



Faculty of Medicine

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**Outcome of Antenatal Group Physiotherapy Treatment among the
Pregnant Women Attended in OGSB Hospital**

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Declaration

I declare that the work provided here is my own. All sources have been properly attributed. Any errors or inaccuracies are my own. This also includes any work that is published, presented, or disseminated. I would need a signed consent from the Saic College of Medical Science and Technology (SCMST).

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ACRONYMS

AGPT	Antenatal Group Physiotherapy Treatment
ANC	Antenatal Care
CI	Confidence Interval
DASS-21	Depression, Anxiety, and Stress Scale
MWU	Mann-Whitney U Test
NPRS	Numeric Pain Rating Scale
OGSB	Obstetrical and Gynecological Society of Bangladesh
QoL	Quality of Life
SD	Standard Deviation
WSRT	Wilcoxon Signed Rank Test

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Abstract

Introduction: Pregnancy, a period of significant physical and psychological change, often brings discomforts such as back pain, pelvic pain, and mental health challenges, including stress, anxiety, and depression. This trial aims to explore whether such symptoms can be reduced with the use of antenatal group physiotherapy.

Methodology: A randomized controlled trial (RCT) involving 30 pregnant women who were split into experimental and control group, in the first one group was given antenatal physiotherapy while second received standard normal antenatal care. The intervention consisted of a well-defined group-based program with physical exercises, relaxation methods, and social support. Results were recorded by Numeric Rating Scale (NRS), marking psychological health by DASS-21 before and after the intervention.

Results: Pain, mourning, anxiety and stress were significantly reduced after the intervention. The experimental group demonstrated superior gains to those in the control group. Similarly, emotional support from husbands predicted significantly lower postpartum stress ($p = 0.001$). There were significant differences on depression ($p = 0.045$), anxiety ($p = 0.006$) and stress ($p = 0.024$) between groups.

Conclusion: Antenatal group physiotherapy is more effective than conventional antenatal care in reducing low back and thoracic pain as well as postural blood variations among pregnant women. The results justify community-based group physiotherapy being added to standard antenatal care to improve maternal health and quality of life. Confirmation of these findings is required in additional studies with larger numbers of patients followed-up longer-term.

Keywords: *Antenatal Physiotherapy, Depression, Anxiety, Stress, Pregnancy, Randomized Controlled Trial, Maternal Health, Group Therapy*

1.1 Background: It's no doubt that pregnancy is a very special period of anxiety and change in the life of any woman both emotionally and physically with the impact on general health. Although the pregnant body is subject to several well-adapted physiological modifications in order to accommodate the fetus, these adaptations can be at the origin of discomforts such as dorsal pain (DP), pelvic girdle pain (PGP) and urinary incontinence (Jamil et al. 2019, p. 88). These difficulties are the result of increased body weight, hormonal presumably changes and posture (Chauhan et al. 2016, p. 90).

The treatment antenatal physiotherapy does wonders with these conditions, physical therapies such as exercises to do at home is a must. Such treatments have the potential to improve strength, flexibility and general physical conditioning thereby attenuating common pregnancy-related problems such as low back pain and pain in the region of the pelvis (Richards et al. 2012, p. 15). Physiotherapy regimes, which generally incorporate pelvic floor training and postural education with aerobic fitness work (Prabha et al. 2019, p. 66).

In addition to physical effects, antenatal physiotherapy was found to have a favorable influence on the psychological state of pregnant women. Pregnancy and psychological problems Pregnancy related emotional problems, such as anxiety, depression and stress are a common phenomenon affecting not only the mother's health but also fetal development and general pregnancy outcomes (Bjelica et al. 2018, p. 74). Attendance in a physiotherapy group has been associated with lower levels of anxiety and depression which improves mental status throughout pregnancy (Alghamdi et al. 2023, p. 71).

Additionally, group physiotherapy incorporating individual physiotherapeutic techniques with the support of peers at a group level has been identified as an area worthy of exploration. On one hand, group physiotherapy increases motivation and adherence to the exercise program as well as emotional support, which results in a decrease of psychological distress during pregnancy (Rayjade et al. 2024, p. 15). These

group environments also help to create a sense of community, something that is particularly important for pregnant women who may feel isolated or stressed due to socio-economic factors (Sheth et al. 2019, p. 62).

The socio-economic stress and inadequate access to health care and lack of social support make the pregnant women in Dhaka vulnerable. Considering the high density population and unstoppable urbanization of this city, there would be stress that can interfere with pregnant women health. Additionally, a considerable number of women in Dhaka are employed within low wage and informal sectors, which may not offer sufficient maternity leave or health insurance (Alghamdi et al. 2023, p. 77). This economic burden, combined with limited resources in high-risk pregnancy care, compounds the physical and emotional challenges pregnant women face (Sheth et al. 2019, p. 62). A dearth of targeted services like physiotherapy, leaves many women without appropriate treatment for common symptoms during pregnancy such as musculoskeletal pain and anxiety (Sajitha et al. 2018, p. 64).

There is a growing awareness of the psychological and physical benefits for/with expectant mothers; however, in Dhaka, antenatal care often centers around medical tests and screenings (Bjelica et al. 2018, p. 55). The knowledge about Antenatal physiotherapy particularly structured exercises in reduction of pain and anxiety is low (Chauhan et al. 2016, p. 45). In these areas (most especially, urban low-income settings) access to physiotherapy is limited and few professionals are trained to provide such specialized intervention (Mbada et al. 2014, p. 112). Consequently, women in Dhaka may not be supported to cope with physical and psychological issues that arise while pregnant (Jahan et al. 2023, p. 12).

The research seeks to fill this gap by assessing the effects of antenatal group physiotherapy on pregnant women in Dhaka. The study aims to improve physical and psychological health outcomes for expectant mothers through incorporation of physiotherapy into standard antenatal care (Rayjade et al. 2024, p. 15). Physiotherapy in group settings is beneficial not only for relieving musculoskeletal complaints such as back pain and pelvic girdle pain, but also has a psychosocial value due to the provision of social support (Richards et al. 2012, p. 35). With the evidence from this study, it is possible that the combination of antenatal care with physiotherapy

intervention could contribute to better maternal health outcomes in Dhaka, offering a more holistic approach to pregnancy care (Sajitha et al. 2018, p. 64).

Ante-natal physiotherapy has been well investigated with regard to reducing physical complaints during pregnancy. Pregnant women frequently complain of pain during pregnancy's second half and the most common complaint is backache, which affects 50-70% pregnant woman (Chauhan et al. 2016, p. 45). These discomforts are significantly related to the fluid retention and vascular changes that occur with pregnancy, the increase in body weight, alteration in posture and biomechanics. According to (Khatri et al. 2014, p. 14), through involving different physiotherapy interventions such as pelvic tilts, stretching and strengthening exercises, the severity and duration of back pain has been shown to decrease. It was shown that women who participated in formal physiotherapy programs reported significantly less low back pain than those not receiving care (Richards et al. 2012, p. 35).

Pelvic pain is another contributing factor which physiotherapy treats, caused by hormonal changes and an increase of pressure on the pelvic joints and ligaments Further (Chauhan et al. 2016, p. 45). A systematic review conducted by Richards et al. 90 concluded that specifically designed pelvic floor exercises, like Kegel exercises and pelvic tilts may help with strengthening the pelvic muscles and alleviate the risk of discomfort. These exercises have also been correlated with higher pelvic stability as well as the reduction of complications such as PGP in pregnant women (Sheth et al. 2019, p. 62).

Urinary Incontinence In addition to the musculo-skeletal issues, urinary incontinence is another common problem that can be effectively managed via antenatal physiotherapy. Results The Kegel exercises that target the pelvic floor muscles have been proved to reduce in a statistically significant manner urinary incontinence, a problem women often experience during pregnancy (Chauhan et al. 2016, p. 45). A study by Khatri et al. The frequency of the pregnant women, who practiced perineal exercises frequently in relation to symptoms urinary once chapter III was lower, 30% (2014: p.90). These results suggest that antenatal physiotherapy is a useful provision for improvement of mothers' physical health.

Other than the physical advantages, antenatal physiotherapy also comes with immense psychological effects. Pregnancy is a stage of life in which women have reported heightened levels of stress, anxiety and depression; and this had negative sequels for both maternal wellbeing and child health (Prabha et al. 2019, p. 63). Exercise-based Physiotherapy is associated with the release of endorphins – the body’s natural ‘feel good’ hormones. Studies are becoming unanimous regarding the influence of physical (including kinesitherapy) activity that leads to reduction in secretion of stress hormones such as cortisol by increasing evaporated levels and mood emotional state stabilization (Bjelica et al. 2018, p. 55).

A study by (Prabha et al. 2019) reported on the effect of a 12-week antenatal exercise intervention on HRQoL among pregnant women. Consistently, results showed a significant decrease in anxiety and depressive symptoms favouring the therapeutic effect of antenatal physiotherapy over maternal mental health. Women who attended physiotherapy experienced enhanced emotional well-being and a stronger coping ability in relation to their pregnancy-associated psychological demands (Richards et al. 2012, p. 35).

A separate study by (Bjelica et al. 2018) studied the effect of antenatal physiotherapy on stress and reported that subjects had significantly decreased levels of stress after participating in a programmed exercise. The mental advantages from going to a Physiotherapist are primarily due to the bodily enhancements that increase general overall health; and also the emotional robustness gained, as a result of having physical activity (Prabha et al. 2019, p. 63).

There are also positive psychological effects of group physiotherapy, largely because of the social contact. It has been well documented that provision of a group exercise model can increase motivation, adherence and emotional well-being which yield better results than that obtained in individual physiotherapy sessions. Pregnant women in group physiotherapy felt more supported and less alone; this translated into improvements in emotional wellbeing, and improved physical results (Rayjade et al. 2024, p. 15).

The group sessions in physiotherapy also foster a sense of community among pregnant women, allowing them to connect with one another and form friendships. In addition to it, this group support network may provide a powerful means by which to attend to anxiety and stress, which are common in pregnant women (Richards et al. 2012, p. 35). In addition, group modality encourages ongoing participation as the trust and camaraderie of the other group members motivates women to continue to show up for sessions in greater numbers than exists amongst those participating in individual therapy formats (Rayjade et al. 2024, p. 15).

To conclude, although there is strong evidence of the physical and psychological benefits of antenatal physiotherapy, research on group physiotherapy in low-resource settings such as Dhaka is still required. This study seeks to fill in this gap through studying the effects of antenatal group physiotherapy on physical and psychological health among pregnant women in Dhaka.

1.2: Rationale: Pregnancy can be regarded as a transitional period that is mainly dominated by changes: physical, psychological, and emotional ones that affect the general well-being of a woman. Therefore, this study was undertaken to investigate the effects of antenatal group physiotherapy on pain, stress, anxiety, and depression among pregnant women in Dhaka City, for there has been an increase in awareness of the multifaceted benefits such interventions have. In the advanced stages of pregnancy pregnant women complain about pain in their backs, pelvises and other musculoskeletal problems resulting from the increase in body weight and changes occurring in their bodies.

In addition to this, psychosomatic consequences of pregnancy including stress and tension further exacerbate the physical symptoms, resulting in a worsened QoL. Physiotherapy antenatal exercises that tackle some of these problems can improve health outcomes while reducing related physical discomfort. Increasing evidence is also reported to shows that group physiotherapy has additional benefits compared with individual therapy through the mutual support offered by its members, and decrease in isolation and increased sense of community among pregnant women. It may have extra value in periods and places where social support networks may not be robust. While antenatal physiotherapy is thus evidently advantageous and does have its impact, the broader consequences of general antenatal physiotherapy on overall physical and psychological constitutional health in the community setting of Dhaka city are quite unknown.

Places like Dhaka have its own unique ones very high levels of stress presumably largely associated with poverty, I'd say in general not enough specialized health services. Assessing the effectiveness of antenatal group physiotherapy in this context may provide valuable information about how such programmes could be enhanced to meet the needs of pregnant women in similar urban areas. Finally, this study would address a major omission in our understanding of the development of comprehensive models of maternal care that mitigate pain, stress anxiety and depression across domains of physical as well as mental health. The results could be used to inform healthcare professionals in developing more concentrated and effective antenatal interventions with a view to increasing maternal health and well-being.

1.3 Aim: The aim of this study was to measure the outcome of antenatal group physiotherapy treatment among pregnant women attending the OGSB hospital

1.4 Research question:

What is the effect of antenatal group physiotherapy treatment among pregnant women attending the OGSB hospital?

