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Low back pain during pregnancy: prevalence, risk factors and clinical profile in the Bamenda Regional Hospital

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Abstract

Background Low back pain (LBP) is a significant musculoskeletal problem during pregnancy, which can negatively affect a woman's quality of life. The aim of this study was to determine the prevalence, the clinical characteristics and the factors associated with LBP during pregnancy among women attending the Antenatal Unit of the Bamenda Regional Hospital (BRH).

Methods A cross-sectional study was carried out from February to April 2019 at the Antenatal unit of the BRH. We included all pregnant women who came for antenatal consultation during the study period and who gave their informed consent to participate in the study. A pretested, interviewer-administered questionnaire was used to collect data on the sociodemographic characteristics of the participants, the occurrence of LBP, its clinical characteristics and the factors associated with its occurrence. Data were analysed using SPSS version 25.0. Univariate logistic regression was used to identify risk factors and multivariate analysis was used to eliminate confounders. A p-value of < 0.05 was considered statistically significant.

Results A total of 410 participants were included in the study. The prevalence of LBP in pregnancy was 53.9% ($n = 221$). The prevalences of lumbar pain and pelvic girdle pain were 34.9% ($n = 143$) and 26.1%, ($n = 107$), respectively. The factors that were associated with a higher likelihood of reporting LBP were a history of LBP in a previous pregnancy (aOR = 2.9, 95% CI, p = < 0.001), obesity (aOR 3.4 95% CI, p = < 0.001), and using a soft mattress (aOR = 2.4 95% CI, $p = 0.006$). Exercise during pregnancy was found to be a protective factor (aOR = 0.2 95% CI, p = < 0.001).

Conclusions Low back pain during pregnancy is a common problem among pregnant women attending antenatal care at the Bamenda Regional Hospital. Health workers need to be proactive in identifying LBP in pregnancy and managing it promptly.

Keywords Low back pain, Pregnancy, Prevalence, Risk factors, Cameroon

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Background

Low back pain (LBP) is defined as pain between the costal margin and the inferior gluteal fold which may be referred down to the leg and is usually accompanied by painful limitation of movement [1, 2]. LBP in pregnancy is defined as recurrent or continuous pain for more than one week from the lumbar spine or pelvis during pregnancy [3]. LBP could be pelvic girdle pain (PGP) or lumbar pain (LP) [4, 5]. PGP presents as pain between the posterior iliac crest and the gluteal fold which radiates towards the posterolateral thigh and knee but not the foot [6]. On the other hand, LP is characterised as pain over and around the lumbar spine, above the sacrum, which may or may not radiate to the foot; tenderness over the paravertebral muscles is a common clinical finding [7]. The posterior pain provocation test is positive, in case of PGP [6, 8, 9] and helps to differentiate PGP from other conditions.

The prevalence of LBP among pregnant women was 71.3% in Spain in 2012 [1], 26.3% in Pakistan in 2018 [10] and 55.4% in a study carried out in Ilorin, Nigeria in 2013 [11]. The prevalence of LBP increases progressively during pregnancy. The prevalence during the first trimester was estimated at 50% [12]; in the second trimester, it ranged between 40% and 70% [13]; and in the third trimester, it was between 70% and 80% [1].

History of pelvic trauma, chronic LBP, and LBP during a previous pregnancy are the most common and widely accepted risk factors [14]. The majority of women are affected in their first pregnancy [15] and 85% of women with back pain in a previous pregnancy will develop LBP in a subsequent pregnancy [4, 16]. The number of previous pregnancies also seems to increase this risk [6]. The onset of pain during pregnancy, elective caesarean section, body mass index (BMI) as well as hypermobility are strong predictors of persistent LBP in pregnancy [3, 17]. LBP during menstruation [15] and some movements like sitting up, standing up from a chair, tossing, repetitive lifting, turning around are additional risk factors for pregnancy-related LBP [18].

