Incidence of low back pain during pregnancy in primigravida

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Abstract:

Background: Low back pain (LBP) is an example of one of the most common musculoskeletal symptoms of pregnancy, with 50-80% of women around the world experiencing pain. Women who are primigravida are especially susceptible because numerous physiological, hormonal, and biomechanical alterations are experienced during pregnancy, which is the first time in a lifetime. LBP is a very prevalent and affecting factor, yet, because many pregnant women believe it is normal and regular in pregnancy, they fail to get the desired intervention.

Objectives: To establish the incidence of low back pain in primigravida women and to identify demographic characteristics that are related to low back pain.

Methodology: The study was an observational study of 101 primigravida women between 21-35 years with singleton pregnancies (1-40 weeks). The sample was sampled based on pre-determined inclusion criteria, and a self-administered questionnaire was created and validated to collect data electronically. The onset of the pain, the level of pain, things that worsen the situation, loss of functions and the psychological impact were evaluated. The analysis of data was performed to identify prevalence and other related results. Findings: LBP was found to be prevalent among the primigravida participants, 100 percent. The onset of pain was most frequent during the third trimester (50%), next came the second (35%), and first (15%) trimesters. Most (93% of them) complained of moderate to severe pain with 80 percent complaining of pain every day or a few times in a day. The physical activity and evening hours were the factors that worsened LBP the most (48.1% and 33.3%, respectively). Impairment in terms of functions was severe and 88.9% reported moderate to severe difficulty in performing daily activities. The psychological impact was also noteworthy, as 96% of them reported feeling troubled psychologically (mood changes of varying severity).

Conclusion: Low back pain among primigravida women is so high with significant effects on physical functioning and mental wellness. The physiological and biomechanical pregnancy alterations play a significant role in the development of the symptoms. Prompt screening, posture training, ergonomics, and prompt physiotherapeutic intervention are necessary in enhancing maternal health outcomes. Additional trimester-wise and large-scale research is suggested.

Keywords: Low back pain, Pregnancy, Primigravida, Prevalence, Musculoskeletal pain, Physiotherapy, Antenatal care.

INTRODUCTION

The problem of low back pain (LBP) in pregnancy is a common and serious health issue affecting a pregnant woman. great quantity of pregnant mothers around the globe. Caused by pregnancy, there are a number of physiological and biomechanical modifications predisposing women to LBP, especially in the second and third trimesters [(1)]. Studies indicate a wide range on the prevalence of LBP during pregnancy usually between 40-70 and more with a significant rise as pregnancy advances [(3)] This is mostly prevalent among the primigravida women who undergo such pain during childbirth first time during pregnancy [(6).] The pain is usually experienced in second trimester to its peak in the third trimester. [(5)] During Pregnancy low back pain is a kind of pain that manifests itself in an individual who has never experienced such pain history of low back pain [(1,2)] Low back pain during pregnancy has low severity in about 70 percent of pregnant women. [(2)] back pains do not allow them to perform their daily tasks and result in rest. Low back pain is among the most prevalent musculoskeletal pains experienced by most people during Pregnancy. women are used to the first time of pregnancy and can lead to numerous issues and problems disabilities for them. [(2)] The majority of expectant women with the low back pain believe that such experience is part of pregnancy [(3)] process, by which they neither make any special efforts of solving it. Etiology -Pregnancy-related LBP is a complicated process of interactions of hormonal changes biomechanical changes, weight gain, laxity of the joints, and postural changes [(3)] . Hormones such as relaxin also increase the ligamentous laxity especially in the pelvic area, the protruding belly and gain of weight cause the center of gravity of the body to move forward resulting in compensatory alterations of the spine and unequal loading of lumbar structures [(7).] These in conjunction with muscle weakness and fatigue, changes lead to musculoskeletal stress and pain. High prevalence 50-70 of primiparous women do experience low back pain during pregnancy·Low back pain has an impact on daily life, sleep and psychological condition have low back pain during the postpartum period. [(4)] The conditions that lead to low back pain during pregnancy are hormone change, change in position, muscle weakness, weight gain, an increase in joint mobility and psychosocial factors. The pain typically starts in second trimester and reaches its highest level in third trimester. [(5)] Low back pain (LBP) is a common problem that afflicts a big number of pregnant women globally. The World Health Organization (WHO) takes LBP as a symptom of different underlying medical problems. In case it happens during pregnancy it is categorized as LBP that is related to pregnancy which can be characterized as the recurrent or persistent pain that endures over a period of more than one week of lumbar or pelvic region. Such discomfort is extremely