1.5 Objectives

1.5.1 General Objectives

To evaluate the outcome of antenatal group physiotherapy in reducing pain, stress, anxiety, and depression among pregnant women in OGSB hospital compared to those receiving standard antenatal care

1.5.2 Specific objectives

- I. To collect information on socio demographic (age, Living area, educational status) characteristics of the participants.
- II. To assess the level of pain by NPRS scale of experimental and control group before and after intervention.
- III. To determine the level of stress, anxiety and depression by using DASS-21 scale of experimental and control group before after intervention.
- IV. To compare the outcome of the intervention between two groups by Mann Whitney-U statistical test.

1.6 Hypothesis

Antenatal group physiotherapy is more effective than only conventional physiotherapy on pain, stress, anxiety and depression among the pregnant women.

$$\mu_1 - \mu_2 = 0 \text{ or } \mu_1 \geq \mu_2$$

1.7 Null hypothesis

Antenatal group physiotherapy is not more effective than only conventional physiotherapy on pain, stress, anxiety and depression among pregnant women

$$\mu_1 - \mu_2 \neq 0 \text{ or } \mu_1 \neq \mu_2$$

Where,

H_0 = Null hypothesis

H_a = Alternative hypothesis

μ_1 = mean difference in initial assessment

μ_2 = mean difference in final assessment

1.8 Conceptual Framework

Independent Variables

1. Group physiotherapy
2. Conventional physiotherapy

2. Comorbidities

- Diabetes mellitus
- High Blood pressure
- Asthma

3. Socio-demographic

- Age
- Living area
- Education
- Family type

Dependent Variables

- Pain
- Depression
- Stress
- Anxiety

1.9 Operational definitions

Antenatal

It occurs during or about the phase surrounding the time of birth, from the 20th week of gestation to the 28th day of newborn life.

Group physiotherapy

Group physiotherapy is a type of physical treatment in which several patients engage in cooperative rehabilitative exercises and activities while being closely supervised by a physiotherapist.

Pregnancy:

Pregnancy is the term used to describe the period in which a fetus develops inside a woman's womb or uterus. Pregnancy usually lasts about 40 weeks, or just over 9 months, as measured from the last menstrual period to delivery. Healthcare providers refer to three segments of pregnancy, called trimesters.

The purpose of the present literature review is to overview the available published studies and articles on antenatal physiotherapy as well as the connection between the use of physiotherapy and pregnant women's improved physical health and psychological well-being. For instance, Physiotherapy interventions, such as strengthening the pelvic floor, correction of posture, and aerobic recommendations, have proven useful in relieving the discomfort related to pregnancy in the form of backache, pelvic girdle discomfort, and urinary incontinence (Chauhan et al. 2016, p. 45). Physiotherapy is a significant component of the management of psychosocial complaints like anxiety, stress, and depression against overall mental health. In more recent years, the importance of antenatal physiotherapy in antenatal care had been relatively increased (Prabha et al. 2019, p. 63).

With maternal morbidity becoming more intense, it is becoming increasingly vital to utilizing non-pharmacologic interventions such as physiotherapy to affect physical comfort and mental health. Physiotherapy sessions are crucial for enhancing maternal physical well-being (Khatri et al. 2014, p. 14). They are also a source of encouragement when conducted in groups, and this social support aids in reducing psychological tension further. It improves the consumer's ability to adhere to the courses. Despite substantial gaps and lack of follow-up studies, the literature complements each other. Further research in the application and impact of group antenatal physiotherapy is needed in urban slums low-resource settings because they may vary due to socioeconomic levels and quality of healthcare (Jamil et al. 2019, p. 89).

One of the most common physical discomforts experienced by pregnant women is back pain, which occurs in approximately 50-70% of all expectant mothers . The primary cause of back pain during pregnancy is the onset of physiological changes linked to the increased body mass, altered posture, and the growing uterus, which subtly displaces the center of weight. Thus, the lumbosacral complex and the entire spinal column are stressed, which results in pain and sensations of discomfort (Sheth et al. 2019, p. 62).

Moreover, there can be hormonal changes such as the production of relaxin and increased joint laxity which could lead to sacroiliac joints instability leading to lumbar back pain and pelvic girdle pain. Physiotherapy has proven to be very effective in treating back pain due to pregnancy. Eg, pelvic bridges, muscle-strengthening exercises and posture alignment exercises have been proven highly successful in pain relief. Pelvic rails work well because they help a woman to keep her pelvic shape which will relieve some of the weight from her back. Women who attended organized structured physiotherapy classes report less severe backpain than their control group. But they also require fewer painkillers, emphasizing that it's a health match for mother and child.

Evidence is uniform in suggesting that physiotherapy either alone or in combination with exercise is more effective than no intervention for patients with low back pain. In these women who had physio the feeling of wellbeing in life (during pregnancy), a more active moving forward with life, less pain and improved mobility with better move function experienced over time were rated to be better. The findings of these studies imply that physiotherapy can also be a key treatment option for back pain in pregnancy and should be employed as improper antenatal health care (Sajitha et al. 2018, p. 64).

The other lovely pregnancy symptom and slow and not very painful but still waits elsewhere in the uterus, it another one just put away. It is due in part to a number of physical factors, including hormonal changes that cause laxity in the articulations of the pelvis. As the body prepares for labour, the ligaments in your pelvis become more relaxed to allow a baby to pass through it and this causes pain and instability. The added weight of carrying your baby will place more stress on the pelvis to spread even further leading to pain in lower abdomen, hip and groin area” (Prabha et al. 2019, p. 63).

The physical therapy had been shown effective in reducing pelvic pain and stabilizing pelvis, particularly hemodynamic Kegel exercise and stretching techniques. Kegel exercises that activate the pelvic floor muscles are also widely used as a main non-pharmacological treatment option in order to decrease pelvic pain and promote better bladder control (Mbada et al. 2014, p. 112). These exercises have been demonstrated to promote the conservation of pelvic muscle tone, an important factor in pain reduction and the prevention of urinary incontinence (Jahan et al. 2023, p. 12).

Scientific report indicates that PFM exercise is effective in minimizing pelvic pain and enhancing the stabilization of pelvis. A study that found a statistically significant decrease in pelvic pain when women did physical therapy for their pelvis. The exercise participants reported feeling more comfortable in their bodies and craving physical activity, and less pain during activities of daily living. This indicates that pelvic floor muscle training is a part of physiotherapy treatment and should be included in the antenatal care (Rayjade et al. 2024, p. 15).

The urinary incontinence is other common symptom during pregnancy, especially in the second and third trimesters. High prevalence of this disorder is common in pregnant women and is mainly due to the effect of hormonal changes. Furthermore, factors such as increased bladder pressure due to gravid uterus and reduction of pelvic-floor muscles have significant impact on the development of UI (Khorasani et al. 2020, p. 74). Pelvic floor muscle training, including Kegel exercises, has been shown to be effective in treating urinary incontinence during pregnancy. Kegel exercises encourage the prevention of incontinence and enhance one's bladder control by strengthening the muscles around the pelvic floor (Kampen et al. 2015, p. 115). One study found that women who engaged in pelvic floor exercises regularly were 30% less likely to have symptoms of urinary incontinence in their third trimester masseter muscle pain relief when it comes to types of stretches and strength-training moves.

These exercises not only cure the incontinence but also control the severity of symptoms thus resulting in better maternal comfort and quality life (Woolhouse et al. 2014, p. 45).

Additional studies revealed that pelvic floor physiotherapy was similar in lowering urinary incontinence during pregnancy, moderate the ding well-being among mothers. The benefits gained from these physiotherapy interventions are significant, indicating the importance of pelvic floor training as an essential part of practicable antenatal physiotherapy to decrease incontinence and provide comfort throughout pregnancy (Gaur et al. 2015, p. 122).

Joint, leg and SI joint pain Pregnant women commonly complain of joint, leg and SI joint pain In addition to back and pelvic pain, many pregnant women experience

musculoskeletal problems such as joint pain in the extremities, stiffness, limited activity level or ring lock. These discomforts are often aggravated by position change, weight gain and hormonal influences stabilities of the joint (Prabha et al. 2019, p. 63). These problems may restrict mobility, decrease physical activity and prejudice a woman's capacity to perform activities of daily living, affecting her qol (Sanches et al. 2013).

Antenatal physiotherapy helps with these musculoskeletal problems through stretching and strengthening exercises selected to work on flexibility, movement, and muscle tone. There are also stretching exercises to address flexibility, especially in the lower back and legs as well as strengthening exercises designed to stabilize your core, pelvic muscles and lower limbs. These routines also help tone the body, improve posture and balance additional elements believed key to preventing more pain during pregnancy (Jamil et al. 2019, p. 89).

One study found that pelvic floor muscle function in the immediate postnatal period is significantly improved for women who participated in antenatal training to enhance their capacity to perform activities of daily living (walking, standing and sitting). Decreased musculoskeletal complaints led to a feeling of being more active and less passive in the pregnancy, which was good for health. These findings suggest that antenatal physiotherapy has a key role in musculoskeletal discomfort relief and physically health promotion for pregnant women (Khatri et al. 2014, p. 14).

Pregnancy is often a time of increased psychological distress, with anxiety being one of the most prevalent maternal mental health conditions. Studies show that about 20%-30% of pregnant women experience anxiety, and there are various reasons, such as craziness for childbirth, body image change and economic problems etc., on the stress level (Sheth et al. 2019, p. 62). High antenatal anxiety is associated with a number of short and long-term adverse health and developmental outcomes for both the expectant mother as well as the child, which include pre-term delivery, low birth weight, and increased risk for developing post-natal depression (Bjelica et al. 2018, p. 55).

In addition, in one study structured antenatal exercise programs involving moderate intensity aerobic exercise and muscle conditioning exercises reduced anxiety. Indeed, pregnant women engaged in these exercise programs claimed for better mood, less

stress and a greater sense of well-being (Chauhan et al. 2016, p. 45). Likewise, others studies show that pregnant women who did regular physiotherapy exercises especially in group classes, experienced a significant emotional well-being which shows the composite effect of physical and social support in managing stress (Richards et al. 2012, p. 35).

Antenatal depression is a significant public health problem due to the many varied severe consequences it potentially has for both the mother and fetus. Low birth weight, preterm birth, and labor difficulty are just some of the complications that can arise with pregnancy depression (Alghamdi et al. 2021, p. 23). It can also prevent the mum from looking after herself and preparing for motherhood's struggles. Depression can also predispose for postpartum depression, increasing the risk of maternal and fetal health (Sajitha et al. 2018, p. 64).

Antenatal physical therapy, specifically exercise intervention, has proven to be an effective option for treating depressive symptomatology. Positive chemical reactions Exercise causes a release of neurochemicals such as endorphins and serotonin, which is important to mood stability and emotional balance (Mbada et al. 2014 p. 112). Walking and swimming were highly effective for reducing depressive symptoms among the pregnant women. They are also health promoting in that they relieve fatigue, improve sleep quality and give a sense of confidence (Jahan et al. 2023, p. 12).

Furthermore, antenatal physiotherapy including physical exercise and psychological counseling was an important contributor to reduced depression levels among pregnant women. Physiotherapy intervention improved physical conditioning, assisted women to feel better and able to undertake on pregnancy-related demands. When physical discomforts were eased by the physiotherapy, women could experience more positive emotions⁶³ negatively again disqualifying or being relieved of certain sensations and then feeling a sense of relief or making them feel better emotionally: an example of the two-way relationship that was described to have on mental health during (Rayjade et al. 2024, p. 15).

The extent of physical and mental complaints during pregnancy represents a large burden of disease on quality of life. Women affected by musculoskeletal complaints,

for example back and pelvic pain, often also experience a lower quality of life with potentially an additional increased level of anxiety or depression. This link between physical health and emotional wellbeing illustrates the value of joined-up care during pregnancy (Khorasani et al. 2020, p. 74).

Antenatal physiotherapy This service offers a holistic approach to care for the pregnant woman ensuring her physical problems and psychological stresses and strains are kept to a minimum. By relieving back pain, pelvic pain and incontinence related problems, physiotherapy offers pregnant women the possibility to have their normal mobility restored, perform daily activities with ease as well as diminish emotional stress related to actual physical pain (Kampen et al. 2015, p. 115).

