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Low Back Pain Severity and Related Disability in Different Trimesters of Pregnancy and Associated Risk Factors

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ABSTRACT

Background: The physiological changes associated with pregnancy, such as hormonal shifts, postural adjustments, and changes in load distribution, can lead to an increased vulnerability to Lower back pain (LBP). While LBP is generally considered a transient discomfort, recent research highlights that it can escalate into a disabling condition for pregnant women, affecting their ability to engage in daily activities. Objective: The aim was to comprehensively explore the relationship between LBP and disability in pregnant women, investigating its impact on daily activities, employment, and social life. Methods: a cross-sectional survey approach to collect data from participants in private clinics in Tripoli, Libya. The Oswestry Disability Index (ODI) was employed to collect data concerning the patients. Results: Initial results indicate that a considerable percentage of expectant mothers (61.6%) reported experiencing intense LBP, with those between the ages of 25 to 29 years registering the highest pain levels. The outcomes demonstrate that a significant majority of the respondents (66.7%) managed their back pain effectively without relying on pain-relieving medication. Moreover, most pregnant women expressed that their pain harmed their daily routines. Conclusions: The findings revealed that a significant portion of pregnant women reported that their pain had unfavorable consequences on their everyday tasks, such as lifting objects, sitting, and travelling. In essence, this research enhances comprehension of the complex connection between LBP and disability in pregnancy, thereby providing a foundation for specific interventions and enhanced healthcare approaches tailored to pregnant women.

1. INTRODUCTION

Pregnancy generates many physiological and anatomical changes required for maintaining the growing fetus. While these changes are normally manageable for healthy women, they can exacerbate pre-existing ailments or lead to new concerns, notably musculoskeletal problems, the most frequent of which is lower back discomfort (Fiat et al., 2022). In Kesikburun et al. (2018) have noted that Extensive evidence supports the notion that pregnancy can result in various musculoskeletal problems, stemming from the body's biomechanical, hormonal, as well as vascular alterations that occur during this condition.

As the uterus expands, it causes a shift in the body's center of gravity and imposes mechanical stress on it. As a result, approximately 25% of pregnant women encounter temporary disabling symptoms at some trimester of their pregnancy.

The most recurrent musculoskeletal issue reported during pregnancy is lower back pain (LBP), which typically starts at around the 22nd week of gestation, in the second trimester. Based on the literature, the manifestation of LBP during pregnancy varies extensively, with occurrence rates ranging from 20% to 90%. Inappropriately, roughly 50% of women with LBP during pregnancy continue to have persistent pain even one year after giving birth (Bryndal et al., 2020). Furthermore, pregnant women's everyday activities are frequently negatively impacted by LBP. According to research, pregnant women with LBP, for example, may experience far less mobility in their day-to-day activities and may need assistance from a wheelchair or crutches (Morino et al., 2017). Pregnancy-related low back pain is significantly correlated with a history of low back pain. A higher pre-pregnancy body mass index (BMI), younger maternal age, multiple prior pregnancies, and physically demanding employment are further known risk factors (Backhausen, Bendix, Tabor, & Hegaard, 2019). Women's lives are significantly impacted by pregnancy, especially in regards to LBP. Given that every woman's pregnancy experience is different, it is essential to recognize and treat LBP as soon as possible for the best outcomes. Conservative management is the recommended strategy, which includes a range of therapies such yoga, massage, pharmaceutical treatments, stability belt use, physiotherapy, and relaxation techniques. If early detection and treatment are put in place, pregnancy-related LBP generally has a favourable prognosis (Katonis et al., 2011). As previously stated, pregnancy-related hormonal and anatomical changes can affect the musculoskeletal system, resulting in a variety of musculoskeletal issues, an increased risk of accident, or modifications to underlying disorders. It is critical to consider these pregnancy-related changes while giving advice to women who want to maintain their fitness habits during pregnancy. When treating musculoskeletal complaints during pregnancy, the possible repercussions for both the mother and the foetus should be considered (Ireland & Ott, 2000). Additionally, it is emphasized that different healthcare professionals must take the initiative and offer proactive care for pregnant women with lumbar problems because of the significant impact on their general well-being (Padlla & Vallejo, 2015). Aim of study: to comprehensively explore the relationship between LBP and disability in pregnant women, investigating its impact on daily activities, employment, and social life.