widespread in among pregnant women and can influence their lives significantly, their daily life [7] mobility, performance at work, and well-being. The stage of pregnancy is a transformative one that leads to a lot of physiological changes, physiological modifications of the body of a woman. The growing weight is experienced as the pregnancy moves on of the infant, hormonal changes and posture changes also lead to LBP development. Pregnant women complain of mild or severe pain which may impede their performance physical malfunction, which is a result of routine activities. Researchers have found that it causes long-term low pain during pregnancy that is experienced in the back is linked to work absenteeism and reduction in fruitfulness, finally to influence the quality of Iife in a woman [7] Proper medical attention is one of the most alarming factors about the pregnancy-related LBP, attention and management. Most expectant women do not seek treatment or when they do, are all too frequently ill-treated. This may be because of lack of awareness, access to limited access medical experts, or the ignorance that the backaches are the normal and ordinary inevitable aspect of pregnancy. Nevertheless, untreated LBP may result in disability, which results into great discomfort and decreased mobility.[7] The knowledge and skills should be well-equipped by the antenatal care providers had to diagnose and treat pregnancy-related LBP. Early intervention can assist in reducing the intensity of pain and enhance the well-being of expectant women in general. Safe pain-relief strategies, physical therapy and proper posture management can be of great help. alleviate suffering and avoid additional difficulties. [7] The musculoskeletal changes are commonly associated with the pain that develops during pregnancy, most especially the iliotibial band and lower back muscles. Although it is not known exactly what causes it non-specific, the factors that may be affecting it include hormonal changes, ligament laxity, and biomechanical strain are contributory to its occurrence. Learning the prevalence of LBP in pregnant women and the determination of the risk factors involved can assist in the formulation of improved management policies. This information can be used by Healthcare Professionals and policymakers to develop effective ones interventions and services to enhance maternal health. [7] The purpose of the research under this project is to investigate the incidence of low back pain in primigravida women, examine related risks, determine the level of pain, and the effect of LBP on their everyday life activities. This work aims at incorporating clinical observations with available literature to determine, provide knowledge that can assist in improving healthcare practices and policy formulation to enhance the quality of maternal care and eliminate pregnancy-related disabilities. Low back pain is a common musculoskeletal complaint during pregnancy significantly affecting a woman's quality of life .Understanding its incidence, particularly in primigravida (first time pregnant women), is crucial for early identification, prevention, and management. Many pregnant women experience low back pain, which can interfere with daily activities work and sleep.

NEED OF THE STUDY.

Low back pain is a musculoskeletal complaint that is experienced by pregnant women to a great extent. impacting the life of a woman's quality of life Knowledge about incidence of the same, especially in primigravida (first time pregnant women), is essential in early detection, prevention, and treatment. Low back pain can be felt by a lot of pregnant women, which disrupts normal daily activities work and sleep.

RESEARCH METHODOLOGY

The study was an observational study that was carried out during a period of six months in some selected hospitals.The study sample was made of 101 primigravida women.The research design was observational in nature,where the objective was to determine the suitability of pertinent clinical and demographic factors in the sample population of primigravida.Those participants that were recruited were in hospital settings,and predetermined inclusion criteria were used to select them.The systematic collection of data has been made during the period of the study in order to be accurate and reliable.

PROCEDURE

Firstly, permission will be taken from the respective hospitals. The aims and objectives of the research will be explained to the participants and those who fulfilling the inclusion criteria will be included in the study. Then a self-made questionnaire will be made and participants have to answer questions. The questionnaire will be validated by the experienced physiotherapists. The review and rating to examine and evaluate each survey question for its relevance, clarity, sequence. Each Pregnant woman comments will be thoroughly reviewed to improve accuracy, quality and validity of the survey questions. Before conducting the survey consent of the participating woman in the survey will be taken an electronic survey will be conducted and distributed via WhatsApp , and E- mail. In, addition the pregnant woman which will be contacted will be requested to forward the survey among the primigravida they know. The pregnant women will be asked to select an appropriate option from the questionnaire. The data will be collected and analysed and appropriate results will be found out.