Pregnant women who attended antenatal physiotherapy had significantly better scores in quality of life. Mothers in the regular exercise group were less likely to have aches and pains, and felt better emotionally — two benefits which are particularly meaningful during pregnancy. Group physiotherapy interventions were also effective for both physical and mental health, with the influence of exercise and social support making it more straightforward that women seeking help feel empowered to manage any issues raised by pregnancy roles (Woolhouse et al. 2014, p. 45).

Social support is a strong coping strategy reference in anxiety, distress and pregnancy; the group environment in physiotherapy sessions may enable social support. Pregnancy is a time of emotional and physical vulnerability, emotional demands of coping with body dysfunction preparation for childbirth and psychological change, which can cause symptoms vulnerable to stress (Gaur et al. 2015, p. 12). Antenatal physiotherapy group quality, offers a "natural place" for pregnant women to talk about their experiences, provide emotional support to each other and shared concern although they have common bond does not feel isolate and worry (Sanches et al. 2013, p. 33).

We were also separated from our physio setting community which is part of that 'feel-good' medicine i.e Connecting Good for the soul. It has as a platform to express for women in the same situation and that are suffering from repeated mechanical failure, both physical and psychological. This shared experience isn't just a balm to the soul, it

makes women feel as if they and their experiences matter ones pregnant females often have difficulty believing could be relevant at this time.

when they may very well be lonely or suffering. Not feeling isolated and supporting the other women in the group also facilitate anxiety and stress management, which is associated with mental health, such as increased emotional wellbeing (Jamil et al. 2019, p. 89).

The nonevaluative functions of group physiotherapy do not apply to individual treatment. while individual therapy provides customized treatment, it may lack the social aspects of group sessions. “You’re in the group physio, you’ve got that peer support, which is so strong for mental health. Pregnant women are urged to keep connected A substantial 60% of pregnant woman in community settings may share fear, ask and learn from others’ experiences, thus forming a supportive group that affects mental health (Khatri et al. 2014, p. 14). Reduction of anxiety and depression Both of these outcomes are essential to relieve during pregnancy; hence, group physiotherapy becomes an important tool in improving mental health during pregnancy (Sheth et al. 2019, p. 62).

One of the key challenges in antenatal investigation have been limited to encouraging participation and adherence with exercises. There is evidence that physiotherapy in a group setting can result in increased motivation and adherence to exercises compared with an individual session (Bjelica et al. 2018, p. 55).

Peer and common goal-trust circle Inter-group, the community promoting an apropos of twisted positive reinforcement by colleagues encouraging them to attend sessions and do their exercises. This type of group-oriented model vastly improved the likelihood that prospective participants would stick with their participation in the program long enough to receive its benefits. In one study, group physiotherapy participants were more likely than individual exercisers to continue strengthening exercises following the program. The greater compliance by declared exercise programs may also favour mental health, considering that physical exercise helps to reduce the perception of stress, anxiety and depression (Chauhan et al. 2016, p. 45).

Shared support and feedback from others involved in the program gives women reasons to remain committed to health enhancement. Social, sociological motivational factors (e.g., inspirations to make friends, friendly rivalries), motivations of encouragement and comparison/sharing are encouragement such as social. Potent motivators instigating continued fitness activity and improvements in physical & mental health (Richards et al. 2012, p. 35).

Several arguments can be made in favour of group physiotherapy as opposed to individual physiotherapy, concerning mainly motivation, adherence and psychological support. That way, you're far more likely to wake up in time and go to a workout class at the gym if all you need to do is get dressed. Physical therapy in a group setting still remains with the highest attendance rate and participation rate of all exercise programs, largely because of group becomes a facilitator to adherence (Alghamdi et al. 2021, p. 16). 'We have discovered that when women come with their friends, 1–2 times a week, they get more attached because of the group support and it is also less isolating (Sajitha et al. 2018, p. 64).

Group-based physiotherapy offers a social context for women to be inspired and encouraged in performing activities. Common motivation is key for sustained involvement in the exercise program in these settings. On the other hand, individual physiotherapy provides a targeted care, it does not generally offer same level of peer support or motivation encountered in group sessions. This absence of positive social reinforcement can result in decreased exercise program adherence, especially when isolated or negatively motivated pregnant women (Prabha et al. 2019, p. 63).

As far as functionality and psychological benefit are concerned, so far investigations have revealed significantly better results when compared to personal or at home intervention. Women having group-based physiotherapy had more favourable functional effects of the treatment, in terms of physical status and pain, than women receiving individual physiotherapy. Group and there remained even improved psychological health at follow-up, since the sense of community, which fostered additional emotional support that individual sessions could not replicate (Mbada et al. 2014, p. 112).

The group form of physiotherapy is more efficient in decreasing stress and anxiety compared to individual therapy. Support and sharing of experiences and coping strategies enabling stress to be 'managed' by decreasing a sense of isolation that is most helpful in pregnancy (Jahan et al. 2023, p. 12).

There is a growing evidence base to support the advantages of antenatal physiotherapy, although many studies are from high-income countries or well-resourced urban areas. A major research gap remains in low-resource urban areas, like Dhaka, Bangladesh, where socio-economic and health system constraints might override the impact of physiotherapy interventions. Studies in developed countries frequently take for granted widespread availability of health care and antenatal programs, and pregnant women's confidence to attend regular physiotherapy appointments. However, in low-income countries like Bangladesh social-cultural issues (poverty, health service and facilities access) can hinder from the proper implementation of antenatal physiotherapy programs (Rayjade et al. 2024, p. 15).

Furthermore, they may have other challenges such as little knowledge and education and social stigma concerning PA during pregnancy that can also compromise the effect of physiotherapy interventions (Khorasani et al. 2020, p. 74).

Research is urgently needed to explore the specific barriers and needs of women in culturally understudied areas such as Bangladesh, where cultural, economic, and health situations vary markedly from those in high-income countries. These contextual differences may contribute to differences in approach and the acceptance of antenatal physiotherapy as part of standard care. For example, attitudes to pregnancy and exercise might prevent women from engaging in physiotherapy as a result further undermining the efficacy of interventions (Kampen et al. 2015, p. 115).

A further limitation in the current research is there are very few studies that have examined group antenatal physiotherapy when compared to individual or home based physiotherapy interventions. The majority of research to date has focused on the impact from individual physiotherapy programs and there is little focus on the benefits that can be gained through group settings. Group based exercise offers several advantages beyond simply access to a peer, including social support, motivation and community

(Woolhouse et al. 2014, p. 45). The role of group physiotherapy in the promotion of cohesion and shared experience is also a key factor contributing to psychological distress reduction and compliance with exercises. Nonetheless, advantages of group physiotherapy possibly especially in this urban setting where social and practical support networks can be limited adding to psychological distress during pregnancy have not been tested by research (Gaur et al. 2015, p. 90).

There is a lack of knowledge on group physiotherapy-based interventions which combine social support and physical exercise, for pregnant women in low resource urban settings. In these situations, women often do not have extended family networks or community structures for support and so the social benefits of group physiotherapy are even more important (Sanches et al. 2013, p. 55).

The literature highlights the importance of antenatal physiotherapy and its need as a physical and psychological therapy. Physiotherapy treatments involving aerobic exercise, pelvic floor exercises and strengthening activities have been demonstrated to reduce back and pelvic pain and urinary incontinence as well as stress, anxiety and depression in pregnancy (Richards et al. 2012, p. 35). Group physiotherapy also offers crucial social support thereby encouraging motivation and compliance to training as a result of improved mental health, and endeavors the physical well-being (Rayjade et al. 2024, p. 15).

3.1 Study design

The purpose of the study was to evaluate the outcome of antenatal group physiotherapy among pregnant women. A quantitative research design which was a Randomized Controlled Trial (RCT) was selected to conduct the study.

The study is an experiment between two subject designs. Group therapy was applied to the experimental group and Conventional physiotherapy only was applied to the control group.

A pre-test (before intervention) and post-test (after intervention) were administered with each subject of both groups to compare the outcome of the subject in the within-group and the between-group.

3.2 Study Area

Outdoor Physiotherapy Unit, OGSB hospital, Mirpur

3.3 Study period:

The study period was one year (June 2024 to July 2025).

3.4 Study population

The study population consisted of pregnant women who sought antenatal care services at OGSB Hospital. These individuals were enrolled based on their participation in routine antenatal visits, including those who were attending for regular check-ups, screenings, and other pregnancy-related medical assessments at the designated healthcare facilities. This population encompasses women at various stages of pregnancy, ranging from early to late gestation, who received standard antenatal care.

3.5 Sample size

Sample Size Formula:

$$n = \frac{2SD^2 \times \left(\frac{Z_\alpha}{2} + Z_\beta\right)^2}{d^2}$$

Given:

- $SD = 8.01$ (Richards et al., 2012)
- $d = 6.07$ (Richards et al., 2012)
- $\frac{Z_\alpha}{2} = 1.96$
- $Z_\beta = 0.84$

Substituting values:

$$\begin{aligned}n &= \frac{2 \times (8.01)^2 \times (1.96 + 0.84)^2}{(6.07)^2} \\&= \frac{2 \times 64.1601 \times (2.8)^2}{36.84} \\&= \frac{2 \times 64.1601 \times 7.84}{36.84} \\&= \frac{1006.02}{36.84} \\n &\approx 27.30 \approx 28\end{aligned}$$

3.6 Eligibility Criteria

3.6.1 Inclusion criteria

- Pregnant women with ≥ 18 years old (Smith et al. 2016).
- Pregnant women with 2nd and 3rd trimester (Johnson & Lee, 2017).
- Subjects who participated willingly and had interest
- Multigravida or Primigravida both were selected (Nkhata et al. 2015)

3.6.2 Exclusion criteria:

- Subjects who were medically unstable
- Pregnant women's age above 40 years was excluded (Sheth et al.,2019).

3.7 Data collection method and tools

Data was collected through face-to-face interviews with participants. Data was analyzed in Microsoft Office Excel 2010 using SPSS 20 version software program. The tools that were needed for the study were Consent paper, questionnaire, numeric rating scale, paper, pen, file, calculator, computer, and printer.

Questionnaire- A questionnaire is a method of collecting information whereby subjects answer a set of questions usually predefined by the researcher. The researcher used a questionnaire that includes structured questions including both open-ended and close-ended questions. An open-ended question asks the respondent to formulate his own answer, whereas a closed-ended question has the respondent pick an answer from a given number of options. Structured questions are always closed questions and are most frequently used in survey research design.

Numeric Rating Scale- a Numeric Rating Scale is an 11-point scale for patient self-reporting of pain. It is for adults and 10 years old or older.

0=No pain

1-3=Mild pain (ongoing, interfering little with ADLs)

4-6=Moderate pain (interferes significantly with ADLs)

7-10=Severe pain (disabling; unable to perform ADLs)

DASS-21 scale: Each question has a number 0, 1, 2, or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. The rating scale is as follows: 0 Did not apply to me at all 1 Applied to me to some degree, or some of the time 2 Applied to me to a considerable degree or a good part of the time 3 Applied to me very much or most of the time

Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, and lack of interest/involvement, anhedonia, and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable / over-reactive, and impatient. Scores for depression, anxiety, and stress are calculated by summing the scores for the relevant items.

3.8 Sampling Technique

A simple random sampling technique was utilized in this study to ensure impartial selection of participants and to improve the reliability of the results. The sampling universe was pregnant mothers who attended antenatal care in OGSB Hospital. Eligible subjects were assigned a participant identifier code after being screened against inclusion and exclusion criteria. These participants were then randomly assigned using computer-generated randomization to one of two groups: the experimental group (intervention designed to improve antenatal care) and the control group (standard antenatal care). This approach minimised selection bias, a feature that increased the likelihood of each eligible participant being allocated to either group, strengthening the robustness of study design.

