Faculty of Medicine

University of Dhaka

Prevalence and Associated Factors of Low Back Pain among The Breastfeeding Mothers

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4th Professional B.Sc. in Physiotherapy

Session: 2019-20

DU Roll no: 1705

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This work has never before been approved in full for a degree, nor is it presently being presented as a candidate for one. A portion of the criteria for the B.Sc. in Physiotherapy degree are being met by submitting this dissertation.

I confirm that I will receive an inadequate rating and be subject to disciplinary action from the appropriate authorities if it is found in my work that I have plagiarized or otherwise cheated. I guarantee that the bound copy of the thesis and the electronic version are the same.

If the results of this project are published in the future, the research supervisor will be very concerned. The physiotherapy department of SAIC College of Medical Science and Technology (SCMST) will provide consent, and the project will be properly recognized as a graduate thesis.

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ACKNOWLEDGEMENT

First of all, I am deeply grateful to Almighty Allah for giving me the strength, knowledge, and determination to start and finish this project in time. The second acknowledgement must go to my parents who have inspired me for preparing the project properly.

I would like to express my profound gratitude to my supervisor **Md. Billal Hossain**, Lecturer, Department of Physiotherapy, SCMST, Mirpur-14, for his significant mentoring, support, and advice during this research. His enthusiastic supervision and excellent guidance inspired me for preparing the project properly. This effort has been greatly influenced by his commitment and expertise. I could not be able to complete this project without his support.

I also want to express my gratitude to **Dr. Zahid Bin Sultan Nahid**, Assistant professor and Head, Department of physiotherapy for his insightful counsel and support. I would also want to express my thanks to SAIC College of Medical Science and Technology for providing the tools and platform required to carry out this study.

In addition to other notable board members, I would like to thank my esteemed instructors, **Md. Shahidul Islam** (Assistant Professor & Clinical Head, Department of Physiotherapy, SCMST), **Dr. Abul Kasem Mohammad Enamul Haque,** Principal, SCMST, **Md. Furatul Haque** (Lecturer, Department of Physiotherapy, SAIC College of Medical Science and Technology, SCMST), **Md. Forhad Hossain**, Lecturer, Department of Physiotherapy, SCMST**, Asma Arju**, Lecturer, Department of Physiotherapy, SCMST, **Shahid Afridi**, Lecturer, Department of Physiotherapy, for their invaluable support and direction. Their knowledge and guidance have been essential to my academic success.

I also want to express my gratitude to my friends for their unwavering support and company during this adventure. I wish to thank the Librarian of SCMST and his associates for their kind support to find out related books, journals and also access to internet.

Lastly, I would want to express my profound gratitude to everyone who participated in this study and generously donated, as well as to everyone who helped make it a success.

List of Abbreviations

LBP – Low Back Pain

MSK – Musculoskeletal

BMI – Body Mass Index

C/S – Cesarean Section

NVD – Normal Vaginal Delivery

VAS – Visual Analog Scale

WHO – World Health Organizations

UNICEF – United Nations International Children's Emergency Fund

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ABSTRACT

Background: Low back pain (LBP) is a common problem among breastfeeding mothers, often aggravated by poor ergonomics, prolonged feeding, and childcare demands. Evidence from rural Bangladeshi populations is limited. Mothers health and their ability to breastfeed might be negatively impacted by low back pain (LBP), a prevalent musculoskeletal problem among women who have recently given birth. **Objective:** To determine the prevalence and associated factors of LBP among breastfeeding mothers in villages of Kaliganj Union, Gazipur. **Methods:** A descriptive type of cross-sectional study was conducted using a structured questionnaire. Mothers with pre-pregnancy LBP or musculoskeletal disorders were excluded**. Results:** According to the findings of the present study, the prevalence of low back pain among breastfeeding mothers was 87.7%, which indicates that a significant majority of the participants encountered LBP during postpartum period. Pain severity was experiencing moderate 63.2% and severe 24.5%. Significant factors included mode of delivery (p=0.000), parity (p=0.044), duration of breastfeeding (p=0.007), carrying infants for long durations (p=0.032), and sleeping hours (p=0.026). Caesarean delivery, multiparity, prolonged feeding, extended infant carrying, and inadequate sleep were identified as key contributors **Conclusion:** LBP is highly prevalent among breastfeeding mothers in rural Bangladesh and is strongly influenced by modifiable lifestyle factors. Breastfeeding women frequently experienced low back pain which can be influenced by variable factors such as the duration of breastfeeding and the method of carrying their child. Breastfeeding rates, maternal health, and the prevalence of low back pain (LBP) should all benefit from ergonomic education and the promotion of sufficient rest.

Keywords*: Low back pain, breastfeeding, caesarean section, parity, maternal health.*

CHAPTER – I INTRODUCTION

1.1: BACKGROUND

Human milk contains the appropriate nutritional content for baby physical and neurological growth accompanied by essential biologically active components, including immunomodulatory substances, growth hormones and a combination of opposed to and pre-biotics (Perrella et al. 2021, p. e0228863). The most prevalent solid ingredients in human milk are lactose and lipids. Lactose is an essential source of energy for infants, even though calories promote immune function, cell membrane structure, brain development, and the absorption of fat soluble vitamins some fats have anti microbial and anti-inflammatory characteristics (Reniker et al. 2023, p. 151306). Human milk contains around 400 different kinds of proteins that serve a variety of purposes. Proteins are essential for growth, development, and general (Donovan et al. 2019, pp. 126-131).

For infants the main source of nutrition is their mother’s milk, which also support their immune system & provide vital nutrients. While more women in affluent nations are choosing to breastfeed the rates are still below ideal levels and frequently fall short of World Health Organization (WHO) guidelines (Bosi et al. 2016, pp. 753-764). The most effective method for a child's nutrition, growth and development, and overall wellness is breastfeeding (Chong, 2015, pp. 20-28).

Breastfeeding also transfers the mother's immune cells, such as macrophages, T cells, lymphocytes, and stem cells, to the baby, promoting the immune system's progress (Ballard & Morrow, 2013, pp. 49-74). It also contains immune cells, stem cells, omega-3 fatty acids, and alpha-linolenic acid, which are not present in baby formulas or artificial milk, in addition to these nutrients (Boquien, 2018, p. 295).

The World Health Organization (WHO) and UNICEF's breastfeeding awareness program states that mothers should begin within an hour after delivery and last for six months, during which neither foods, drinks, or supplements other than liquid prescriptions should be consumed (WHO and UNICEF, 2015).

The most efficient method of reducing newborn mortality is exclusive breastfeeding, which has been reported to lower infant death rates by 13% in low-income nations (Jones et al. 2013, pp. 683-687). Although several studies have shown that the advantages of breastfeeding for both mother & child (Victora et al. 2016, pp. 475-490). Breastfeeding promotes early uterine involution, lowers postpartum hemorrhage, lowers the risk of breast, ovarian, and uterine malignancies, as well as in postpartum weight loss (Mathur & Dhingra, 2013, pp.143-149). The World Health Organization (WHO) & the United Nations Children's Fund (UNICEF) have advised that there has been a recent surge in efforts to improve exclusive breastfeeding (Black et al. 2013, pp. 1842-1851). Maximizing the positive consequences of lactation for both the mother the infants has been the ultimate objectives of each of these (Anstey et al. 2017, pp. 51-67).

The quality of life is greatly impacted by low back pain (LBP), a common musculoskeletal condition that is especially common among nursing mothers. Physical and physiological changes that are frequently linked to the postpartum phase can make women more susceptible to LBP. Breastfeeding mothers often experience low back pain. Poor breastfeeding posture, stress and anxiety, pregnancy-related physiological changes that influence ligaments, weak core muscles, and lack of sleep are prominent causes of low pain in breastfeeding mothers. Nowadays, 70–80% of the people in Bangladesh suffer from various forms of low back pain. Among women, 82% experience low back discomfort (Barua and Sultana, 2015, pp. 48-51).

Pregnancy-related physiological changes are typically the cause of low back pain, which is prevalent during and after pregnancy. Pregnancy-related low back pain is often accepted as a normal occurrence because about half of cases resolve completely on their own within a year after delivery (Casagrande et al. 2015, pp. 539-549). Due to the physical demands of nursing, breastfeeding moms may be particularly vulnerable to certain risk factors, including prolonged bad posture, lifting the newborn repeatedly, and hormonal changes that impact ligament laxity (Smith et al. 2020, pp. 223-229). Furthermore, musculoskeletal pain may worsen due to sleep deprivation and the psychological strain of new motherhood (Jones & Brown, 2019, pp. 27-49).

Numerous risk factors for LBP in nursing moms have been found by research, including parity, body mass index (BMI), maternal age, and the length of breastfeeding (Taylor

et al. 2021, pp. 455-467). Additionally, one of the main causes of LBP has been identified as improper ergonomic techniques during nursing and infant care (Williams et al. 2018, p, 167).

Even though it hasn't been proven beyond a reasonable doubt that breastfeeding itself raises the risk of back pain, it can be said that breastfeeding women are more susceptible to back pain due to prolonged non-ergonomic postures and the strains placed on their joints, muscles, tendons, and ligaments during pregnancy, which calls for musculoskeletal system monitoring (Bellù & Condò, 2017, p. 156).

During and after pregnancy, breastfeeding mothers have a number of physiological changes that may make them more susceptible to LBP. Hormonal changes occur in the body, including an increase in relaxation hormone, which stretches ligaments and prepares the pelvis ready for delivery (Miller et al. 2022, pp. 798-805). Many women have to make physical as well as psychological changes during the postpartum phase, which can be quite difficult. The difficulties of breastfeeding and the stress of caring for a infants can exacerbate pain perception and stress on the muscles (Higgins et al. 2022, pp. 15-25).

Additionally, a lack of social support which is essential for mental health can make people feel even more alone and distressed, which raises their chance of developing LBP (Smith et al. 2023, pp. 243-256). Breastfeeding mothers often experience various musculoskeletal and postural issues, including mechanical neck pain, brachial plexus pain, carpal tunnel syndrome, kyphosis, lordosis, scoliosis, sciatica, and mechanical low back pain. These problems are significantly influenced by breastfeeding positions, which can either alleviate or worsen the discomfort. Pain resulting from these postural challenges can occur in any part of the body and may arise during or after breastfeeding. For instance, incorrect positioning and improper hand placement to support the baby's weight can strain the hand muscles. Repeatedly using the same position can lead to radiating pain in the elbows and hands (Hendershot, 2015, p. 367).

The cervical, thoracic, and lumbar spines undergo mechanical changes when sitting, standing, or lying down in order to adjust for pain, which changes the body's natural alignment. If left untreated, it can result in hyperkyphosis and hyperlordosis, interfere

with the spine's natural curvature, and create long-term abnormalities (Bonet et al. 2017, pp. 1290-1295).

Due to postpartum weakness and poor posture during breastfeeding bending over the infant rather than bringing them closer to them with pillows or other props low back pain is frequent in breastfeeding women (Dewey et al. 2021, pp. 1774-1790).

The woman's labor and delivery cause microscopic or serious tissue damage. An individual's degree of psychological, physical, and financial health has a significant impact on how much pain this injury creates. This happens as a result of the release of inflammatory chemicals which make nociceptors more sensitive and increase the possibility of persistent pain. The same may apply during cesarean sections, which might lead to nerve traction or surgical damage to the uterine tissues (Wisner et al., 2014). The primary cause of back pain during the postpartum phase involves breastfeeding, hormonal fluctuations, changes in muscle tone and strength, and bending while tending to the baby (Bergström et al. 2016, pp.1-11).

Postpartum women frequently have low back pain, which is often linked to the biomechanical and physical stresses of breastfeeding. According to studies, the physical posture used while breastfeeding, especially extended sitting or uncomfortable positions, might cause musculoskeletal strain and discomfort (Chen et al. 2021, p. 15).People of many different demographics suffer from low back pain (LBP), which has been seen to be more prevalent among postpartum mothers, especially those who breastfeed (Jung et al. 2019, p. 282).

Positioning the infant on the mother, attaching the infant to the mother's breast, and sucking on breast milk are all components of the breastfeeding technique (Yilak et al. 2020, p. 3). Only when the mother is properly positioned and infant is properly attached to the mothers breast is breastfeeding considered effective (Sallam et al.2024. p. 9).

Breastfeeding mothers frequently experience low back pain, which can be caused by a number of physical, hormonal, and psychological causes. The lumbar spine is severely strained by prolonged and incorrect breastfeeding postures. Chronic pain can result from prolonged sitting, frequently in non-ergonomic situations. Leaning forward or slouching are two bad positions for breastfeeding that cause spinal tension. Over time,

these repetitive activities cause musculoskeletal pain and lack of sleep, which lowers overall health (Smith et al. 2020, p. 224).

According to research, bending a lot and sitting unsupported while nursing may increase the risk of low back pain (LBP). Breastfeeding positions that cause biomechanical stress are a major risk factor for LBP in breastfeeding mothers (O'Sullivan et al. 2018, pp. 178-186). The infant's weight and the length of time spent carrying or feeding them can also exacerbate musculoskeletal pain (Dale et al. 2019, p. 445).

One of the main reasons for pain in the muscles during breastfeeding is poor posture. The lower back muscles become stretched when mothers sit or hold the baby for extended periods of time without adequate back support. Research has indicated that inadequate position for nurses can result in pain in the muscles (Aburub et al. 2022, pp. 926-931).

Up to 60% of breastfeeding mothers experience LBP, one of the most frequently described forms of pain (Bollini et al. 2017, p. 130). There is a significant incidence of LBP in postpartum women; research indicates that between 50 and 70 percent of women have musculoskeletal at the same point during this time (Häkkinen et al. 2019, pp. 298-305). When breastfeeding, bad posture, such as slumping or hunching over, exerts more stress on the spine and can contribute to the occurrence of pain (Frost et al. 2021, pp. 567-576).

Breastfeeding women are especially vulnerable to low back pain (LBP), a common ailment that impacts people from a variety of demographics. This is because of the physical demands of both nursing and child care. Numerous risk factors, like as hormonal changes, changed biomechanics, and the physical strain of breastfeeding positions, can be linked to the incidence of LBP in postpartum women (Borud et al. 2019, p. 125).

These mothers are much more likely to experience LBP because they frequently spend a lot of time in positions that might not promote the best spinal alignment (Petersen et al. 2018, pp. 1-7).

It is essential to comprehend the specific risk factors for LBP in breastfeeding mothers for the mother's own health and wellbeing as well as the continued growth and care of their children. According to research, mothers who experience chronic pain may find it difficult to continue nursing, which may have an effect on the nutrition and bonding of their infants (Friedrich et al. 2020, p.567).

There are a number of contributing factors that cause LBP in nursing mothers, according to recent research. These include changes in posture, physical strain when nursing, instability in the core, and the psychological stress that comes with being a new mother (Woods et al. 2020, p.130). Insufficient training on ergonomic nursing positions and a lack of postpartum recovery time can both increase the physical demands on mothers (Gordon et al. 2021, pp. 1-9).

Additionally, the postpartum hormonal changes might exacerbate musculoskeletal issues by reducing joint stability and muscle tone (Stuge et al. 2016, p. 351). To reduce LBP and promote successful breastfeeding, it is crucial to create tailored therapies for nursing moms, as this increased risk highlights. Prior research has indicated that teaching women how to position themselves correctly and how to develop their core muscles can significantly improve their overall health and lessen the symptoms of lower back pain (McKenzie et al. 2018, pp. 246-257).

There are several different risk factors for LBP in breastfeeding mothers, such as environmental, psychological, and physical variables. Physical variables that have been linked to the start of LBP include inadequate lifting skills, poor posture while nursing, and a lack of physical activity (Cohen et al. 2017, p. 183).

1.2: Justification

This research is to be conducted in to the concerns that have been principally related to the low back pain among the breastfeeding mother in Gazipur. To the best of our knowledge there are no published studies on the prevalence and associated factors of low back among the breastfeeding mother in Gazipur. Consequently, the objective of the study is to identify the various associated factors of low back pain among the breast feeding mothers. The title will clearly identifies the target population as breastfeeding mothers, which is essential since the study specifically aims to examine the prevalence and associated factors of low back pain in this group. By focusing on breastfeeding mothers, the title immediately conveys the research's primary demographic and context.

This is particularly important because the study aims to investigate a condition that is prevalent among postpartum women, especially those who breastfeed, due to the physical demands associated with breastfeeding and infant care. Addressing these risk factors through education awareness and interventions can help improve the health and wellbeing of breastfeeding mothers. It is important to note that this is a complex issue with various contributing factors and the specific justification may vary depending on individual circumstances. Further research is needed to fully understand the risk factors and develop effective prevention and management strategies for low back pain among breastfeeding mothers.

1.3: Research question:

What is the prevalence and associated factors of low back pain among the breastfeeding mothers at Kaliganj Union in Gazipur?

1.4 Aim of the study:

The aim of the study is to find out the prevalence and associated factors of low back pain among the breastfeeding mothers at Kaliganj Union in Gazipur.