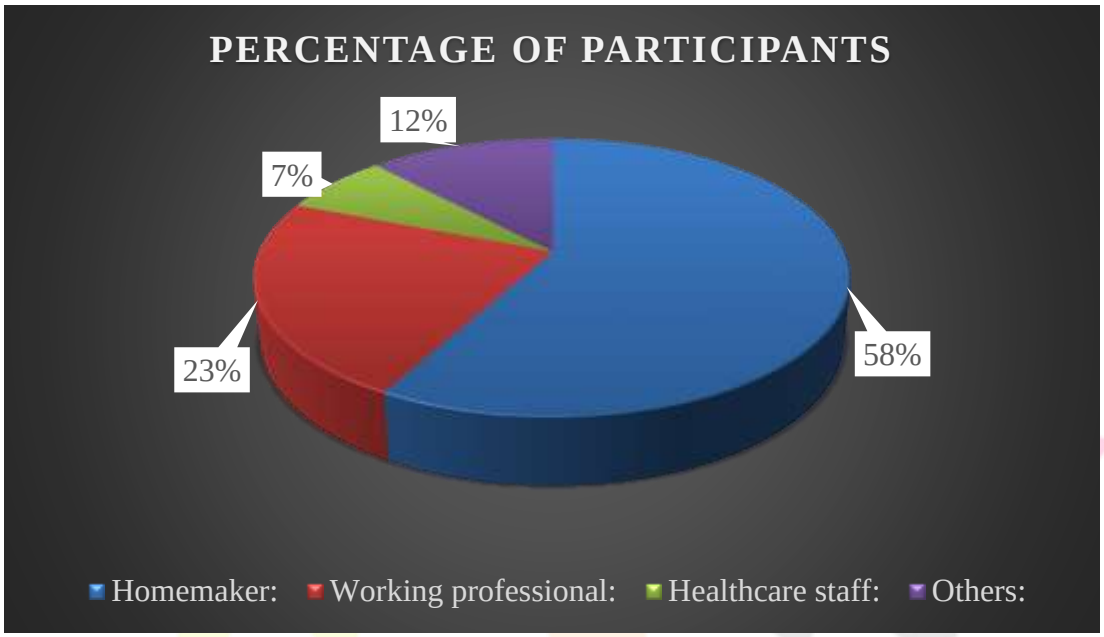
RESULT

Results from this study on low back pain (LBP) during pregnancy in primigravida women reveal a very high prevalence rate, with all 100 participants (100%) reporting LBP. The onset of pain was most frequent in the third trimester at 50%, followed by 35% in the second trimester and 15% in the first trimester. Pain severity data showed that 93% of participants rated their pain as moderate to severe. The pain was a frequent occurrence, with 80% experiencing it daily or several times per day. Low back pain worsened mainly during or after physical activity (48.1%) and in the evening (33.3%). Regarding daily life, 88.9% reported moderate to severe impairment in performing daily activities due to LBP. Additionally, the psychological impact was significant, with 96% reporting effects on mood or mental health ranging from slight to severe. These findings highlight the substantial functional and emotional burden of LBP during pregnancy in primigravida women and emphasize the critical need for early identification, education on posture and ergonomics, and timely physiotherapeutic intervention to improve maternal health outcomes and quality of life. Data aligns with existing literature that reports LBP prevalence in pregnancy generally between 50% and 80%, but your study indicates a particularly high prevalence and impact, underscoring the importance of addressing this issue in antenatal care practices. This study provides a solid foundation for clinical recommendations and future research .

Table 1: Distribution of Participants According to Occupation

OCCUPATION	PERCENTAGE OF PARTICIPANTS
Homemaker:	58%
Working professional:	23%
Healthcare staff:	7%
Others:	12%

Graph 1: Distribution of Participants According to Occupation.

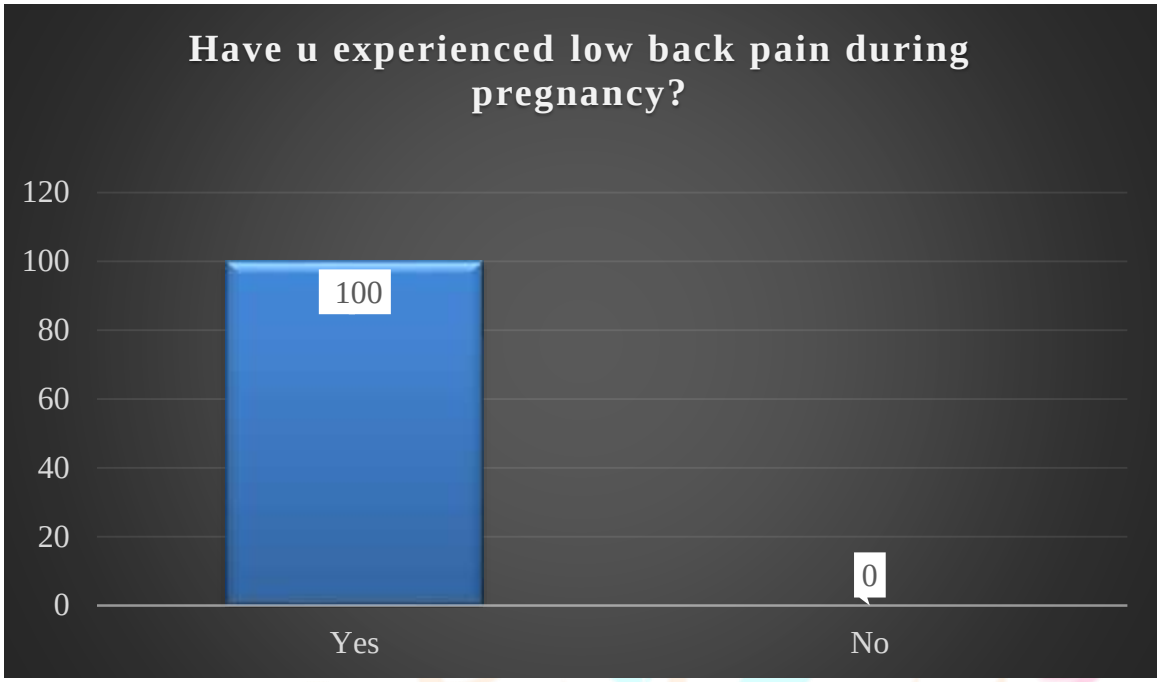


Interpretation: The data reveals that the study population is heavily dominated by Homemakers (58%), indicating that the majority of the participants do not engage in full-time, structured employment outside the home. The largest employed category is Working Professionals (23%). This distribution is important for your LBP analysis, as it suggests the high incidence and severity of pain are experienced even by those with lower structured occupational demands, potentially linking the LBP more strongly to household activities and postural demands rather than external workplace stress.

Table 2: Have u experienced low back pain during pregnancy?

Experience of Low Back Pain	**Response**	**Percentage (%)**
YES (Experienced LBP)	100	100%
NO (Did not experience LBP)	0	0.0%

Graph 2: Have u experienced low back pain during pregnancy?