3.9 Data Collection Procedure

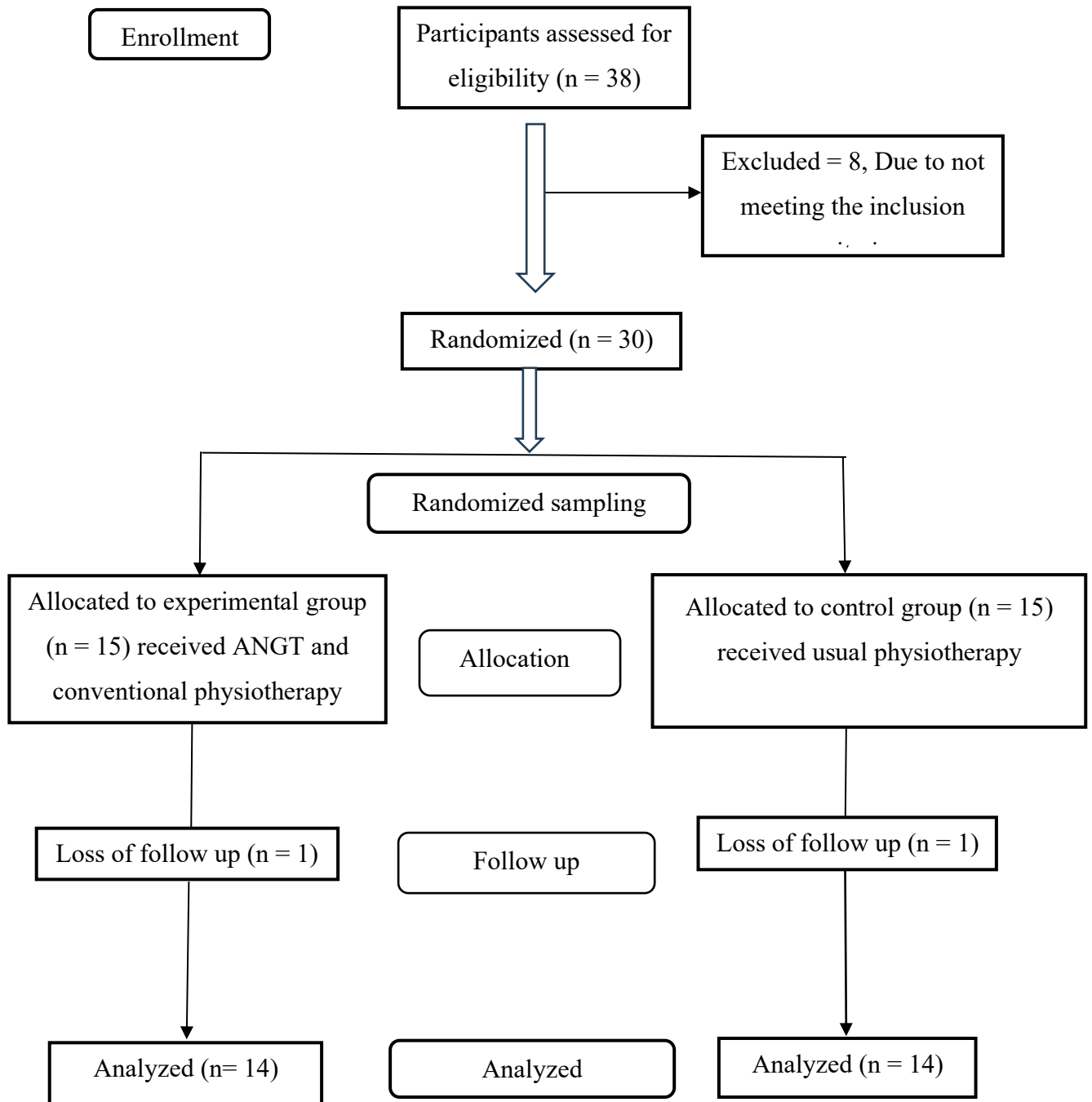
The information was obtained by structured interviews and standardized questionnaires with closed-ended responses. The adoption of a standardized questionnaire allowed the researcher to collect detailed information in an organized manner while maintaining

uniformity among all participants. A questionnaire was developed to collect sociodemographic information and experiences related to antenatal care. With closed-ended questions, the investigator facilitated clarity and reduced ambiguity regarding data collection, which helped enable a more targeted analysis. The structured nature of the questioning also reduced interviewer bias and made the data gathered more reliable, as an in-depth investigation was conducted into the participant's background and antenatal care experiences.

3.10 Level of Significance

We calculated 'p' value and came to know how relevant is the study. We took a p value of 0.05 as the extent to which statistical significance for health care research. Then the results are said to be significant if the p value is less than or equal to the significance level.

3.11 CONSORT (Consolidated Standards of Reporting Trials) flow chart:



Intervention Protocol for the (Antenatal Group Physiotherapy)

The antenatal physiotherapy treatment will be provided in a group setting supervised by a certified physiotherapist. The treatment will be structured to address both the physical and psychological needs of the participants, focusing on alleviating pain, stress, anxiety, and depression during pregnancy.

Frequency and Duration of Sessions

- **Frequency:** 3 sessions per week
- **Duration of each session:** 45-60 minutes
- **Duration of the treatment program:** 6 weeks (total of 18 sessions)

Treatment Components

The physiotherapy sessions will be conducted in groups with a maximum of 10-15 participants per group. The sessions will be conducted in a safe, supportive, and socially engaging environment to promote emotional support and shared experiences among the participants. The treatment will include the following components:

1. Warm-Up and Breathing Exercises (10 minutes)

- **Purpose:** To help participants relax and prepare their bodies for physical activity.
- **Exercises:** Diaphragmatic breathing, pelvic floor breathing, and relaxation techniques.
- **Frequency:** Daily practice during each session to aid in stress reduction (Santana et al.2022, p. 7).

2. Pelvic Floor Muscle Training (15 minutes)

- **Purpose:** Strengthening of the pelvic floor muscles to reduce the risk of urinary incontinence and improve muscle tone (Santana et al.2022, p. 7).
- **Exercises:** Kegel exercises, pelvic tilts, and squatting exercises.
- **Frequency:** Every session, with gradual progression in intensity.

3. Aerobic and Strengthening Exercises (20 minutes)

- **Purpose:** To improve overall fitness, reduce back pain, and alleviate physical discomfort.
 - **Exercises:**
 - Gentle aerobic exercises (walking, low-impact cardio).
 - Strengthening exercises for the legs, back, and arms (squats, calf raises, wall push-ups).
 - Stretching exercises targeting the lower back, legs, and pelvic region (hamstring stretch, hip flexor stretch, lower back stretches).
 - **Frequency:** Every session, progressing with intensity and duration as the participant adapts (Santana et al.2022, p. 7).
4. **Postural Education and Stretching (10 minutes)**
- **Purpose:** To educate participants on proper posture, alignment, and ergonomics during pregnancy, reducing strain on muscles and joints.
 - **Exercises:** Posture correction techniques and stretches for the neck, back, and shoulders.
 - **Frequency:** Every session, ensuring that participants are mindful of their body mechanics (Santana et al.2022, p. 7).
5. **Relaxation Techniques and Mental Well-Being (10 minutes)**
- **Purpose:** To manage anxiety, depression, and stress.
 - **Exercises:** Guided relaxation, progressive muscle relaxation, and mindfulness meditation.
 - **Frequency:** At the end of each session, helping participants manage stress and emotions (Santana et al.2022, p. 7).

Control Group Protocol (Standard Physiotherapy for Antenatal Care)

The control group will receive standard physiotherapy as part of routine antenatal care, focusing on maintaining maternal health and alleviating common pregnancy-related discomforts.

1. **Postural Education and Ergonomics:** Women will be taught proper posture to reduce back and pelvic pain and advised on ergonomics for daily activities like lifting and sitting.
2. **Stretching and Mobility:** Gentle stretching exercises (e.g., pelvic tilts, hamstring stretches) will be recommended to improve flexibility and reduce discomfort in areas like the back and legs.
3. **Strengthening Exercises:** Basic core strengthening (e.g., pelvic floor exercises, bridging) will be included to support the pelvic region and alleviate musculoskeletal discomforts.
4. **Breathing and Relaxation:** Deep breathing and relaxation techniques will be taught to help reduce anxiety, manage stress, and improve overall emotional well-being.
5. **Physical Activity Guidance:** Women will be encouraged to engage in low-impact activities like walking to maintain cardiovascular fitness and prevent excessive weight gain.
6. **Manual Therapy:** Light massage therapy and joint mobilizations may be provided to ease tension in muscles and improve joint mobility.

Obstetric & Gynecological society of bangladesh Hospital & Institute of Reproductive & Child Health (IRCH). (1972). Institutional profile: Treatment pattern followed at OGSB Hospital & IRCH, Mirpur. Dhaka: OGSB Hospital & IRCH.

3.12 Ethical consideration

In this study, it is imperative that they were strict followers to ethical guidelines. A formal project proposal was submitted to the Department of Physiotherapy, Saic College of Medical Science and Technology (SCMST), and approval based on Institutional Review Board (IRB) of SCMST had been given to conduct the study. This study is in conformity with the guidelines provided by the World Health Organization (WHO) and Bangladesh Medical Research Council (BMRC) and keeps the confidentiality of information from the participants intact at all times. The study area authorities of OGSB hospital gave permission to collect data. The aim and objectives of the study would be fully explained to participants before they are willing to participate. Each participant will be granted written consent and explained to process verbally. The information that will be given to the participants will be assured that it will be kept confidential, but only shared with the research supervisor. Participants will be told when they have a right to withdraw from the study without any repercussions. Participant names and addresses will be replaced with distinct participation numbers for reasons of anonymity, and participation numbers will be used in all notes and transcripts. The information gathered will be presented in presentation, seminar or paper in such a way that there is no identification of individuals or causing them harm. All participants will be assured their right to ask senior authorities about any issues and concerns surrounding the study. Therefore, the ethics standards followed in this study are particularly meant to protect welfare of participants as well as the process of the research at the same time.

The study included 28 pregnant women attending OGSB Hospital who participated in antenatal group physiotherapy. The aim was to evaluate the effect of group physiotherapy on pain and psychological health. Pain was measured using the NPRS and psychological outcomes using DASS-21. Results showed a significant reduction in pain and decrease in depression, anxiety, and stress scores after the intervention. Findings indicate that antenatal group physiotherapy is effective in improving maternal physical and mental well-being. Outcomes were presented using tables.

Table 1: Baseline characters of participants:

Variables	Mean \pm SD	Min	Max
Age	26.89 \pm 3.31	21.00	35.00
Height	5.2 \pm 0.6	4.10	5.7
Weight	64.17 \pm 5.15	55.00	73.00
BMI	23.83 \pm 4.55	18.69	27.56
Pain (NPRS)	6.39 \pm 1.16	5.00	9.00

The baseline characteristics of the participants revealed that the average age was 26.89 years (± 3.31), with a range from 21 to 35 years. The mean weight was 64.17 kg (± 5.15), with the participants' weight ranging between 55 and 73 kg. Regarding pain levels, as measured by the Numeric Pain Rating Scale (NPRS), the mean score was 6.39 (± 1.16), with values spanning from 5 to 9. These results provide a general overview of the participants' demographic and pain-related characteristics at the start of the study.

Table 2: Socio demographic information of participants:

4.1 Family type of participant:

Family type	Experimental N (%)	Control N (%)	Total N (%)
Nuclear	14 (100%)	13 (92.9%)	27 (96.4%)
Joint	0 (0%)	1 (7.1%)	1 (3.6%)

In the experimental group, all participants (100%) belonged to nuclear families, while in the control group, 13 participants (92.9%) were from nuclear families and 1 participant (7.1%) was from a joint family. Overall, most participants (96.4%) lived in nuclear families.

4.2 Living Area of participant:

Living Area	Experimental N (%)	Control N (%)	Total N (%)
Urban	14 (100%)	14 (100%)	28 (100%)
Rural	0 (0%)	0 (0%)	0 (0%)

All participants in both the experimental and control groups (100%) lived in urban areas. No participants were from rural areas.

4.3 Educational status of participant:

Educational status	Experimental N (%)	Control N (%)	Total N (%)
Illiterate	0 (0%)	0 (0%)	0 (0%)
Primary	1 (7.1%)	0 (0%)	1 (3.8%)

Secondary	0 (0%)	4 (28.6%)	4 (14.3%)
Higher secondary	2 (14.3%)	3 (21.4%)	5 (17.3%)
Honors	9 (64.3%)	7 (50.0%)	16 (57.1%)
Masters	2 (14.3%)	0 (0%)	2 (7.1%)

In the experimental group, most participants (64.3%) had an Honors degree, followed by higher secondary (14.3%) and Masters (14.3%), while 7.1% had primary education. In the control group, 50% had an Honors degree, 21.4% had higher secondary, and 28.6% had secondary education. Overall, the majority of participants (57.1%) held an Honors degree.