2. METHOD

The research employed a cross-sectional survey method to gather information from participants over a span of three months, from June to August 2023. As there was no ethical approval obtained from public hospitals in the area, specifically Al-Jala and Al-Khadra hospitals, the study concentrated solely on private clinics in Tripoli, which included Al-Osra, Al-Arab, and Al-Mayseen clinics. A total of 159 expectant mothers attending these clinics joined the study.

Participants were chosen through convenience sampling based on their availability and willingness to participate during the study period. To qualify for inclusion, participants needed to be pregnant, at least 17 years old, and able to comprehend and answer the survey questions. Pregnant women who had chronic lower back problems, significant orthopaedic issues, or a history of spinal surgeries were not included in the study.

Data collection was carried out using the Oswestry Disability Index (ODI), a recognized questionnaire developed by Jeremy Fairbank and his team at the Oswestry Back Pain Clinic in the UK in 1980. The ODI evaluates the level of disability experienced by individuals with lower back pain and examines how this pain affects daily activities, functional abilities, and overall quality of life. The index comprises ten sections, each addressing a distinct facet of daily living. Each section contains six statements detailing various levels of disability, and respondents must select the statement that best represents their situation. These sections assess areas such as pain severity, personal care, lifting, walking, sitting, standing, sleeping, social engagement, travelling, and work performance.

In addition, participants were questioned about the intensity of their lower back pain during pregnancy. Pain severity was assessed using a Visual Analog Scale for Pain (VAS Pain), which is depicted as a horizontal line measuring 10 centimetres. One end of the line marks "No Pain" (0), and the opposite end denotes "Worst Pain Imaginable" (10), indicating the most extreme pain possible.

For statistical evaluation, the data collected throughout the study were entered into Microsoft Excel spreadsheets. After data entry, analysis was performed utilizing SPSS software, version 26.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed for demographic information, pain characteristics, and disability scores. A chi-square test was conducted to investigate relationships among variables, with statistical significance established at $p < 0.05$.

3. ETHIC APPROVAL

Ethical approval prior this study was obtained from faculty of medical technology physiotherpy department, and participants were assured of the confidentiality of information ,and have signed the consent.

4. RESULT

This study enrolled 159 pregnant women with low back pain. Figure 1 shows the age and some clinical characteristics of the participants. The results revealed that the largest proportion of patients, accounting for 30% of the research group, were aged between 25 and 29 years. The mean age of the participants was 29.2 years. The least common age group, comprising only 5.7% of the population, was 40 years and above.

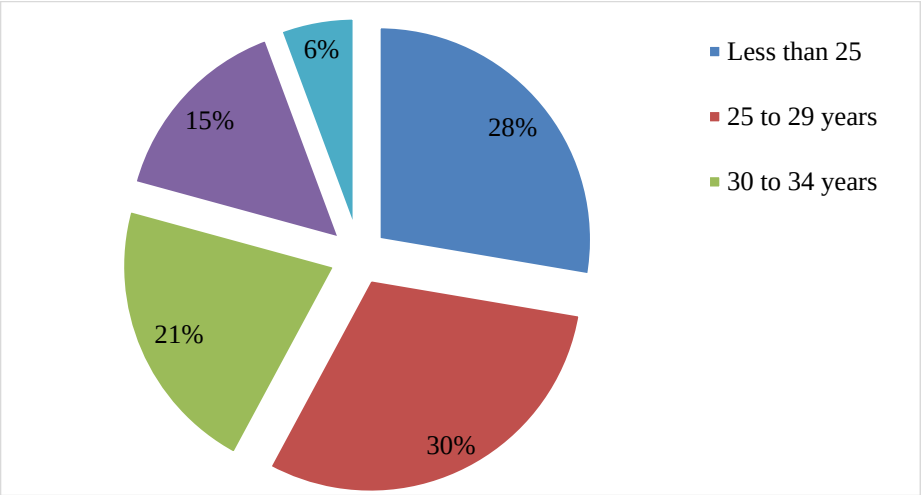

Figure 1. Shows the age groups of the sampled pregnant women.