Pregnancy related LBP, seems to be a result of hormonal, mechanical and other factors [8, 19, 20]. The hormonal changes (increase in relaxin) cause softening of ligaments and joints. In conjunction with lengthening of the abdominal and pelvic floor muscles [21], this compromises the stability of the spine [22, 23], which loses the ability to maintain body posture, causing the lower back to support most of the increased weight of the torso [20]. The result is excess mobility of the joints which may be the cause of discomfort or pain in the sacro-iliac joint, lower back and posterior pelvis [22, 23]. Also, the enlarging gravid uterus changes the load and body mechanics which leads to a shift in the centre of gravity forwards thereby increasing the stress on the lower back. Postural changes can be used to balance the anterior shift possibly causing an extra lordosis which further increasing stress on the lower back [14, 24, 25]. The extra stress on the intervertebral disc responds to the axial loading by expelling fluid, resulting in decreased height and an overall compression of the spine [14, 24, 26]. Another theory suggests venous engorgement in the pelvis due to pressure on the vena cava by the expanding uterus when the patient is lying down especially for pain that worsens at night [14]. This, combined with the increased fluid volume from fluid retention during pregnancy, leads to venous congestion and hypoxia in the pelvic and lumbar spine [14].

Although it is difficult to prevent LBP, it is important to inform future mothers, especially those at high risk to expect the discomforting symptoms of LBP. Several strategies like undertaking physical activity and maintaining a good level of physical fitness are likely to reduce the risk of developing LBP during pregnancy [6]. Warm shower baths or hot packs, acupuncture, instructions concerning posture and domestic activity and/or antenatal physiotherapy classes have been proposed to prevent LBP during pregnancy but only a few have shown to be effective [27, 28].

LBP has a negative impact on women's daily activities, quality of life, and ability to work but women do not always seek medical attention [3]. The appropriate treatment aims to reduce the discomfort and the impact on the pregnant woman's quality of life. Treatment options include physiotherapy, acupuncture, massage, relaxation, yoga, stabilization belts, nerve stimulation and eventually pharmacological treatment [8, 14, 29, 30].

Despite the impact of LBP in pregnancy on the quality of life, there is little or no information on this pathology in our setting. Therefore, the aim of this study was to to determine the prevalence and the factors associated with pregnancy-related LBP among women attending the antenatal clinic of the Bamenda Regional Hospital (BRH).

Methods

Study design and setting

This study was a cross-sectional study carried out at the Antenatal Unit of the Bamenda Regional Hospital (BRH) from February 26th to April 18th 2019. The BRH is a third category health facility, which acts as a referral hospital in the North-West Region of Cameroon. It is located in Bamenda, which is the capital city of the North West Region. The BRH has a Gynaecology and Obstetrics Unit, which harbours the Antenatal Unit which is one of the most widely used ANC units of the Region.

Study population

All pregnant women attending their antenatal care at the BRH during the study period who gave informed consent

were included in the study. Pregnant women who had been experiencing back pain caused by an underlying pathology such as fractures or direct trauma were excluded.

Sample size calculation and sampling technique

Considering a Z-value of 1.96 for a 95% confidence interval and using the prevalence of LBP in pregnancy in a study in Nigeria [11], the minimum required sample size was calculated at 380 participants using the Cochran's formula [$n = Z^2P(1\text{-}P)/d^2$]. A consecutive selection of participants who met the inclusion criteria over the study period was done. To improve on the statistical power, we went beyond our calculated minimum sample size.

Study procedure

Ethical clearance was obtained from the Institutional Review Board of the Faculty of Health sciences, University of Bamenda (2019/0037H/UBa/IRB) and administrative authorizations were obtained from the North West Regional Delegation of Public Health and from the Director of the Bamenda Regional Hospital.

Data were collected by the principal investigator, a trained health professional on maternal health, who was not blinded at any time during the data collection process. Participants were approached individually at the antenatal unit upon arrival and were informed of the purpose and procedure of the study. Informed consent was signed before the participant was enrolled in the study. For participants aged below 18 years, consent was obtained from the person accompanying them. All eligible participants underwent an interview with the use of a pretested data collection form in the English language.