4.4 Occupation of participant:

Occupation	Experimental N (%)	Control N (%)	Total N (%)
Housewife	4 (28.6%)	9 (64.3%)	13 (46.4%)
Office job	9 (64.3%)	5 (35.7%)	14 (50.0%)
Athlete	0 (0%)	0 (0%)	0 (0%)
Others	1 (7.1%)	0 (0%)	1 (3.6%)

In the experimental group, most participants (64.3%) were engaged in office jobs, 28.6% were housewives, and 7.1% had other occupations. In the control group, the majority (64.3%) were housewives, while 35.7% had office jobs. Overall, half of the participants (50%) were in office jobs and 46.4% were housewives.

4.5 Comorbidities of participant:

Comorbidities	Experimental N (%)	Control N (%)	Total N (%)
Heart disease	0 (0%)	1 (7.1%)	1 (3.6%)
HTN	1 (7.1%)	5 (35.7%)	6 (21.4%)
Diabetes	4 (28.6%)	6 (42.9%)	10 (35.7%)
Others	9 (64.3%)	2 (14.3%)	11 (39.3%)

In the experimental group, most participants (64.3%) had other comorbidities, followed by diabetes (28.6%) and hypertension (7.1%). In the control group, diabetes (42.9%) and hypertension (35.7%) were most common, with one participant (7.1%) having heart disease. Overall, other comorbidities were present in 39.3% of participants, diabetes in 35.7%, and hypertension in 21.4%.

4.6 Number of pregnancies of participant:

Number of pregnancies	Experimental N (%)	Control N (%)	Total N (%)
First	10 (71.4%)	5 (35.7%)	15 (53.6%)
Second	4 (28.6%)	7 (50.0%)	11 (39.3%)
Third	0 (0%)	2 (14.3%)	2 (7.1%)
More than three	0 (0%)	0 (0%)	0 (0%)

In the experimental group, most participants (71.4%) were experiencing their first pregnancy, while 28.6% were in their second pregnancy. In the control group, 50% were in their second pregnancy, 35.7% in their first, and 14.3% in their third pregnancy. Overall, the majority of participants (53.6%) were first-time pregnant women.

4.7 Current trimester of participant:

Current trimester	Experimental N (%)	Control N (%)	Total N (%)
First	0 (0.0%)	1 (7.1%)	1 (3.6%)
Second	7 (50.0%)	8 (57.1%)	15 (53.6%)
Third	7 (50.0%)	5 (35.7%)	12 (42.9%)

In the experimental group, 50% of participants were in the second trimester and 50% in the third trimester. In the control group, 57.1% were in the second trimester, 35.7% in the third trimester, and 7.1% in the first trimester. Overall, most participants (53.6%) were in the second trimester.

4.8 Presence of back pain of participant:

Presence of back pain	Experimental N (%)	Control N (%)	Total N (%)
Yes	14 (100%)	14 (100%)	28 (100%)
No	0 (0%)	0 (0%)	0 (0%)

All participants in both the experimental and control groups (100%) reported experiencing back pain. No participants were without back pain.

4.9 Type of pain of participant:

Type of pain	Experimental N (%)	Control N (%)	Total N (%)
Intermittent	7 (50%)	6 (42.9%)	13 (46.4%)
Constant	7 (50%)	8 (57.1%)	14 (50.0%)

In the experimental group, 50% of participants experienced intermittent pain and 50% experienced constant pain. In the control group, 42.9% reported intermittent pain, while 57.1% reported constant pain. Overall, half of the participants (50%) experienced constant pain and 46.4% experienced intermittent pain.

4.10 Resting position of participant:

Resting position	Experimental N (%)	Control N (%)	Total N (%)
Sitting	2 (14.3%)	3 (21.4%)	5 (17.9%)
Standing	12 (85.7%)	1 (7.1%)	1 (3.6%)
Lying	0 (0%)	10 (71.4%)	22 (78.6%)

In the experimental group, most participants (85.7%) preferred resting in a standing position, while 14.3% preferred sitting. In the control group, 71.4% preferred lying, 21.4% preferred sitting, and 7.1% preferred standing. Overall, the majority of participants (78.6%) rested in a lying position.

4.11 Pain disturbance of participant:

Pain disturbance	Experimental N (%)	Control N (%)	Total N (%)
Yes	14 (100%)	8 (57.1%)	22 (78.6%)
No	0 (0%)	6 (42.9%)	6 (21.4%)

In the experimental group, all participants (100%) reported that pain disturbed their daily activities, while in the control group, 57.1% reported pain disturbance and 42.9% did not. Overall, 78.6% of participants experienced pain-related disturbance.

4.12 Worried about the unborn child of participant:

Worried about the unborn child	Experimental N (%)	Control N (%)	Total N (%)
Yes	2 (14.3%)	3 (21.4%)	5 (17.9%)
No	12 (85.7%)	11 (78.6%)	23 (82.1%)

In the experimental group, 14.3% of participants were worried about their unborn child, while 85.7% were not. In the control group, 21.4% reported worry and 78.6% did not. Overall, most participants (82.1%) were not worried about their unborn child.

Table 3: Description of Pain, Depression, Anxiety, and Stress Before and After Intervention

Variables	Experimental (Mean ± SD)	Experimental (Median)	Control (Mean ± SD)	Control (Median)
NPRS				
Before	6.64 ± 1.15	6.50	6.14 ± 1.16	6.00
After	3.21 ± 0.89	3.00	3.21 ± 0.69	3.00
Depression				
Before	21.92 ± 6.15	22.50	19.57 ± 4.50	19.50
After	9.57 ± 1.55	9.50	11.14 ± 2.03	11.00
Anxiety				
Before	13.92 ± 1.94	14.00	13.92 ± 2.67	14.00
After	8.85 ± 1.65	9.00	10.92 ± 1.73	11.00
Stress				
Before	20.35 ± 3.45	20.00	20.28 ± 6.31	18.00
After	14.14 ± 2.10	14.00	12.21 ± 2.11	12.00

The results show significant improvements in pain, depression, anxiety, and stress levels after the intervention for both the experimental and control groups. For the experimental group, NPRS pain scores reduced from 6.64 ± 1.15 to 3.21 ± 0.89, depression from 21.92 ± 6.15 to 9.57 ± 1.55, anxiety from 13.92 ± 1.94 to 8.85 ± 1.65, and stress from 20.35 ± 3.45 to 14.14 ± 2.10. In comparison, the control group showed smaller reductions: NPRS pain decreased from 6.14 ± 1.16 to 3.21 ± 0.69, depression from 19.57 ± 4.50 to 11.14 ± 2.03, anxiety from 13.92 ± 2.67 to 10.92 ± 1.73, and stress from 20.28 ± 6.31 to 12.21 ± 2.11. Both groups showed improvement, but the experimental group exhibited more pronounced changes across all variables.

Table 4: Mann-Whitney U test of Depression Between Groups after intervention:

Variable	Experimental	Control	<i>U</i>	<i>p</i> -value
	Mean Rank			
Depression	11.43	17.57	55.000	0.045*

(* significant <0.05)

Depression (Table 4):

The mean rank for depression scores was 11.43 in the experimental group and 17.57 in the control group after the intervention. The Mann–Whitney U test yielded a value of $U = 55.000$, with a p -value of 0.045, indicating a statistically significant difference ($p < 0.05$). This result suggests that participants in the experimental group experienced significantly lower levels of depression compared to the control group after the intervention.

Table 5: Mann-Whitney U test of Anxiety Between Groups after intervention:

Variable	Experimental	Control	<i>U</i>	<i>p</i> -value
	Mean Rank			
Anxiety	10.25	18.75	38.500	0.006*

(* significant <0.05)

Anxiety (Table 5):

For anxiety, the experimental group had a mean rank of 10.25, while the control group had a higher mean rank of 18.75. The Mann–Whitney U test produced $U = 38.500$ with a *p*-value of 0.006, showing a highly significant difference ($p < 0.05$). This indicates that the experimental group reported significantly lower anxiety levels than the control group following the intervention.

Table 6: Mann-Whitney U test of Stress Between Groups after intervention:

Variable	Experimental	Control	<i>U</i>	<i>p</i> -value
	Mean Rank			
Stress	17.93	11.07	50.000	0.024*

(* significant <0.05)

Stress (Table 6):

In the case of stress, the trend was reversed. The experimental group recorded a higher mean rank (17.93) compared to the control group (11.07). The test result was $U = 50.000$, with a p -value of 0.024, demonstrating a significant difference ($p < 0.05$). This means that the control group exhibited lower stress levels than the experimental group after the intervention.

Table 7: Wilcoxon signed rank test of Depression among the experimental group:

Posttest- Pretest Depression scores	N	Means Rank	Sum of Ranks	Wilcoxon signed rank test based on Z rank	P-Value
Negative Ranks	14	7.50	105.00	-3.303	0.001*
Positive Ranks	0	.00	.00		
Ties	0				
Total	14				

(* significant <0.05)

Depression (Table 7):

All 14 participants demonstrated a reduction in depression scores from pretest to posttest, with no positive ranks or ties. The mean rank for negative differences was 7.50, yielding a sum of ranks of 105.00. The test statistic produced a $Z = -3.303$, with a $p\text{-value} = 0.001$, indicating a highly significant reduction in depression ($p < 0.05$)

Table 8: Wilcoxon signed rank test of Anxiety among the experimental group:

Posttest- Pretest Anxiety scores	N	Means Rank	Sum of Ranks	Wilcoxon signed rank test based on Z rank	P-Value
Negative Ranks	14	7.50	105.00	-3.330	0.001*
Positive Ranks	0	.00	.00		
Ties	0				
Total	14				

(* significant <0.05)

Anxiety (Table 8):

Similarly, all 14 participants reported lower anxiety levels post-intervention. Negative ranks carried a mean of 7.50 and a total rank sum of 105.00. The test showed $Z = -3.330$ with $p = 0.001$, confirming a statistically significant decrease in anxiety ($p < 0.05$).

Table 9: Wilcoxon signed rank test of Stress among the experimental group:

Posttest- Pretest Stress scores	N	Means Rank	Sum of Ranks	Wilcoxon signed rank test based on Z rank	P-Value
Negative Ranks	14	7.50	105.00	-3.316	0.001*
Positive Ranks	0	.00	.00		
Ties	0				
Total	14				

(* significant <0.05)

Stress (Table 9):

Post-intervention stress scores also decreased consistently across all 14 participants, with no positive ranks or ties. The mean negative rank was 7.50, and the sum of ranks was 105.00. The Wilcoxon test result was $Z = -3.316$, with $p = 0.001$, again signifying a significant reduction in stress levels ($p < 0.05$).

Table 10: Wilcoxon signed rank test of Depression among the control group:

Posttest- Pretest Depression scores	N	Means Rank	Sum of Ranks	Wilcoxon signed rank test based on Z rank	P-Value
Negative Ranks	14	7.50	105.00	-3.298	0.001*
Positive Ranks	0	.00	.00		
Ties	0				
Total	14				

(* significant <0.05)

Depression (Table 10):

As with the experimental group, all 14 participants demonstrated lower depression scores posttest, with negative ranks showing a mean of 7.50 and a total of 105.00. The test revealed $Z = -3.298$ with $p = 0.001$, signifying a statistically significant reduction in depression ($p < 0.05$).

Table 11: Wilcoxon signed rank test of Anxiety among the control group:

Posttest- Pretest Anxiety scores	N	Means Rank	Sum of Ranks	Wilcoxon signed rank test based on Z rank	P-Value
Negative Ranks	10	6.50	65.00	-2.862	0.004*
Positive Ranks	1	1.00	1.00		
Ties	3				
Total	14				

(* significant <0.05)

Anxiety (Table 11):

Anxiety changes were less uniform in the control group compared to the experimental group. While 10 participants showed decreased anxiety, 1 participant showed increased anxiety, and 3 participants recorded no change. The mean rank of negative changes was 6.50 with a sum of 65.00, while the positive rank sum was 1.00. The Wilcoxon test produced $Z = -2.862$, with $p = 0.004$, reflecting a significant reduction in anxiety, though with some variability.

Table 12: Wilcoxon signed rank test of Stress among the control group:

Posttest- Pretest Stress scores	N	Means Rank	Sum of Ranks	Wilcoxon signed rank test based on Z rank	P-Value
Negative Ranks	13	7.88	102.50	-3.147	0.002*
Positive Ranks	1	2.50	2.50		
Ties	0				
Total	14				

(* significant <0.05)

Stress (Table 12):

Stress scores decreased for 13 participants, increased for 1, and showed no ties. The mean rank of negative differences was 7.88, with a total of 102.50. Positive ranks had a mean of 2.50 and a sum of 2.50. The Wilcoxon test revealed $Z = -3.147$ with $p = 0.002$, again indicating a significant reduction in stress.