Regarding the Pain during pregnancy s, the second trimester was experienced by 38.4% of pregnant women, followed by the third trimester with 32.7%, and the first trimester with 28.9%. Pain levels were measured on a scale of 1 to 10, with the majority of pregnant women (61.6%) reporting severe pain ranging from 7 to 10. Only a small percentage of patients (3.1%) reported lower levels of pain, scoring between 1 and 3 out of 10. The mean pain score across the study population was 6.9 out of 10.

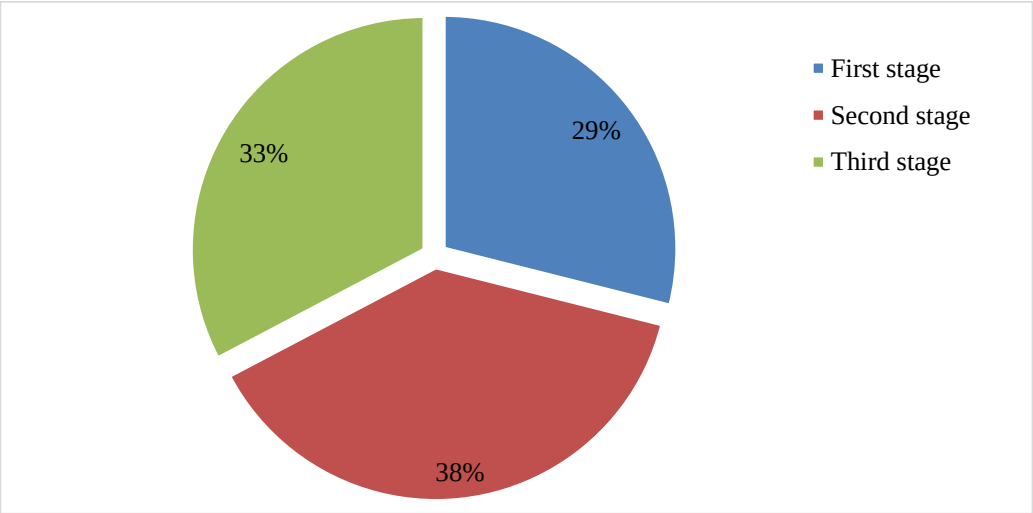

Figure 2. Shows the trimesters of lower back pain experienced by pregnant women.

