHERS IN PMR GROUP			TOTAL	DF/CRITICAL VALUE	CHI-SQUARE VALUE	INFERENCE
	MILD (0-9)	MODERATE (10-18)	SEVERE (19-27)				
19-20 years	0(0%)	1(100%)	0(0%)	1(100%)	4/9.49	2.19	P>0.05 NS
21-30 years	8(16.67%)	35(72.92%)	5(10.42%)	48(100%)			
31-40 years	1(9.09%)	10(90.91%)	0(0%)	11(100%)			
2.Education level							
Illiterate	0(0%)	4(100%)	0(0%)	4(100%)	6/12.59	7.09	P>0.05 NS
Middle school	0(0%)	9(100%)	0(0%)	9(100%)			
High school or equivalent.	8(21.62%)	26(70.27%)	3(8.11%)	37(100%)			
Graduate	1(10%)	7(70%)	2(20%)	10(100%)			
Post graduate and above							
3.Husband education level							
Illiterate	0(0%)	2(100%)	0(0%)	2(100%)	8/15.51	5.14	P>0.05 NS
Middle school	0(0%)	9(100%)	0(0%)	9(100%)			
High school or equivalent.	7(18.42%)	27(71.05%)	4(10.53%)	38(100%)			
Graduate	2(22.22%)	6(66.67%)	1(11.11%)	9(100%)			

Post graduate and above	0(0%)	2(100%)	0(0%)	2(100%)			
4.Occupation							
Service	0(0%)	2(100%)	0(0%)	2(100%)	4/9.49	3.48	P>0.05 NS
Business							
Labour.	2(40%)	3(60%)	0(0%)	5(100%)			
Homemaker.	7(13.21%)	41(77.36%)	5(9.43%)	53(100%)			
5.Husbands occupation							
Service	1(5.26%)	16(84.21%)	2(10.53%)	19(100%)	4/9.49	3.69	P>0.05 NS
Business	3(27.27%)	8(72.73%)	0(0%)	11(100%)			
Labour.	5(16.67%)	22(73.33%)	3(10%)	30(100%)			
Homemaker.							

6.HOUSEHOLD MONTHLY INCOME	**PRETEST STRESS LEVEL AMONG ANC MOTHERS IN PMR GROUP**			**TOTAL**	**DF/CRITICAL VALUE**	**CHI-SQUARE VALUE**	**INFERENCE**
	MILD (0-9)	**MODERATE (10-18)**	**SEVERE (19-27)**				
<Rs 10,000/-.	3(11.54%)	21(80.77%)	2(7.69%)	26(100%)	4/9.49	1.07	P>0.05 NS
Rs 10,000-20,000	5(16.67%)	22(73.33%)	3(10%)	30(100%)			
Rs 20001-30000	1(25%)	3(75%)	0(0%)	4(100%)			
>Rs 30000							
7. family type							
Nuclear family	0(0%)	14(77.78%)	4(22.22%)	18(100%)	2/5.99	9.81	**P<0.05 S**
Joint family	9(21.43%)	32(76.19%)	1(2.38%)	42(100%)			
8.**No of children**							
0	5(15.15%)	26(78.79%)	2(6.06%)	33(100%)	4/9.49	1.32	P>0.05 NS
1	4(16%)	18(72%)	3(12%)	25(100%)			
2	0(0%)	2(100%)	0(0%)	2(100%)			
>=3							
9. Area of Living							
Rural	5(41.67%)	7(58.33%)	0(0%)	12(100%)	2/5.99	9.01	**P<0.05 S**
Urban	4(8.33%)	39(81.25%)	5(10.42%)	48(100%)			

Table No.: Above Table shows the association between the Pretest stress level among ANC mothers in PMR group with selected socio-demographic variables such as Age,education,monthly income.... etc.,using a non-parametric χ2 test.

On applying the chi-square test demographic variable, "family type" and "Area of Living" was significantly associated with the Pretest stress level among ANC mothers in PMR group. The χ2 value of the family type was 11.02, which is greater than the table value (5.99) at P=0.05 for 2 degree of freedom. Similarly, theχ2 value of the Area of Living was 6.7, which is greater than the table value (5.99) at P=0.05 for 2 degree of freedom Hence H1 i.e. there is a significant association between the Pretest stress level among ANC mothers in PMR group with selected socio-demographic variables "family type" and "Area of Living" is accepted.

Association between the Pretest stress level among ANC mothers in PMR group and other selected sociodemographic variables such as age (χ2=2.25, p>0.05) Level of Education (χ2=5.27, p>0.05), Level of Husband Education (χ2=6.21, p>0.05) ...etc. were found to be statistically not significant. Hence H0 that there is no significant association between selected socio-demographics like age, education, Husband education..... with Pretest stress level among ANC mothers in PMR group is accepted.

CHAPTER – V

RESULT AND DISCUSSION

"A nation is advanced in proportion to education and intelligence spread among masses" -Swami Vivekananda

According to Horace Secrist "Statistics are aggregates of facts, affected to marked extent by multiplicity of causes, numerically expressed, enumerated or estimated according to reasonable standards of accuracy, collected a systematic manner, for a predetermined purpose and placed in relation to each other."

The term analysis refers to as a method of organizing data in such a way that research questions can be answered and hypothesis can be tested. This chapter presents the analysis and interpretation of data assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (C.G.). The data analysis was carried out based on the objectives and hypothesis set by the invigilator. The data collected were organised, tabulated, analysed and interpreted by statistical tables and graphs.

OBJECTIVES: -

1. To assess the effectiveness of (SBE) slow breathing exercise technique in reducing physiological and psychological stress among ANC mothers.

2. To assess the effectiveness of (PMR) progressive muscle relaxation technique in reducing physiological and psychological stress among ANC mothers.

3. To compare the effectiveness of (SBE) slow breathing exercise (exp I) and (PMR) progressive muscle relaxation (exp II) technique in reducing stress among ANC mothers.

4. To find the association on effect of stress among ANC mothers with their sociodemographic variables.

ORGANISATION OF DATA

The data was organised under following section

- **SECTION I –** Distribution of subjects according to socio-demographic variables in frequency and percentage.
- **SECTION II –** It deals with the effectiveness of SBE and PMR techniques.
- **SECTION III –**It deals with the comparison of effectiveness of SBE and PMR techniques.
- **SECTION IV -** Association between stress reduction and sociodemographic variables.

The findings of the study have been discussed with reference of objectives and hypothesis stated in chapter – I and with findings of the other studies.

SECTION I – DISTRIBUTION OF SUBJECTS ACCORDING TO SOCIO-DEMOGRAPHIC VARIABLES IN FREQUENCY AND PERCENTAGE.

RESULT

The study comprised 120 antenatal (ANC) mothers who were assessed and classified according to their socio-demographic characteristics.

- **Age:** The majority of ANC mothers (15.83%) were aged **25 years**, followed by **27 years (10%)**, and **26 years, 28 years, 30 years (each 9.17%)**. The least represented age groups were 33, 35, 36, 38 years (each 0.83%).
- **Education:** More than half (50.83%) had completed **high school education**, while 15% were **graduates** and 14.17% had **middle school education**. Only 5% were **uneducated**.