1.5: Objectives

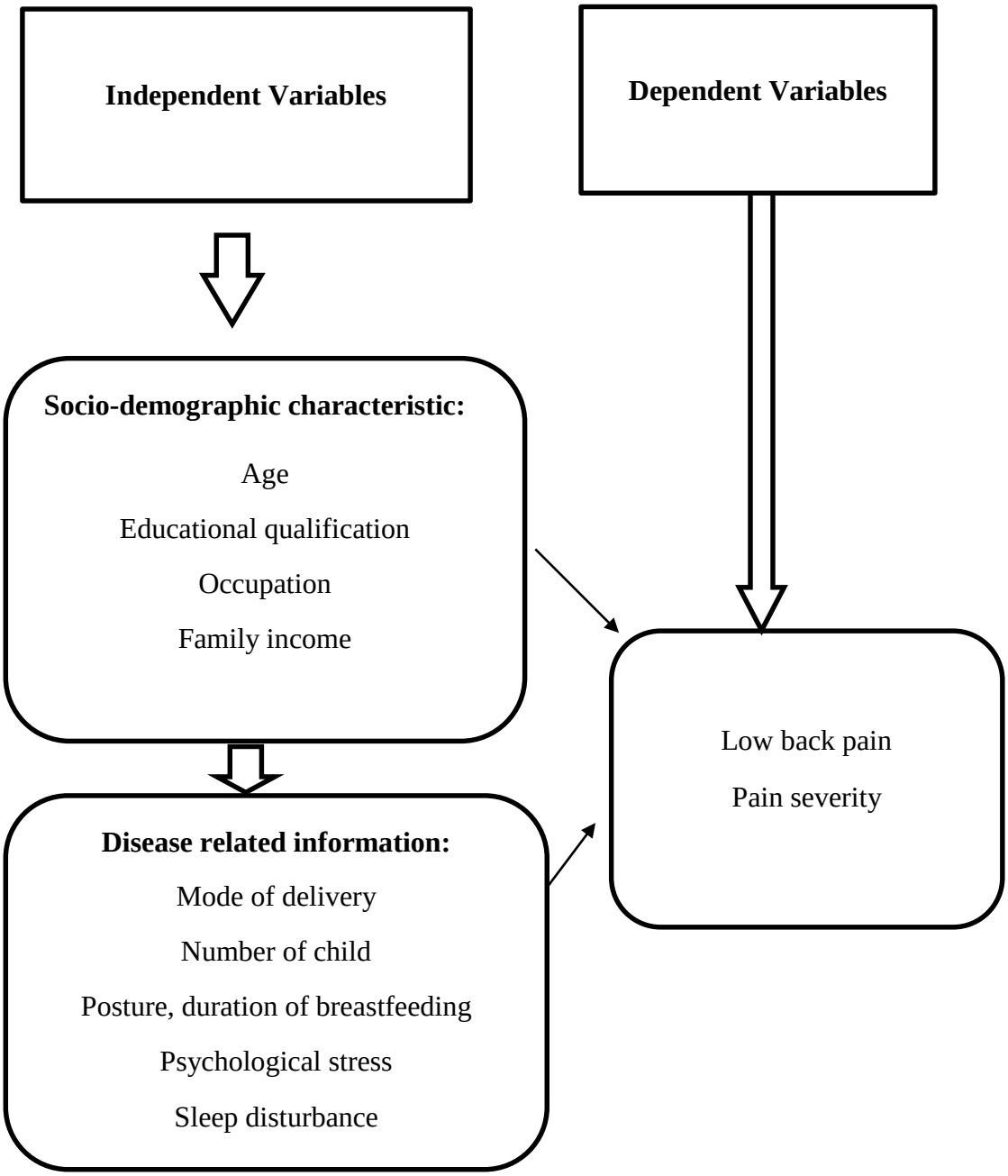
1.5.1: General objective:

To identify the prevalence and associated factors of low back pain among the breastfeeding mothers.

1.5.2: Specific objectives:

1) To explore the socio-demographic characteristics of breastfeeding mothers.
2) To assess the prevalence of low back pain among breastfeeding mothers.
3) To assess the level of severity of pain due to breastfeeding among the breastfeeding mothers by using VAS scale.
4) To examine the association between mode of delivery, number of child, breastfeeding posture with low back pain among the breastfeeding mothers.
5) To explore the influence of psychological stress and sleep disturbances on low back pain among the breastfeeding mothers.

1.6: Conceptual framework:



1.7: Operational definition:

Low Back Pain: LBP is the term used to describe pain between the glutes and the bottom edge of the ribs. It could be acute, sub-acute, or chronic, lasting a little as well significantly longer, or a long time. It can affect everybody**.**

Pain intensity: The individual level of pain is determined using a validated scale, such as the Visual Analogue Scale (VAS) or Numeric Rating Scale (NRS), in which respondents score their discomfort on a scale of 0 (no pain) to 10 (no pain at all). The degree of pain will be measured at baseline, just after the procedure, and at intervals after the intervention.

Frequency of pain: Pain frequency refers to the number of times an individual experiences pain over a specific period. It is measured by the number of pain episodes or occurrences reported by participants during a defined time e.g. daily, weekly or monthly. This can be assessed using self-reported tools such as pain diaries, questionnaires, or scales.

Breastfeeding: Breastfeeding is the practice of giving a baby milk straight from the breast. It is a natural and vital way to feed a baby, meeting all of their nutritional needs for growth and development, especially during the first six months of life.

Breastfeeding mothers: A woman who provides her infant breast milk, either straight from the breast or through pumping and bottle-feeding, is known as a breastfeeding mother. Breastfeeding and nursing are other names for breastfeeding.

Breastfeeding technique: Breastfeeding technique is the composite of positioning, attachment and feeding. The appropriate postures and methods used to ensure successful breastfeeding, comfortable breastfeeding for both mother and child, and efficient milk transfer are referred to as breastfeeding techniques.

Breastfeeding position: Breastfeeding position refers to the specific posture or arrangement of the mother and infant during breastfeeding, aimed at ensuring effective milk transfer and minimizing discomfort for both. It includes the alignment of the baby's body, the mother's posture, and the manner in which the baby is held to the breast.

Duration of breastfeeding sessions: The total time, in minutes, from the moment the baby latches onto the breast until they stop suckling, during a single feeding session. This is the length of time spent in each breastfeeding session. Extended periods of

breastfeeding without breaks may increase the risk of developing low back pain due to sustained muscle tension.

Frequency of breastfeeding: Frequency of breastfeeding refers to the number of breastfeeding sessions a mother engages in within a specified period, typically measured over 24 hours. Higher frequency may lead to cumulative strain on the back if not managed with proper posture and support.

Psychosocial factor: Psychosocial factors refer to the combination of psychological and social elements that influence an individual's mental and emotional well-being, behavior, and interactions with their environment. This encompasses stress levels, mental health, and emotional well-being of the mother, which can influence her physical health and pain perception.

Psychological stress: The term psychological stress is often used to describe processes that are thought to play a role in the development and maintenance of a number of physical and mental illnesses.

Posture: Posture is the attitude that the body adopts when it is supported during periods of inactivity or when numerous muscles work in unison to keep the body stable. As a fundamental foundation, it is continuously being modified.

Work-related Stress: Stress associated with work or professional responsibilities that may contribute to physical tension, including in the lower back. It can be caused by various factors such as workload, work environment, interpersonal relationships at work, job insecurity, and the balance between work and personal life.

CHAPTER – 2 LITERATURE REVIEW

After caesarean sections and following surgical vaginal births, low back pain and pelvic floor weakness known as risk factors for pelvic floor dysfunction are more prevalent (Romano et al. 2010, p. 34). Although lumbar stress fractures and postpartum sacroiliitis have been identified as rare causes, the primary cause of low back pain has not yet been identified. Its differential diagnoses include lumbar stenosis, sciatica, lumbar disc pathology, cauda equine syndrome, and urinary tract infections. Typically, musculoskeletal diseases present in the neck, shoulders, and low back. Physiological changes frequently result in postpartum neck and low back pain. In the recent week, 44.54% of respondents reported having neck pain, whereas 67.23% reported having low back pain, and 60.5% reported having neck discomfort in the previous year (Asif et al. 2022, pp. 271-278).

Breastfeeding mothers frequently experience musculoskeletal pain, particularly in the neck and back; 84% report having back pain at least once a month. The cervical and thoracic regions experienced the greatest pain, followed by the lumbar region. A dysfunctional condition, as evaluated by the Roland-Morris Disability Questionnaire, was reported by 27.6% of those experiencing back pain. Back pain was more likely to occur in mothers who breastfed for longer periods of time in a single session or who breastfed for a longer period of time each day. Breastfeeding posture and duration are important factors in controlling and avoiding musculoskeletal discomfort in breastfeeding women. Mothers who preferred to breastfeed while lying down experienced much less neck pain than those who breastfed while sitting (Ratajczak and Górnowicz, 2024, p. 675).

This study explored musculoskeletal pain prevalence and risk factors among women running during pregnancy through a survey of 3,102 participants from 25 countries. Most women (86%) reported pain, primarily in the pelvis/sacroiliac joint (59%), lower back (52%), abdomen (51%), breast (44%), and hip (40%), with the most severe pain at the pelvis (9%). Women with a previous injury (OR = 3.44) or older age (OR = 1.04) had a higher risk, while those with a previous child had lower breast pain risk (OR =

0.76). Healthcare strategies should prioritize managing pain in the pelvis, lower back, and abdomen to support running during pregnancy (Wyatt et al. 2024, pp. 902-913). Assessing the prevalence of musculoskeletal pain (MSP) and its correlation with breastfeeding positions among breastfeeding women in Riyadh, Saudi Arabia, was the goal of this study. 336 women between the ages of 20 and 50 were surveyed, and 97.3% of them reported having discomfort, with the shoulders, neck, and lower back being the most common locations. MSP prevalence varied by location, ranging from 58.6% to 72.3%. The most popular position that was closely linked to MSP was the cradle position. Even though discomfort is very common, just 25% of moms were given health education about it. The report emphasizes how breastfeeding moms in the area need more assistance and knowledge about managing MSP (Alazmi et al. 2023, p. 250).

The Klang Valley's breastfeeding mothers' neck and low back pain prevalence, which reported that 69.4% of mothers had low back pain and 58% of mothers had neck pain. It evaluated a number of variables, including breastfeeding position, feeding side, technique, and duration; however, as p-values were greater than 0.05, no significant associations with the occurrence of pain were noted. However, a significant correlation was observed between the daily total number of nursing sessions and neck pain ($p = 0.02$). According to the study, low back discomfort is more common than neck pain among breastfeeding mothers, who also have musculoskeletal pain.the significance of addressing the ergonomic issues that breastfeeding mothers have in order to lessen their pain and discomfort (Tan et al. 2022, p. 25).

During pregnancy, especially in the third trimester, low back pain (LBP) is a typical occurrence. It frequently continues after giving birth and may develop into a chronic problem. LBP affects 44.6% of women prior to pregnancy, 75% throughout pregnancy, and 53% after giving birth, according to studies. Back pain episodes during prior pregnancies and outside of pregnancy are highly linked to persistent LBP ($p<0.001$). However, there is no apparent connection between postpartum LBP and variables like body mass index ($p=0.37$), physical activity ($p=0.726$), or the number of children ($p=0.681$). The lack of specific prognostic variables found by multivariate data analysis points to a multifactorial origin. This demonstrates that further study is required to

address chronic postpartum LBP, particularly in responsive population such as breastfeeding mothers (Miladi et al. 2023, pp. 688-692).

Approximately 50% of pregnant women experience pregnancy-related lumbopelvic pain (PLPP), which frequently lasts into the postpartum phase. Although the cause of this ailment is unknown, it usually manifests around 18 weeks of pregnancy and can have significant adverse impacts on a woman's health and wellbeing. With various degrees of success, research has examined a number of risk variables, including hormonal changes, pre-existing diseases, and physical changes that occur during pregnancy. To determine risk variables for persistent PLPP, 339 women in their first postpartum month participated in a recent study. According to the findings, 18.9% of women were still suffering pain one month after giving birth, and 33.6% had suffered PLPP during pregnancy. Age, parity, depression, and birth method did not significantly differ between those with and without chronic pain. However, independent risk variables for persistent pain were shown to be body mass index (BMI), weight gain during pregnancy, and a history of PLPP in prior pregnancies. The necessity of focused measures to control weight and keep an eye on women with prior PLPP is highlighted by these findings (Terzi et al. 2015, pp. 1617-1621).

However, poor posture during prolonged breastfeeding can result in musculoskeletal pain, particularly in the shoulder, neck, and upper back. Breastfeeding has many advantages for both mothers and babies. Research has shown that this type of pain has a detrimental effect on a mother's quality of life, influencing her mood, sleep patterns, and everyday activities. However, many breastfeeding moms in Jordan do not have access to expert advice on good posture. The high prevalence of musculoskeletal pain may be attributed to the fact that research indicates that the majority of Jordanian mothers do not receive instruction from medical professionals regarding the best breastfeeding positions. By filling this knowledge gap, mothers may experience less discomfort and have better overall breastfeeding experience (Aburub et al. 2022, p.467).

A study conducted among 400 breastfeeding mothers in Rawalpindi and Islamabad explored the relationship between breastfeeding positions and musculoskeletal problems. The cross-cradle hold was identified as the most common position (70.8%), followed by the side-lying position (21.5%), while 7.9% used other positions. Many

mothers reported musculoskeletal issues, such as back and neck pain. However, statistical analysis using the chi-square test showed no significant association (p=0.989) between breastfeeding positions and these problems. The findings suggest that while discomfort is prevalent, it may not be directly linked to specific breastfeeding positions (Rani et al. 2019, pp. 564-566).

The probability of musculoskeletal conditions and postpartum depression in first-time nursing moms with frequent myofascial triggers is examined in this case study. Using a descriptive research technique, the study assessed postpartum depression using the Edinburgh Postnatal Depression Scale (EPDS) and examined mothers' nursing postures through observation and interviews. According to the results, postpartum depression is common among new moms, and poor breastfeeding ergonomics raise the risk of musculoskeletal problems. The study emphasizes that in order to avoid these problems and enhance maternal health outcomes, appropriate ergonomic guidance is required both during the prenatal and postnatal phases (George, et al. 2022, p. 35).

Previous analysis identified a correlation between postpartum depression, the severity of low back pain, and any variation in postpartum women's postural alignment. Using inclusion and exclusion criteria, 80 women between the ages of 2 and 30 weeks after giving birth were included. The Visual Analogue Scale (VAS) was used to quantify pain and depression sensations as outcome measures. Using the Nordic Musculoskeletal Questionnaire, the Edinburgh Postnatal Depression Scale (EPDS), and posture, the mother was observed in her natural setting. The investigation ultimately reached the conclusion that there is a correlation between postpartum depression and the severity of pain. There is no link between PPD and posture type (Angelo et al. 2014, pp, 32-39).

Changes during pregnancy and the postpartum period, such as increased fluid retention, postural muscle imbalance, ligament laxity, and unpredictable sleep patterns, as well as poor ergonomics in self-care and childcare-related activities, put mothers-to-be at risk for musculoskeletal Her body underwent numerous changes during pregnancy and the postpartum phase, including physiological and postural alterations, in addition to the numerous physical and mental strains of caring for her child and taking care of herself. Mothers are hence susceptible to musculoskeletal conditions (Roberts, 2011, p. 23).

Postpartum depression, the severity of low back pain, and any variation in postpartum women's postural alignment have all been linked in previous research. At two to thirty weeks postpartum, eighty women were included based on inclusion and exclusion criteria. Using the visual analog scale (VAS) to measure pain and depressed symptoms were the outcome measures. By monitoring the mother in her natural setting, the Nordic Musculoskeletal Questionnaire, the Edinburgh Postnatal Depression Scale (EPDS), and posture were used. The study came to the conclusion that postpartum depression and pain severity are related based on the results. But there is no correlation between PPD and posture type (Angelo et al. 2014, pp. 32-39).

The physical demands of holding an infant frequently cause biomechanical stress on the musculoskeletal system, especially the lower back. In 192 Igbo-speaking nursing moms with children under two years old, ages 18 to 35, a cross-sectional study found that infant carrying-related low back pain (ICRLBP) was highly prevalent (82.3%). 87.3 percent of the impacted moms reported just minor discomfort. Maternal age > 35 years, breastfeeding babies weighing > 10 kg, prior cesarean birth, and civil service work were specific risk factors, although neither maternal nor baby characteristics were substantially linked to the incidence of ICRLBP (Ojukwu et al. 2017, pp. 1-10).

The extended sitting that comes with breastfeeding has been linked to back pain, and lumbar support is essential for reducing this discomfort. Lumbar support has been shown to dramatically alleviate back discomfort, particularly as breastfeeding duration rises, according to studies. A progressive increase in lumbar support thickness results in a more noticeable reduction in pain, with the biggest reduction happening when the support reaches 9 cm. Younger moms had less back discomfort than older mothers, most likely as a result of their stronger muscles and superior physical health. The significance of ergonomic measures, such lumbar support, in reducing back discomfort in nursing moms is highlighted by these findings (Klinpikul et al. 2010, pp. 254-259)

CHAPTER – III METHODOLOGY

3.1 Study design:

The study employed a descriptive type of cross-sectional study design to find out the prevalence of low back pain among breastfeeding mothers in Kaliganj Union, Gazipur. This design is chosen because it allows for the collection of data at a single point in time, providing a clear image of the prevalence and associated risk factors of low back pain in the target population.

3.2 Study area:

Data for the present study were collected from breastfeeding mothers in selected villages of Kaligonj, Gazipur.

3.3 Study place:

With the required permissions, the research was carried out on the campus of SAIC College of Medical Science, where the researcher is a fourth-year student pursuing a Bachelor of Science in Physiotherapy at the SAIC of Medical Science and Technology, Mirpur, Dhaka**.**

3.4 Study period:

The study period will be one year from June 2024 to July 2025.

3.5 Study population:

The study population consisted of breastfeeding mothers residing in Kaliganj Union, Gazipur.