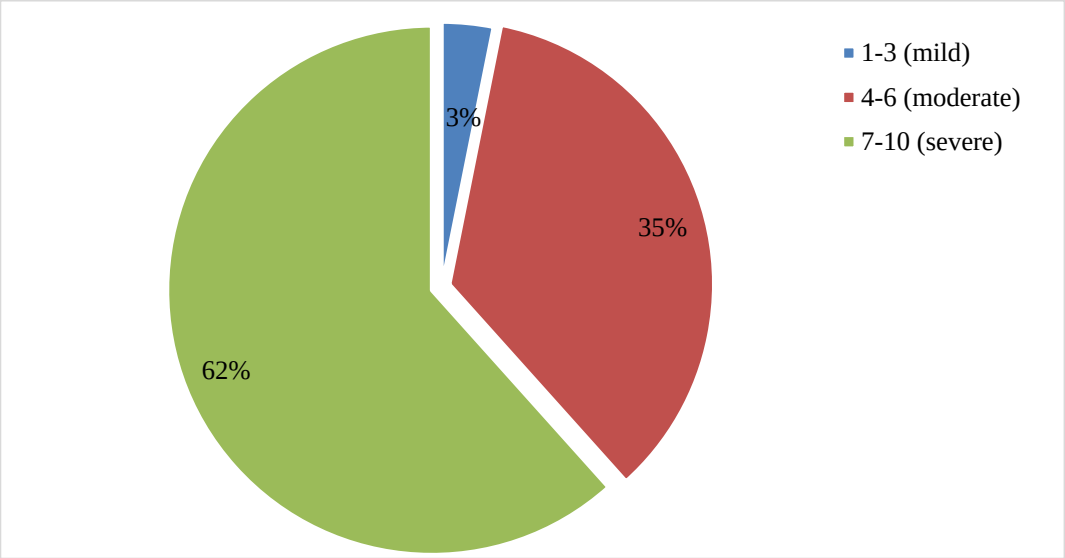

Figure 3. Shows the pain levels experienced by the surveyed pregnant women.

Figures 4 show the results from the survey. The findings indicate that most of the participants (66.7%) reported being able to manage their back pain without the use of painkillers. In contrast, only a small percentage (1.9%) mentioned that they do not use painkillers because they find them ineffective in relieving their pain.

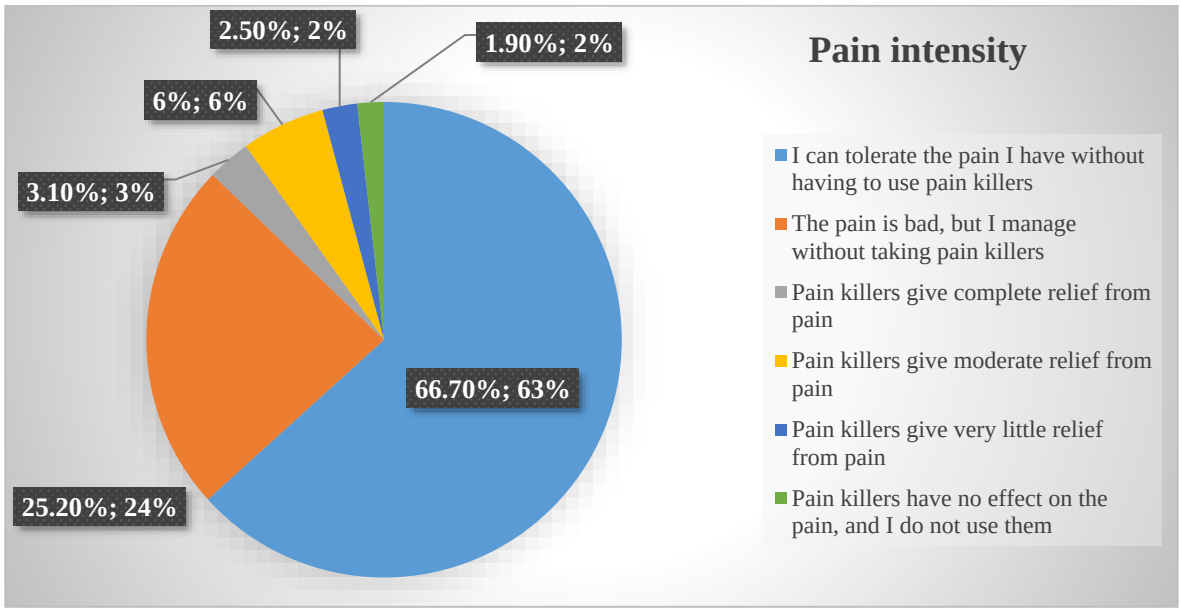

Figure 4. Shows pain intensity of study participants.

Figure 5. Shows lifting capability of study participants. Regarding the act of lifting objects of different weights, the majority of the surveyed pregnant women (57.2%) indicated that they were unable to lift anything at all, 12.6% reported being able to lift heavy weights and objects without extra pain.