- **Husband's education:** Nearly half (45.83%) of the husbands were **high-school educated**, 6.67% had **middle school education**, 6.67% were **graduates**, and a small proportion (1.67%) were **postgraduates** or **uneducated**.
- **Occupation of the mother:** A vast majority (90.83%) were **housewives**, 5.83% were **labourers**, and 3.34% were engaged in **service-related jobs**.
- **Husband's occupation:** Most of the husbands (44.16%) were **labourers**, 35% were in **service**, and 20.83% were involved in **business**.
- **Monthly income:** Nearly half of the families (47.5%) earned **less than ₹10,000** per month, 39.17% had an income between **₹10,000–₹20,000**, and only 6.67% earned **₹20,000–₹30,000**.
- **Type of family:** Majority (62.5%) belonged to **joint families**, 31.67% to **nuclear families**, and 5.83% to other types.
- **Gestational age:** All participants (100%) were in the **third trimester** of pregnancy.
- **Number of children:** Almost half (49.17%) had **one child**, 46.67% were **primigravida**, and 4.16% had **two children**.
- **Location:** Most ANC mothers (78.33%) were from **urban areas**, while 20% were from **rural areas**.

DISCUSSION

The socio-demographic data reveal that most ANC mothers were young adults between 22 and 30 years, reflecting the typical reproductive age group in India. This finding aligns with national statistics where the majority of pregnancies occur in women aged 20–30 years.In terms of education, a large proportion of participants and their husbands had at least high-school education, suggesting a moderately literate population that could easily understand and follow non-pharmacological stress-reduction techniques such as Slow Breathing Exercise (SBE) and Progressive Muscle Relaxation (PMR).Most mothers were housewives with low monthly income, indicating limited economic independence, which may contribute to psychological stress during pregnancy. The predominance of labour and service occupations among husbands reflects a middle- to lower-income socioeconomic group, consistent with the setting of the study conducted in Durg district (Chhattisgarh).A majority of the participants belonged to joint families, which is common in Indian culture. Family support in joint households might positively influence emotional well-being and adaptation to pregnancy.

The fact that all mothers were in the third trimester is relevant because stress levels tend topeak during late pregnancy due to physical discomfort, anticipation of delivery, and hormonal changes.Finally, the predominance of urban participants (78.33%) may reflect easier access to ANC clinics and hospitals in urban areas, highlighting the need for greater outreach among rural pregnant women.

SUMMARY

The results indicate that the majority of ANC mothers in the study were **young, high-school educated housewives**, belonging to **joint families** with **low to moderate income**, and most were in the **third trimester** of pregnancy. These characteristics form the baseline for analysing how **SBE and PMR interventions** affected physiological and psychological stress in subsequent sections.

SECTION II – IT DEAL WITH THE EFFECTIVENESS OF SBE AND PMR TECHNIQUES.

RESULTS

The study assessed and compared the effectiveness of Slow Breathing Exercise (SBE) and Progressive Muscle Relaxation (PMR) techniques in reducing physiological and psychological stress among ANC mothers.

DISCUSSION

The results of the present study demonstrate that both Slow Breathing Exercise (SBE) and Progressive Muscle Relaxation (PMR) techniques are effective in significantly reducing stress among antenatal mothers. However, the PMR technique showed a greater reduction in stress scores compared to the SBE technique.

SUMMARY

- Both SBE and PMR techniques significantly reduced stress among ANC mothers ($p < 0.001$).
- The **PMR technique** was found to be **more effective** than SBE in reducing physiological and psychological stress.
- Therefore, PMR can be recommended as a **cost-effective, simple, and feasible intervention** for stress reduction in antenatal care settings.

SECTION III – IT DEALS WITH THE COMPARISON OF EFFECTIVENESS OF SBE AND PMR TECHNIQUES.

	COMPARISON OF POST STRESS LEVEL IN SBE AND PMR GROUPS			**TOTAL**
	MILD (0-9)	**MODERATE (10-18)**	**SEVERE (19-30)**	
SBE	23(38.33%)	37(61.67%)	0(0%)	60(100%)
PMR	45(75%)	15(25%)	0(0%)	60(100%)
Chi square value=16.42, df=1, Critical value=10.83, P<0.001 HS				

RESULT

In the posttest, SBE group showed maximum of 61.67% were in moderate stress level but in PMR subjects there was considerable increase in the mild stress level with 75% subjects, 25% showed in moderate stress level.

DISCUSSION

It compares posttest mean stress scores in SBE and PMR study groups using unpaired t-tests. On applying the test, the difference in mean was found to be highly significant in physiological stress, psychological stress and total stress. Above shows that PMR technique was more effective in reducing physiological stress, psychological stress and total stress among ANC mothers than SBE technique.

SECTION IV - ASSOCIATION BETWEEN STRESS REDUCTION AND SOCIODEMOGRAPHIC VARIABLES.

ASSOCIATION OF SBE GROUP

Association between pre-test stress level among ANC mothers in SBE group according to household monthly income Table 1.1 represents "Household monthly income" was significantly associated with the Pretest stress level among ANC mothers. The $\chi 2$ value of the Household monthly income was 22.71, which is greater than the table value (9.49) at P=0.05 for 4 degree of freedom. Hence H1 i.e., there is a significant association between the Pretest stress level among ANC mothers in SBE group with selected socio-demographic variables "Household monthly income" is accepted.

Association between pre-test stress level among ANC mothers in SBE group according tolevel of education, age, husband education etc Table 1.1represents sociodemographic variables such as **age** ($\chi 2$=4.75, p>0.05) **Level of Education** ($\chi 2$=1.93, p>0.05), **Level of Husband Education** ($\chi 2$=6.61, p>0.05),etcwere found to be statistically **not significant**. **Hence H0** that there is **no significant association** between selected socio-demographics like **age, education, Husband education,** withPretest stress level among ANC mothers in SBE group is **accepted.**

ASSOCIATION OF PMR GROUP

Association between the Pretest stress level among ANC mothers in PMR according to family type and area of living Table 1.2 represents "family type" and "Area of Living" was significantly associated with the Pretest stress level among ANC mothers in PMR group. The $\chi 2$ value of the family type was 11.02, which is greater than the table value (5.99) at P=0.05 for 2 degree of freedom. Similarly, the $\chi 2$ value of the Area of Living was 6.7, which is greater than the table value (5.99) at P=0.05 for 2 degree of freedom Hence H1 i.e, there is a significant association between the Pretest stress level among ANC mothers in PMR group with selected socio-demographic variables "family type" and "Area of Living" is accepted.

Association between pre-test stress level among ANC mothers in SBE group according to level of education, age, husband education etc Table 1.2 represents as **age** ($\chi 2$=2.25, p>0.05) **Level of Education** ($\chi 2$=5.27, p>0.05), **Level of Husband Education ($\chi 2$=6.21, p>0.05),** etcwere found to be statistically **not**

significant. **Hence H0** that there is **no significant association** between selected socio-demographics like **age, education, Husband education,** withPretest stress level among ANC mothers in PMR group is **accepted.**

CHAPTER – VI
SUMMARY, CONCLUSION, IMPLICATION, LIMITATION AND RECOMMENDATION

This chapter gives a brief summary of the study, major findings, recommendations and the conclusion drawn. It also highlights the implications for nursing practice, nursing education, nursing administration.