Discussion

This study set out to assess the outcome of antenatal group physiotherapy on pain, depression, anxiety, and stress among pregnant women attending OGSB Hospital. Both experimental and control groups demonstrated post-intervention improvements across all outcome variables; however, the magnitude and consistency of these improvements differed between groups. Specifically, the experimental group showed greater reductions in depression and anxiety, while the control group recorded lower stress scores after the intervention. Pain decreased substantially in both groups, reflecting the combined influence of physiotherapy and general antenatal care.

Pain reduction was a major outcome, with both groups showing similar improvements. The experimental group's NPRS score fell from 6.64 ± 1.15 to 3.21 ± 0.89 , while the control group's score decreased from 6.14 ± 1.16 to 3.21 ± 0.69 . These findings are consistent with Haakstad and Bo (2011, p. 854), who reported that exercise interventions during pregnancy alleviated musculoskeletal discomfort and improved general well-being. (Coll et al. 2010, p. 379) also identified that antenatal physiotherapy enhances women's self-awareness and provides strategies for managing pregnancy-related pain.

The similarity in pain reduction across groups suggests that factors beyond physiotherapy such as antenatal monitoring, posture advice, and routine education may contribute significantly. Indeed, (Stafne et al. 2012, p. 68) highlighted that even light-to-moderate activity during pregnancy improves functional mobility and reduces perceived pain levels. Thus, while physiotherapy may accelerate or consolidate these improvements, the effect of general antenatal care should not be underestimated.

The experimental group showed a marked decrease in depression scores, reducing from 21.92 ± 6.15 to 9.57 ± 1.55 , compared to the control group's reduction from 19.57 ± 4.50 to 11.14 ± 2.03 . A Mann–Whitney U test confirmed significantly lower depression levels in the experimental group post-intervention ($U = 55.000$, $p = 0.045$). This result is in line with (Daley et al. 2015, p. 59), who demonstrated that structured antenatal

exercise reduces depression more effectively than routine care. Similarly, (Coll et al. 2010, p. 382) emphasized that physical activity in pregnancy mitigates mood disorders, contributing to improved quality of life.

The larger effect in the experimental group may be attributed to the structured physiotherapy sessions, which provided both physical relief and psychological stimulation. Exercise increases endorphin release and serotonin activity, which are strongly linked to mood regulation (Daley et al., 2015, p. 61). Furthermore, group physiotherapy settings may foster a sense of belonging and peer support, which (Songøygard et al. 2012, p. 65) identified as important in protecting against antenatal depression.

The reductions in anxiety were also more pronounced in the experimental group, which decreased from 13.92 ± 1.94 to 8.85 ± 1.65 , compared to the control group's reduction from 13.92 ± 2.67 to 10.92 ± 1.73 . The Mann–Whitney U test showed significant between-group differences ($U = 38.500$, $p = 0.006$). These findings align with (Goodman et al. 2014, p. 375), who demonstrated that structured, activity-based interventions particularly those involving mindfulness and physical activity alleviate antenatal anxiety symptoms.

Interestingly, all 14 participants in the experimental group showed anxiety reduction, whereas the control group presented variability: 10 improved, 1 worsened, and 3 showed no change. This pattern suggests that structured physiotherapy produces more consistent effects than general antenatal care alone. Group participation may explain this uniform improvement, as peer interaction helps normalize experiences of pregnancy-related worry, thereby reducing anxiety (Songøygard et al. 2012, p. 66).

The stress outcomes diverged from expectations. The experimental group improved from 20.35 ± 3.45 to 14.14 ± 2.10 , while the control group improved more sharply, from 20.28 ± 6.31 to 12.21 ± 2.11 . The Mann–Whitney U test revealed that the control group reported significantly lower stress scores after intervention ($U = 50.000$, $p = 0.024$). This contrasts with (Rakhshani et al. 2012, p. 336), who found greater reductions in stress among women undergoing yoga and physiotherapy interventions.

Several factors may explain this unexpected finding. Firstly, pain disturbance was universal in the experimental group (100%), compared to 57.1% in the control group, which likely sustained higher stress levels despite reductions in depression and anxiety. Secondly, resting positions differed markedly: 85.7% of the experimental group preferred standing, while 71.4% of the control group adopted lying positions. Research by (Gjestland et al. 2013, p. 171) suggests that resting posture influences stress recovery, with lying positions promoting physiological relaxation more effectively than standing. This lifestyle factor may have disproportionately benefitted the control group.

It is also possible that the structured physiotherapy sessions, while effective at reducing depression and anxiety, imposed additional time demands and physical exertion that some women perceived as stressful. (Goodman et al. 2014, p. 376) cautioned that intervention intensity must be carefully balanced, as excessive or demanding regimens may unintentionally elevate stress in certain subgroups of pregnant women.

The sociodemographic data provide further nuance. Both groups were similar in education and living area, but comorbidities such as hypertension and diabetes were more prevalent in the control group. Despite this, the control group reported lower stress post-intervention, which suggests that factors other than medical conditions may have influenced stress outcomes. The experimental group was dominated by first-time mothers (71.4%), who often experience greater uncertainty and emotional burden, which could explain their higher residual stress compared to the multiparous women in the control group (Chauhan et al. 2016, p. 45).

Overall, the findings affirm that antenatal physiotherapy is an effective intervention for reducing pain, depression, and anxiety, consistent with international literature. However, the stress results highlight that interventions may need tailoring: first-time mothers, or those with persistent pain disturbance, may require additional stress-management strategies such as mindfulness, breathing exercises, or psychosocial counselling in tandem with physiotherapy.

The limitations of this study include:

This study has several limitations that should be acknowledged when interpreting the findings. First, the relatively small sample size of 28 participants, divided evenly between the experimental and control groups, may not be sufficient to generalize the results to a broader population, as a larger sample could enhance the robustness and reliability of the outcomes. Second, the research was geographically limited to Dhaka City, and therefore the results may not be applicable to rural settings or other regions with different socioeconomic and cultural contexts. Third, despite employing simple random sampling, the study only included pregnant women from specific hospitals (BRB and OGSB), which may have introduced selection bias by excluding women who seek antenatal care elsewhere or lack access to healthcare facilities. Moreover, the sample displayed limited diversity, as most participants came from nuclear families and urban areas, potentially restricting the applicability of findings to populations with more varied socio-cultural backgrounds. Another limitation is the short-term focus of the study, as outcomes were measured immediately after the intervention, leaving the long-term effects of antenatal group physiotherapy on pain, stress, anxiety, and depression unexplored. Additionally, reliance on self-reported data may have introduced response bias, with participants possibly providing socially desirable or inaccurate responses. Moreover, the potential contribution of comorbidities should be taken into account; indeed, patients in the control group had a higher prevalence of hypertension and diabetes, which may have influenced outcome although other concomitant illnesses were not completely analyzed. Third, the lack of blinding to participants and researchers creates potential risk of bias in both reporting and interpreting, possibly affecting the overall conclusions of the study.

The objective of this study was to investigate the effectiveness of antenatal group physiotherapy on reducing psychological distress, (depression, anxiety and stress) amongst pregnant women who attended OGSB Hospital. The findings of this trial show that antenatal physiotherapy is an effective intervention as significant differences were observed in the experimental group which received the physiotherapy intervention and the control group who were given a standard antenatal care.

Results demonstrate significant decrease in depression, anxiety and stress level at post intervention state of the experimental group following physiotherapy. The pre-intervention depression scores of the experimental group were significantly higher than those after intervention, indicating that physiotherapy had a beneficial effect on alleviating depressive symptoms. Similarly, the levels of anxiety and stress were improved significantly after the intervention in both groups, but there was also a more significant improvement observed in the experimental group than control. These results point to the importance of addressing psychological health antenatally and antenatal physiotherapy may be an effective way of ensuring maternal mental health.

Its focus on the psychosocial aspects of antenatal physiotherapy is one of its key strengths and a much-needed research area that goes largely ignored in more traditional models of antenatal care which are heavily weighted towards physical health. Antenatal physiotherapy offers holistic care as it aims at the physical and psychological aspects of a patient through this strategy. This can be seen as an important step forward in bringing the focus of antenatal care into line with mental health being given equal prominence to physical health.

In addition the design of the study with a control group, informs on what effect group physiotherapy has compared to standard antenatal care. The clinical and statistical differences between groups for the psychological end points suggest that antenatal physiotherapy is better than conventional antenatal care at decreasing distress. This shows that physiotherapy services provided throughout antenatal care would be an integral part of the antenatal program for better maternal health in general.

Sociodemographic variables of the participants, such as education, occupation and pregnancy history were not in the scope of this study but might have created a context to interpret differences in women's needs. Furthermore, the high number of primiparas in the experimental group supports the value of antenatal physiotherapy, as first pregnancies are usually linked to higher anxiety and stress.

All subjects had also reported having back pain, a common symptom associated with pregnancy. While physiotherapy alleviated some of the physical symptoms, it enhanced psychological functioning, thus showing that addressing physical health can have mental health benefits. This supports the notion that holistic physical and psychological health was capable of being increased at once through comprehensive intervention measures during pregnancy.

In conclusion, the results obtained in the present study emphasize the importance of integrating antenatal physiotherapy into routine antenatal care. The significant decrease in depression, anxiety and stress among the experimental group observed is an indication that physiotherapy encompasses much more than physical healing and is an important component in preserving psychological health of pregnant women. Due to the promising results, antenatal physiotherapy should be implemented as a part of standard care during pregnancy and further studies should follow focusing on long-term effects and transferability on other women's cultural and healthcare context.

Recommendation

Future antenatal group physiotherapy trials should take into account a number of key issues in order to enhance the evidence base and improve generalizability of findings. Sample size is very important as, the more patients one has, the stronger your statistical results will be and also there would be higher precision and a chance to detect smaller differences between subgroups. It will allow for better understanding whether effects of physiotherapy are generalizable to all context or not through inclusion such as rural and urban, low and high socio-economic status. Long-term follow-up may further examine these effects of antenatal physiotherapy on pain, stress, anxiety and depression to reveal how enduring the benefits are. Further, more attention needs to be paid to assessing the contribution of comorbidities such as hypertension, diabetes and cardiovascular disease, which could contribute to maternal outcome and the requirement for tailored intervention. Finally, future studies could broaden the scope by comparing group-based physiotherapy with individual, home-based, and hybrid models of care, offering valuable evidence on which approaches are most effective in enhancing maternal well-being.

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Appendix- A

SCMST-BPT/IRB/06-23/43

To

Kakoli Akter Ripa

4th Year Student of B.Sc. in Physiotherapy

Session: 2018-2019, Reg No: 10458

SAIC College of Medical Science & Technology (SCMST)

Mirpur-14, Dhaka-1216, Bangladesh

Subject: Approval of the thesis proposal "Outcome of Antenatal Group Physiotherapy Treatment among the Pregnant Women Attended in OGSB Hospital" by ethics committee.

Dear Kakoli Akter Ripa,

Congratulations.

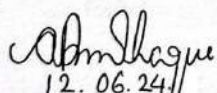
The Institutional Review Board (IRB) of SCMST has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the principal investigator. The following documents have been reviewed and approved:

Sl. No.	Name of the Documents
1	Dissertation Proposal
2	Questionnaire (English version)
3	Information sheet & consent form.

The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 09.00 AM on 28th September 2023 at SCMST.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring during the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,



Dr. Abul Kasem Mohammad Enamul Haque

Principal, SCMST & Chairman, Institutional Review Board (IRB)

SAIC College of Medical Science & Technology (SCMST)

Mirpur-14, Dhaka-1216, Bangladesh

Appendix- B

9th June, 2024

To
The Director,
Obstetrical and Gynecological Society of Bangladesh (OGSB)
Mirpur 13, Dhaka-1216

Subject: Prayer for permission to collect data to conduct a research project.

Sir,

With due respect and humble submission to state that I am a student of B.Sc. in Physiotherapy at SAIC College of Medical Science and Technology (SCMST). As a part of our course curriculum, we have to conduct a research project for the partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. My research title is "Outcome of Antenatal Group Physiotherapy Treatment among the Pregnant Women Attended in OGSB Hospital" and the aim of to find out the outcome of antenatal group physiotherapy on pregnant women. This is a RCT research under the supervision of Dr. Mohammad Habibur Rahman, Assistant Professor Physiotherapy, SST (BOU). I want to collect data from the Obstetrical and Gynecological Society of Bangladesh (OGSB). So, I need your permission to collect data and ensure that the study will not be harmful for participants.