3.6 SAMPLE SIZE

Sample size will be calculated by following equation,

$$n = \frac{Z^2\, p\, q}{d^2}$$

Here,

n = required sample size

z = confidence level at 95% (standard value of 1.96)

p = prevalence taken as 69.4% (Tan et al. 2022, pp.64 -71)

d= margin of errors at 5% (standard value of 0.05)

$$n = \frac{Z^2\, p\, q}{d^2}$$

$$= \frac{(1.96)^2 \times 0.69 \times 0.31}{(0.05)^2}$$

$$= \frac{3.84 \times 0.69 \times 0.31}{0.0025}$$

= 328

The actual sample size was n=328. Because of time constraints it is challenging to get a larger number of samples, 114 breastfeeding mothers selected as the study's sample.

3.7 Sampling technique:

Convenience sampling was used for the study because it was the quickest, least expensive and most straightforward way to choose a sample. It was simple to find people who meet the requirements related to the study's goal using the convenience sampling technique.

3.8 Eligibility criteria

3.8.1 Inclusion criteria

- Consists of breastfeeding mother with age of 15 to 40 years (Bryndal et al. 2020, pp.1-21)
- Mothers currently breastfeeding their infant
- Mothers breastfeeding at least twice a day
- Participants willing to provide informed consent for participation in the study.
- Participants able to understand and respond to the questionnaire

3.8.2 Exclusion criteria:

- Pre-existing musculoskeletal conditions
- Pregnancy or planning pregnancy
- Recent trauma or surgery
- Formula feeding only
- Inability to participate

3.9 Method of data collection:

3.9.1 Technique of data collection

Data were collected from post-partum women through face to face interview.

3.9.2 Instrument and tools of data collection

Tools:

- Weighing machine
- Measuring tape

Instrument:

- Self-administrated questionnaire was used.
- And also both open and close ended question will be included in the questionnaire.
- VAS (Visual Analogue Scale) scale

Procedure of data collection:

The researcher obtained permission to perform the study from the UNO in Kaliganj, Gazipur. Eligible individuals were approached and informed about the study's aims and goals. It was also made clear to participants that they might leave the research at any moment. The study consisted of those who consented to take part After answering questions, individuals signed a written consent form confirming their voluntary participation. Following consent, the researcher performed face to face interviews with a standardized questionnaire to gather information on demographics, anthropometric information, pain related information, breastfeeding practice related information. The interviews were conducted in a friendly atmosphere, and the comments were noted as

such. The researcher thanked the participants after the interview and all data were recorded in strict confidentiality.

3.10 Management of data

3.10.1 Data editing:

It characterized by reviewing and cleaning the collected data to identify and correct errors, inconsistencies, or missing information. The primary goal of data editing is to ensure the accuracy, reliability, and completeness of data before proceeding with data analysis. Correction were made where needed to assure the data's correctness and completeness.

3.10.2 Data entry:

Data entry is the process of converting raw data from various sources into a digital format or a data management system, such as a spreadsheet, database, or data entry software. It is a fundamental step in research, business, and other domains where data needs to be organized, analyzed, and utilized efficiently. Data entry involves carefully inputting information from paper documents, questionnaires, surveys, or other sources into a computer or electronic system.

3.10.3 Data analysis:

Data was analyzed with the Statistical Package for Social Sciences (SPSS) Version 22 software program. Descriptive statistic such as frequency, distribution, range and percentage were performed. Inferential statistics was used to be analyze the relationship between independent and dependent variables.

3.11 Ethical consideration:

Before Data Collection, permission for the ethical committee of Saic of Medical Science and Technology was taken and a request letter handed over to appropriate authorities of the study area for taking permission and seeking assistance for smooth access to data collection. All ethical issue related to research involving human subjects addressed according to guidelines of Medical Council and the ethical review committee

of WHO. Prior to data collection the objectives of the study was explain in understandable language to the study participant and their written inform consent will taken. The prospective participants was give free opportunity to receive summary information of the study. The participants right to refuse and withdraw from the study was accepted. All questionnaire and ethical document were translate into Bengali before the interview. Data were manage privately and confidentially.

CHAPTER – IV: RESULTS

For the purpose of this research, a total number of 114 participants of postpartum mothers were enrolled in the study. The aimed of the study is to examine the prevalence, nature, and influencing factors of low back pain (LBP) during the postpartum period. The findings are descriptive in nature and provide an overview of the participants socio-demographic details, health status, pain experiences, and lifestyle behaviors. Data are reported using frequencies, percentages, means, and standard deviations. The results begin with the socio-demographic information of the participants and then present detailed insights into coexisting health conditions, perception and characteristics of pain, delivery-related variables, breastfeeding patterns, levels of physical activity, average sitting and sleeping hours, and healthcare-seeking behavior. These findings help to identify trends and factors potentially linked to postpartum LBP.

4.1 Socio-Demographic information

Table no.01. Frequency distribution table of participants according to socio-demographic

Variables	Number(n)	Percent (%)
Age of the participants		
15 – 20 years	30	26.3%
21 – 25 years	51	44.7%
26 – 30 years	18	15.8%
31 – 35 years	11	9.6%
36 – 40 years	4	3.5%
Mean ± SD		24.15±4.973
BMI of the participants		
>18.5 (Underweight)	28	24.6%

18.5-24.9 (Normal weight)	70	61.4%
25-29.9 (Overweight)	14	12.3%
30-39.9 (Obesity)	2	1.8%
Mean BMI ± SD		20.84±3.39
Educational qualification of the participants		
No formal education	0	0%
Primary education	18	15.8%
Secondary education	51	44.7%
Higher secondary education	24	21.1%
Graduate or higher	21	18.4%
Occupation of the participants		
Housewife	101	88.6%
Self-employed	0	0%
Employed	12	10.5%
Others	1	.9%
Income of the participants		
Low (>10000 tk)	34	29.8%
Medium (10000- 30000 tk)	64	56.1%
High (<30000 tk)	16	14.0%
Living area of the participants		
Urban	0	0%
Semi-rural	31	27.2%
Rural	83	72.8%

The mean age of participants was 24.15 years (SD ± 4.97). The majority, 44.7%, were aged between 21 to 25 years, while 26.3% were aged group between 15 – 20 years, 15.8% were aged group between 26 – 30 years ,9.6% were aged group 31 – 35 years and only 3.5% were aged group between 36 – 40 years.. Regarding body mass index (BMI), 61.4% of the participants were of normal weight (BMI 18.5–24.9), 24.6% were underweight (BMI <18.5), 12.3% were overweight (BMI 25–29.9), and 1.8% were classified as obese (BMI 30–39.9). The mean BMI was reported as 20.84±3.39 although this value appears inconsistent with standard BMI calculations and may represent a coding index rather than raw BMI. In terms of education, the highest proportion of mothers had completed secondary education (44.7%), followed by higher secondary education (21.1%) and graduate or higher education (18.4%). A smaller proportion had only primary education (15.8%), and none of the participants were uneducated. The occupational status showed that a vast majority were housewives (88.6%), while 10.5% were employed, and only 0.9% fell into the "other" category. None reported being self-employed. Income levels were mostly in the medium category (56.1%), with 29.8% reporting low income and 14.0% reporting high income. The living area distribution showed that 72.8% of participants resided in rural areas, and 27.2% in semi-rural areas. Notably, no participants were from urban areas.

4.2: Comorbid Health Conditions Among Participants

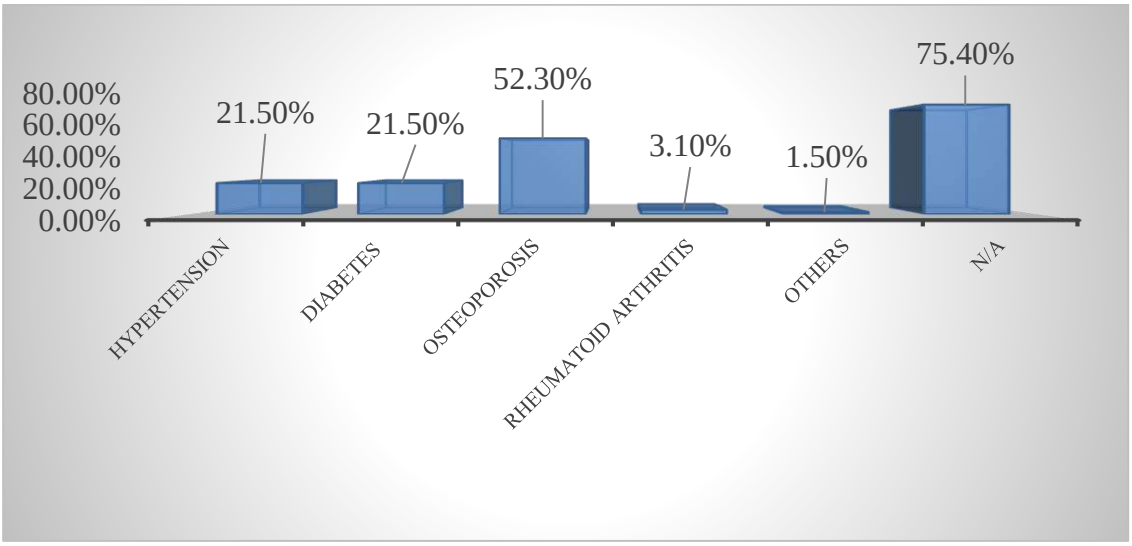


Figure no. 01: Frequency distribution of the participants by comorbidities of participants

The bar chart showed the frequency distribution of the participants by comorbidities (figure no. 01). Among the participants, osteoporosis was the most frequently reported comorbid condition, affecting 34 individuals (52.3%). Hypertension and diabetes were each present in 14 participants (21.5%), while a smaller proportion reported rheumatoid arthritis (3.1%) and other unspecified conditions (1.5%). Notably, 49 participants (75.4%) did not report any comorbid health issues.

4.3: Mental health, pregnancy and postpartum related information

4.3.1 : Mental health condition that affects pain perception:

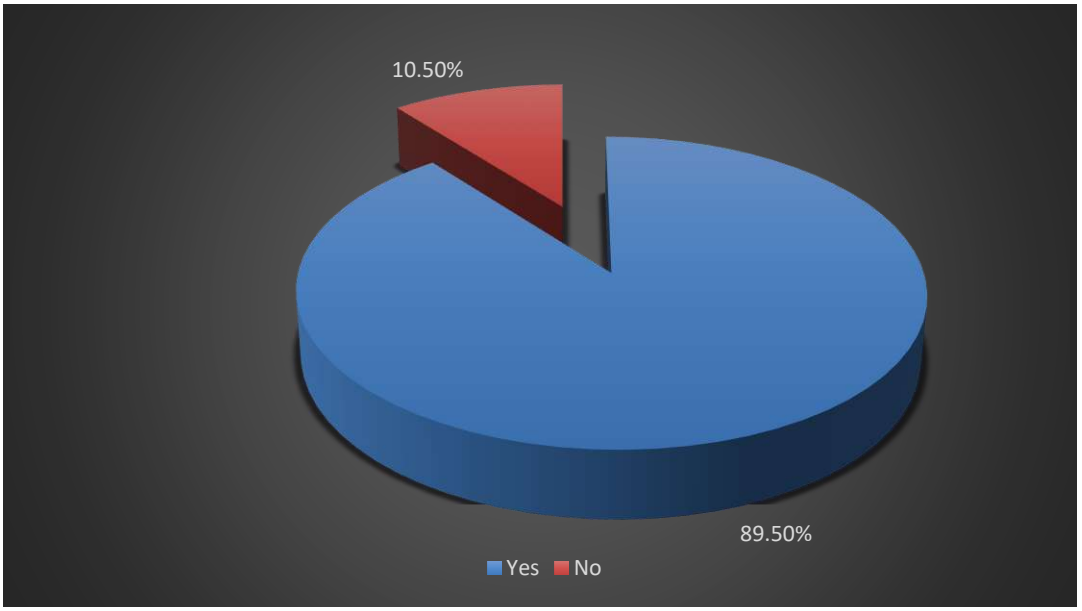


Figure no.02: Frequency distribution of the participants by mental health condition that affects pain perception

This pie chart showed the frequency distribution of the participants by mental health condition that condition that affects pain perception. Out of 114 postpartum participants, 89.5% did not report experiencing psychological distress, while 10.5% indicated the presence of such issues.

4.3.2: Number of children of the participants:

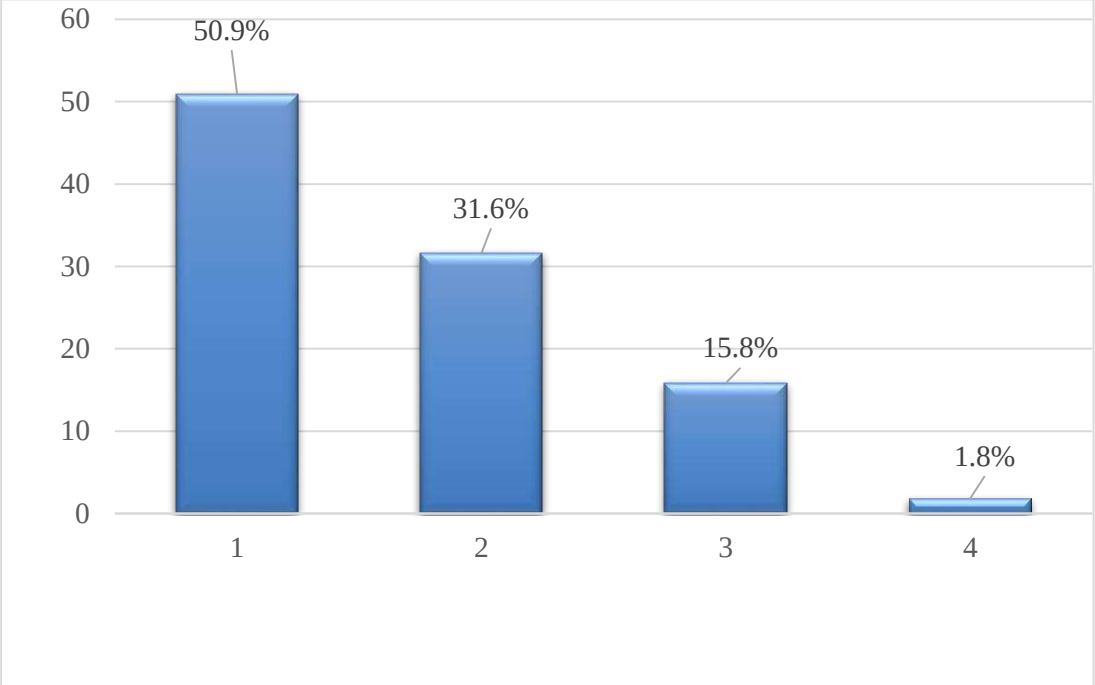


Figure no.03: Frequency distribution of the participants by number of children of the participants

The bar chart demonstrated the frequency of the participants by number of children. The number of children among the participants ranged from one to four. Of the 114 postpartum mothers surveyed, 50.9% (n = 58) had one child**,** 31.6% (n = 36) had two children, 15.8% (n = 18) had three children, and only 1.8% (n = 2) reported having four children.

4.3.3: Last delivery of the participants:

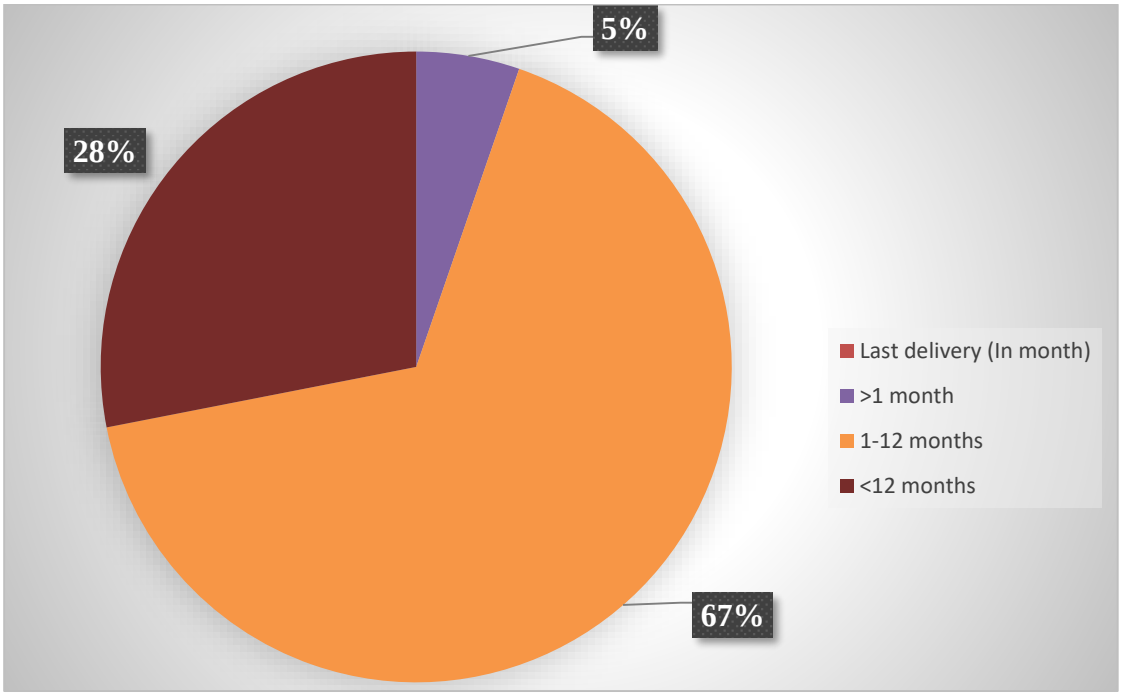


Figure no.04: Frequency distribution of the participants by last delivery of the participants

The pie chart presents the distribution of participants based on the duration since their most recent delivery. A significant majority (67%) had delivered within 1 to 12 months, reflecting the early to mid-postpartum phase. In contrast, 28% of mothers had delivered more than 12 months ago, and only 5% had delivered less than one month prior to the survey.