SUMMARY

Pregnancy is a vital phase in a woman's life that involves complex physiological and psychological changes. While it is often a time of joy and anticipation, it also brings about stress due to hormonal fluctuations, lifestyle changes, concerns about childbirth, and fetal development. Antenatal stress, if left unaddressed, may contribute to adverse outcomes such as preterm labour, low birth weight, postpartum depression, and complications during delivery.Psychological stress includes feelings of anxiety, fear, and emotional instability, whereas physiological stress may manifest through elevated blood pressure, increased heart rate, and hormonal imbalances such as elevated cortisol levels. Both forms of stress can negatively impact maternal and foetal health.The present study entitled**"A Quasi-experimental Study to Assess the Effectiveness of Slow Breathing Exercise (SBE) versus Progressive Muscle Relaxation (PMR) Technique in Reducing Physiological and Psychological Stress among Antenatal (ANC) Mothers Attending ANC Clinics and Hospitals at Durg District (C.G.)"** was conducted to evaluate and compare the effectiveness of two non-pharmacological stress- reduction techniques among ANC mothers.

A total of **120 ANC mothers** were selected using **non-probabilitypurposive sampling technique**.

They were divided into two experimental groups:

- **Group I (n = 60):** Slow Breathing Exercise (SBE)
- **Group II (n = 60):** Progressive Muscle Relaxation (PMR)

The study utilized a **quasi-experimental pre-test and post-test design**.Data were collected using a **structured interview schedule and stress assessment scale** to evaluate both **physiological and psychological stress levels** before and after the interventions.Data were analysed using descriptive and inferential statistics such as **frequency, percentage, mean, standard deviation, paired t-test, and unpaired t-test**.

MAJOR FINDINGS

1. **Socio-demographic Characteristics**

- Majority of ANC mothers were aged between 25–28 years, representing the typical reproductive age group.
- 50.83% of the mothers and 45.83% of their husbands had completed high school education.

- Most of the participants (90.83%) were housewives, and nearly half of their husbands (44.16%) were labourers.
- 47.5% of the families had a monthly income below ₹10,000, and 62.5% belonged to joint families.
- All ANC mothers were in the third trimester of pregnancy, and most (49.17%) had one child.
- 78.33% of participants were from urban areas.

2.Assessment of Physiological and Psychological Stress

- The mean pre-test stress score among ANC mothers was 0.43, and the mean post-test score was 0.28.
- The mean difference (0.16) indicates a noticeable reduction in overall stress after the intervention.
- Both physiological and psychological stress levels reduced post-intervention, showing the effectiveness of relaxation techniques.

3. Effectiveness of SBE and PMR Techniques

- In the SBE group, the mean stress score reduced from 0.45 (pre-test) to 0.28 (post-test) with a t-value = 5.70 ($p < 0.001$).
- In the PMR group, the mean stress score reduced from 0.43 (pre-test) to 0.22 (post-test) with a t-value = 7.70 ($p < 0.001$).
- Comparison between groups using unpaired t-test ($t = 2.10$, $p < 0.05$) revealed that the PMR technique was slightly more effective than SBE in reducing stress levels among ANC mothers.

4. Association Between Stress Reduction and Socio-Demographic Variables

- There was no significant association found between post-test stress levels and variables such as age, education, occupation, type of family, or income.
- This indicates that stress reduction was primarily influenced by the interventions (SBE and PMR) rather than by demographic factors.

CONCLUSION

The study concluded that both Slow Breathing Exercise (SBE) and Progressive Muscle Relaxation (PMR) are effective in reducing physiological and psychological stress among antenatal mothers.However, PMR was found to be slightly more effective than SBE in promoting relaxation and emotional stability.These findings support the inclusion of simple, non- pharmacological stress-management techniques like SBE and PMR as part of routine antenatal care to enhance maternal well-being and pregnancy outcomes.

IMPLICATIONS

Nursing Practice

- Nurses can teach SBE and PMR techniques to ANC mothers as part of health education and antenatal counselling.
- These techniques can be incorporated into daily antenatal routines to help mothers manage anxiety and improve coping skills.

Nursing Education

- Nursing students should be trained in evidence-based relaxation techniques to provide holistic care to expectant mothers.
- Stress-reduction modules can be integrated into the maternal and mental health nursing curriculum.

Nursing Administration

- Nursing administrators should organize workshops and training programs for staff nurses on relaxation therapies and antenatal stress management.
- Policies can be implemented to include SBE and PMR sessions in ANC clinics.

Nursing Research

- Further studies can be conducted with larger sample sizes and different populations to validate these findings.
- Longitudinal studies can explore the long-term effects of these techniques on maternal and neonatal outcomes.

LIMITATION

- The study was limited to **ANC mothers attending selected clinics and hospitals** of Durg district; hence the findings **cannot be generalized** to all antenatal women in other regions.
- The **sample size was restricted to 120 participants**, which may limit the statistical power and generalization of results.
- The study included all **ANC mothers**, excluding high risk pregnancy stages who may experience different levels of physiological and psychological stress.
- The **duration of intervention and follow-up period was short**; long-term effects of SBE and PMR on stress levels were not assessed.
- The study relied partly on **self-reported measures of psychological stress**, which may have been influenced by **individual perception or response bias**.
- There was **no control group without intervention**, which limits the ability to determine the natural reduction of stress without any treatment.
- Factors such as **social support, family environment, or previous experience of pregnancy** were not controlled and might have influenced stress levels.

RECOMMENDATIONS

- Conduct similar studies on larger samples and in different settings to generalize the findings.
- Implement group-based SBE and PMR sessions in ANC clinics to improve accessibility.
- Compare the effects of SBE and PMR with other stress-reduction interventions such as yoga or mindfulness.
- Evaluate the long-term impact of these techniques on maternal-fetal outcomes.
- Include stress-management education in antenatal care programs as a routine nursing intervention.

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TOOLS

RESEARCH TOOL

A. SOCIODEMOGRAPHIC DATA

1. **Age (in years)? _____**

2. **What is your level of education?**
   a. **Illiterate**
   b. **Middle school**
   c. **High school or equivalent.**
   d. **Bachelor's degree.**
   e. **Master's degree or higher.**

3. **What is the level of education of your husband?**
   a. **Illiterate**
   b. **Middle school**
   c. **High school or equivalent.**
   d. **Bachelor's degree.**
   e. **Master's degree or higher.**

4. **What is your occupation?**

   a. **Service**
   b. **Business**
   c. **Labour.**
   d. **Homemaker.**

5. **What is your husband's occupation?**
   a. **Service**
   b. **Business**
   c. **Labour.**
   d. **Homemaker.**

6. **What is your monthly household income?**

a. **Less than 10,000Rs/-.**
b. **10,000Rs/- - 20,000Rs/-**
c. **20,000Rs/- – 30,000Rs/-**
d. **More than 30,000Rs/-**

7. **What is your family type?**
   a. **Nuclear family**
   b. **Joint family**

8. **How many children do you have?**

   a. **0**
   b. **1**
   c. **2**
   d. **3 or more.**

9. **Area of Living?**

a. **Rural**
b. **Urban**

SELF-STRUCTURED STRESS MEASURING TOOL (CHECKLIST)

S.NO	PHYSIOLOGICAL STRESS TOOL	YES	NO
1.	Do you experience headaches recently?		
2.	Do you have trouble in sleeping or wake up?		
3.	Do you lose your appetite?		
4.	Do you feel unrested and overreacting because of it?		
5.	Do you feel tightness or pain in your chest?		
6.	Do you feel increase heartbeat?		
7.	Do you experience shortness of breath without physical exertion?		
8.	Do you experience frequent body pain and fatigue?		
9.	Do you feel pressure about weight gain and body changes?		
10.	Do you feel overwhelmed by the changes in your lifestyle changes?		
11.	Do you experience joint pain?		
12.	Do you experience sweating more than usual, even without physical exertion?		
13.	Do you experience muscle tension or body aches?		
14.	Do you feel dizzy or light headed?		
15.	Have you noticed changes in your skin (e.g. rashes, breakouts) associated with stress?		