Data was collected on sociodemographic characteristics (age, religion, education level, marital status, occupation), obstetrical and gynaecologic characteristics (gestational age, gravidity, parity, mode of delivery for the previous pregnancies, dysmenorrhea), clinical characteristics of pain (onset, severity using the visual analogue scale, type, radiation, timing), medical history of low back pain (presence of low back pain before pregnancy, history of low back pain in previous pregnancies) and lifestyle habits such as prolonged postural habit (e.g. frequent bending, lifting things, prolonged sitting or standing), physical activity, and the firmness of the mattress (considered soft if it easily sinks when the individual lies on it).

The Visual Analog Scale (VAS) is a tool used to assess pain intensity, commonly employed in research and routine clinical practice. It is typically presented as a 10 cm line, with one end representing "no pain at all" and the other representing "worst pain imaginable." The pregnant woman was asked to mark the line at the point that best represents the intensity of their pain.

The description of the pain permitted the classification into either PGP or LP. For each pregnant woman, the weight in kilograms and height in meters were taken at the end of the interview using the EKS mechanical scale and a stadiometer respectively. This allowed the participants to be grouped as non-obese (18.5–29.99 kg/m^2) or obese (≥ 30 kg/m^2).

Data analysis

Data collected were entered into Epi data software version 3.1 and analysed using IBM SPSS Statistics (Version 25). Descriptive data was summarized using frequencies and percentages. Odds ratios (OR) and their corresponding 95% confidence intervals (CIs) for LBP in pregnancy were calculated by logistic regression in univariate analyses. Factors with a p-value < 0.05 at univariate analysis were computed into a multivariate regression to determine the factors independently associated with the occurrence of LBP. The p-value of < 0.05 was considered statistically significant.

Results

Sociodemographic characteristics of the study participants

Among the 410 participants, the mean age (SD) was 27.31 (5.61) years with the minimum age being 15 years and maximum 47 years. Most of the women, 73.9% ($n = 303$) were aged ≤ 30 years, 98.0% ($n = 402$) were Christians, 79.0% ($n = 324$) were married or cohabiting, 47.3% ($n = 194$) had a secondary school level of education and 64.6% ($n = 265$) were employed (Table 1).

Gynaecologic and obstetrical characteristics of the study participants

The mean gestational age (SD) was 26.02 (± 7.997) weeks with a range from 8 weeks to 41 weeks of gestation. Concerning the obstetrical profile, 69.8% ($n = 286$) were multigravida, 38.3% ($n = 157$) were multiparous and 55.9% ($n = 229$) were in the second trimester of pregnancy. Among the 262 women who had delivered before, 43 (16.4%) had a caesarean delivery during the previous pregnancy. Among the study participants, 42.0% ($n = 172$) had a history of dysmenorrhea (Table 2).

Past-history and lifestyle habits of study participants

Most of the participants, 84.6% ($n = 347$) had no history of LBP, 35.9% ($n = 102$) had LBP during their previous pregnancy, 49.0% ($n = 201$) had no prolonged postural habits, 63.4% ($n = 260$) did not exercise before the current pregnancy and 81.0% ($n = 332$) did not exercise during the current pregnancy. The mean body mass index was 29.1 kg/m^2 with 39.0% ($n = 160$) of the participants being obese. Among the participants, 71.2% ($n = 292$) said their mattress was firm (Table 3).

Table 1 Association between sociodemographic characteristics and low back pain during pregnancy

Variable	Category	Presence of pain *n*/%			Odd ratio	*P* value
		Total ***N*** **= 410**	**Yes** ***n*** **= 221**	**No** ***n*** **= 189**		
Age group (years)	≤ 30	303 (73.9%)	168(76.0%)	135(71.4%)	1.268(0.815–1.972)	0.292
	> 30 **(Ref)**	107 (26.1%)	53 (24.0%)	54 (28.6%)		
Religion	Christian	402 (98.0%)	216(97.8%)	186 (98.4%)	0.697(0.164–2.995)	0.624
	Muslim **(Ref)**	8 (2.0%)	5 (2.2%)	3 (1.6%)		
Educational level	Primary	41 (10.0%)	17 (7.7%)	24 (12.7%)	0.519(0.260–1.863)	0.062
	Secondary	194 (47.3%)	103 (46.6%)	91 (48.1%)	0.829(0.549–1.251)	0.829
	Tertiary **(Ref)**	175 (42.7%)	101 (45.7%)	74 (39.2%)		
Marital status	Single **(Ref)**	86 (21.0%)	42 (19.0%)	44 (23.3%)	1.293(0.803–2.082)	0.290
	Married or cohabiting	324 (79.0%)	179 (81.0%)	145 (76.7%)		
Occupation	Employed	265 (64.6%)	141 (63.8%)	124 (65.6%)	0.924(0.615–1.388)	0.703
	Unemployed **(Ref)**	145 (35.4%)	80 (36.2%)	65 (34.4%)		