4.3.4 Mode of delivery

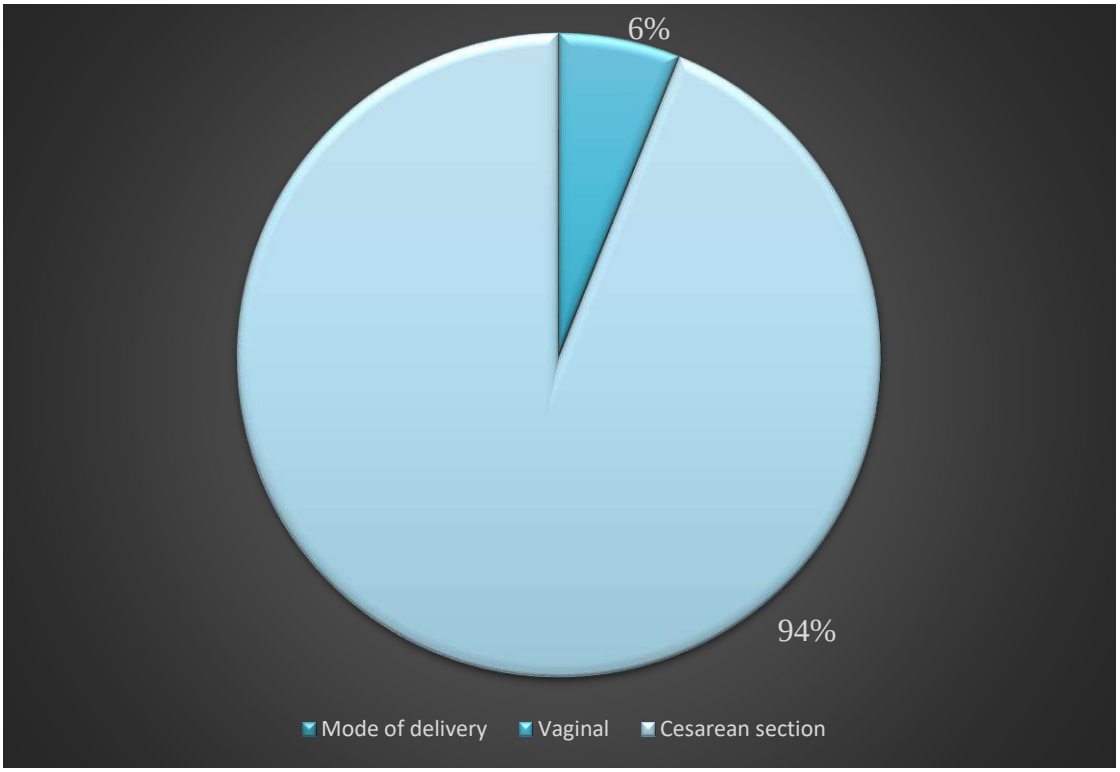


Figure no. 05: Frequency distribution of the participants by mode of delivery of the participants

In the present study, the majority of participants (94%) had cesarean deliveries, while only 6% delivered vaginally. Cesarean section may be linked to postpartum low back pain due to surgical stress, reduced core stability, and the effects of spinal anesthesia. The high rate of cesarean births in this sample may indicate a potential association with increased LBP risk.

4.4: Pain related information

4.4.1: Currently experience low back pain

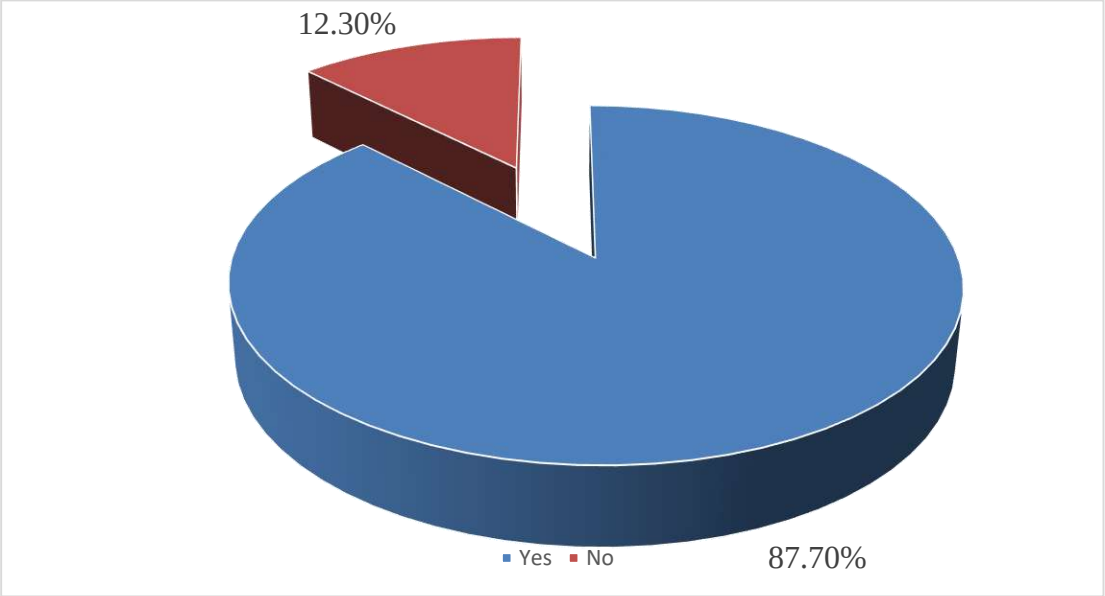


Figure no.06: Frequency distribution of the participant by current experience of low back pain

This figure demonstrated the distribution of the participant by current experience of low back pain. Participants were asked whether they were currently experiencing low back pain (LBP) during the postpartum period. Out of the total 114 postpartum mothers surveyed, 87.7% (n=100) reported currently experiencing LBP, while only 12.30% (n=14) indicated they were not experiencing any back pain at the time of data collection.

4.4.2: Onset of pain of the participant

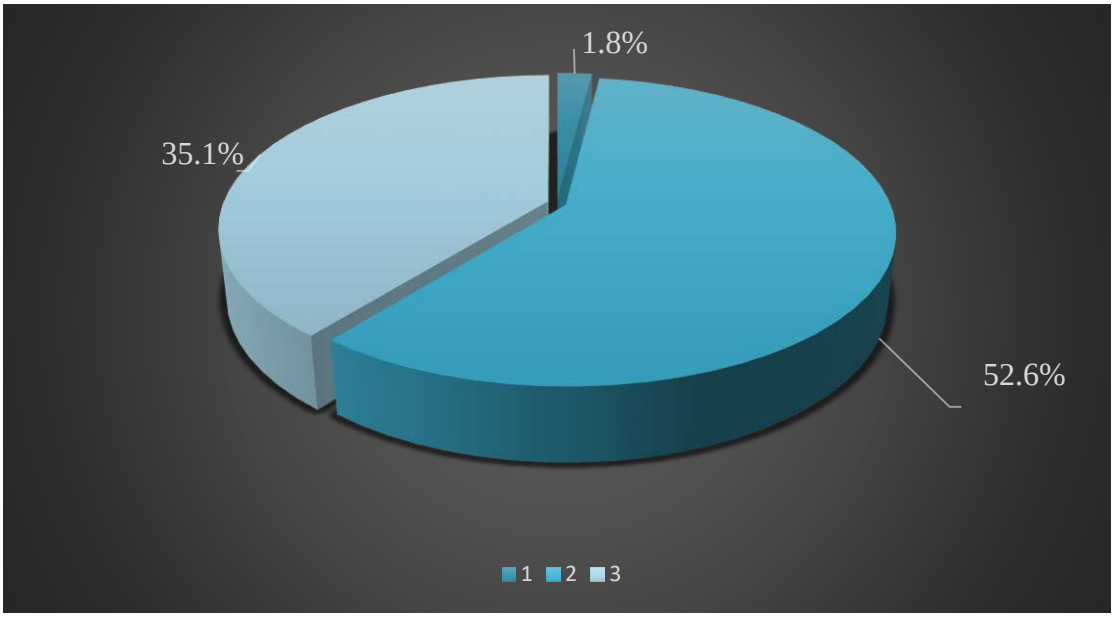


Figure no.07: Frequency distribution of the participants by onset of pain of the participants

The majority of participants **(**59%**)** reported the onset of low back pain occurring between 1 to 12 months postpartum**,** indicating that most cases developed during the extended postpartum period. Additionally, 39% of mothers experienced pain onset within the first month following delivery, reflecting a notable prevalence of early postpartum discomfort. Only 2% reported the onset of symptoms after one year postpartum**,** suggesting that late onset of low back pain was relatively uncommon in this study population.

4.4.3: Type of pain of the participant:

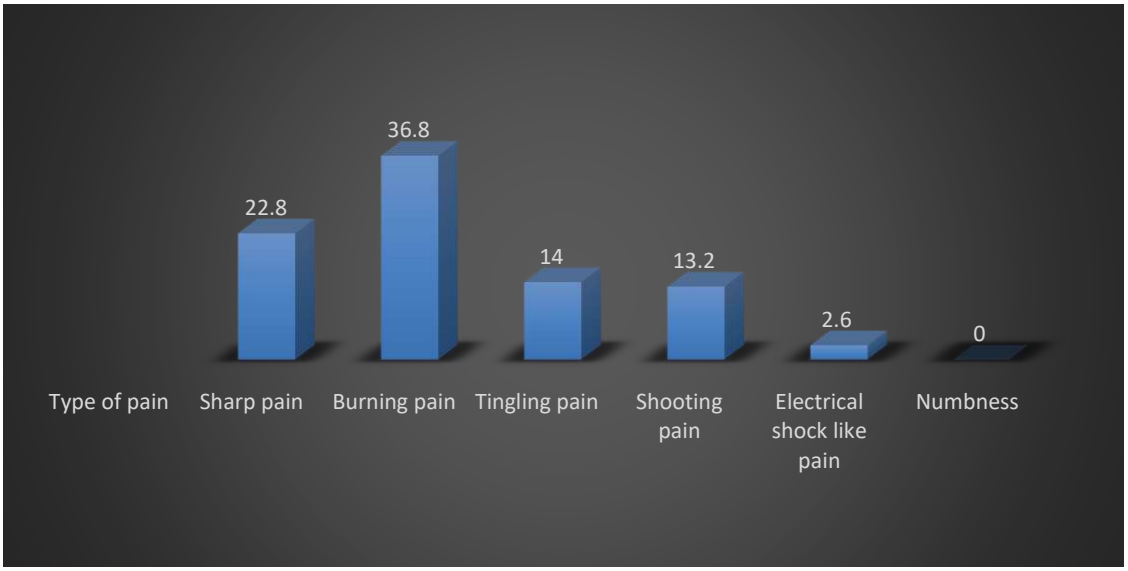


Figure no.08: Frequency distribution of the participants by types of pain of the participants

The most commonly reported type was burning pain, noted by 36.8% of participants. This type of pain is often described as a hot or searing sensation and may suggest nerve irritation or inflammation. Sharp pain was the second most frequently reported, affecting 22.8% of mothers. This type of pain is typically sudden and intense, often indicating localized muscle strain or ligament sprain. Tingling pain, experienced by 14.0%, may reflect nerve involvement, often accompanied by sensations such as pins and needles or numbness, although no participants in this study reported numbness. Shooting pain was reported by 13.2%, characterized by a sudden, radiating sensation that travels down the lower limbs, possibly indicative of nerve root compression or sciatica-like symptoms. A small proportion, 2.6%, described their pain as electrical shock-like, a more severe form of neuropathic pain, which may be associated with damage or compression of spinal nerves. Notably, no participants reported numbness, which helps differentiate these pain types from conditions with sensory deficits.

4.4.4: Nature of pain of the participant

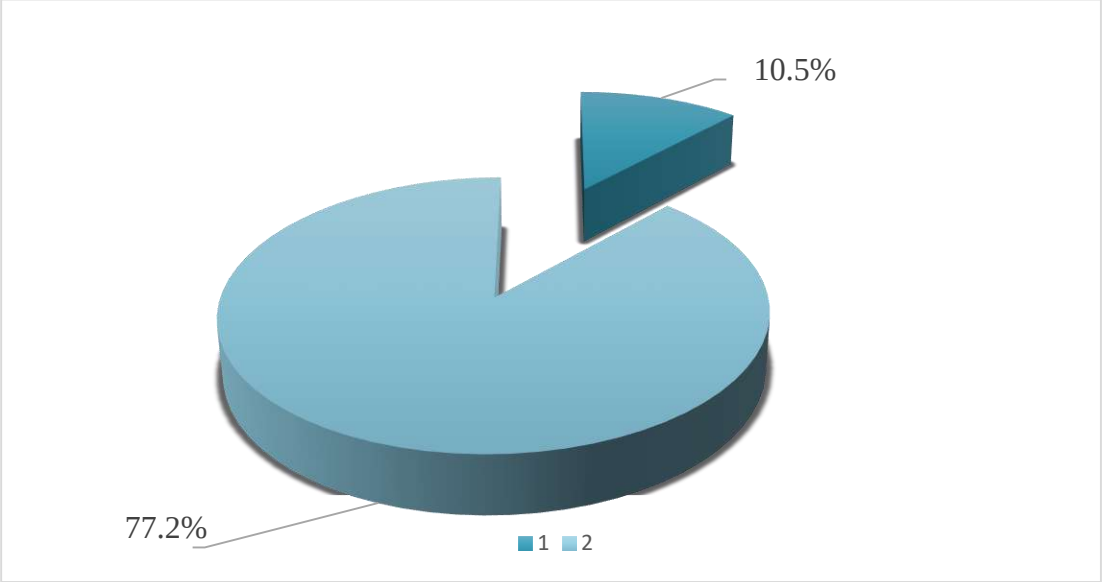


Figure no.09 : Frequency distribution of the participants by nature of the pain in the participants

The nature of low back pain (LBP) among postpartum mothers was categorized as either radiating or non-radiating, indicating whether the pain was localized or spread to other areas such as the legs or hips. The vast majority of participants, 77.2%**,** reported experiencing non-radiating pain. In contrast, 10.5% of participants experienced radiating pain, which spreads from the lower back to other areas, often following a nerve pathway.

4.4.5: Pattern of pain of the participants

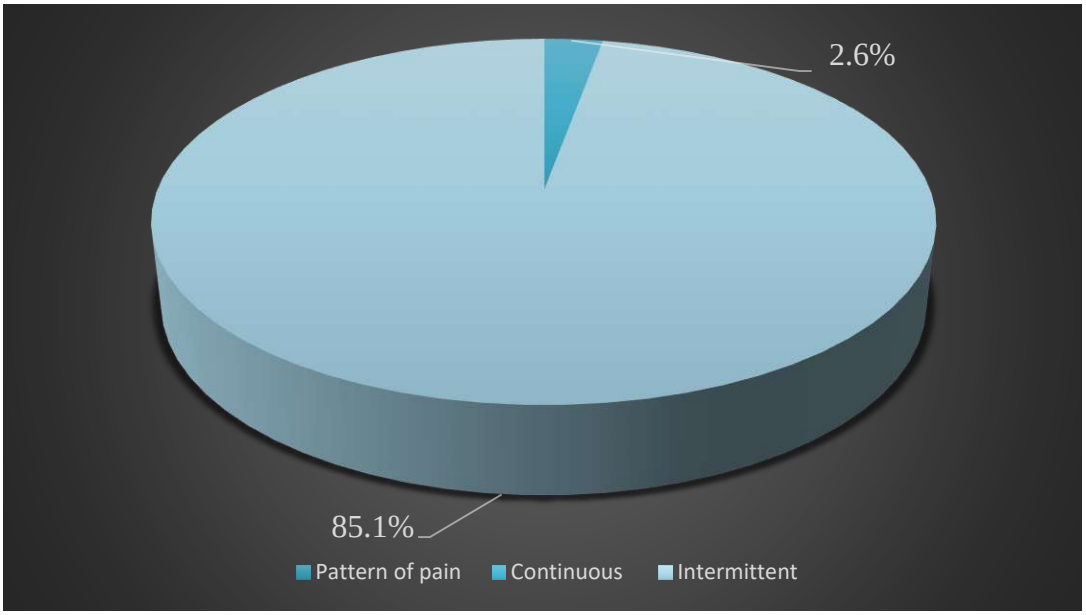


Figure no.10: Frequency distribution of the participants by pattern of pain of the participants

The pattern of low back pain (LBP) reported by participants was primarily intermittent**,** meaning the pain occurred at intervals rather than being constant. Specifically**,** 85.1% of the mothers described their pain as intermittent**.** Only a small percentage, 2.6%**,** experienced continuous pain, indicating persistent discomfort without relief.