So, I, therefore, pray and hope that you would be kind enough to give permission for data collection that will help me to complete my study.

Yours Faithfully

Kakoli Akter Ripa.
Kakoli Akter Ripa
Student of 4th Year B.Sc. in Physiotherapy
Session: 2018-2019 Reg: 10458
SCMST, Mirpur-14, Dhaka-1216, Bangladesh

permitted
6.25
Big Gen (Retd) Dr. Md. Sajid Karim
Director
OGSB Hospital & IRCH

Appendix- C

Questionnaire Bangla and English

Consent Form

Please read this carefully before participation

Assalamu Alaikum!

I am Kakoli Akter Ripa, a student of Saic College of Medical Science and Technology, 4th year (Session: 2018–19). I am conducting a study titled: “Outcome of Antenatal Group Physiotherapy Treatment among the Pregnant Women Attended in OGSB Hospital" Through this research, I want to assess the effectiveness of group counseling among pregnant women.

If you agree to participate, I will collect some information regarding your socio-demographic profile, medical history, pregnancy condition, and mental health. Participation is entirely voluntary, and you may withdraw at any time. All the information you provide will be kept confidential and your name will not be used in any publication.

If you have any questions, feel free to contact me or the supervisor of the study.

Do you agree to participate?

Yes No

Signature of the participant:

Date:

Signature of the interviewer:

Date:

Part 1: Personal Information

1.1 ID Number:

1.2 Date of Interview:

1.3 Participant's Name:

1.4 Age:

1.5 Address:

Village:

Union:

Upazila:

District:

1.6 Mobile Number:

Part 2: Socio-Demographic and Economic Information

(Put a tick (✓) on the appropriate answer)

No.	Question	Answer
2.1	Sex	<input type="checkbox"/> Female
2.2	Type of Family	<input type="checkbox"/> Nuclear <input type="checkbox"/> Joint
2.3	Residence	<input type="checkbox"/> Urban <input type="checkbox"/> Rural
2.4	Education Level	<input type="checkbox"/> Illiterate <input type="checkbox"/> Primary <input type="checkbox"/> Secondary <input type="checkbox"/> Higher Secondary <input type="checkbox"/> Graduate <input type="checkbox"/> Postgraduate
2.5	Occupation	<input type="checkbox"/> Housewife <input type="checkbox"/> Service Holder <input type="checkbox"/> Business <input type="checkbox"/> Others
2.6	Number of Family Members	_____

Part 3: Medical Information

3.1 Height: _____ cm

3.2 Weight: _____ kg

3.3 Do you have any chronic illness?

Heart Disease Hypertension Diabetes Others

Part 4: Pregnancy-Related Information

(Put a tick (✓) on the appropriate answer)

No.	Question	Options
4.1	Which pregnancy is this for you?	<input type="checkbox"/> First <input type="checkbox"/> Second <input type="checkbox"/> Third <input type="checkbox"/> More than three
4.2	What is your current trimester?	<input type="checkbox"/> First (1–3 months) <input type="checkbox"/> Second (4–6 months) <input type="checkbox"/> Third (7–9 months)
4.3	Have you participated in any antenatal class before?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.4	If yes, how many times?	<input type="checkbox"/> Occasionally <input type="checkbox"/> Regularly
4.5	At what time of day do you feel most tired?	<input type="checkbox"/> Morning <input type="checkbox"/> Afternoon <input type="checkbox"/> Evening
4.6	Does this fatigue interfere with daily activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.7	Are you receiving any physiotherapy for this?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.8	Are you worried about your baby's health?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.9	Are you worried about financial matters after birth?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.10	Is anyone in the family supporting you during pregnancy?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.11	Are you facing sleep disturbances or nightmares due to pregnancy?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Do you do anything to reduce mental stress
4.12 (e.g., meditation, exercise, listening to music, Yes No
spending time with family)?

Section 5: DASS-21 (Depression, Anxiety, Stress Scale)

Instructions:

Over the past week, indicate how much each statement applied to you.

(0 = Did not apply at all, 1 = Applied to some degree, 2 = Applied a good part of the time, 3 = Applied most of the time)

No.	Statement	0	1	2	3
1	I found it hard to wind down.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	I was aware of dryness in my mouth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	I couldn't experience any positive feeling at all.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	I found it difficult to work up the initiative to do things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	I tended to over-react to situations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	I experienced trembling (e.g., in the hands).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	I felt I was using a lot of nervous energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	I was worried about situations in which I might panic and make a fool of myself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	I felt that I had nothing to look forward to.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	I felt agitated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	I found it difficult to relax.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	I felt down-hearted and blue.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	I was intolerant of anything that kept me from getting on with what I was doing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	I felt I was close to panic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

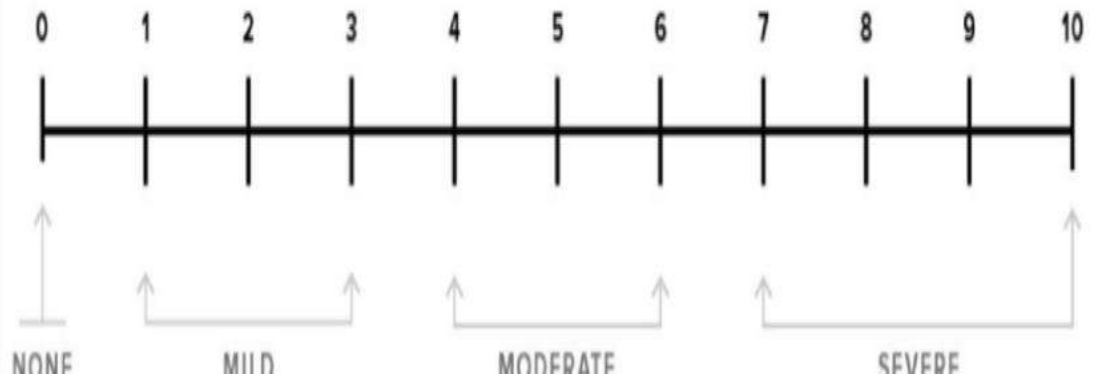
- 16 I was unable to become enthusiastic about anything.
- 17 I felt I wasn't worth much as a person.
- 18 I felt that I was rather touchy.
- 19 I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat).
- 20 I felt scared without any good reason.
- 21 I felt that life was meaningless.
-

Final DASS Evaluation

What was the intensity of your physical discomfort during stress?

None Mild Moderate Severe

0-10 NUMERIC PAIN RATING SCALE



অনুমতি বিবৃতি

দয়া করে এটি মনোযোগ দিয়ে পড়ুন

আসসালামু আলাইকুম!

আমি কাকলী আক্তার রিপা, সাইক কলেজ অফ মেডিকেল সায়েন্স অ্যান্ড টেকনোলজির বিএসসি ইন ফিজিওথেরাপির ৪র্থ বর্ষের (২০১৮-১৯ সেশন) ছাত্রী। আমি "গর্ভবতী নারীদের মধ্যে প্রাক-প্রসব গ্রুপ ফিজিওথেরাপির ফলাফল" শীর্ষক একটি গবেষণা পরিচালনা করছি। এই গবেষণার মাধ্যমে আমি গর্ভবতী নারীদের জন্য গ্রুপ ফিজিওথেরাপির প্রভাব মূল্যায়ন করতে চাই। গবেষণার অংশ হিসেবে, আমি আপনার সামাজিক-জনসংখ্যাগত তথ্য, চিকিৎসা ইতিহাস এবং ফিজিওথেরাপি সংক্রান্ত অভিজ্ঞতা সম্পর্কে তথ্য সংগ্রহ করব। আপনার অংশগ্রহণ সম্পূর্ণ স্বেচ্ছাসেবী, এবং আপনি যে কোনো সময় অংশগ্রহণ বাতিল করতে পারেন। আপনার দেওয়া সমস্ত তথ্য কঠোর গোপনীয়তার সাথে সংরক্ষিত থাকবে এবং কোনো প্রকাশনায় আপনার নাম উল্লেখ করা হবে না।

আপনার কোনো প্রশ্ন থাকলে, দয়া করে আমার সাথে বা আমার হ্যাঁ না
গবেষণা তত্ত্বাবধায়কের সাথে যোগাযোগ করুন।

আপনি কি অংশগ্রহণ করতে রাজি? হ্যাঁ না

অংশগ্রহণকারীর সাক্ষর

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তারিখ.....

ইন্টারভিউয়ারের সাক্ষর

.....

তারিখ.....

গর্ভবতী নারীদের মধ্যে প্রাক-প্রসব গ্রুপ ফিজিওথেরাপির ফলাফল

পার্ট ১: ব্যক্তিগত তথ্য			
১.১	রোগীর আইডি:		
১.২	পরীক্ষার তারিখ:		
১.৩	অংশগ্রহণকারীর নাম:		
১.৪	কোড:		
১.৫	ঠিকানা:	গ্রাম:	ডাকঘর:
		উপজেলা:	জেলা:
১.৬	ফোন নম্বর		
পার্ট ২- সামাজিক ও পারিবারিক তথ্য			
(সঠিক উত্তরে (√) চিহ্ন দিন)			
ক্রমিক নং	প্রশ্ন	উত্তর	
২.১	বয়স:	[] বছর	
২.২	পরিবারের ধরন:	(১) একক পরিবার	(২) যৌথ পরিবার
২.৩	বসবাসের স্থান:	(১) শহর	(২) গ্রাম
২.৪	শিক্ষাগত যোগ্যতা:	(১) নিরক্ষর	(২) প্রাথমিক
		(৩) মাধ্যমিক	(৪) উচ্চ মাধ্যমিক
২.৫	পেশা:	(৫) স্নাতক	(৬) স্নাতকোত্তর
		(১) গৃহিণী	(২) অফিসের চাকরি
২.৬	পরিবারের উপার্জনক্ষম সদস্য সংখ্যা	(৫) ক্রীড়াবিদ	(৪) অন্যান্য

পার্ট ৩: চিকিৎসা সংক্রান্ত তথ্য			
৩.১	উচ্চতা	[] ফুট	
৩.২	ওজন	[] কেজি	
৩.৩	কোনো দীর্ঘমেয়াদি রোগ আছে কি?	(১) হৃদরোগ	(১) উচ্চ রক্তচাপ
		(৩) ডায়াবেটিস	(৪) অন্যান্য

পার্ট ৪: গর্ভাবস্থা সংক্রান্ত তথ্য (সঠিক উত্তরে (√) চিহ্ন দিন)			
৪.১	এটি আপনার কত নম্বর গর্ভাবস্থা?	(১) প্রথম	(২) দ্বিতীয়
		(৩) তৃতীয়	(৪) তৃতীয়ের বেশি
৪.২	গর্ভাবস্থার কোন ধাপে আছেন?	(১) প্রথম ত্রৈমাসিক মাস (৩-১)	
		(২) দ্বিতীয় ত্রৈমাসিক মাস (৬-৪)	
		(৩) তৃতীয় ত্রৈমাসিক মাস (৯-৭)	
৪.৩	আপনি কি পিঠের নিচের অংশে ব্যথা অনুভব করেন?	(১) হ্যাঁ	(২) না
৪.৪	ব্যথার ধরন কেমন?	(১) মাঝে মাঝে হয়	(২) সবসময় থাকে
৪.৫	সাধারণত কোন ভঙ্গিতে বিশ্রাম নেন?	(১) বসে	(২) দাঁড়িয়ে
		(৩) শুয়ে	
৪.৬	এই ব্যথা কি দৈনন্দিন কাজের ব্যাঘাত ঘটায়?	(১) হ্যাঁ	(২) না
৪.৭	আপনি কি এই ব্যথার জন্য কোনো ফিজিওথেরাপি নিচ্ছেন?	(১) হ্যাঁ	(২) না
৪.৮	আপনি কি আপনার অনাগত সন্তানের স্বাস্থ্য নিয়ে উদ্বিগ্ন?	(১) হ্যাঁ	(২) না
৪.৯	সন্তান জন্মের পর আর্থিক বিষয় নিয়ে চিন্তিত?	(১) হ্যাঁ	(২) না
৪.১০	গর্ভাবস্থায় কি পরিবারের কেউ আপনাকে সাহায্য করছে না বলে মনে হয়?	(১) হ্যাঁ	(২) না
৪.১১	গর্ভাবস্থার কারণে কি ঘুমের সমস্যা বা দুঃস্বপ্ন হচ্ছে?	(১) হ্যাঁ	(২) না
৪.১২	আপনি কি মানসিক চাপ কমানোর জন্য মেডিটেশন, ব্যায়াম, বন্ধু বা পরিবারের সঙ্গে সময় কাটানো ইত্যাদি করেন?	(১) হ্যাঁ	(২) না