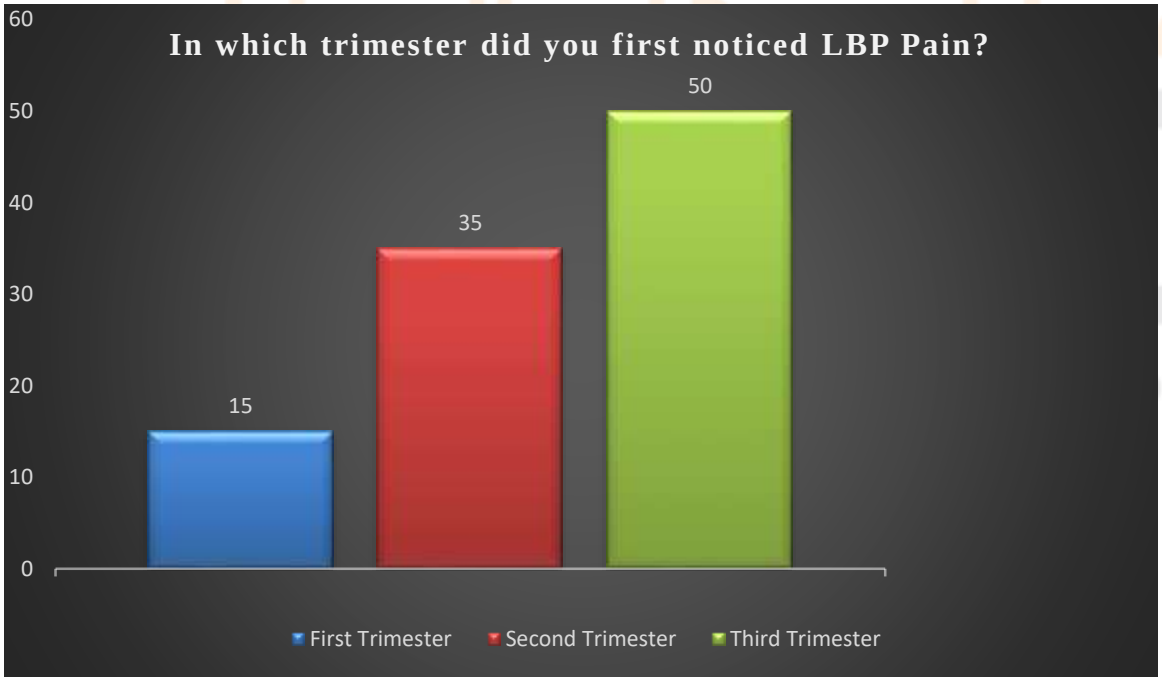


Interpretation: According to the data, the incidence of Low Back Pain (LBP) during pregnancy is 100%. This means that every individual in the study group reported experiencing Low Back Pain.

Table 3: In which trimester did you first noticed LBP Pain?

Trimester	Number of Cases	Percentage (%)
First	15	15%
Second	35	35%
Third	50	50%

Graph 3: In which trimester did you first noticed LBP Pain?

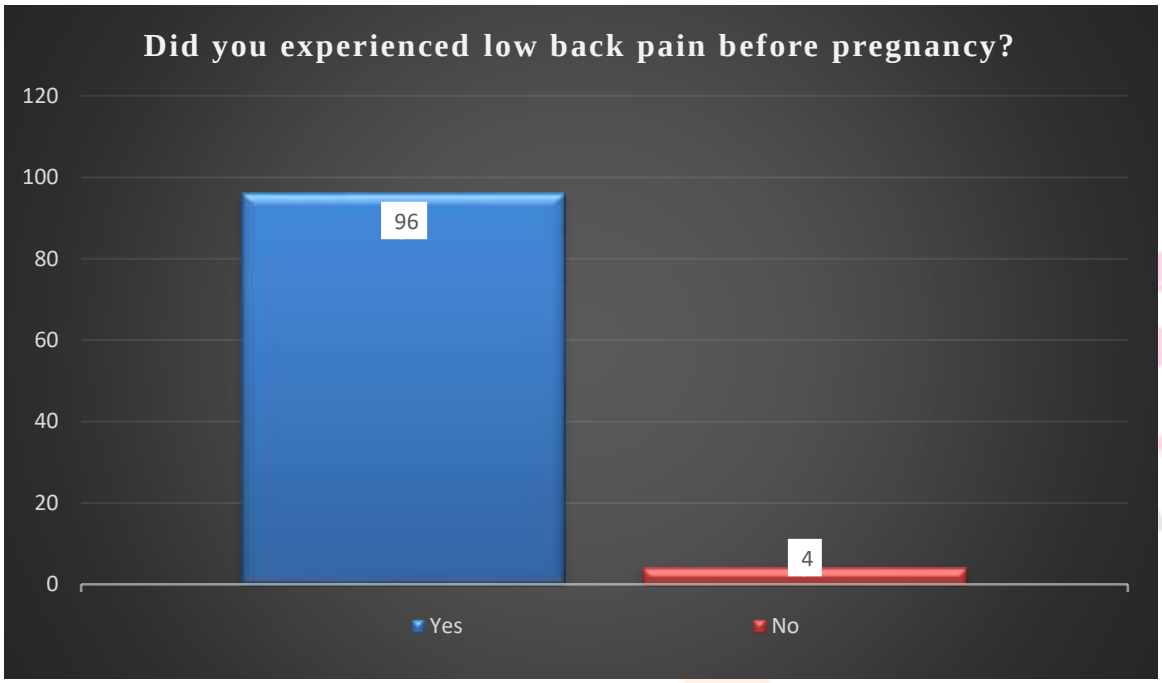


Interpretation: According to the data, the incidence of Low Back Pain (LBP) sharply increases as pregnancy progresses, peaking in the Third Trimester. The Third Trimester accounts for the highest experience at 50 %, followed by the Second Trimester at 35% , and the First Trimester at the lowest incidence of 15%. This trend clearly links the higher occurrence of back pain to the biomechanical and postural changes that happen later in pregnancy.

Table 4: Did you experience low back pain before pregnancy?

Response	Response Given by Participants	Percentage
NO	**96**	**96.3%**
YES	**4**	**3.7%**

Graph 4: Did you experience low back pain before pregnancy?