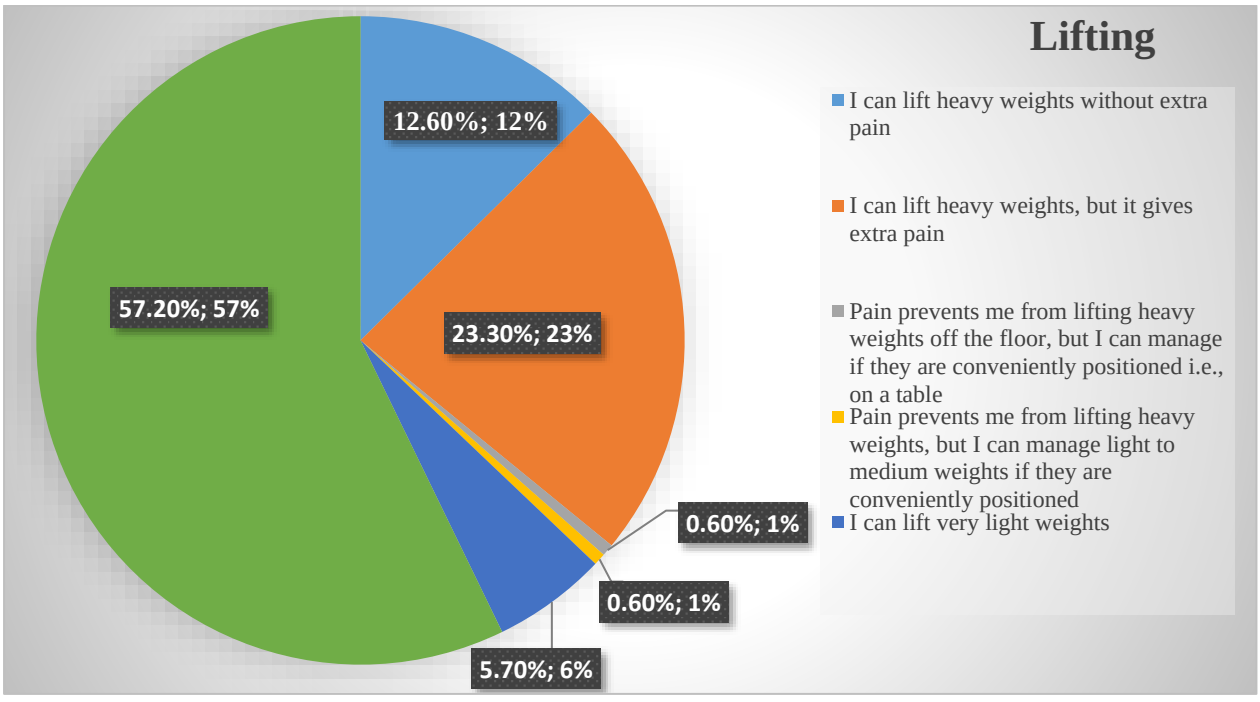

Figure 5. Shows lifting capability of study participants.

Concerning the impact of lower back pain on walking, 41.5% of the participants reported that their pain does not hinder them from walking any distance. 8.8% of participants reported not being able to walk and remaining in bed (Figure 6).