Table 2 Association between gynaecologic, obstetric history and low back pain during pregnancy

Variable	Category	Low back pain			Odds ratio	*P* value
		Total ***N*** **= 410**	**Yes** ***n*** **= 221**	**No** ***n*** **= 189**		
Gestational age	First trimester **(Ref)**	12 (2.9%)	6 (2.7%)	6 (3.2%)	/	
	Second trimester	229 (55.9%)	111 (50.2%)	118 (62.4%)	0.941(0.295–3.003)	0.918
	Third trimester	169 (41.2%)	104 (47.1%)	65 (34.4%)	1.600(0.495–5.1720)	0.432
Gravidity	Primigravida	124 (30.2%)	65 (29.4%)	59 (31.2%)	0.918(0.602–1.401)	0.692
	Multigravida **(Ref)**	286 (69.8%)	156 (70.6%)	130 (68.8%)		
Parity	Nulliparous **(Ref)**	148 (36.1%)	78 (35.3%)	70 (37.0%)		
	Primiparous	105 (25.6%	56 (25.3%)	49 (26.0%)	1.026(0.621–1.693)	0.921
	Multiparous	157 (38.3%)	87 (39.4%)	70 (37.0%)	1.115(0.711–1.751)	0.635
Mode of previous delivery*	Vaginal	219 (83.6%)	120 (54.3%)	99 (52.4%)	0.960(0.497–1.853)	0.902
	Caesarean **(Ref)**	43 (16.4%)	24 (10.9%)	19 (10.1%)		
Dysmenorrhea	Yes	172 (42.0%)	99 (44.8%)	73 (38.6%)	1.289(0.869–1.914)	0.207
	No **(Ref)**	238 (58.0%)	122 (55.2%)	116 (61.4%)		

*$n = 262$

Table 3 Past history/lifestyle and low back pain during pregnancy

Variable	Category	Presence of pain			Odd ratio	*P* value
		Total ***N*** **= 410**	**Yes** ***n*** **= 221**	**No** ***n*** **= 189**		
History of low back pain	Yes	63 (15.4%)	46 (20.8)	17 (9.0)	2.659(1.467–4.821)	**0.001**
	No **(Ref)**	347 (84.6%)	175 (79.2)	172 (91)		
Low back pain in previous pregnancy*	Yes	102 (35.9%)	73 (33.0)	29 (15.3)	3.003(1.785–5.050)	**< 0.0001**
	No **(Ref)**	182 (64.1%)	83 (37.6)	99 (52.4)		
History of spinal anaesthesia	Yes	16 (3.9%)	8 (3.6)	8 (4.2)	0.850(0.313–2.310)	0.750
	No **(Ref)**	394 (96.1%)	213 (96.4)	181 (95.8)		
Exercise before pregnancy	Yes	150 (36.6%)	65 (29.4)	85 (45.0)	0.510 (0.339–0.766)	**0.001**
	No **(Ref)**	260 (63.4%)	156 (70.6)	104 (55.0)		
Exercise during pregnancy	Yes	78 (19.0%)	28 (12.7)	50 (26.5)	0.403 (0.242–0.673)	**0.001**
	No **(Ref)**	332 (81.0%)	193 (87.3)	139 73.5		
Prolonged postural habit	Present	201 (49.0%)	119 (53.8)	82 (43.4)	1.522(1.030–2.250)	**0.035**
	Absent **(Ref)**	209 (51.0%)	102 (46.2)	107 (56.6)		
Body mass index	Obese	160(39.0%)	111 (50.2)	49 (25.9)	2.883(1.897–4.383)	**< 0.0001**
	Non obese **(Ref)**	250 (61.0%)	110 (49.8)	140 (74.1)		
Firmness of mattress	Soft	118 (28.8%)	84 (38.0)	34 (18.0)	2.795(1.765–4.428)	**< 0.0001**
	Firm **(Ref)**	292 (71,2%)	137 (62.0)	155 (82.0)		