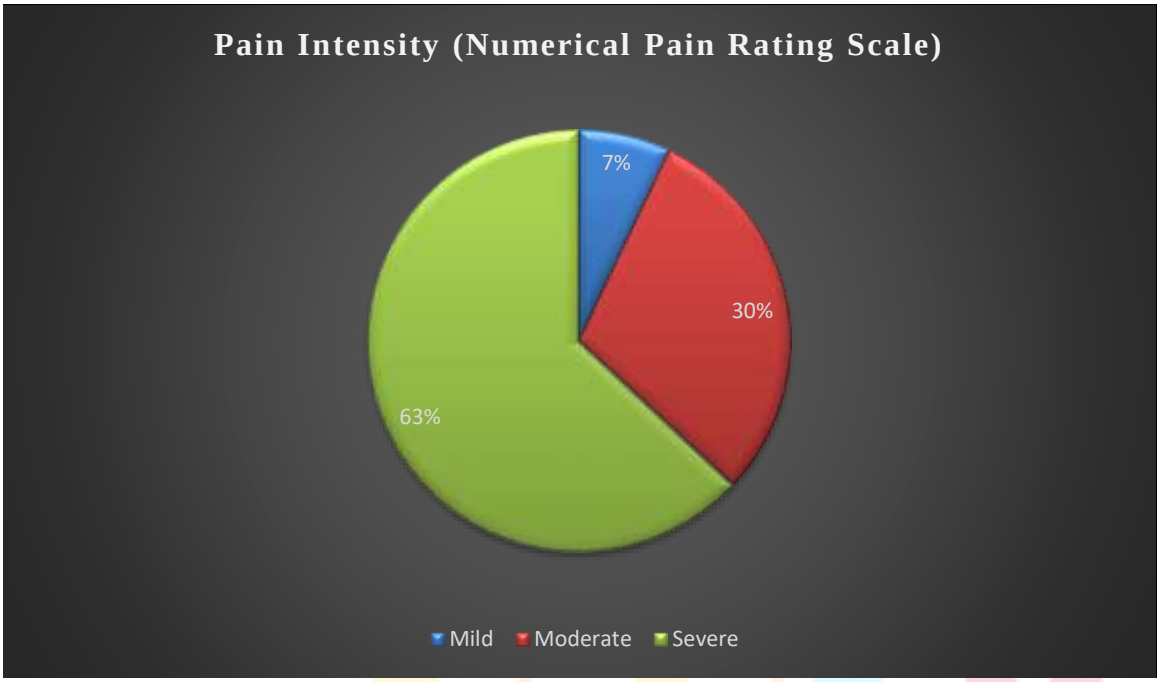


Interpretation: According to this data, the vast majority of participants (96.3%) did not experience Low Back Pain (LBP) before pregnancy.

Table 5: How would you rate your low back pain in scale from 0 to 10
(0=no pain ,10=worst pain)

Pain Intensity	Pain Score (NPRS)	Response Given by Participants	Percentage (%)
Mild	0–2	7	7%
Moderate	3–5	30	30%
Severe	6–8	63	63%

Graph 5: How would you rate your low back pain in scale from 0 to 10
(0=no pain ,10=worst pain)

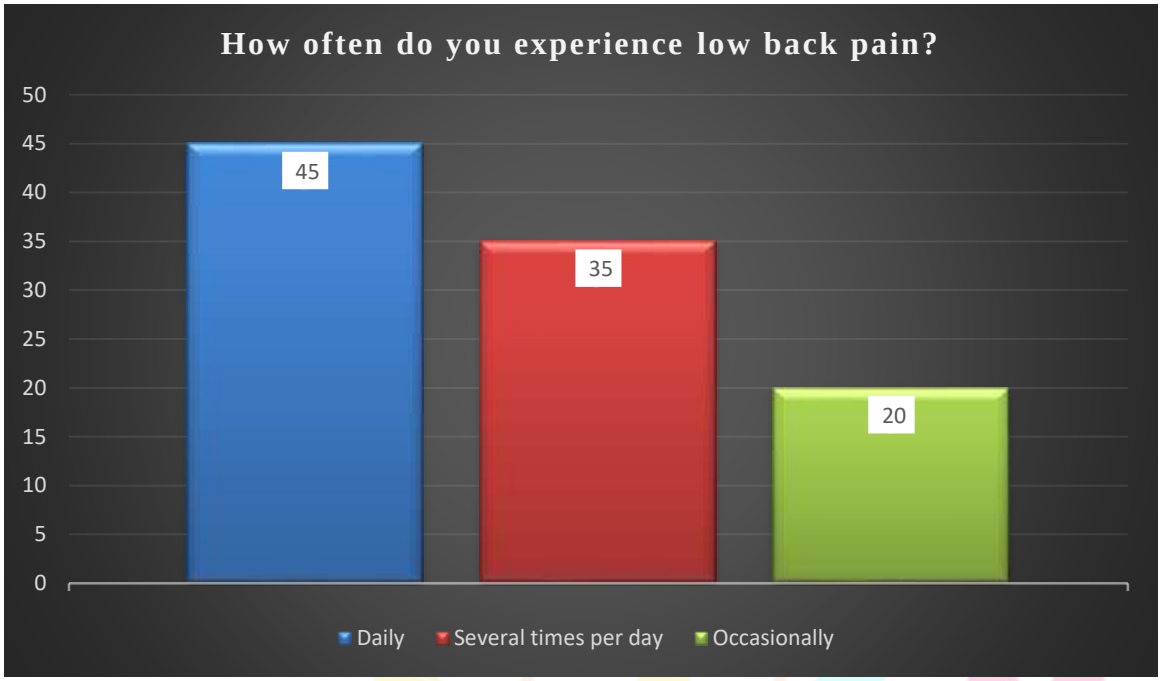


Interpretation: According to the data, the vast majority of participants who experienced Low Back Pain (LBP) rated their pain as being in the moderate to severe range. A total of 93% of the participants rated their low back pain as moderate or severe, indicating that for this group, LBP during pregnancy is a highly significant symptom, often reaching a level that can interfere with daily activities.