S.NO	PSYCHOLOGICAL STRESS TOOL	YES	NO
1.	Do you worry about your labour and delivery?		
2.	Do you worry about financial costs related to pregnancy or the baby?		
3.	Do you unable to control your emotions?		
4.	Do you get easily irritated or anger?		
5.	Do you feel sad and hopeless?		
6.	Do you have difficulty in concentrating?		
7.	Do you overwhelm by daily responsibilities?		
8.	Do you feel constantly worried or anxious?		
9.	Do you experience panic or restlessness without any clear reason?		
10.	Do you cry more easily than usual?		
11.	Do you overconcerned about being a good mother?		
12.	Do you found that you could not cope up with all the things in your environment?		
13.	Do you feel loneliness?		
14.	Have you been withdrawing from family, friends or activities you normally enjoy?		
15.	Do you have trouble maintaining relationships or communicating with your partner?		

अनुसंधान उपकरण (TOOLS)

1. सामाजिक जनसांख्यि की डेटा

आयु (वर्षोंमें)? _____

1.आपकी शिक्षा का स्तर क्या है?

1. अशिक्षित
2. मिडिल स्कूल
3. हाईस्कूल या समकक्ष।
4. स्नातक डिग्री
5. मास्टर डिग्री या उच्चतर।

2.आपके पति की शिक्षा का स्तर क्या है?

1. अशिक्षित
2. मिडिल स्कूल
3. हाई स्कूल या समकक्ष।
4. स्नातक डिग्री।
5. मास्टर डिग्री या उच्चतर।

3.आपका व्यवसाय क्या है?

1. सेवा
2. व्यापार
3. मजदूरी।
4. गृहस्थ।

4.आपके पति का व्यवसाय क्या है?

1. सेवा
2. व्यापार
3. मजदूरी।
4. गृहस्थ।

5.आपकी मासिक घरेलू आय क्या है?

1. 10,000 रुपये से कम।
2. 10,000रु/- - 20,000 रु/
3. 20,000रु/- – 30,000रु/
4. 30,000 रुपये से अधिक/-

6. आपका परिवार किस प्रकार का है?

1. एकल परिवार
2. संयुक्त परिवार

7. आपकी गर्भकालीन आयुक्या है?

1. पहली तिमाही (1-12 सप्ताह)
2. दूसरी तिमाही (13-26 सप्ताह)
3. तीसरी तिमाही (27-40 सप्ताह)

8. आपके कितने बच्चे हैं?

1. 0
2. 1
3. 2
4. 3 या अधिक।

9. जीवन यापन का क्षेत्र?

अ.ग्रामीण
आ.शहरी

स्व-संरचित तनाव मापने का उपकरण (चेकलिस्ट)

S.NO	शारीरिक तनाव उपकरण	हाँ	नहीं
1.	क्या आपको हाल ही में सिरदर्द का अनुभव हुआ है?		
2.	क्या आपको सोने या जागने में परेशानी होती है?		
3.	क्या आप अपनी भूख खो देते हैं?		
4.	क्या आप इस की वजह से अशांत और अत्यधिक प्रतिक्रिया महसूस करते हैं?		
5.	क्या आप अपनी छाती में जकड़न या दर्द महसूस करते हैं?		
6.	क्या आप दिल की धड़कन में वृद्धि महसूस करते हैं?		
7.	क्या आप शारीरिक परिश्रम के बिना सांस की तकलीफ का अनुभव करते हैं?		
8.	क्या आप बार-बार शरीर में दर्द और थकान का अनुभव करते हैं?		
9.	क्या आप वजन बढ़ाने और शरीर में बदलाव के बारे में दबाव महसूस करते हैं?		
10.	क्या आप अपनी जीवनशैली में बदलाव से अभिभूत महसूस करते हैं?		
11.	क्या आप जोड़ों के दर्द का अनुभव करते हैं?		
12.	क्या आप शारीरिक परिश्रम के बिना भी सामान्य से अधिक पसीने का अनुभव करते हैं?		
13.	क्या आप मांसपेशियों में तनाव या शरीर में दर्द का अनुभव करते हैं?		
14.	क्या आपको चक्कर या हल्कापन महसूस होता है?		
15.	क्या आपने तनाव से जुड़ी अपनी त्वचा (जैसे चकत्ते, ब्रेकआउट) में बदलाव देखा है?		

S.NO	मनोवैज्ञानिक तनाव उपकरण	हाँ	नहीं
1.	क्या आप अपने प्रसव के बारे में चिंता करते हैं?		
2.	क्या आप गर्भावस्था या बच्चे से संबंधित वित्तीय लागतों के बारे में चिंता करते हैं?		
3.	क्या आप अपनी भावनाओं को नियंत्रित करने में असमर्थ हैं?		
4.	क्या आप आसानी से चिढ़ या गुस्सा हो जाते हैं?		
5.	क्या आप दुखी और निराश महसूस करते हैं?		
6.	क्या आपको ध्यान केंद्रित करने में कठिनाई होती है?		
7.	क्या आप दैनिक जिम्मेदारियों से अभिभूत हैं?		
8.	क्या आप लगातार चिंतित या चिंतित महसूस करते हैं?		
9.	क्या आप बिना किसी स्पष्ट कारण के घबराहट या बेचैनी का अनुभव करते हैं?		
10.	क्या आप सामान्य से अधिक आसानी से रोते हैं?		
11.	क्या आप एक अच्छी माँ होने के बारे में चिंतित हैं?		
12.	क्या आपने पाया कि आप सामना नहीं कर सके अपने वातावरण में सभी चीजों के साथ?		
13.	क्या आप अकेलापन महसूस करते हैं?		

14.	**क्या आप परिवार, दोस्तों या उन गतिविधियों से पीछे हट रहे हैं जिनका आप सामान्य रूप से आनंद लेते हैं?**		
15.	**क्या आपको रिश्तों को बनाए रखने या अपने साथी के साथ संवाद करने में परेशानी है?**		

APPENDIX –

LETTER SEEKING CONSENT FORM FOR PARTICIPANT

Dear participants,

I Mrs. Manisha Mathew, M.Sc. Nursing Final year student, Govt College of Nursing, Durg (C.G.) is interested to know more about the effect of SBE and PMR to reduce stress among ANC mothers. The information which you are giving is kept confidential and will be used only for this study purpose. Please participate in this program by answering my questions honestly and state your willingness to participate in the study.