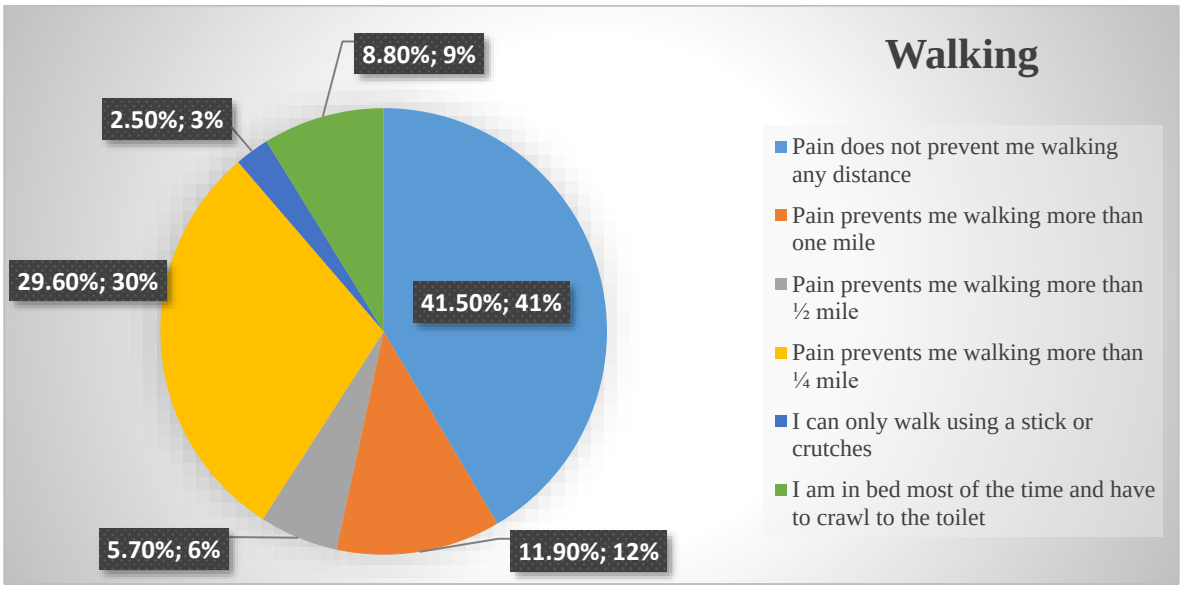

Figure 6. Shows walking capability of study participants.

The majority of individuals who participated in the survey (31.4%) stated that they are unable to sit at all due to their pain. Conversely, only a small percentage (4.4%) reported being able to sit comfortably in their favourite chair for extended periods (Figure 7).

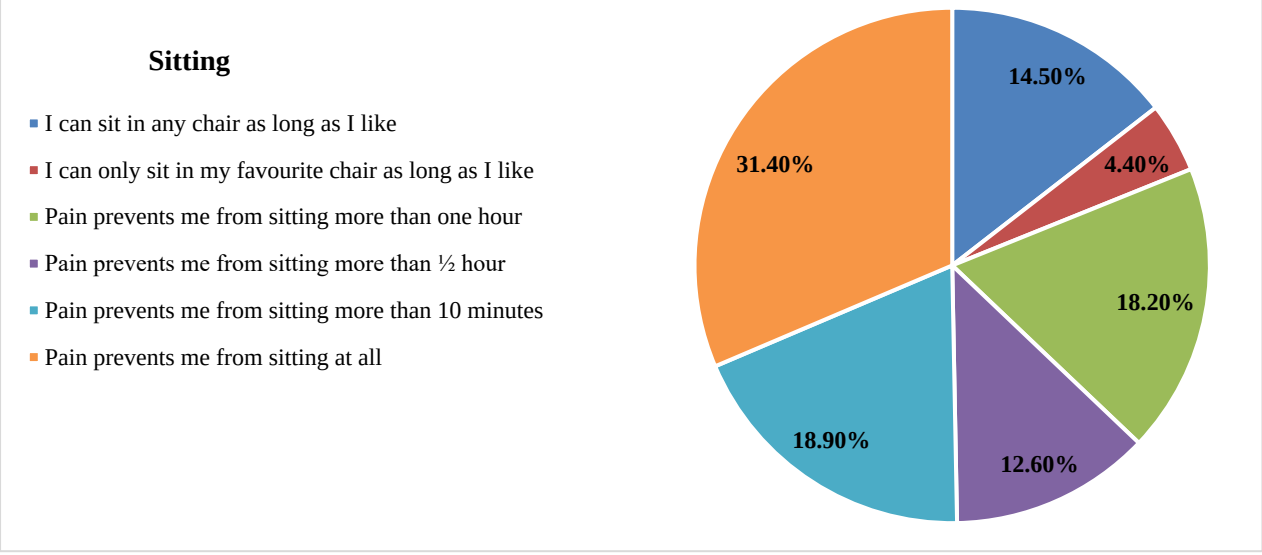

Figure 7. Shows sitting capability of study participants

5. DISCUSSION

Low back pain (LBP) is the most prevalent musculoskeletal issue reported by pregnant women, with global rates ranging from 20% to 90%. This condition frequently interferes with daily activities, leading to significant mobility loss and, in some cases, necessitating the use of crutches or wheelchairs for support (Bryndal et al., 2020). Consequently, the primary aim of this research was to examine the potential impact of low back pain on the disability levels of pregnant women in Tripoli.