4.4.6: Pain severity on VAS scale

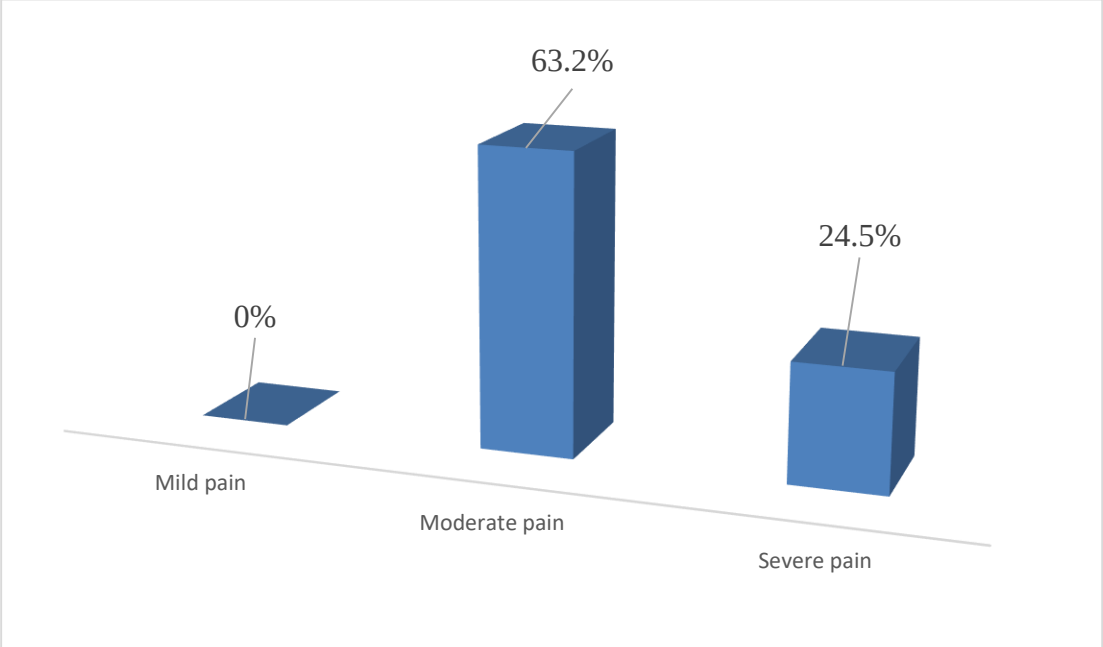


Figure no.11: Frequency distribution of the participants by pain severity on VAS scale

Pain severity among participants was assessed using the Visual Analogue Scale (VAS), a commonly used tool to measure the intensity of pain. The VAS ranges from 0 to 10, where 0 indicates no pain, 1–3 represents mild pain, 4–6 indicates moderate pain, and 7–10 signifies severe pain. In this study, none of the participants reported mild pain. The majority, 63.2% (n=72), reported experiencing moderate pain, while 24.5% (n=28) reported severe pain.

4.5: Breastfeeding practice

4.5.1: Time Period of Breastfeeding Practice

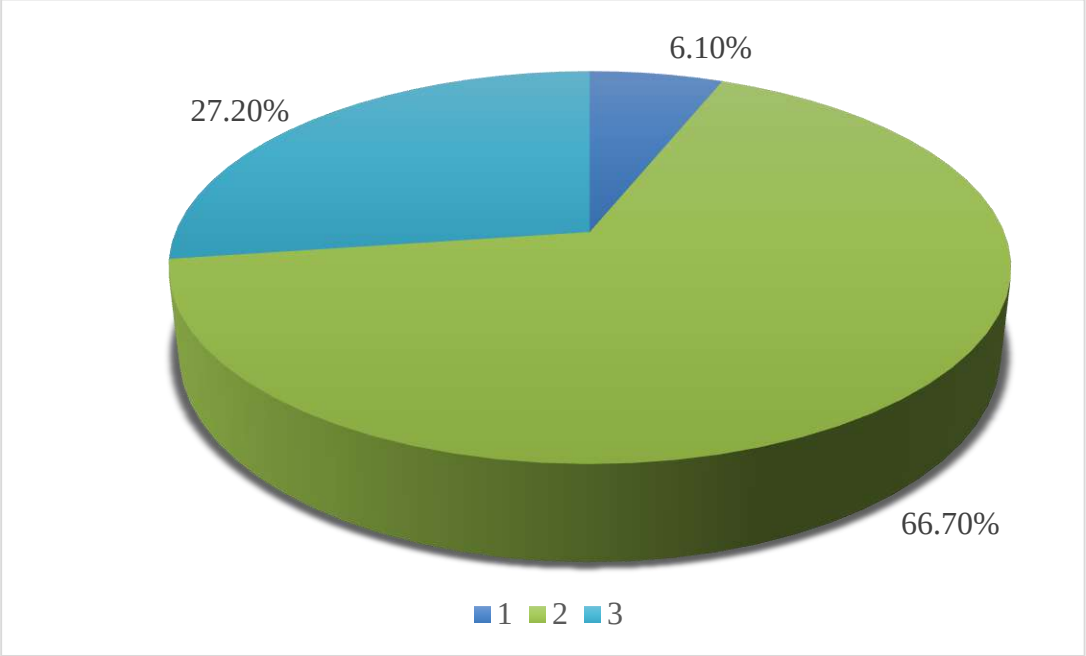


Figure no.12: Frequency distribution of the participants by time period of breastfeeding practice

Among the total participants, the majority (66.7%) reported breastfeeding their child for a duration of **1 to 12 months**, indicating that most mothers continued breastfeeding through at least the first year postpartum. Additionally, **27.2%** of the respondents practiced **extended breastfeeding** for more than 12 months. In contrast, a small proportion (**6.1%**) discontinued breastfeeding within the **first month** after childbirth.

4.5.2: Breastfeeding position of the participants:

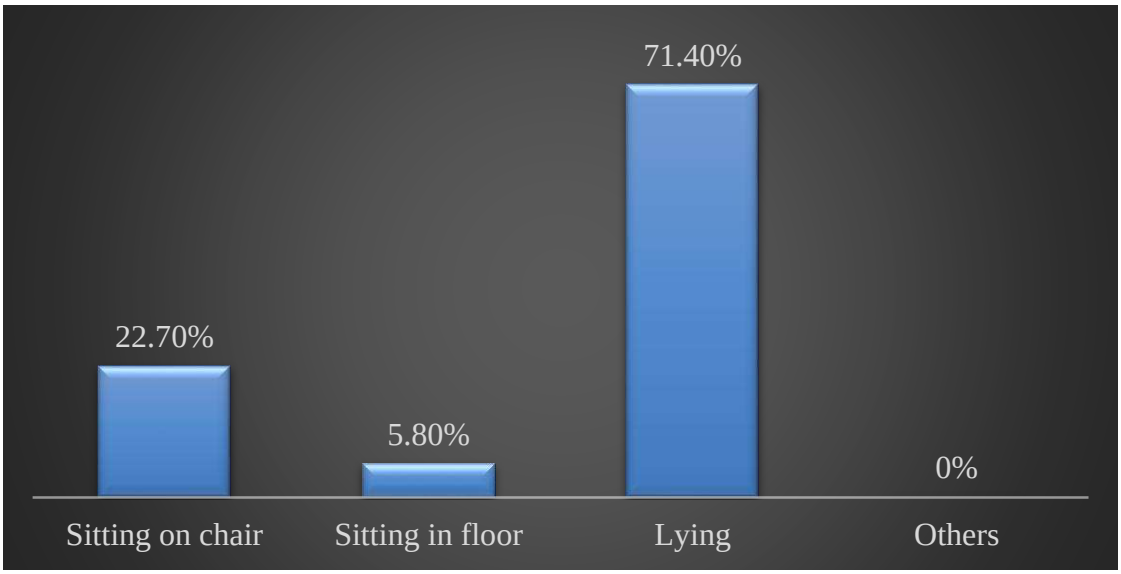


Figure no. 13: Frequency distribution of the participants by breastfeeding position of the participants

In this study of 114 postpartum mothers, the lying down position was the most frequently adopted for breastfeeding, reported by 71.4% of participants. This posture is often preferred due to its comfort and practicality, particularly during nighttime feeds or when the mother is experiencing fatigue or recovering from childbirth. The sitting on a chair position was the second most common, practiced by 22.7% of mothers. This position may offer better back support and promote proper infant latching, making it suitable for extended feeding sessions. In contrast, only 5.8% of mothers reported sitting on the floor while breastfeeding, which may reflect specific cultural practices or household conditions.

4.5.3: Breastfeeding hours of the participants

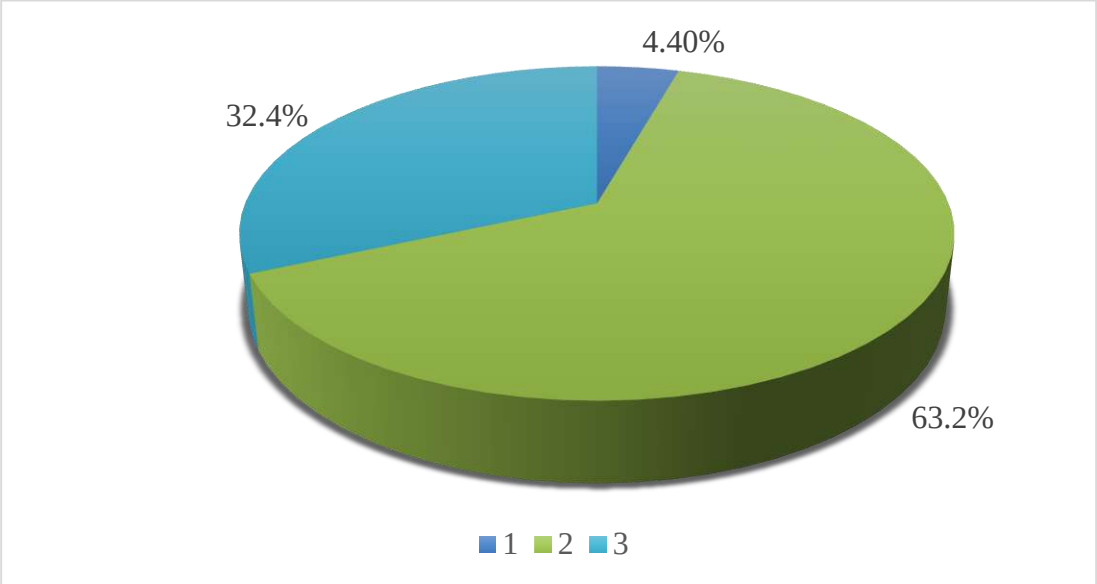


Figure no.14: Frequency distribution of the participants by hours of breastfeeding per day

Among the 114 postpartum mothers surveyed, the majority (approximately 63.2%**)** reported breastfeeding for 1 to 4 hours per day, as illustrated by the dominant orange segment of the chart. A considerable proportion (around 32.4%) indicated breastfeeding for more than 4 hours daily, while only a small percentage (44%)**.** reported breastfeeding for just over 1 hour per day.

4.5.4: Use of Pillow Support During Breastfeeding:

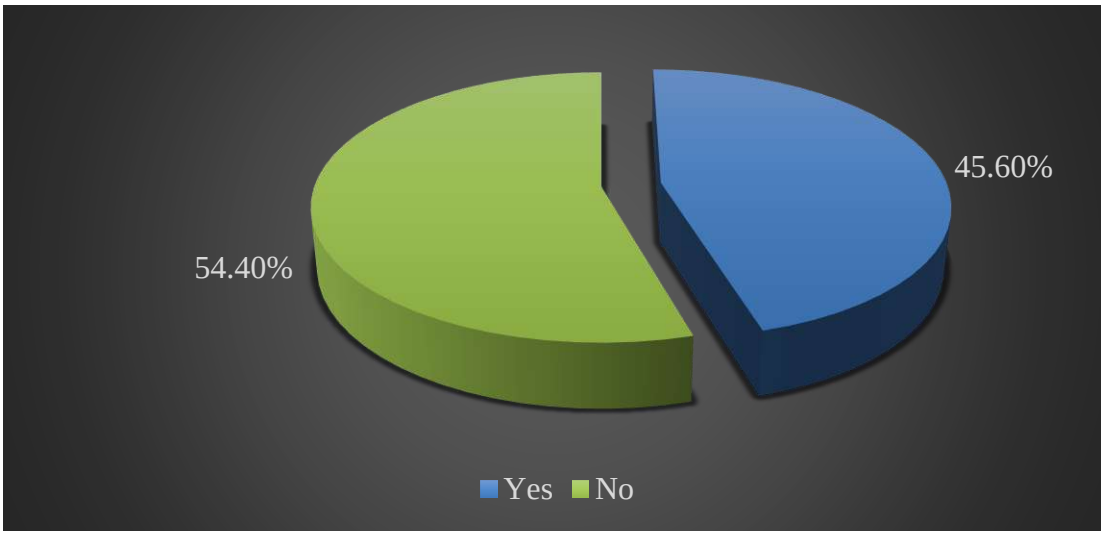


Figure no.15: Frequency distribution of the participants by use of pillow support during breastfeeding

The pie chart showed the frequency distribution of the participants by use of pillow support during breastfeeding. Analysis of the data revealed that 45.6% of the participants utilized pillow support while breastfeeding, whereas a slightly higher proportion, 54.4%**,** reported not using any form of supportive aid.

4.5.5: Preferable breastfeeding position:

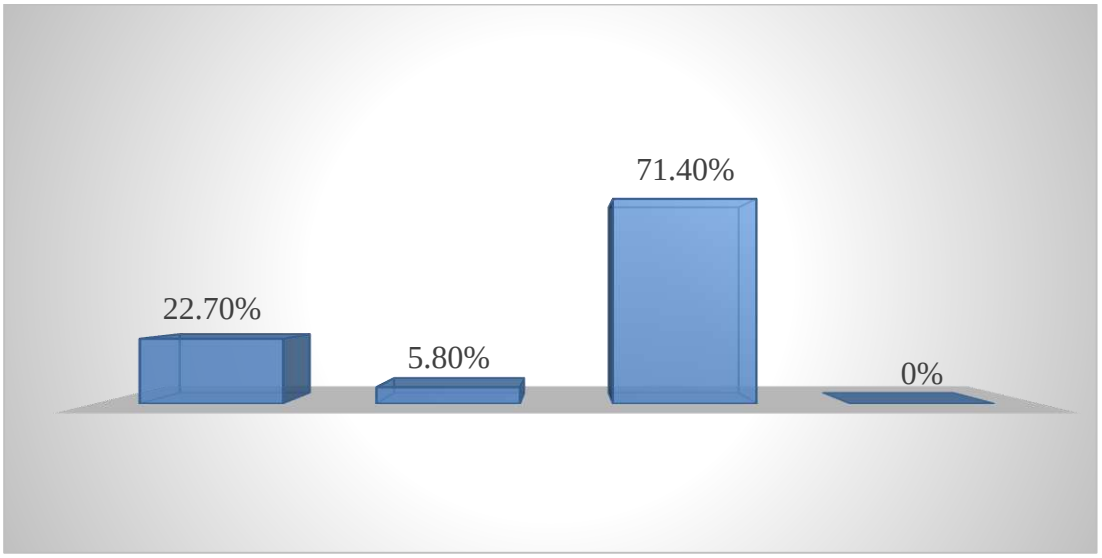


Figure no.16: Frequency distribution of the participants by preferable breastfeeding position of the participants

The data indicates that the most preferred breastfeeding position among participants was the side-lying position, reported by 73.6% of the mothers. This suggests a strong inclination toward postures that offer greater relaxation and reduced physical strain, particularly during extended or night-time feeding sessions. In comparison, 20.3% of the participants preferred sitting with support, such as using a chair or backrest, which provides additional comfort and spinal alignment. A small percentage, 6.1%, reported breastfeeding in a sitting unsupported position, reflecting minimal use of ergonomically unfavorable postures. Notably, no participants (0%) selected alternative positions categorized as "others.

4.5.6: Regularity of Switching Breastfeeding Side:

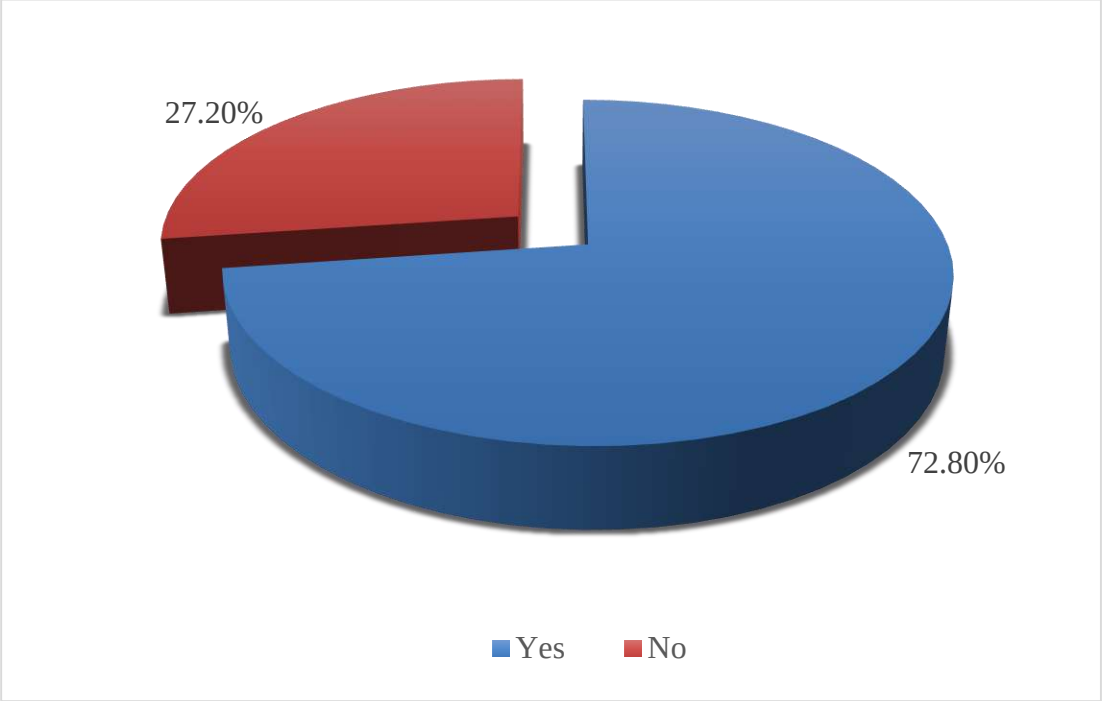


Figure no.17: Frequency distribution of the participants by regularity of switching breastfeeding side

Among the participants, 72.8% reported that they regularly switch breastfeeding sides during feeding sessions, while 27.2% indicated that they do not switch sides. This suggests that the majority of postpartum mothers in this study adopt alternating sides, which may help promote balanced milk production and reduce discomfort during breastfeeding.