Table 6: How often do you experience low back pain?

Frequency Category	**Response Given by Participants**	**Percentage**
Daily	45	45%
Several times per day	35	35%
Occasionally	20	20%
Total	100	100%

Graph 6: How often do you experience low back pain?

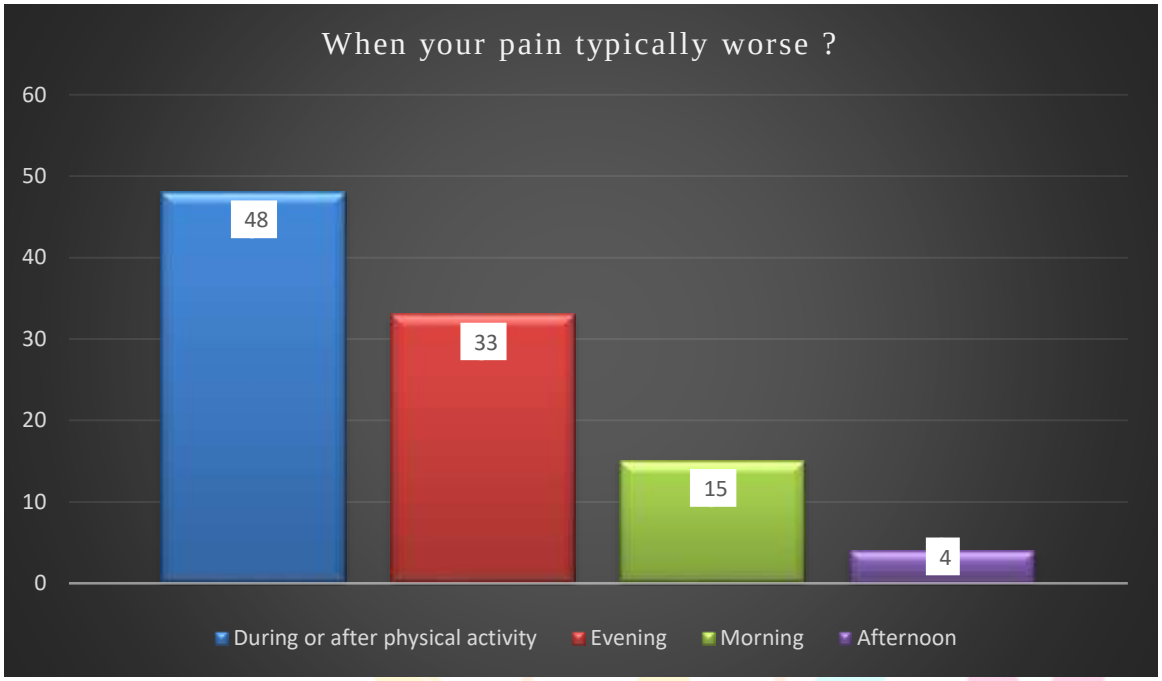


Interpretation: According to the data, Low Back Pain (LBP) is a daily, chronic issue for the vast majority of participants.A combined 80% of the women reported experiencing LBP Daily (45%)or Several times per day (35%). This indicates the pain is not an occasional discomfort but a constant, recurring feature of their pregnancy. Only 20% experienced the pain occasionally.

Table 7: When your pain typically worse?

Timing Category	**Response Given by Participants**	Percentage
During or after physical activity	48	48.1%
Evening	33	33.3%
Morning	15	14.8%
Afternoon	4	3.7%
Total	100	100.0%

Graph 7 : When your pain typically worse ?