In a study conducted in 2016, Wang, Wang, & Kaplar noted that the development and progression of various musculoskeletal degenerative conditions, including lower back pain, are significantly influenced by female sex hormones and are also linked to an individual's age. The highest percentage of pregnant women experiencing LBP in this research was found in the age group of 25 to 29 years, with an average age of 29.2 years among participants. This finding aligns with the results of Korovessis et al. (2019), who reported a mean age of 29.65 years for pregnant women in their study.

Regarding pain during pregnancy, the largest proportion of participants in this study, accounting for 38.4%, reported experiencing pain during the second trimester. A separate study by Backhausen et al. (2019) found that overall, the prevalence of low back pain was 76% at 20 weeks of gestation and increased to 90% at 32 weeks. Literature indicates that the onset of LBP typically occurs most frequently between the fifth and seventh months of pregnancy, corresponding to the third trimester (Sabino & Grauer, 2008).

Approximately one-third of women experience severe lower back pain during pregnancy, with around 80% reporting a significant impact on their quality of life and sleep. Additionally, a smaller percentage of these women find themselves unable to work due to the intensity of their pain (Katonis et al., 2011). In this study, a significant portion of pregnant women (61.6%) reported severe pain levels ranging from 7 to 10 on a scale of 0 to 10, with an average pain score of 6.9. Different results were reported by Backhausen et al. (2019), where the median pain score was 2.7 at 20 weeks and 4 at 32 weeks of gestation. The discrepancies in average pain scores may be attributed to differences in the definitions of lower back pain and the methods used to assess pain intensity.

Regarding the relationship between pain levels and age groups, findings indicated that pregnant women aged 25 to 29 years had the highest pain scores. However, no statistically significant correlation between pain intensity and the patient's age was detected. This outcome contradicts the research of Korovessis et al. (2019), which found no correlation between pain intensity and the age of participants. Conversely, Backhausen et al. (2019) reported notable variations in LBP prevalence across different age groups.

In the present study, no statistically significant distinction was observed between pain intensity and gestational age ($p= 0.156$). This contrasts with findings from a previous study by Rabiei & Sarchamie (2018), which noted a significant correlation between pain severity and gestational age ($P = 0.01$). Literature suggests that 80% of pregnant women experience a substantial impact on their quality of life and sleep due to lower back pain, with approximately 10% unable to continue work because of the pain's severity (Katonis et al., 2011).

However, this study's results showed that a considerable portion of participants (59.1%) reported that their pain does not disrupt their sleep or affect their ability to rest adequately. Additionally, 58.3% indicated that they can manage their daily responsibilities, even though these tasks exacerbate their lower back pain.

In comparing factors that increase pain severity, the literature indicates that 54% of women suffer from severe back pain during pregnancy. The factors associated with increased pain include sleeping (49%), sitting (36%), and walking (37%) (Bryndal et al., 2020). In contrast, this study found that among participants who reported severe pain (61%), different factors were associated with increased pain: lifting (57%), sitting (34%), and travelling (28%). The study also discovered that the factors least associated with increased pain intensity included personal care (60%), walking (41%), sleep (59%), and social life (44%).

6. CONCLUSION

A significant number of pregnant women reported experiencing severe lower back pain. However, there was no observed correlation between the level of pain and different age groups or the severity of pain during pregnancy. Additionally, most pregnant women noted that their pain negatively impacted their daily activities, including lifting objects, sitting, and traveling.

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