4.5.7: Carrying baby for long time:

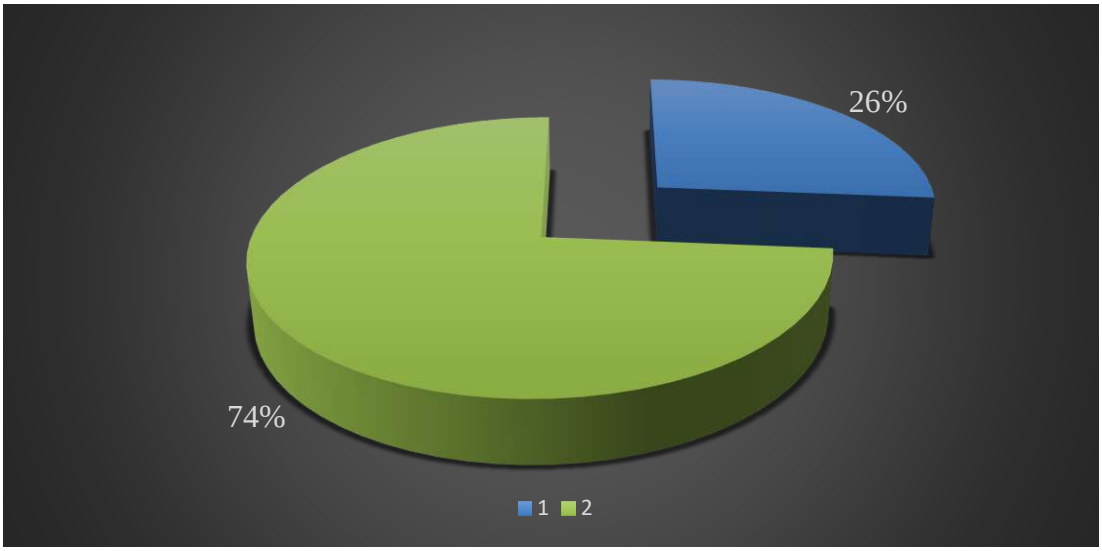


Figure no.17: Frequency distribution of the participants by carrying baby for long time

The figure demonstrated the frequency of the participants by carrying baby for long time. In response to whether they carry their baby for prolonged periods, 74% of the participants indicated that they do not engage in extended baby carrying, while 26% reported that they do.

4.5.8: Experiencing any low back pain while breastfeeding:

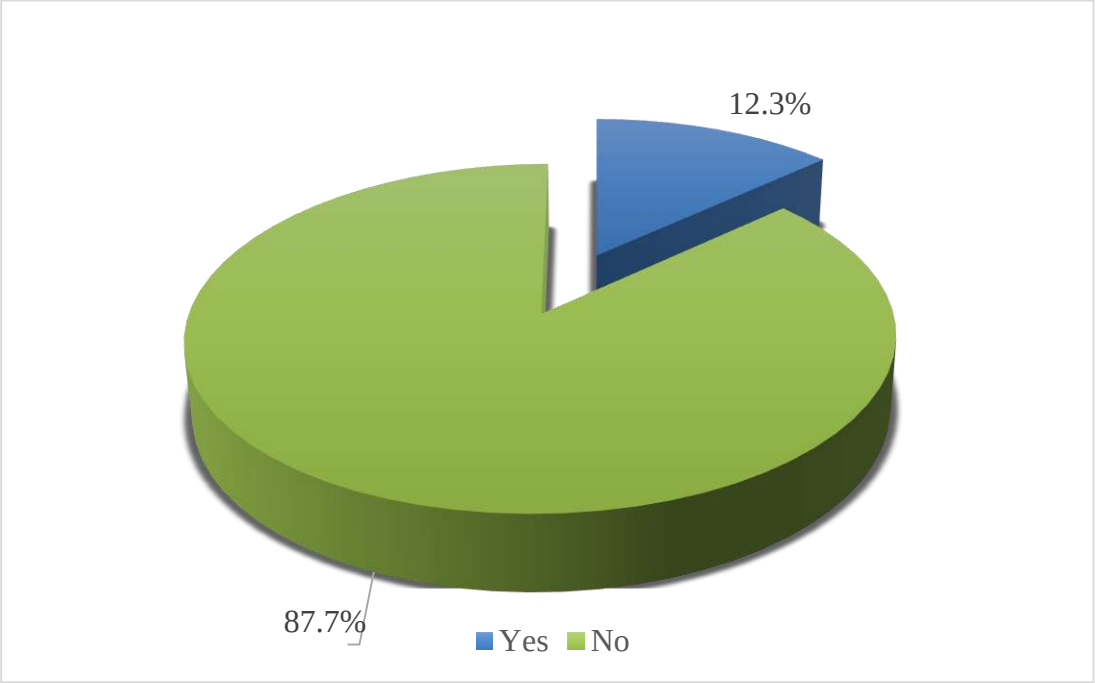


Figure no.18: Frequency distribution of the participants by experiencing any low back pain while breastfeeding

The pie chart showed the frequency of the participants by experiencing any low back pain while breastfeeding. Regarding the experience of low back pain during breastfeeding, 87.7% of the participants reported no such complaints, while 12.3% acknowledged experiencing low back pain during feeding.

4.5.9: Timing and Triggers of Low Back Pain Among Postpartum Mothers:

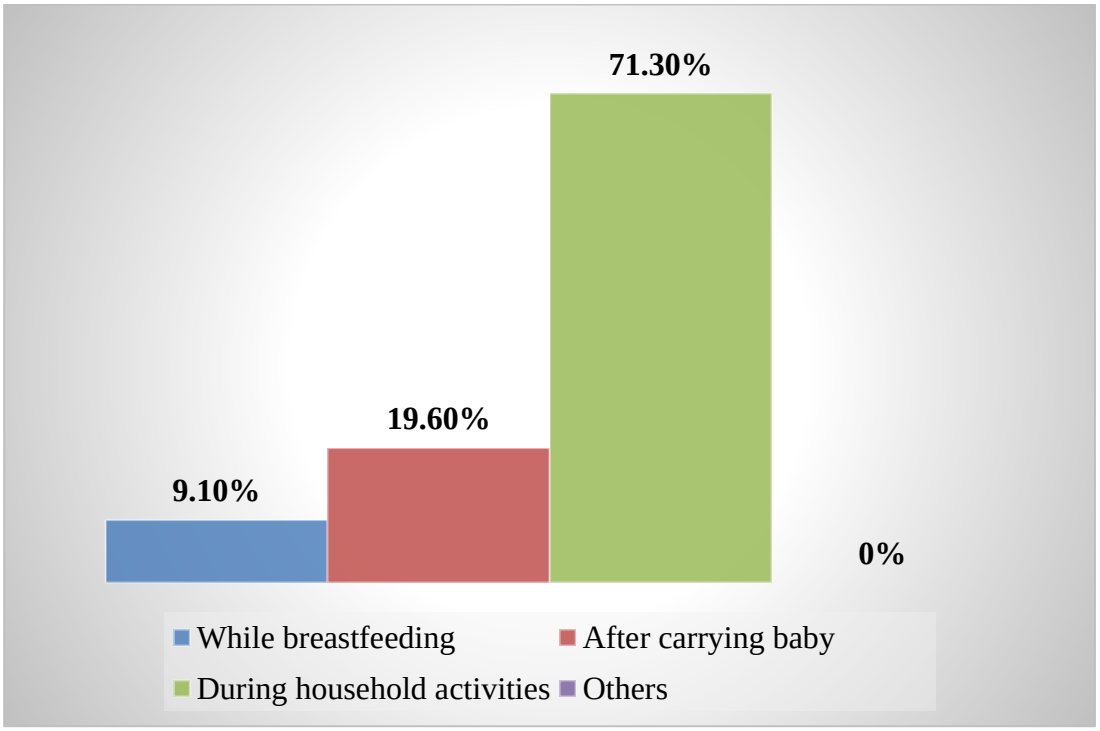


Figure no.19: Frequency distribution of the participants by timing and triggers of low back pain among postpartum mothers

The timing of low back pain reported by postpartum mothers varied across different daily activities. A majority of participants (71.3%) experienced back pain primarily during household activities. Additionally, 19.6% reported experiencing pain after carrying their baby, while 9.1% experienced discomfort specifically during breastfeeding. No participants (0%) indicated experiencing back pain in other situations.

4.6: Lifestyle and physical activity:

Table no.02: Frequency distribution of the participants by lifestyle and physical activity:

Variable	Number(n)	Percent (%)
Engaging in regular exercise		
Yes	20	17.5%
No	94	82.5%
Frequency of exercise		
Daily	18	15.8%
3-5 times per week	0	0%
1-2 times per week	2	1.8%
Never	94	82.5%
Type of exercise do you engage		
Walking	20	14.8%
Stretching	2	1.5%
Yoga	0	0%
Household activity	113	83.7%
None	0	0%
Sitting hour per day		
>4 hours	74	64.9%
4 - 6 hours	36	31.6%
<6 hours	4	3.5%
Sleeping hour per day		
>4 hours	6	5.3%

4 - 6 hours	60	52.6%
<6 hours	48	42.1%

The lifestyle and physical activity patterns of postpartum mothers shows only 17.5% engaged in regular physical activity, while 82.5% did not. Among them, 15.8% exercised daily and 1.8% did so 1–2 times per week. In terms of activity type, 83.7% performed household chores, 14.8% walked, and 1.5% did stretching, while none practiced yoga. Regarding sitting time, 64.9% sat for more than 4 hours, 31.6% for 4–6 hours, and 3.5% for less than 4 hours daily. For sleep, 5.3% slept more than 6 hours, 52.6% slept 4–6 hours, and 42.1% slept less than 4 hours per day.

4.7: Treatment related information:

Table no.03: Frequency distribution of the participants by treatment related information:

Variable	Number(n)	Percent(%)
Sought for medical treatment for low back pain		
Yes	10	8.8%
No	104	91.2%
Method of treatment you have used		
Medication	8	80%
Physiotherapy	2	20%
Home remedies	0	0%
Others	0	0%
Any treatment improved your low back pain		
Yes	8	8.8%
No	104	91.2%

Among 114 participants, only 8.8% (n = 10) of postpartum mothers sought treatment for LBP, mainly through medication (80%) and physiotherapy (20%), with just 8.8% (n = 8) reporting improvement, while the majority (91.2%).

4.8 Association between low back pain and socio-demographic and related information:

Table no. 04: Frequency distribution of the participants by age of the participants and low back pain:

Age of the participants	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	%
15 – 20 years	25	21.9%	5	4.4%	30	26.3%
21 – 25 years	44	38.6%	7	6.1%	51	44.7%
26 – 30 years	16	14%	2	1.8%	18	15.8%
31 – 35 years	11	9.6%	0	0%	11	9.6%
36 – 40 years	4	3.8%	0	0%	4	3.8%
Total	100	87.7%	14	12.3%	114	100%

$\chi^{2=}2.757$; $df=4$; $p=0.599$

The frequency distribution table demonstrate the association between age of the participant and low back pain. The highest prevalence was among women aged group 21 – 25 years age group, 38.6% had LBP and 6.1% were free from pain. Among participants aged 15 – 20 years , 21.9% reported LBP while 4.4% did not. For the age group 26 – 30 years, 14% of mothers experienced LBP compared to 1.8% without pain. Similarly, in the 31 – 35years group, 9.6% reported LBP, with none in this group reporting no pain. In the age group 36 – 40 years, only 3.8% had LBP and no participants were pain free. The chi-square test showed no significant association between age and LBP, indicating that maternal age was not a determining factor for back pain.

Table no. 05: Frequency distribution of the participant by educational qualification and low back pain:

Educational qualification	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
No formal education	0	0%	0	0%	0	0%
Primary education	18	15.8%	0	0%	18	15.8%
Secondary education	44	38.6%	7	6.1%	51	44.7%
Higher secondary	22	19.3%	2	1.8%	24	21.1%
Graduate or higher	16	14%	5	4.4%	21	18.4%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 5.557; df = 3; p = 0.135$

The table demonstrate the frequency and association between educational qualification and low back pain. The majority of LBP cases occurred among mothers with secondary education (38.6%) and higher secondary education (19.3%), while 14% of graduates also reported pain. Primary educated mothers accounted for 15.8% cases of LBP. There were no mothers in the sample who didn't have a formal education. Statistical tests showed that there was no significant link between education and LBP (p=0.135), which means that the level of education did not affect the risk of back pain in this group.

Table no. 06: Frequency distribution of the participants by occupation and low back pain:

Occupation	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Housewife	87	76.3%	14	12.3%	101	88.6%
Employed	12	10.5%	0	0%	12	10.5%
Self-employed	0	0%	0	0%	0	0%
Others	1	0.9%	0	0%	1	0.9%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 2.054; df = 2; p = 0.358$

Housewives comprised the majority of LBP cases (76.3%), followed by employed mothers (10.5%). No participants were self-employed. Although the prevalence appeared higher among housewives, this reflected their larger representation in the sample. The chi-square test did not find any significant association (p =0.358)), suggesting occupation was not a major influencing factor.

Table no.07: Frequency distribution of the participants by monthly household income and low back pain:

Household income	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Low (>10000 Tk)	28	24.6%	6	5.3%	34	30.9%
Middle (10000 -30000 Tk)	56	49.1%	8	7%	64	56.1%
Higher (<30000 Tk)	16	14%	0	0%	16	14%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 3.152; df = 2; p = 0.207$

Mothers from middle-class families had the most LBP (49.1%), followed by mothers from low-income (24.6%) and high income (14%). Although pain appeared most frequent in middle-income groups, the chi-square test showed no significant association. The chi value was 3.152 with p=0.207, indicating no significant association.

Table no. 08: Frequency distribution of the participants by living area and low back pain:

Living area	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Rural	73	64 %	10	8.8%	83	72.8%
Semi-urban	27	23.7%	4	3.5%	31	27.2%
Urban	0	0%	0	0%	0	0%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 0.015$; df=1; p=0.902

The table showed the association between living area and LBP. The most cases were reported by mothers from rural areas (64%) while 23.7% from semi-urban areas reported LBP. No participants were from urban area. The chi-square test ($\chi^2 = 0.015$; P=0.902) revealed no significant association suggesting that living area was not a determinant factor for LBP.

Table no.09: Frequency distribution of the participants by BMI level and low back pain :

BMI level	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Underweight	22	19.3%	6	5.3%	28	24.2%
Normal	64	56.1%	6	5.3%	70	61.4%
Overweight	12	10.5%	2	1.8%	14	12.3%
Obesity	2	1.8%	0	0%	2	1.8%
Total	100	87.7%	14	12.3%	114	100%

χ^2 = 3.401 ; df =3 ; p= 0.334

Normal-weight mothers showed the highest prevalence of LBP (56.1%), followed by underweight (19.3%), & overweight (10.5%). A small number of obese participants (1.8%) also reported pain. The statistical test revealed no significant association (χ^2 = 3.401 ; P= 0.334,)indicating that BMI was not significantly related to low back pain in this sample.

Table no. 10: Frequency distribution of the participant by hypertension and low back pain:

Hypertension	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	14	12.3%	0	0%	14	12.3%
No	86	75.4%	14	12.3%	100	87.7%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 2.234$; $df = 1$; $p = 0.135$

All hypertensive mothers (12.3%) reported LBP, while 75.4% of non-hypertensive mothers reported pain and 12.3% were without pain. The chi-square test showed no significant link (p=0.135), which means that hypertension alone may not be a deciding factor, but it could add to physical strain.

Table no. 11: Frequency distribution of the participants by diabetes and low back pain:

Diabetes	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	14	12.3%	0	0%	14	12.3%
No	86	75.4%	14	12.3%	100	87.7%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 2.234$; df= 1 ; p=0.135

12.3% of mothers with diabetic LBP while 75.4% of mothers without diabetic experienced LBP and 12.3% was pain free. With $\chi^2 = 2.234$ and p=0.135, the chi-square test demonstrate the relationship between diabetes and low back pain was not statistically significant.

Table no. 12 : Frequency distribution of the participants by thyroid disease and low back pain:

Thyroid disease	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	31	27.4%	3	2.7%	34	30.1%
No	68	60.2%	11	9.7%	79	69.4%
Total	100	87.6%	14	12.4%	114	100%

$\chi^2 = 0.570$; $df = 1$; $p = 0.450$

27.4% of mothers with thyroid disorders had LBP none of them were pain free. Conversely, 60.2% of non-thyroid mothers suffered LBP, whereas 12.3% reported not having LBP. However, statistical analysis showed no significant association (p=0.450). This suggests thyroid dysfunction may play a role in musculoskeletal discomfort but was not a significant risk factor here.

Table no.13: Frequency distribution of the participants by rheumatoid arthritis and low back pain:

Rheumatoid arthritis	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	1	0.9%	1	0.9%	2	1.8%
No	99	86.8%	13	11.4%	14	98.2%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 2.689; df=1 ; p=0.101$

Rheumatoid arthritis affected two mothers; one of them (0.9%) reported experiencing pain, while the other (0.9%) did not. With χ^2=2.689 and p=0.101, the relationship was not determined to be significant.