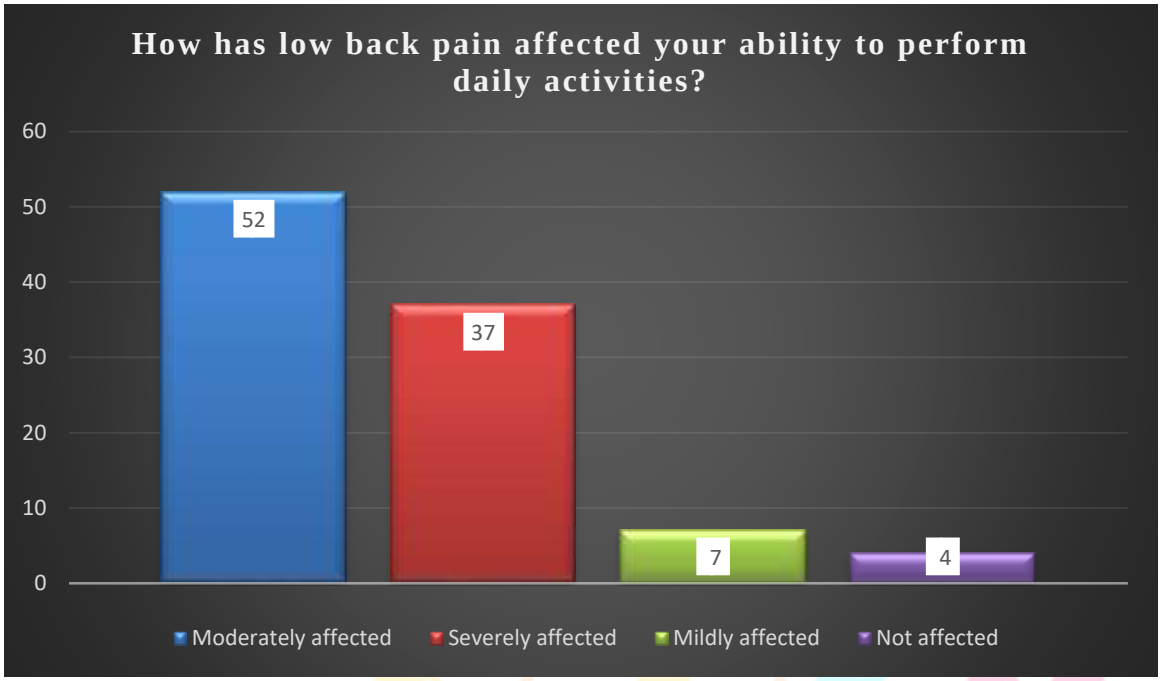


Interpretation: According to the data, Low Back Pain (LBP) is primarily aggravated by activity and fatigue. The largest share of participants (48.1%) reported their pain was typically worse During or after physical activity, while the second largest group (33.3%) experienced the worst pain in the Evening. Together, these two categories account for over 81% of the responses, confirming that increased LBP is overwhelmingly associated with mechanical stress and accumulated daily fatigue.

Table 8: How has low back pain affected your ability to perform daily activities?

Impact Level	Response Given by Participants	Percentage
Moderately affected	52	51.9%
Severely affected	37	37.0%
Mildly affected	7	7.4%
Not affected	4	3.7%

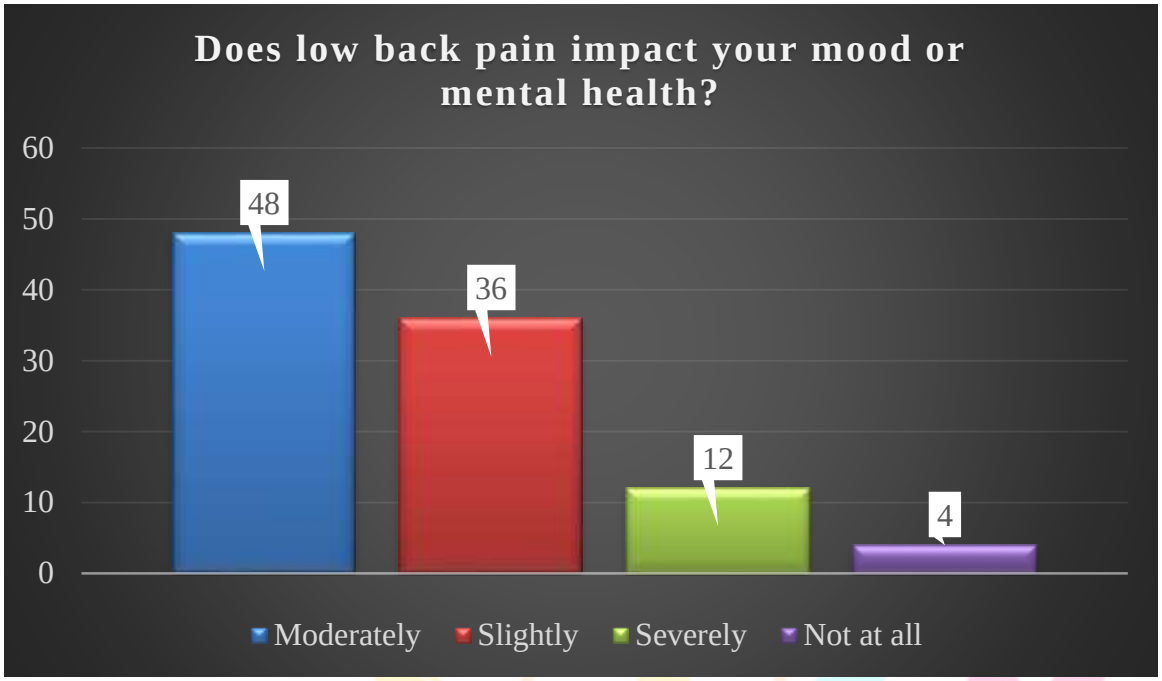
Graph 8: How has low back pain affected your ability to perform daily activities?



Interpretation: According to the data, combined 88.9% of women indicated their ability to perform daily activities was either Moderately affected or severely affected. Only a marginal percentage felt the impact was mild or non-existent. This clearly demonstrates that for most participants, LBP is not a minor inconvenience but a condition that substantially limits or complicates their routine tasks.

Table 9: Does low back pain impact your mood or mental health?

Impact Level	**Extrapolated Count (N=100)**	**Percentage**
Moderately	**48**	**48.0%**
Slightly	**36**	**36.0%**
Severely	**12**	**12.0%**
Not at all	4	4.0%
Total	**100**	**100.0%**



Interpretation: According to the data, majority of 96.0% reported that LBP affected their mood or mental health at least Slightly, Moderately, or Severely. The largest single group, 48.0%, reported being Moderately impacted, with an additional 36.0% affected Slightly, and 12.0% reported being Severely impacted. This demonstrates that for almost all participants, the physical discomfort of LBP translates directly into emotional or psychological distress, with only a marginal 4.0% reporting not at all affected.