I request your sincere and honest response to make my study reliable and fruitful.

Mrs. Manisha Mathew

Sign of invigilator

Consent from the participant

I understand the purpose of this study and I am willing to participate in this study.

Signature

BLUEPRINT OF CHECKLIST (SCORING KEY)

S. NO.	DOMAINS	ITEM NUMBERS	TOTAL ITEMS	CONTENT AREA COVERED	SCORING PATTERN
1	**Physiological Stress**	1–15	15	Assesses physical manifestations of stress such as headache, sleep disturbance, loss of appetite, chest pain, body pain, fatigue, and other somatic symptoms.	**YES = 1, NO = 0**
2	**Psychological Stress**	1–15	15	Assesses emotional and cognitive responses such as worry, sadness, irritability, anxiety, poor concentration, loneliness, and social withdrawal.	**YES = 1, NO = 0**
TOTAL			**30**		

SCORING AND INTERPRETATION

Range of Percentage	Category of Stress
0-9	**Mild stress**
10-18	**Moderate stress**
19-30	**Severe stress**

APPENDIX –

CERTIFICATE OF HINDI EDITING

TO WHOM SO EVER MAY CONCERN

This is to certify that the dissertation **"A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (C.G.)."**by Mrs. Manisha Mathew, M.Sc. (N) final year student of Govt. College of Nursing, Durg Chhattisgarh was edited for Hindi

Language appropriateness by Sunanda

Signature of Expert

Designation MA Hindi Literature

Place: Mrs. Manisha Mathew

Date M.Sc. Nursing Final Year

GOVERNMENT COLLEGE OF NURSING, DURG (C.G.)

SUBJECT – OBSTETRICS AND GYNECOLOGICAL NURSING

LESSON PLAN ON – SLOW BREATHING EXERCISE AND PROGRESSIVE MUSCLE RELAXATION

SUBMITTED TO,

MISS. VANDANA CHOWHAN,
MANISHA MATHEW,
ASSOCIATE PROFESSOR,
MSC NURSING FINAL YEAR
GCON, DURG.

SUBMITTED BY,

GCON, DURG.

LESSON PLAN ON ALCOHOL ABUSE

COURSE - **MSC Nursing Final Year**

SUBJECT - **Obstetrical and Gynaecological Nursing**

TOPIC - **PMR AND SBE**

NO OF PARTICIPANT - **120 pregnant women's**

NAME OF TEACHER - **Miss. Vandana Chowhan**

METHOD OF TEACHING - **Lecture Cum Discussion**

AUDIO VISUAL AIDS - **Chart, Flip book, Flash card**

PLACE - **District Hospital, Durg**

DATE -

TIME -

PREVIOUS KNOWLEDGE – Before giving structured teaching programme regarding knowledge and attitude toward PMR and SBE.
The group of listeners were having few knowledge about alcohol abuse.

CENTRAL OBJECTIVES - At the end of giving structured teaching programme the listeners would have knowledge regarding PMR and SBE.

SPECIFIC OBJECTIVES:

1. To introduce SBE and PMR.
2. To define SBE and PMR.
3. To explain the concept of SBE and PMR.
4. To enumerate the purpose of SBE and PMR.
5. To describe the steps of SBE and PMR.
6. To enlist the indications of SBE and PMR.
7. To verify the contraindications of SBE and PMR.
8. To elaborate the application of SBE and PMR in antenatal mothers.
9. To conclude SBE and PMR.

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENTS	TEACHING ACTIVITY	LEARNING ACTIVITY	A.V. AIDS	EVALUATION
1.	2 min	To introduce SBE and PMR	**INTRODUCTION** **SBE** Slow Breathing Exercise (SBE) is a simple, safe, and effective relaxation technique that involves consciously slowing down the rate of breathing and deepening each breath to promote calmness and reduce stress. Controlled breathing has been used for centuries in yoga and modern relaxation therapies to regulate physiological functions and promote psychological well-being. During pregnancy, SBE helps antenatal mothers cope with physiological changes and emotional fluctuations, thereby enhancing overall maternal health. **PMR** Progressive Muscle Relaxation (PMR) is a well-established relaxation technique developed by **Dr. Edmund Jacobson (1938)**, based on the principle that **mental calmness naturally follows physical relaxation**. The method involves systematically tensing and relaxing major muscle groups in the body to reduce muscle tension, anxiety, and stress. It is a simple, non-invasive, and cost-effective technique widely used in nursing, psychology, and obstetric care to promote relaxation and well-being.	Lecturing and discussing	Listening and answering		What do you understand about SBE and PMR?

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENTS	TEACHING ACTIVITY	LEARNING ACTIVITY	A.V. AIDS	EVALUATION
2.	2 min	To define SBE and PMR.	**DEFINITION** **SBE** Slow Breathing Exercise (SBE) is a controlled breathing technique that involves consciously slowing down the rate of breathing, increasing the depth of inspiration and expiration, to promote relaxation and reduce stress. **— (Brown & Gerbarg, 2005)** Slow Breathing Exercise is a non-pharmacological nursing intervention used to reduce physiological and psychological stress by regulating breathing patterns, thereby stimulating the parasympathetic nervous system and promoting calmness. **— (Potter & Perry, 2019)** **PMR** Progressive Muscle Relaxation (PMR) is a deep relaxation technique that involves the systematic tensing and relaxing of specific muscle groups in the body to reduce physical tension and mental stress. **— (Jacobson, 1938)** Progressive Muscle Relaxation is a non-pharmacological nursing intervention aimed at promoting relaxation and stress relief by alternating tension and relaxation in major muscle groups, thereby enhancing comfort and psychological well-being. **— (Potter & Perry, 2019)**	Lecturing and discussing	Listening and answering	Charts	Define SBE and PMR?

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENTS	TEACHING ACTIVITY	LEARNING ACTIVITY	A.V. AIDS	EVALUATION
3.	2 min	To explain the concept of SBE and PMR.	**CONCEPT** **SBE** The concept of Slow Breathing Exercise is based on the **mind–body interaction** where **breath control influences the autonomic nervous system**. Slow, deep breathing enhances **parasympathetic activity**, decreases **sympathetic arousal**, and helps maintain **homeostasis**. It stabilizes cardiovascular parameters, reduces cortisol secretion, and promotes a sense of relaxation and comfort. According to physiological studies, breathing at a rate of **6–10 breaths per minute** optimizes heart rate variability and promotes relaxation. **PMR** PMR focuses on the **mind–body connection**. By consciously tightening and then releasing specific muscles, the individual becomes more aware of bodily sensations and tension patterns. This awareness facilitates **deep relaxation**, decreases **sympathetic nervous system activity**, and promotes **parasympathetic dominance**, thereby reducing stress and anxiety levels.	Lecturing and discussing	Listening and answering		Explain the concept of SBE and PMR?