Table no.14: Frequency distribution of the participants by any other co-morbidities and low back pain :

Other co-morbidities	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	1	0.9%	0	0%	1	0.9%
No	99	86.8%	13	12.3%	113	99.1%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 0.141; df = 1; p=0.707$

Only 1 mother (0.9%) reported another comorbidity, and had LBP. No significant association was found (χ^2=0.141, p=0.707).

Table no.15: Frequency distribution of the participant by mental health condition and low back pain:

Mental health condition	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	12	10.5%	0	0%	12	10.5%
No	88	77.2%	14	12.3%	102	89.5%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 1.878; df = 1; p = 0.171$

In all, 10.5% of mothers who indicated mental health issues also reported lower back pain. Among the people who did not have a mental health issue, 77.2% said they were in pain and only 12.3% said they were pain-free. The correlation did not reach statistical significance (χ^2=1.878, p=0.171).

Table no.16: Frequency distribution of the participants by number of child and low back pain:

Number of child	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
1	46	40.4%	12	10.5%	58	50.9%
2	34	29.8%	2	1.8%	36	31.6%
3	18	15.8%	0	0%	18	15.8%
4	2	1.8%	0	0%	2	1.8%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =8.119 ; df=3 ;p=0.044

With a single child, 40.4% of mothers experienced pain and 10.5% claimed no pain; with two children, 29.8% reported pain and 1.8% no pain; with three children, 15.8% reported pain alone; and with four children, 1.8% pain only. Parity increases the incidence of LBP, as indicated by the significant correlation shown by the chi-square test (χ^2=8.119, p=0.044).

Table no. 17: Frequency distribution of the participant by last delivery months and low back pain:

Last delivery month	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
>1 month	4	3.5%	2	1.8%	6	5.3%
1–12 months	68	59.6%	8	7%	76	66.6%
<12 months	28	24.4%	4	3.5%	32	27.9%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =2.687 ; df= 2; p=0.261

Fewer than one month after giving birth, just 3.5% of mothers reported pain, and none reported being pain-free. A total of 59.6% reported pain during the first a year after giving birth, whereas 8.8% reported no pain at all. Of those who reported pain, 24.4% had it for more than 12 months, while just 3.5% reported no pain at all. An association was not found to be significant (χ^2=2.687, p=0.261).

Table no.18: Frequency distribution of the participants by mode of delivery and low back pain:

Mode of delivery	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Vaginal delivery	3	2.6%	4	3.5%	10	6.1%
Cesarean delivery	97	85.1%	10	8.8%	100	93.9%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 13.934$; $df = 1$; $p = 0.00$

While 85.1% of cesarean mothers reported low-back pain, only 2.6% of vaginal birth mothers reported pain and 12.3% reported no pain. Cesarean delivery is strongly associated with lower back pain, as confirmed by the highly significant association (χ^2=13.934, p=0.000) found by the chi-square test.

Table no.19: Frequency distribution of the participants by duration of breastfeeding and low back pain:

Duration of breastfeeding	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
>1 hour	3	2.6%	2	1.8%	5	4.4%
1-4 hours	69	60.5%	4	3.5%	73	64%
<4 hours	28	24.6%	8	7%	36	31.4%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =10.004; df=2 ; p= 0.007

Mothers who breastfed for less than 1 hour per day reported 2.6% pain while 2.8% were pain free. Breastfeeding mothers who breastfed for 1–4 hours per day reported 60.5% pain and 7% no pain; those who breastfed for 4 hours or more per day reported 24.6% discomfort and 1.8% no pain. Indicating that LBP was increased with longer time of breastfeeding, the correlation was statistically significant (χ^2=10.004, p=0.007).

Table no.20: Frequency distribution of the participants by breastfeeding in sitting on chair and low back pain:

Sitting on chair	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	31	27.2%	4	3.5%	35	30.7%
No	69	60.5%	10	8.8%	79	69.3%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =0.034; df=1; p=0.854

Mothers using chair sitting reported 27.2% pain and 5.3% no pain, while those not using chair sitting had 60.5% pain and 7% no pain. The association was not significant (χ^2=0.034, p=0.854).

Table no.21: Frequency distribution of the participants of by breastfeeding in sitting on floor and low back pain:

Sitting on floor	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	7	6.1%	2	1.8%	9	7.9%
No	93	81.6%	12	10.5%	105	92.1%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =0.896; df=1; p=0.344

Among mothers who breastfed on the floor, just 6.1% reported pain and 0.9% reported no pain, while 81.6% of those who did not use the floor experienced pain and 11.4% reported no pain. The results did not show any significant correlation (χ^2=0.896, p=0.344).

Table no.22: Frequency distribution of the participants by breastfeeding in lying position and low back pain:

Lying	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	96	84.2%	14	12.3%	110	96.5%
No	4	3.5%	0	0%	4	3.5%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 0.580; df=1; p=0.449$

The frequency table demonstrated the association between breastfeeding lying position and low back pain. Of the mothers who lied down, 84.2% felt lower back pain and 12.3% did not. No significant correlation was found in the chi-square test (χ^2=0.580, p=0.449).

Table no.23: Frequency distribution of the participants by using pillow support and low back pain:

Using pillow support	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	47	41.2%	5	4.4%	52	45.6%
No	53	46.5%	9	7.9%	62	54.4%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =0.631 ; df=1 ; p= 0.427

Mothers using pillow support reported 41.2% with pain and 7.9% without, while those not using pillows reported 46.5% pain and 4.4% no pain. The association was not significant (χ^2=0.631, p=0.427).

Table no. 24: Frequency distribution of the participant by switching breastfeeding sides and low back pain:

Switching breastfeeding sides	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	72	63.2%	11	9.6%	83	72.8%
No	28	24.5%	3	2.7%	31	27.2%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =0.268; df=1; p=0.605

The frequency table demonstrated the association between switching breastfeeding sides and low back pain. Mothers who switched sides reported 63.2% pain and 10.5% no pain, while those not switching reported 24.5% pain and 1.8% no pain. No significant association was found (χ^2=0.268, p=0.605).

Table no.25: Frequency distribution of the participants by carrying baby and low back pain:

Carrying baby	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	23	20.2%	7	6.1%	30	26.3%
No	77	67.5%	7	6,1%	84	77.7%
Total	100	87.7%	14	12.3%	114	100%

$\chi^2 = 4.617$; df=1 ; p= 0.032

Mothers who carried babies for an extended duration reported 20.2% experiencing pain, while none demonstrated being pain-free. In contrast, among those who did not carry for an extended duration, 67.5% experienced discomfort and 12.3% reported being pain-free. The chi-square test was significant (χ^2=4.617, p=0.032), which means that carrying something for a long time makes LBP worse.

Table no.26: Frequency distribution of the participants by engaging regular activities and low back pain:

Engage in regular activities	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
Yes	16	14%	4	3.5%	20	17.5%
No	84	73.7%	10	8.8%	94	82.5%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =1.342; df=1 ; p= 0.247

In the group of mothers who engage in regular activities, 14% reported pain and 3.5% reported no pain, while non-active mothers accounted for 73.7% pain and 8.8% no pain. In this study, no significant association was identified (χ^2=1.342, p=0.247).

Table no.27: Frequency distribution of the participants by sitting hour and low back pain:

Sitting hour	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
>4 hours	67	58.8%	7	6.1%	73	64.9%
4 – 6 hours	29	25.4%	7	6.1%	36	31.6%
<6 hours	4	3.5%	0	0%	4	3.5%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =2.822; df=2 ; p=0.244

58.8% of mothers reported pain and 8.8% reported no pain when they sat for less than four hours, while 25.4% of mothers reported pain and 3.5% reported no pain when they sat for four to six hours. Only 3.5% of mothers who sat for more than 6 hours had LBP. There was no statistically significant association (χ^2=2.822, p=0.244).

Table no. 28: Frequency distribution of the participants by sleeping hour and low back pain:

Sleeping hours	Low back pain				Total	
	Yes		No			
	N	(%)	N	(%)	N	(%)
>4 hours	4	3.5%	2	1.8%	6	5.3%
4 – 6 hours	57	50%	3	2.6%	60	52.6%
<6 hours	39	34.2%	9	7.9%	48	42.1%
Total	100	87.7%	14	12.3%	114	100%

χ^2 =7.286; df=2 ; p=0.026

The frequency table showed the association between sleeping hours and low back pain. Among mothers who slept for four to six hours, 50% experienced pain compared to 7.9% who reported no pain at all. Following that, the prevalent sleep duration was less than four hours, with 34.2% of mothers reporting pain and 0.9% reporting no pain at all. A only 3.5% of individuals who slept for more than 6 hours reported experiencing pain, whereas 0.9% reported no pain at all. Reduced sleep increased LBP, as indicated by the significant chi-square test (χ^2=7.286, p=0.026).

CHAPTER-V DISCUSSION & LIMITATION

The prevalence of low back pain in this study was strikingly high at 87.7% reflecting that majority breastfeeding mothers experience low back pain during postpartum period. Another study showed 84% of mothers reported back pain at least once a month. 27.6% of mothers indicating that low back pain is not only a cause of discomfort but also limits daily functioning and maternal activities (Ratajczak and Górnowicz , 2024, p.675). A study found that 78% of mothers in Pakistan had low back pain (Rani et al. 2019, p. 432). In Saudi Arabia 84% of mothers reported to having low back pain (Almutairi et al. 2024, p. 58).

The study found that mothers aged 21 – 25 years were more likely to experienced low back pain. This corresponds with the results of another study noted a greater incidence of low back pain in younger populations attributed to variables such as higher physical activity and childcare responsibilities (Sany et al. 2022, p.698). Age, education, occupation, income, residence, and BMI did not significantly influence LBP, similar to findings from Saudi Arabia and other studies that demonstrated widespread vulnerability regardless of demographic factors (Almutairi et al. 2024, pp. 57-62). An important finding of this study was that overweight and obese mothers experienced significantly more low back pain compared to normal BMI. A study also reported that higher BMI is a significant risk factors for chronic low back pain among postpartum women (Chia et al. 2016, p. e3468).

The study found a significant association between cesarean delivery and low back pain among breastfeeding mothers. Mothers who underwent cesarean delivery had a higher prevalence of low back pain compared to those with normal delivery. The chi-square analysis showed significant (p-0.032). This align with another article finding reported that cesarean section mothers experienced higher rates of low back pain compared to those with spontaneous vaginal delivery (Barega et al. 2025, pp. 1-9). Similar to what Chia et al. (2016, p. 4) found, the risk of persistent LBP is increased with cesarean delivery, especially when neuraxial anesthesia is used. Contributing factors are likely post-operative pain, delayed movement, compromised abdominal muscles, and improper breastfeeding posture. According to Uddin (2025, pp. 1-26), the cesarean rate

for hospital births in Bangladesh is over 72%, which is much higher than what the World Health Organization recommends.

Multiparous mothers had a higher prevalence of LBP compared to primiparous mothers. This is in the line with another study found that healthcare workers with more than one child were more likely to have LBP (Islam et al. 2023, pp. 1-8). A study found that Bangladeshi women who had several children were more likely to suffer from musculoskeletal problems as a result of the long hours spent lifting, bending, and doing housework. This finding is in line with the link between multiparty and musculoskeletal pain (Rahman et al. 2020, p. 14). Parity as a risk factor has been emphasized in extensive musculoskeletal research. For instance, a Saudi study found that women who had more children were more likely to suffer back and pelvic pain during and after pregnancy (Almutairi et al. 2024, p. 59). This corresponds with Nepal's findings that associate multiparity and childcare responsibilities with reduced abdominal endurance and increased pain (Yazir et al. 2022, p. 6069). In addition, severe physical load during childcare is regularly identified as a risk factor for postpartum musculoskeletal symptoms (Rahman et al. 2020, p. 15).

Mothers who adopted poor breastfeeding postures such as unsupported sitting or forward bending reported higher incidences of LBP. In this study, lying position was reported 71.4% of the participants whereas 22.7% reported sitting on a chair and only 5.8% reported sitting on floor while breastfeeding. But there was no statistically significant relationship between low back pain and breastfeeding position. Compared to another study showed that bad posture when breastfeeding is a significant risk factor (Yuan et al. 2022, pp. 86-96). A variety of feeding positions should be tried, rather than staying in one for long periods of time, according to consumer advice. Results demonstrate that ergonomic education can help decrease biomechanical strain, as recommended by Ratajczak and Górnowicz (2024, p. 7), for example, by suggesting that people lie or semi-lye when feeding in order to support their head and torso.

The present study found a statistically significant association between duration of breastfeeding and low back pain among breastfeeding mothers ($p=0.007$).This findings is consistent with another study who reported that longer breastfeeding duration significantly increased the prevalence of back and neck pain among mothers. Women experiencing back pain spent significantly longer time during single breastfeeding

episodes ($p < 0.05$) and had a higher total daily breastfeeding time ($p < 0.01$) compared to those without back pain (Ratajczak and Górnowicz , 2024, p.675). Another study showed that prolonged static positions during breastfeeding contribute to low back pain (Komatsu et al. 2020, pp. e117-e130). Also, among Saudi Arabian nursing mothers, Almutairi et al. (2024, p. 60) found that the duration of time a woman feeds and how she positions herself while doing so were significant factors in the development of musculoskeletal pain.

The study found a significant association between prolonged baby carrying and low back pain among breastfeeding mothers ($p=0.032$). Mothers who carried their infants for long time were more likely to experienced LBP. This align with another study found that prolonged carrying increased muscle load, strains the paraspinal muscles and shoulder muscles and can lead to postural imbalance (Tola et al. 2022, p. 457). International findings provide more support for this association. Turkish researchers found that bending over and carrying a baby were major causes of back pain after giving birth (Kaya et al. 2018, p. 66).

Reduced sleeping hours were significantly associated with LBP ($p =0.026$).Sleep deprivation impairs tissue repair ,elevates inflammatory responses and increases pain sensitivity, particularly in postpartum mothers (Abouelela et al. 2021, pp. 789-798).Another study found that sleep disturbances at 4 months postpartum were significantly associated with persistent low back pain even after adjusting confounding variables such as age ,BMI , parity and history of low back pain before pregnancy (Horibe et al. 2021, pp. 4015-4023). The association between sleep and musculoskeletal pain has been documented in previous research. Aili et al. (2015, p. 153) found that sleep problems predicted persistent musculoskeletal pain among Swedish twins, suggesting a bidirectional relationship between sleep deprivation and pain. Poor sleep may impair tissue recovery, increase inflammatory mediators, and lower pain thresholds.

5.2 Limitation:

In any investigation, including this one, complete precision is impossible to attain. When interpreting the findings, certain restrictions and challenges must be considered:

- The limited sample size (n=114) limits the findings applicability to larger groups. Larger sample sizes may result in differing prevalence rates and associated factors. The study concentrated on participants from a restricted geographic area, mostly rural settings, which may not accurately reflect the experiences of breastfeeding mothers in urban or various socioeconomic contexts.
- As a cross-sectional study, it collects data at a particular point in time and cannot demonstrate causal correlations between risk variables and low back pain (LBP), which could provide a more complete picture of its effects on quality of life.
- By expanding the study to include a wider range of groups, larger sample sizes, and more thorough objectives, the validity and applicability of any follow-up findings will be enhanced.

CHAPTER – VI CONCLUSION & RECOMMENDATION

6.1 Conclusion:

The purpose of this research was to identify breastfeeding mothers in Kaliganj, Gazipur, Bangladesh, and to determine the frequency and associated factors of low back pain (LBP). A major maternal health problem in the postpartum period, LBP is a condition that impacts 87.7% of participants, according to the data. Mode of delivery, number of children, duration of breastfeeding, sleeping hours, and prolonged infant carrying were found to have significant relationships with the occurrence of LBP among the factors investigated. Low back pain was more common among mothers who had caesarean sections, had three or more children, breastfed for longer periods of time each day, carried their infants for longer lengths of time, and had less sleep. These results are in line with previous research from around the world, which has shown that biomechanical strain and lifestyle factors are major contributors to musculoskeletal health after giving birth. There was no statistically significant association between the variables of interest (body mass index (BMI), comorbidities, breastfeeding positions, and socio-demographic characteristics including age, education, occupation, income, and living region). It appears that broader societal and cultural variables continue to impact mothers' perceptions of pain, as descriptive patterns indicated that LBP was more prevalent among housewives, moms residing in rural areas, and those with chronic illnesses. This study's high prevalence of LBP highlights the critical need for immediate measures to alleviate symptoms and promote health. Breastfeeding and baby carrying ergonomics education, postpartum care based on physiotherapy, and the promotion of sufficient maternal rest should all be part of maternal health initiatives. In addition, lowering the rate of needless cesarean sections and bolstering social support networks could assist in lowering risks. Finally, low back pain (LBP) among nursing moms is a multi-faceted public health concern with economic, social, and cultural implications. It can only be tackled by integrating clinical treatment with family education and actions at the policy level. Ensuring mothers' musculoskeletal health is important for many reasons, including their own health, their children's health and development, and the health of their communities and families as a whole.

6.2 Recommendations:

1. Raising awareness of breastfeeding posture, carrying baby and preventive measures should be focus in public health campaigns and educational initiatives, especially for women in reproductive ages.
2. Mothers should be educated on ergonomically safe breastfeeding positions, such as using pillows for support and keeping the spine aligned to reduce strain on the lower back.
3. Frequent breaks and alternating arms while holding the baby are recommended.

4. Ensuring at least 7–8 hours of quality sleep can reduce fatigue-related postural issues that exacerbate LBP
5. Mothers experiencing early signs of LBP should seek physiotherapy consultation for individualized intervention.