DISCUSSION

Overview and Key Findings

Low back pain (LBP) is a prevalent and clinically significant condition among primigravida women, with reported prevalence rates ranging between 50% and 80% globally. The current findings demonstrate that LBP is not only widespread during pregnancy but also substantially impacts functional ability, emotional health, and quality of life. Similar to recent studies, such as Cheema et al. (2024) and Patel et al. (2023), the present results emphasize that most pregnant women experience moderate to severe degrees of pain and disability during the second and third trimesters.

Physiological and Biomechanical Interpretation

The incidence of LBP in pregnancy can primarily be attributed to physiological, hormonal, and biomechanical adaptations that occur throughout gestation. Increased abdominal volume shifts the center of gravity forward, leading to compensatory hyperlordosis and greater tension on the lumbar musculature. Concurrent weight gain amplifies spinal loading and pelvic joint stress, while the hormone relaxin induces ligamentous laxity, increasing joint instability, particularly duringmid to late pregnancy. These changes collectively compromise postural alignment and neuromuscular control, predisposing primigravidas—who lack prior adaptive experience to LBP.

Pain Characteristics and Functional Impact

LBP typically arises in the second and third trimesters, coinciding with increased uterine mass and spinal curvature. The pain often localizes to the lumbosacral or pelvic region and tends to intensify with prolonged standing, walking, or end-of-day fatigue. Studies report that 36–45% of women experience moderate pain, while around 40% develop severe or disabling pain, affecting sleep, mobility, and psychosocial health. Emotional outcomes such as irritability, anxiety, and reduced self-efficacy are also common, highlighting the multi-dimensional impact of pregnancy-related LBP.

Clinical and Physiotherapeutic Implications

Given the high prevalence and functional burden, early screening and preventive physiotherapy are essential components of comprehensive antenatal care. Structured exercise programs focusing on core stability, posture correction, ergonomic adaptation, and flexibility help mitigate symptoms and enhance quality of life. Integrating prenatal physiotherapy education can also encourage pregnant women to adopt proper body mechanics during daily activities, reducing recurrence and chronicity of back pain postpartum.

Comparison with Existing Research

The findings of this study align with global reports—from Salari et al. (2023) showing a 40.5% worldwide prevalence, to Wu et al. and Gutke et al. highlighting 56–70% incidence in later pregnancy stages. The data also correlate with results from South Asian studies, where LBP incidence exceeds 70% among primigravidas, often accompanied by moderate to complete disability as measured by the Oswestry Disability Index. This consistency reinforces that pregnancy-related LBP is an international health issue transcending socioeconomic and geographical boundaries.

CONCLUSION

The researchers come to the conclusion that the level of low back pain (LBP) is high among primigravida. women throughout the 14-40 weeks period. The analysis demonstrated that LBP was moderate to less than. total disability, which would have a great impact on the day-to-day performance and life of the participants. Transient physiological and anatomical alterations of pregnancy including mechanical loading, postural. Hormone changes, shifts, and hormonal changes are the major causes of this pain. These findings stress the significance of early screening and intervention such as training of correct posture, chair aerobics, and antenatal care to control and minimize LBP among pregnant women. The study also suggests additional studies, such as trimester-wise and week-wise analyses and larger studies. populations, to develop knowledge and better clinical care plans to address pregnancy-related. low back pain. This conclusion has clinical and public health implications in terms of treating LBP. primigravida to enhance maternal health and disability during pregnancy, concordant. directly with your study results and aims.

LIMITATIONS

The current research also has some limitations that should be addressed. The sample was also not very large; it consisted of 100 individuals, thus limiting the applicability of the research; bigger research involving more varied populations should be suggested. The study was of observational design, which only enabled them to establish prevalence and not causality or detailed mechanistic pathways. The research was also done in the selected hospitals that might not be a sufficient representative of the geographic and cultural diversity. Self-reporting of pain measures and self-made questionnaires might have resulted in reporting bias and inaccuracies. The other weakness is the absence of longitudinal follow-up, which could not be used to decipher progress of pain that occurs during early pregnancy through to the postpartum period. The classification of participants into semi-long trimester groups would have confounded the per-week differences in the onset and intensity of the pain. Moreover, the mood changes were not accompanied with thorough psychological assessment, which restricted the knowledge of psychological factors related to the low back pain during pregnancy.

FUTURE SCOPE

Future studies ought to be undertaken to mitigate the shortcomings of this study. Investigations that are conducted on a large scale and in multi-centers can improve on the generalizability of the findings as they will consider a greater number of pregnant women with more diverse populations. Longitudinal research designs are advised so as to follow the progression and evolution of low back pains during pregnancy and after delivery. The use of diverse preventive and management measures, such as physiotherapy measures, physical exercise programs, and educational programs should be explored in future research. Research of new treatment options, including the introduction of virtual reality to physiotherapy, can also help in better pain management, and functional outcomes. Further research is to be done in the future with the aim of determining the psychological effects of low back pain during pregnancy in more detail and finding comprehensive methods that can help both the physical and mental conditions. The studies devoted to the postural control, balance, and fall risk could assist in determining the predictors of the severity of the low back pain and provide specific interventions. In addition, the analysis of particular biomechanical and hormonal alterations in the course of pregnancy can help understand the underlying mechanisms of pregnancy-related low back pain.

ACKNOWLEDGEMENT

The success and result of this project required a lot of guidance and assistance, and I am extremely privileged to have got this all along the completion of my project.I owe my deepest gratitude to my project guide Dr. Venkataseshan (PT), who took keen interest on our project work and guided me along till the completion by providing all the necessary information throughout numerous consultations. I will forever be grateful for the knowledge and skills that I have gained working under you. Thank you!

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