১৩	আমি মন খারাপ বা হতাশ লাগছিল।	০	১	২	৩
১৪	কোনো কিছু যদি আমার কাজে বাধা দিচ্ছিল, আমি সেটা সহ্য করতে পারছিলাম না।	০	১	২	৩
১৫	আমি অনুভব করেছি যে আমি ভয় বা আতঙ্কের খুব কাছাকাছি চলে গেছি।	০	১	২	৩
১৬	আমি কোনো কিছু নিয়েই উৎসাহ বা আগ্রহ অনুভব করিনি।	০	১	২	৩
১৭	আমি অনুভব করেছি যে আমি তেমন গুরুত্বপূর্ণ কেউ নই বা আমার কোনো মূল্য নেই।	০	১	২	৩
১৮	আমি খুব সংবেদনশীল হয়ে গিয়েছিলাম বা সহজেই কষ্ট পাচ্ছিলাম।	০	১	২	৩
১৯	আমি অনুভব করেছি যে আমার হৃদস্পন্দন অস্বাভাবিক (যেমন: বুক ধড়ফড় করা বা মনে হচ্ছিল হার্ট মিস করছে), যদিও আমি কোনো পরিশ্রম করিনি।	০	১	২	৩
২০	আমি কোনো কারণ ছাড়াই ভয় বা দুশ্চিন্তা অনুভব করেছি।	০	১	২	৩
২১	আমি অনুভব করেছি যে জীবন অর্থহীন বা কোনো মূল্য নেই।	০	১	২	৩

সেকশন-৫: DASS-২১

পরীক্ষার আগে

গত সপ্তাহে আপনার অভিজ্ঞতা অনুযায়ী নিচের প্রতিটি বিবৃতি কতটা প্রযোজ্য হয়েছে তা চিহ্নিত করুন।

০ = একেবারেই প্রযোজ্য নয়

১ = কিছুটা প্রযোজ্য

২ = বেশিরভাগ সময় প্রযোজ্য

৩ = সবসময় প্রযোজ্য

১	আমি সহজে শান্ত হতে পারিনি।	০	১	২	৩
২	আমার মুখ শুকিয়ে যাচ্ছিল, আমি সেটা অনুভব করেছি।	০	১	২	৩
৩	আমি কোনোভাবেই আনন্দ বা ভালো অনুভব করতে পারিনি।	০	১	২	৩
৪	আমি শ্বাস নিতে কষ্ট অনুভব করেছি (যেমন: খুব দ্রুত শ্বাস নেওয়া বা কোনো কারণ ছাড়াই হাঁপিয়ে ওঠা)।	০	১	২	৩
৫	কোনো কাজ শুরু করতে আমার ইচ্ছাশক্তি কমে গিয়েছিল।	০	১	২	৩
৬	আমি খুব সহজেই রেগে যাচ্ছিলাম বা বেশি প্রতিক্রিয়া দেখাচ্ছিলাম।	০	১	২	৩
৭	আমি শরীর কাঁপা (যেমন: হাত কাঁপা) অনুভব করেছি।	০	১	২	৩
৮	আমি অনুভব করেছি যে আমি প্রচুর দুশ্চিন্তা বা মানসিক চাপ নিচ্ছি।	০	১	২	৩
৯	আমি ভয় পাচ্ছিলাম যে কোনো পরিস্থিতিতে আমি বিব্রত হতে পারি বা ভুল কিছু করে ফেলতে পারি।	০	১	২	৩
১০	আমি অনুভব করেছি যে সামনে আশাব্যঞ্জক কিছু নেই বা ভালো কিছু হবে না।	০	১	২	৩
১১	আমি খুব অস্থির বা চঞ্চল অনুভব করেছি।	০	১	২	৩
১২	আমি নিজেকে শান্ত বা রিলাক্স করতে পারছিলাম না।	০	১	২	৩

পরীক্ষার পরে

গত সপ্তাহে আপনার অভিজ্ঞতা অনুযায়ী নিচের প্রতিটি বিবৃতি কতটা প্রযোজ্য হয়েছে তা চিহ্নিত করুন।

- ০ = একেবারেই প্রযোজ্য নয়
১ = কিছুটা প্রযোজ্য
২ = বেশিরভাগ সময় প্রযোজ্য
৩ = সবসময় প্রযোজ্য

১	আমি সহজে শান্ত হতে পারিনি।	০	১	২	৩
২	আমার মুখ শুকিয়ে যাচ্ছিল, আমি সেটা অনুভব করেছি।	০	১	২	৩
৩	আমি কোনোভাবেই আনন্দ বা ভালো অনুভব করতে পারিনি।	০	১	২	৩
৪	আমি শ্বাস নিতে কষ্ট অনুভব করেছি (যেমন: খুব দ্রুত শ্বাস নেওয়া বা কোনো কারণ ছাড়াই হাঁপিয়ে ওঠা)।	০	১	২	৩
৫	কোনো কাজ শুরু করতে আমার ইচ্ছাশক্তি কমে গিয়েছিল।	০	১	২	৩
৬	আমি খুব সহজেই রেগে যাচ্ছিলাম বা বেশি প্রতিক্রিয়া দেখাচ্ছিলাম।	০	১	২	৩
৭	আমি শরীর কাঁপা (যেমন: হাত কাঁপা) অনুভব করেছি।	০	১	২	৩
৮	আমি অনুভব করেছি যে আমি প্রচুর দুশ্চিন্তা বা মানসিক চাপ নিচ্ছি।	০	১	২	৩
৯	আমি ভয় পাচ্ছিলাম যে কোনো পরিস্থিতিতে আমি বিব্রত হতে পারি বা ভুল কিছু করে ফেলতে পারি।	০	১	২	৩
১০	আমি অনুভব করেছি যে সামনে আশাব্যঞ্জক কিছু নেই বা ভালো কিছু হবে না।	০	১	২	৩
১১	আমি খুব অস্থির বা চঞ্চল অনুভব করেছি।	০	১	২	৩
১২	আমি নিজেকে শান্ত বা রিলাক্স করতে পারছিলাম না।	০	১	২	৩
১৩	আমি মন ধারাপ বা হতাশ লাগছিল।	০	১	২	৩

১৪	কোনো কিছু যদি আমার কাজে বাধা দিচ্ছিল, আমি সেটা সহ্য করতে পারছিলাম না।	০	১	২	৩
১৫	আমি অনুভব করেছি যে আমি ভয় বা আতঙ্কের খুব কাছাকাছি চলে গেছি।	০	১	২	৩
১৬	আমি কোনো কিছু নিয়েই উৎসাহ বা আগ্রহ অনুভব করিনি।	০	১	২	৩
১৭	আমি অনুভব করেছি যে আমি তেমন গুরুত্বপূর্ণ কেউ নই বা আমার কোনো মূল্য নেই।	০	১	২	৩
১৮	আমি খুব সংবেদনশীল হয়ে গিয়েছিলাম বা সহজেই কষ্ট পাচ্ছিলাম।	০	১	২	৩
১৯	আমি অনুভব করেছি যে আমার হৃদস্পন্দন অস্বাভাবিক (যেমন: বুক ধড়ফড় করা বা মনে হচ্ছিল হার্ট মিস করছে), যদিও আমি কোনো পরিশ্রম করিনি।	০	১	২	৩
২০	আমি কোনো কারণ ছাড়াই ভয় বা দুশ্চিন্তা অনুভব করেছি।	০	১	২	৩
২১	আমি অনুভব করেছি যে জীবন অর্থহীন বা কোনো মূল্য নেই।	০	১	২	৩

এন পি আর এস স্কেল:

আপনার বিশ্রামের সময় ব্যথার মাত্রা কতটা?		স্কোর:	
		০ = নেই	
		১ = হালকা	
		২ = মধ্যম	
		৩ = তীব্র	
পরীক্ষার আগে		পরীক্ষার পরে	

Appendix- D

Title: Outcome of Antenatal Group Physiotherapy Treatment among the Pregnant Women Attended in OGSB Hospital

Intervention Protocol for the (Antenatal Group Physiotherapy)

The antenatal physiotherapy treatment will be provided in a **group setting** supervised by a certified physiotherapist. The treatment will be structured to address both the **physical and psychological** needs of the participants, focusing on alleviating pain, stress, anxiety, and depression during pregnancy.

Frequency and Duration of Sessions

- **Frequency:** 3 sessions per week
- **Duration of each session:** 45-60 minutes
- **Duration of the treatment program:** 6 weeks (total of 18 sessions)

Treatment Components

The physiotherapy sessions will be conducted in groups with a maximum of 10-15 participants per group. The sessions will be conducted in a **safe, supportive, and socially engaging environment** to promote emotional support and shared experiences among the participants. The treatment will include the following components:

- 1. Warm-Up and Breathing Exercises (10 minutes)**
 - **Purpose:** To help participants relax and prepare their bodies for physical activity.
 - **Exercises:** Diaphragmatic breathing, pelvic floor breathing, and relaxation techniques.
 - **Frequency:** Daily practice during each session to aid in stress reduction.
- 2. Pelvic Floor Muscle Training (15 minutes)**
 - **Purpose:** Strengthening of the pelvic floor muscles to reduce the risk of urinary incontinence and improve muscle tone.
 - **Exercises:** Kegel exercises, pelvic tilts, and squatting exercises.
 - **Frequency:** Every session, with gradual progression in intensity.
- 3. Aerobic and Strengthening Exercises (20 minutes)**

- **Purpose:** To improve overall fitness, reduce back pain, and alleviate physical discomfort.
 - **Exercises:**
 - Gentle aerobic exercises (walking, low-impact cardio).
 - Strengthening exercises for the legs, back, and arms (squats, calf raises, wall push-ups).
 - Stretching exercises targeting the lower back, legs, and pelvic region (hamstring stretch, hip flexor stretch, lower back stretches).
 - **Frequency:** Every session, progressing with intensity and duration as the participant adapts.
- 4. Postural Education and Stretching (10 minutes)**
- **Purpose:** To educate participants on proper posture, alignment, and ergonomics during pregnancy, reducing strain on muscles and joints.
 - **Exercises:** Posture correction techniques and stretches for the neck, back, and shoulders.
 - **Frequency:** Every session, ensuring that participants are mindful of their body mechanics.
- 5. Relaxation Techniques and Mental Well-Being (10 minutes)**
- **Purpose:** To manage anxiety, depression, and stress.
 - **Exercises:** Guided relaxation, progressive muscle relaxation, and mindfulness meditation.
 - **Frequency:** At the end of each session, helping participants manage stress and emotions.

(Santana et al., 2022, p. 7)

Control Group Protocol (Standard Physiotherapy for Antenatal Care)

The control group will receive standard physiotherapy as part of routine antenatal care, focusing on maintaining maternal health and alleviating common pregnancy-related discomforts.

1. **Postural Education and Ergonomics:** Women will be taught proper posture to reduce back and pelvic pain and advised on ergonomics for daily activities like lifting and sitting.
2. **Stretching and Mobility:** Gentle stretching exercises (e.g., pelvic tilts, hamstring stretches) will be recommended to improve flexibility and reduce discomfort in areas like the back and legs.
3. **Strengthening Exercises:** Basic core strengthening (e.g., pelvic floor exercises, bridging) will be included to support the pelvic region and alleviate musculoskeletal discomforts.
4. **Breathing and Relaxation:** Deep breathing and relaxation techniques will be taught to help reduce anxiety, manage stress, and improve overall emotional well-being.
5. **Physical Activity Guidance:** Women will be encouraged to engage in low-impact activities like walking to maintain cardiovascular fitness and prevent excessive weight gain.
6. **Manual Therapy:** Light massage therapy and joint mobilizations may be provided to ease tension in muscles and improve joint mobility.

[This treatment protocol has been approved and designed by the authorities of OGSB hospital for antenatal group physiotherapy]



Gantt Chart

Activities/ Months	Jun 24	Jul 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25	Jun 25	Jul 25
Proposal Presentation														
Introduction														
Literature Review														
Methodology														
Data Collection														
Data Analysis														
Result														
1st progress Presentation														
Discussion														
Conclusion and Recommendation														
2nd progress Presentation														
Communication with supervisor														
Final Submission														