6. Conduct longitudinal studies to identify causal relationships between maternal practices and LBP. Expand research to urban populations for comparison with rural contexts. Explore additional factors such as psychological stress, physical activity level, and nutrition in relation to maternal back pain.

CHAPTER – VII REFERENCES

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APPENDIXES

Verbal Consent Form

Assalamu-aalaikum/ Namashkar,

I am Nusrat Jahan Jyoti, a student of B.Sc. in Physiotherapy, SAIC College of Medical Science and Technology (SCMST), affiliated with Faculty of Medicine, University of Dhaka. For the partial fulfillment of my bachelor degree, I have to conduct a research project and it is a part of my study. My Research title is "Prevalence and associated factors of low back pain among breastfeeding mothers in Kaliganj Union, Gazipur"

I do expect that the interview will take 20-30 minutes. I also offer you to ask any sort of questions when you fell it is necessary to get insight.

I would like to inform you that this is a purely academic study and will not be used for any other purposes. I assure you that all the data will be kept confidential. Your participation will be voluntary. You may have the rights to withdraw your consent and discontinue from the study at any point of time. You also have the right not to answer any other question that you don't like of this questionnaire.

If you have any query about the study, you may contact with me (01643060320) or my supervisor Md. Billal Hossain (01960007506), lecturer (Physiotherapy) of SCMST.

So, may I have your consent to proceed with the interview?

Yes……., No……

Signature of the participant & Date…….

Signature of the researcher & Date……..

Signature of the witness & Date……..

সম্মতি পত্র

আসসালামু আলাইকুম/নমস্কার,

আমি নুসরাত জাহান, সাইক কলেজ অভ মেডিকেল সায়েন্স অ্যান্ড টেকনোলজি (এসসিএমএসটি) এর বি.এস সি. ইন ফিজিওথেরাপিতে এর শিক্ষার্থী। যা, ঢাকা বিশ্ববিদ্যালয়ের মেডিসিন অনুষদের অধিভুক্ত একটি ইনস্টিটিউট। আমার ব্যাচেল ডিগ্রী সম্পূর্ণ করার জন্য একটি গবেষণা প্রকল্প পরিচালনা করতে হবে, এবং এটি আমার পড়াশুনার একটি অংশ। গবেষণার শিরোনামঃ "গাজীপুরের কালীগঞ্জ ইউনিয়নে স্তন্যদানকারী মায়েদের মধ্যে কোমর ব্যথার প্রাদুর্ভাব এবং এর সাথে সম্পর্কিত কারণগুলি"।

আমি আশা করি সাক্ষাৎকারটি ২০-৩০ মিনিট সময় নেবে। আপনার মনে কোন কিছু জানা দরকার মনে হলে, যেকোন প্রশ্ন করতে পারেন।

আপনার অবগতির জানাচ্ছি যে, এটি সম্পূর্ণ একাডেমিক গবেষণা এবং অন্য কোন উদ্দেশ্যে ব্যবহার করা হবে না। আমি আপনাকে আশ্বাস দিচ্ছি যে, সকল তথ্য গোপনীয় রাখা হবে। এটি একটি স্বেচ্ছাসেবী অংশগ্রহণ । আপনি যেকোন সময় আপনার সম্মতি প্রত্যাহার করে গবেষণা থেকে চলে যেতে পারেন। এছাড়াও, এই প্রশ্নাবলীতে যেকোন প্রশ্নের উত্তর না দেওয়ার অধিকার আপনার আছে।

গবেষণা সম্পর্কে কোন প্রশ্ন থাকলে, আমার সাথে (০১৬৪৩০৬০৩২০) অথবা আমার সুপারভাইজার মো.বিল্লাল হোসেন (০১৯৬০০০৭৫০৬), লেকচারার অফ ফিজিওথেরাপি, (এসসিএমএসটি) সাথে যোগাযোগ করতে পারেন।

সাক্ষাৎকার এগিয়ে নেওয়ার জন্য কি আমি আপনার সম্মতি পেতে পারি?

হ্যাঁ....., না.....

অংশগ্রহণকারীর স্বাক্ষর ও তারিখ.....

গবেষকের স্বাক্ষর ও তারিখ.....

সাক্ষীর স্বাক্ষর ও তারিখ.....

Prevalence and Associated Factors of Low Back Pain among The Breastfeeding Mothers in Kaliganj Union, Gazipur

Part 1: Personal information

1.1 Patients name	
1.2 Address	PS: Dist:
1.3 Mobile number	

Part 2: Socio-demographic information

2.1 Age	_____years
2.2 Educational level	1 = No formal education 2 = Primary education 3 = Secondary education 4 = Higher Secondary education 5 = Graduate or higher degree
2.3 Occupation	1= Homemaker 2= Employed 3= Self-employed 4= Other (Specify) _____
2.4 Monthly Household Income	1= Low (< 10,000 BDT) 2= Middle (10,000 - 30,000 BDT) 2= High (> 30,000 BDT)

Part 3 Anthropometric Measurement

3.1 Height	_____cm
3.2 Weight	_____kg
3.3 Body Mass Index (BMI)	_____

Part 4: Medical, Pregnancy and Postpartum History

Question	Answer
4.1 Do you have any co-morbidities?	1 = Hypertension 2 = Diabetes 3 =Thyroid disorder 4 = Osteoporosis 5=Rheumatoid arthritis or others autoimmune disease 6 = Others (Specify)
4.2 Do you have a history of any mental health conditions(e.g., depression, anxiety etc.) that may affect pain perception?	1 = Yes 2 = No
4.3 Number of Children	_____
4.4 Time Since Last Delivery	_____ months
4.5 Mode of Delivery	1= Vaginal 2= Cesarean section

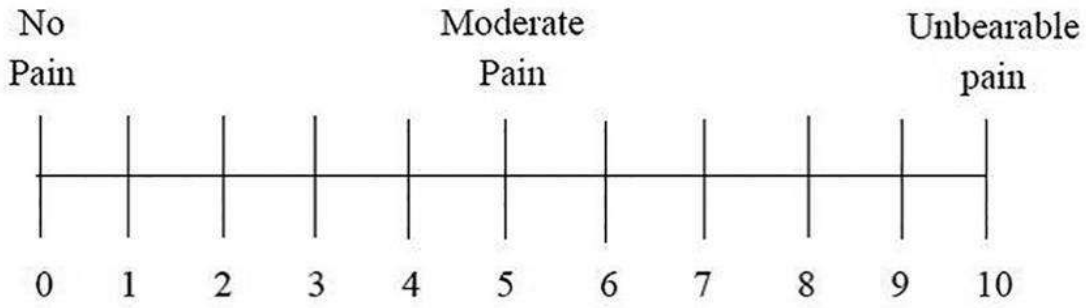
Part 5: Pain Related Information

Question	Answer
5.1 Do you currently experience low back pain?	1= Yes (If yes, proceed with questionnaire) 2= No (If no, continued with part-6)
5.2 Onset of pain	---------- months
5.3 Types of pain	1= Sharp pain 2=Burning pain 3= Tingling pain 4=Shooting pain 5=Electrical shock like pain

	6=Numbness
5.4 Nature of pain	1 = Radiating 2 = Non-radiating
5.5 What is the pattern of Pain?	1= Continuous 2=Intermittent

5.6 How severe is your pain on VAS (Visual Analogue Scale)

0-10 Vas Numeric Pain Distress Scale



Part 6: Breastfeeding, Ergonomic and Postural practices

Question	Answer
6.1 How long have you been breastfeeding?	_____ months
6.2 What's your breastfeeding position?	1= Sitting on a chair 2= Sitting on the floor 3= Lying down 4= Other (Specify) _____
6.3 How many hours do you breastfed per day?	_____ hours
6.4 Do you use pillow support while breastfeeding?	1= Yes 2= No
6.5 Preferred breastfeeding position?	1 = Sitting unsupported 2 = Sitting with back support 3 = Side-lying 4 = Others (Specify)

6.6 Do you switch your breastfeeding sides regularly?	1= Yes 2= No
6.7 Do you carry your baby for long time?	1= Yes 2= No
6.8 Do you experience any low back pain while breastfeeding?	1= Yes 2= No
6.9 When do you feel back pain the most?	1= While breastfeeding 2= After carrying the baby 3= During household activities 4= Other (Specify) _____

Part 7 Lifestyle and Physical Activity

Question	Answer
7.1 Do you engage in regular exercise?	1= Yes 2= No
7.2 How often do you engage in exercise?	1= Daily 2= 3-5 times per week 3 = 1-2 times per week 4 =Never
7.3 What type of exercise do you engage?	1=Walking 2= Stretching 3 = Yoga 4 =Household chores as physical activity 5 = None
7.4 How many hours do you sit per day?	_____ hours
7.5 How many hours do you sleep per day?	_____ hours

Part 8 Treatment related information

8.1 Have you sought for medical treatment for your back pain?	1 = Yes 2 = No
8.2 If yes ,which treatment methods have you used?	1 = Medication 2 = Physiotherapy 3 = Home remedies 4 = Others (Specify)
8.3 Has any treatment helped to reduce your back pain?	1 = Yes (Specify) 2 = No

বাংলাদেশের গাজীপুর জেলার কালীগঞ্জ উপজেলায় স্তন্যদানকারী মায়েদের মধ্যে কোমর ব্যথার প্রাদুর্ভাব এবং এর সাথে সম্পর্কিত কারণগুলি

অংশ ১: ব্যক্তিগত তথ্য

ব্যক্তিগত তথ্য	
ঠিকানা	থানা: _____;জেলা: _____
মোবাইল নম্বর	

অংশ ২: সামাজিক-গবেষণাগত তথ্য

২.১ আপনার বয়স কত?	_____ বছর
২.২ আপনার ওজন কত?	_____ কেজি
২.৩ আপনার উচ্চতা কত?	_____ সেমি
২.৪ আপনার শিক্ষাগত যোগ্যতা?	১ = কোন প্রাতিষ্ঠানিক শিক্ষা নেই ২ = প্রাথমিক শিক্ষা ৩ = মাধ্যমিক শিক্ষা ৪ = উচ্চ মাধ্যমিক শিক্ষা ৫ = স্নাতক বা উচ্চতর ডিগ্রি
২.৫ আপনার পেশা?	১= গৃহিণী ২ = চাকরিজীবী (অংশকালীন/পূর্ণকালীন) ৩ = স্ব-কর্মসংস্থান ৪ = অন্যান্য (উল্লেখ করুন) _____
২.৬ আপনার পরিবারের মাসিক আয় কত?	১ = নিম্ন (< ১০,০০০ টাকা) ২= মধ্যম (১০,০০০ - ৩০,০০০ টাকা) ৩ = উচ্চ (> ৩০,০০০ টাকা)
২.৭ আপনার বসবাসের এলাকা?	১= নগর ২= আধা-গ্রাম্য ৩= গ্রাম্য

অংশ ৩ শারীরিক পরিমাপ

৩.১ উচ্চতা	_____ সেমি
৩.২ ওজন	_____কেজি
৩.৩ বিএমআই	

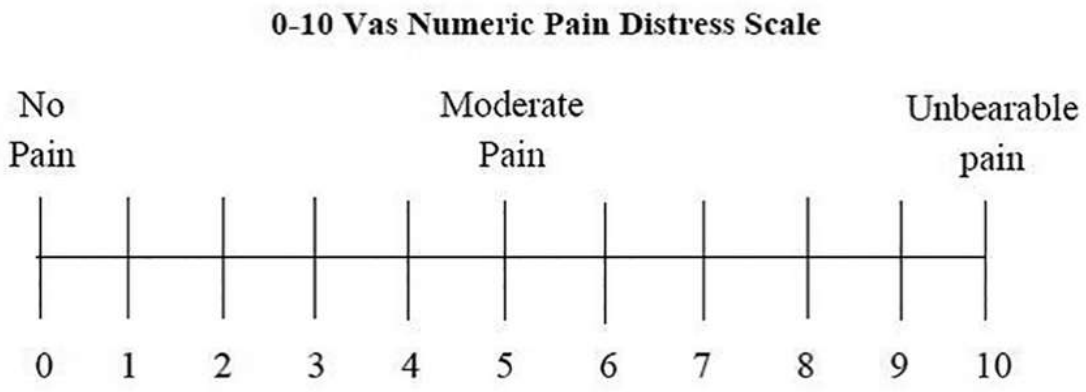
অংশ ৪: চিকিৎসা, গর্ভাবস্থা ও প্রসবোত্তর ইতিহাস

৪.১ আপনার কি কোনো দীর্ঘমেয়াদী অসুস্থতা আছে?	১ = উচ্চ রক্তচাপ ২ = ডায়াবেটিস ৩ = থাইরয়েড সমস্যা ৪ = অস্টিওপরোসিস ৫ = রিউমাটয়েড আর্থ্রাইটিস ৬ = অন্যান্য (উল্লেখ করুন)
৪.২ আপনার কি মানসিক স্বাস্থ্যের কোনো সমস্যা আছে (যেমন, ডিপ্রেশন, উদ্বেগ) যা ব্যথার অনুভূতিতে প্রভাব ফেলে?	১ = হ্যাঁ ২ = না
৪.৩ আপনার কতজন সন্তান আছে?	_____
৪.৪ সর্বশেষ সন্তান জন্মের পর কত মাস হয়েছে?	_____ মাস
৪.৫ আপনার প্রসবের ধরণ কী ছিল?	১= স্বাভাবিক প্রসব ২ = সিজারিয়ান প্রসব

অংশ ৫: ব্যথা সম্পর্কিত তথ্য

৫.১ বর্তমানে কি আপনার কোমরে ব্যথা আছে?	১=হ্যাঁ (তাহলে পরবর্তী প্রশ্নের উত্তর দিন) ২= না (পরবর্তী অংশে যান)
৫.২ ব্যথা কতদিন ধরে আছে?	_____ মাস
৫.৩ ব্যথার প্রকৃতি কেমন?	১=তীক্ষ্ণ ব্যথা ২= জ্বালাপোড়া ব্যথা ৩= ঝিঁঝিঁ ব্যথা ৪=ইলেকট্রিক শকের মতো ব্যথা
৫.৪ ব্যথার ধরণ কেমন?	১=ছড়ানো ব্যথা ২= ছড়ানো নয়
৫.৫ ব্যথা কখন হয়?	১=ক্রমাগত ২= মাঝে মাঝে

৫.৬ ভিজ্যুয়াল অ্যানালগ স্কেল (VAS) অনুযায়ী আপনার ব্যথার মাত্রা কত?



অংশ ৬: স্তন্যদান, অঙ্গসংস্থান ও দেহভঙ্গি সংক্রান্ত অভ্যাস

৬.১ কতদিন ধরে আপনি স্তন্যদান করছেন?	_____ মাস
৬.২ স্তন্যদানের অবস্থান:	১= চেয়ারে বসে ২= মেঝেতে বসে ৩= শুয়ে ৪= অন্যান্য (উল্লেখ করুন) _____
৬.৩ প্রতিদিন কত ঘণ্টা স্তন্যদান করেন?	_____ ঘণ্টা
৬.৪ স্তন্যদানের সময় কি আপনি বালিশ বা সমর্থন ব্যবহার করেন?	১= হ্যাঁ ২= না
৬.৫ পছন্দের স্তন্যদানের অবস্থান:	১= সমর্থন ছাড়া বসা ২= পিঠের সমর্থন নিয়ে বসা ৩= পাশ ফিরে শোয়া ৪= অন্যান্য (উল্লেখ করুন) _____
৬.৬ আপনি কি নিয়মিত স্তন্যদানের পাশ পরিবর্তন করেন?	১= হ্যাঁ ২= না
৬.৭ আপনি কি দীর্ঘ সময় ধরে শিশুকে বহন করেন?	১= হ্যাঁ ২= না
৬.৮ স্তন্যদানের সময় কি আপনি কোমর ব্যথা অনুভব করেন?	১= হ্যাঁ ২= না
৬.৯ কখন ব্যথা বেশি অনুভব করেন?	১= স্তন্যদানের সময় ২= শিশুকে বহনের পর ৩= গৃহস্থালির কাজের সময় ৪= অন্যান্য (উল্লেখ করুন) _____

অংশ ৭: জীবনধারা ও শারীরিক কার্যক্রম

৭.১ আপনি কি নিয়মিত শারীরিক ব্যায়াম করেন?	১ = হ্যাঁ ২= না
৭. ২ কতবার ব্যায়াম করেন?	১= প্রতিদিন ২= সপ্তাহে ৩-৫ দিন ৩= সপ্তাহে ১-২ দিন ৪= কখনও না
৭.৩ আপনি কোন ধরনের শারীরিক কার্যকলাপে যুক্ত?	১= হাঁটা ২= স্ট্রেচিং ৩= যোগব্যায়াম ৪= গৃহস্থালির কাজ ৫= কিছুই না
৭.৪ প্রতিদিন কত ঘণ্টা বসে থাকেন?	_____ ঘণ্টা
৭.৫ প্রতিদিন কত ঘণ্টা ঘুমান?	_____ ঘণ্টা

অংশ ৮: চিকিৎসাগত ইতিহাস

৮.১ আপনি কি পিঠব্যথার জন্য চিকিৎসা নিয়েছেন?	১= হ্যাঁ ২= না
৮.২ যদি হ্যাঁ হয়, তবে কোন চিকিৎসা নিয়েছেন?	১= ওষুধ ২= ফিজিওথেরাপি ৩= ঘরোয়া চিকিৎসা ৪= অন্যান্য (উল্লেখ করুন) _____
৮.৩কোনো চিকিৎসা কি আপনার ব্যথা কমাতে সাহায্য করেছে?	১= হ্যাঁ(উল্লেখ করুন) _____ ২= না