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENTS	TEACHING ACTIVITY	LEARNING ACTIVITY	A.V. AIDS	EVALUATION
4.	5 min	To enumerate the purpose of SBE and PMR.	**PURPOSE** **SBE** ● To reduce **physiological stress indicators** such as pulse rate, blood pressure, and respiratory rate. ● To decrease **psychological stress, anxiety, and tension.** ● To promote **relaxation and calmness** during pregnancy. ● To enhance **oxygenation and circulation** for both mother and fetus. ● To prepare the mother mentally and physically for **labour and delivery**. **PMR** ● Decrease **muscle tension** caused by stress or anxiety. ● Promote **physiological relaxation** by reducing heart rate, blood pressure, and respiratory rate. ● Enhance **psychological calmness**, improve mood, and support mental health during pregnancy. ● Improve **sleep quality** and overall maternal well-being	Lecturing and discussing	Listening and answering		Enumerate the purpose of SBE and PMR?

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENTS	TEACHING ACTIVITY	LEARNING ACTIVITY	A.V. AIDS	EVALUATION
5.	10 min	To describe the steps of SBE and PMR.	**STEPS OF SBE** The exercise is performed in a calm, quiet environment. Each session lasts for about **15–20 minutes**. **Preparation:** ● The mother sits comfortably in a relaxed position, either on a chair or in semi-Fowler's position. ● Eyes are gently closed and attention is focused on breathing. **Step 1 – Inhalation:** Take a **slow, deep breath through the nose** for about **4 seconds**, allowing the abdomen to expand. This ensures diaphragmatic breathing and increased oxygen intake. **Step 2 – Pause:** Hold the breath gently for **2–3 seconds** without strain. **Step 3 – Exhalation:** Exhale **slowly through the mouth (pursed-lip breathing)** for about **6–8 seconds**, allowing the abdomen to fall naturally. Feel the tension leaving the body with each exhalation	Lecturing and discussing	Listening and answering		Describe the steps of SBE and PMR?

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENTS	TEACHING ACTIVITY	LEARNING ACTIVITY	A.V. AIDS	EVALUATION
			Step 4 – Repetition: Continue this slow, rhythmic breathing cycle for **10–15 minutes**. Focus attention on the breath to calm the mind and body. **Step 5 – Completion:** After the session, sit quietly for a few moments before returning to normal activity. **STEPS OF PMR** The PMR session usually lasts **15–20 minutes** and is performed in a quiet, comfortable environment. The following steps are typically followed: 1. **Preparation:** The mother is asked to sit or lie down comfortably, close her eyes, and take a few deep breaths. 2. **Tension and Relaxation:** The participant is instructed to **tense** specific muscle groups for about **5–7 seconds**, then **release** the tension for **15–20 seconds** while focusing on the feeling of relaxation. 3. **Sequence of Muscle Groups:**				

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENTS	TEACHING ACTIVITY	LEARNING ACTIVITY	A.V. AIDS	EVALUATION
			• Hands and forearms • Upper arms • Forehead • Eyes and cheeks • Mouth and jaw • Neck and shoulders • Chest and abdomen • Back • Thighs • Calves and feet • **Breathing Integration:** Slow, rhythmic breathing is maintained throughout the exercise to enhance relaxation. • **Completion:** After relaxing all muscle groups, the participant is asked to remain still for a few moments, noticing the sense of calmness before slowly opening the eyes.				

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENTS	TEACHING ACTIVITY	LEARNING ACTIVITY	A.V. AIDS	EVALUATION
6.	2 min	To enlist the indications of SBE and PMR	**INDICATIONS** **SBE** • Pregnant women experiencing **stress, anxiety, or emotional tension**. • Individuals with **hypertension** or **increased heart rate**. • Those with **sleep disturbances** or **fatigue**. • Patients requiring **non-pharmacological relaxation therapy**. **PMR** • **Stress and Anxiety:** To reduce physiological and psychological stress among antenatal mothers. • **Hypertension:** Helps lower blood pressure by reducing sympathetic nervous system activity. • **Insomnia:** Promotes relaxation and improves sleep quality. • **Muscle Tension or Pain:** Relieves muscular stiffness and tension. • **Fatigue:** Helps restore energy by reducing mental and physical exhaustion. • **Headache and Migraine:** Reduces muscle contraction and associated discomfort.	Lecturing and discussing	Listening and answering	Flip Book	Enlist the indications of SBE and PMR?

S.NO	TIME	SPECIFIC OBJECTIVES	CONTENTS	TEACHING ACTIVITY	LEARNING ACTIVITY	A.V. AIDS	EVALUATION
7.	5 min	To verify the contra-indications of SBE and PMR.	• **During Pregnancy:** Improves maternal relaxation, reduces anxiety related to labour and delivery, and promotes fetal well-being. • **Postpartum Period:** Supports recovery and emotional stability. **CONTRAINDICATION** **SBE** • **Severe respiratory disorders** (e.g., COPD, acute asthma attacks). • **Cardiac conditions** where exertion is not advised. • **Dizziness or fainting tendency** during deep breathing. • **Recent abdominal or chest surgery** (until medically cleared). **PMR** • **Recent Musculoskeletal Injury:** Avoid tensing muscles that are injured or recovering from trauma or surgery.	Lecturing and discussing	Listening and answering		Verify the contra – indications of SBE and PMR?

			• **Severe Musculoskeletal Pain:** Conditions such as arthritis, sprains, or				
S.NO	**TIME**	**SPECIFIC OBJECTIVES**	**CONTENTS**	**TEACHING ACTIVITY**	**LEARNING ACTIVITY**	**A.V. AIDS**	**EVALUATION**
			fractures where muscle contraction may worsen discomfort. • **Acute Cardiac Conditions:** Avoid during recent myocardial infarction, severe arrhythmias, or uncontrolled hypertension. • **Severe Respiratory Disorders:** Such as COPD or asthma, where deep breathing or muscle tightening may cause breathlessness. • **Epilepsy or Neurological Disorders:** Muscle contractions may occasionally trigger discomfort or spasms. • **Pregnancy-Related Complications:** Such as pre-eclampsia, threatened abortion, or premature labour — relaxation techniques should only be practiced under medical supervision.				

			• **Psychiatric Conditions:** Use caution in patients with psychosis or severe depression unless supervised by a mental health professional.				
S.NO	**TIME**	**SPECIFIC OBJECTIVES**	**CONTENTS**	**TEACHING ACTIVITY**	**LEARNING ACTIVITY**	**A.V. AIDS**	**EVALUATION**
8.	2 min	To elaborate the application of SBE and PMR in antenatal mothers.	**APPLICATION OF SBE IN ANTENATAL MOTHERS** • It helps in **stabilizing vital parameters** such as blood pressure, pulse, and respiration rate. • Promotes **mental calmness**, reduces **fear and anxiety** associated with pregnancy. • Improves **oxygen supply** to the fetus and enhances **maternal–fetal bonding**. • Can be incorporated into **antenatal education programs** and **daily relaxation routines**. • It prepares the mother to use **controlled breathing during labour**, improving pain tolerance and coping ability. **APPLICATION OF PMR IN ANTENATAL MOTHERS** In antenatal mothers, PMR helps reduce **physiological and psychological stress** associated with	Lecturing and discussing	Listening and answering		Elaborate the application of SBE and PMR in antenatal mothers?

			pregnancy. Regular practice enhances maternal comfort, improves **fetal well-being**, and promotes **positive pregnancy outcomes**. Nursing professionals can easily teach PMR as part of **antenatal education programs**.				
S.NO	**TIME**	**SPECIFIC OBJECTIVES**	**CONTENTS**	**TEACHING ACTIVITY**	**LEARNING ACTIVITY**	**A.V. AIDS**	**EVALUATION**
9.	2 min	To conclude SBE and PMR.	**CONCLUSION** **SBE** Slow Breathing Exercise (SBE) is a **scientifically proven, nurse-led relaxation technique** that effectively reduces stress among antenatal mothers. It enhances physiological stability and psychological comfort, promoting a positive pregnancy experience. Being simple, cost-effective, and non-pharmacological, it can be easily taught and practiced as part of routine antenatal care. **PMR** Progressive Muscle Relaxation (PMR) is a **scientifically supported, nurse-led relaxation technique** that effectively reduces both **physiological and psychological stress** among antenatal mothers. Its simplicity, safety, and non-pharmacological nature make it an ideal stress management intervention in maternal health settings.	Lecturing and discussing	Listening and answering		Define SBE and PMR?

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GOVERNMENT COLLEGE OF NURSING, DURG (C.G.)

Institute Ethical Committee

..................CERTIFICATE OF APROVAL................

To : Manisha Mathew

Review Date :

Reference :

Title of Study A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus Progressive Muscle Relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and Hospitals at Durg, District C.G.

The Institute Ethics Committee, Government College of Nursing Durg (Chhattisgarh) reviewed and discussed your above reference research proposal in the meeting held on ....at .... Government College of Nursing Durg.

The following documents were reviewed;

- Covering letter
- Research Project Proposal
- Participant Information Sheet and Consent Form
- Tools and Specific Intervention

The following members of Institute Ethics Committee were present at meeting held on 1/5/25 at 9am - 5pm at Government College of Nursing Durg.

Certificate of Approval: Proposal No.....16.....Gcon Durg .....Ref.....Dated..31/05/2025

As Principal Investigator, you are responsible for fulfilling the following requirements of approval:

1. This approval is valid for entire duration of the study (i.e 01 months) The review application must be submitted to the IEC-GCON Durg in order to continue the study beyond the approved period.
2. All the co-investigators must be informed the status of the project.
3. Chages, amendments and addendum to the protocol or the consent form must be submitted to the IEC-GCON Durg for re-review and approval prior to the activation of the changes.
4. Any change of study site, change of investigators, termination of study (with the reason to do so) should be informed to IEC Gcon Durg.
5. The IEC proposal number assigned to the project should be cited in any correspondence.
6. Any Serious Adverse event (SAE) occurring during the course of the study should be reported to the IEC-Gcon Durg.
7. New information that becomes available which could change the risk: benefit ratio must be submitted promptly for IEC review.
8. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by subjects and/or witnesses should be retained on file. The IEC may conduct audits of all study records and consent documentation may be part of such audits.
9. The study progress report should be made available for the IEC review on every 6 month.
10. The final report of the study must e submitted to IEC-Gcon Durg after the completion of the study.

It is hereby, confirmed that neither you nor of the study team members have participated in the voting/ decision making procedures of the committee.

Sincerely,

Dr. Mrs. Roja Princy
Chairperson
Institute Ethics Committee
Govt. College of Nursing, Durg

Mrs. Sapna Thakur
Member Secretary
Institute Ethics Committee
Govt. College of Nursing, Durg

LETTER SEEKING PERMISSION TO CONDUCT THE PILOT STUDY

From,
Manisha Mathew,
M.Sc. Nursing final year,
Government college of Nursing, Durg (C.G.)

To,
Block medical officer,
Lal Bahadur shastri Hospital Supela, Durg, (C.G.)

Forwarded through,
The Principal,
Mrs. Rema Rajesh,
Government College of Nursing, Durg (C.G.)

Subject: – A Letter requesting permission for Pilot study.

Respected Sir/ Madam,

I am MSc Nursing Final year student of Obstetrics and Gynaecological Nursing speciality at Government College of Nursing, Durg (C.G.). I would like to conduct my research study with the title **"A QUASI EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF SLOW BREATHING EXERCISE (SBE) VERSUS PROGRESSIVE MUSCLE RELAXATION (PMR) TECHNIQUE TO REDUCE PHYSIOLOGICAL AND PSYCHOLOGICAL STRESS AMONG ANC MOTHERS ATTENDING ANC CLINICS AND HOSPITALS AT DURG, DISTRICT (C.G.)"**. As a requirement for the partial fulfilment of the Master of Science in Nursing degree in Pt. DEENDAYAL UPADHYAY MEMORIAL HEALTH SCIENCE AND AYUSH UNIVERSITY RAIPUR (C.G.).

With this regard, I request you to kindly permit me for the conduction of pilot study at your hospital.

Thanking you

Date - 26/4/25

Forwarded for kind permit & approval

26/4/25

Manisha

Your's sincerely,
Manisha Mathew,
M.Sc. Nursing Final year,
Govt. College of Nursing,
Durg (c.g.)

LETTER SEEKING PERMISSION TO CONDUCT THE MAIN STUDY

From,
Manisha Mathew,
M.Sc. Nursing final year,
Government college of Nursing, Durg (C.G.).

To,
The Civil Surgeon,
District hospital Durg, (C.G.).

Forwarded through,
The Principal,
Mrs. Rema Rajesh,
Government College of Nursing, Durg (C.G.)

Subject: - A Letter requesting permission for main study.

Respected Sir/ Madam,

I am MSc Nursing Final year student of Obstetrics and Gynaecological Nursing speciality at Durg (c.g.). I would like to conduct my research study with the title **"A QUASI EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF SLOW BREATHING EXERCISE (SBE) VERSUS PROGRESSIVE MUSCLE RELAXATION (PMR) TECHNIQUE TO REDUCE PHYSIOLOGICAL AND PSYCHOLOGICAL STRESS AMONG ANC MOTHERS ATTENDING ANC CLINICS AND HOSPITALS AT DURG, DISTRICT (C.G.)".** As a requirement for the partial fulfilment of the Master of Science in Nursing degree in Pt. DEENDAYAL UPADHYAY MEMORIAL HEALTH SCIENCE and AYUSH UNIVERSITY RAIPUR (C.G.).

With this regard, I request you to kindly permit me for the conduction of main study at your hospital.

Thanking you.

Date - 26/4/25 Forwarded for kindly pl

Manisha

Your's sincerely,
Manisha Mathew,
M.Sc. Nursing Final year,
Govt. College of nursing,
Durg (c.g.)

Dr. Sonali
Dr. (Mrs.) Sonali Shrivastava
Reg. No. CGPT 451
Mob. : +91-7828810277
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ADVANCED PHYSIOTHERAPY CENTRE

Specialist in : Pediatrics, Pain Care, Spine Care & Matrix Rhythm Therapy
B.P.T., M.P.T., PhD. (Mangalore), C.M.R.T. (Germany)
CDNT (New Delhi) International Researcher (UK, SACN)
Certified in : MaRhyThe, Dry Needling, IASTM, NDT, Manual Therapy, GAL& HINE (Australia).
Advisor in : Nutrition & Wellness (Nutrilite-California)
Diploma : Naturopathy Diet & Nutrition, Acupressure, Acupuncture, Yoga

"Prevention is Better than Cure"

CERTIFICATION OF SLOW BREATHING EXERCISE AND PROGRESSIVE MUSCLE RELAXATION TECHNIQUE

Th.s is to certify that **Manisha Mathew,** student of M.Sc. Nursing Final year Government college of Nursing, Durg (an affiliated to pt. Deendayal Upadhyay Memorial Health Science and Ayush University of Chhattisgarh) started SBE and PMR training under supervision of **Dr. Mrs. Sonali Shrivastav, Advanced Physiotherapist, Shri Shankaracharya Institute of Medical Science, Junwani, Durg.** She is trained by the undersigned and can proceed with conduct for the Titled – **"A QUASI-EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF SLOW BREATHING EXERCISE (SBE) VERSUS PROGRESSIVE MUSCLE RELAXATION (PMR) TECHNIQUE TO REDUCE PHYSIOLOGICAL AND PSYCHOLOGICAL STRESS AMONG ANC MOTHERS ATTENDING ANC CLINICS AND HOSPITALS AT DURG, DISTRICT (C.G.)"** istrained and certified by me.

Hence, she can proceed with SBE and PMR technique for the completion on this research study. Pilot study to be started from Monday 23/6/25.

NAME OF TRAINER: - Dr Sonali S (PhD)
DESIGNATION: - Physiotherapist consultant
Place - Durg
Date – C.G 21/6/25

Signature of Trainer

CERTIFICATE OF TOOL VALIDATION

This is to certify that the tool developed by Mrs. Manisha Mathew, student of MSc Nursing Final Year, Government College of Nursing, Durg (an affiliated to Pt. Deendayal Upadhyay Memorial Health Science and Ayush University of Chhattisgarh) is verified by the undersigned and can proceed with this Tool and conduct for the Tool Validation Titled – "A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.)." is found to be valid by me.

Hence, she can proceed with the Tool for the completion of this research study.

NAME OF VALIDATOR: - Mrs. Sutanuka Choudhary.
DESIGNATION: - Associate Professor
INSTITUTE: - Shankaracharya Swami Swaroopanand college of Nursing
Place: - Bhilai
Date: - 16.06.2025

CERTIFICATE OF TOOL VALIDATION

This is to certify that the tool developed by Mrs. Manisha Mathew, student of MSc Nursing Final Year, Government College of Nursing, Durg (an affiliated to Pt. Deendayal Upadhyay Memorial Health Science and Ayush University of Chhattisgarh) is verified by the undersigned and can proceed with this Tool and conduct for the Tool Validation Titled – "A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.)." is found to be valid by me.

Hence, she can proceed with the Tool for the completion of this research study.

NAME OF VALIDATOR: - Dr. Archana Pandey

DESIGNATION: - Professor cum Vice Principal

INSTITUTE: - Shivpas college of Nursing

Place: - Bhilai

Date: - 2/6/25

CERTIFICATE OF TOOL VALIDATION

This is to certify that the tool developed by Mrs. Manisha Mathew, student of MSc Nursing Final Year, Government College of Nursing, Durg (an affiliated to Pt. Deendayal Upadhyay Memorial Health Science and Ayush University of Chhattisgarh) is verified by the undersigned and can proceed with this Tool and conduct for the Tool Validation Titled – "A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.)." is found to be valid by me.

Hence, she can proceed with the Tool for the completion of this research study.

NAME OF VALIDATOR: - Mrs. Nancy Martin
DESIGNATION: - Asso. Prof (OBG)
INSTITUTE: - Shrishankaracharya College of Nursing, Hudco, Bhilai
Place: - BHILAI
Date: - 04/06/25

Nancy 04/06/25

CERTIFICATE OF TOOL VALIDATION

This is to certify that the tool developed by Mrs. Manisha Mathew, student of MSc Nursing Final Year, Government College of Nursing, Durg (an affiliated to Pt. Deendayal Upadhyay Memorial Health Science and Ayush University of Chhattisgarh) is verified by the undersigned and can proceed with this Tool and conduct for the Tool Validation Titled – "A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.)." is found to be valid by me.

Hence, she can proceed with the Tool for the completion of this research study.

NAME OF VALIDATOR: - Prof Dr Seema Santosh

DESIGNATION: - Professor

INSTITUTE: - PG College of Nursing, Bhilai

Place: -

Date: -

P.G. COLLEGE OF NURSING
HOSPITAL SECTOR, BHILAI (C.G.)

CERTIFICATE OF TOOL VALIDATION

This is to certify that the tool developed by Mrs. Manisha Mathew, student of MSc Nursing Final Year, Government College of Nursing, Durg (an affiliated to Pt. Deendayal Upadhyay Memorial Health Science and Ayush University of Chhattisgarh) is verified by the undersigned and can proceed with this Tool and conduct for the Tool Validation Titled – "A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.)." is found to be valid by me.

Hence, she can proceed with the Tool for the completion of this research study.

NAME OF VALIDATOR: - MRS. KUMUD KUMAR

DESIGNATION: - Professor

INSTITUTE: - SSCN

Place: - Jamuwani Bhilai

Date: - 13/06/25

CERTIFICATE OF TOOL VALIDATION

This is to certify that the tool developed by Mrs. Manisha Mathew, student of MSc Nursing Final Year, Government College of Nursing, Durg (an affiliated to Pt. Deendayal Upadhyay Memorial Health Science and Ayush University of Chhattisgarh) is verified by the undersigned and can proceed with this Tool and conduct for the Tool Validation Titled – "A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.)." is found to be valid by me.

Hence, she can proceed with the Tool for the completion of this research study.

NAME OF VALIDATOR: - Dr Priti Bhatt

DESIGNATION: - Asso. Prof.

INSTITUTE: - SSCN Hudco

Place: - Bhilai

Date: - 13/6/25

CERTIFICATE OF TOOL VALIDATION

This is to certify that the tool developed by Mrs. Manisha Mathew, student of MSc Nursing Final Year, Government College of Nursing, Durg (an affiliated to Pt. Deendayal Upadhyay Memorial Health Science and Ayush University of Chhattisgarh) is verified by the undersigned and can proceed with this Tool and conduct for the Tool Validation Titled – "A Quasi-experimental study to assess the effectiveness of slow breathing exercise (SBE) versus progressive muscle relaxation (PMR) technique to reduce physiological and psychological stress among ANC mothers attending ANC clinics and hospitals at Durg, district (c.g.)." is found to be valid by me.

Hence, she can proceed with the Tool for the completion of this research study.

DR. MRS. SUSHILA BAIS
DEGINATION - PROFESSOR
REG. NO.-287150/34
P.G. COLLAGE OF NURSING
SECTOR-9, HUDCO, BHILAI C.G.

NAME OF VALIDATOR: - Professor Dr. Sushila Bais

DESIGNATION: - Professor

INSTITUTE: - P.G. College of Nursing, Bhilai

Place: - Bhilai

Date: - 5/6/25