*$n = 284$

Prevalence of low back pain and its clinical characteristics

The prevalence of LBP among our participants was 53.9% ($n = 221$). The prevalence of LP was 34.9% ($n = 143$) and that of PGP was 26.1% ($n = 107$). Of the 410 participants, 29 (7.1%) had combined PGP and LP.

The mean gestational age (SD) at onset of pain was 17.9 (8.32) weeks for LP and 18.31 (9.13) weeks for PGP. The mean (SD) pain severity on the visual analogue scale (VAS) was 4.79 (1.62) for LP and 4.83 (1.51) for PGP, while the pain severity mode and median were both 5. The pain was most often of gradual onset for both LP (83.2%) and PGP (94.4%). It was described as cramps or spasms by most of the participants (21.7% for LP vs. 33.6% for PGP). In 22.4% of cases for LP and 27.1% for PGP the pain radiated to the lower limbs. LP and PGP occurred most often for 1–2 days per week (37.1% vs. 40.2%), hindered daily activities (44.1% vs. 43.0%) and sleep (30.1% vs. 32.7%). Only 18.2% ($n = 26$) of participants with LP and 15.0% ($n = 16$) with PGP resorted to the use of medications (Table 4).

Factors associated with low back pain in pregnancy among study participants

Sociodemographic characteristics and low back pain during pregnancy

On bivariate analysis, participants with prolonged postural habits [OR = 1.522(1.030–2.250), $p = 0.035$] and those who were obese [OR = 2.883(1.897–4.383), $p < 0.0001$] were more likely to experience pregnancy-related LBP (Table 1).

Gynaecologic and obstetric history and low back pain during pregnancy

On bivariate analysis, neither gynaecologic nor obstetrical variables were statistically significantly associated with the occurrence of pregnancy-related LBP (Table 2).

Past history/lifestyle and low back pain during pregnancy

Women who reported having a soft mattress [OR = 2.795 (1.1.765–4.428), $p < 0.0001$], history of LBP [OR = 2.659(1.467–4.821), $p < 0.001$] and a history of LBP

Table 4 Characteristics and impact of low back pain during pregnancy

Location	Lumbar pain ($n = 143$)/%	Pelvic Girdle pain ($n = 107$)/%
Mean Gestational Age of pregnancy at onset	17.90 (±8.321)	18.31 (±9.129)
Pain Severity (VAS)*	4.83 (+1.511)	4.79 (±1.618)
Radiation to the lower limbs	32 (22.4%)	29 (27.1%)
Onset		
Gradual	119 (83.2%)	101 (94.4%)
Sudden	24 (16.8%)	6 (5.6%)
Nature of pain		
Stiff	22 (15.4%)	12 (11.2%)
Nagging	4 (2.8%)	2 (1.9%)
Numb	6 (4.2%)	17 (15.9%)
Tingling	9 (6.3%)	4 (3.7%)
Cramp/spasm	31 (21.7%)	36 (33.6%)
Burning	4 (2.8%)	1 (0.9%)
Shooting	1 (0.7%)	0 (0.0%)
Unidentified	66 (46.1%)	35 (32.7%)
Pain Frequency per week		
1–2 days	53 (37.1)	43 (40.2)
3–4 days	45 (31.4)	38 (35.5)
5–6 days	19 (13.3)	16 (15.0)
7 days	22 (15.4)	10 (9.3)
Unidentified	4 (2.8)	0 (0.0)
Hindrance to Daily Activity		
Yes	63 (44.1)	46 (43.0)
No	80 (55.9)	61 (57.0)
Hindrance to sleep		
Yes	43 (30.1)	35 (32.7)
No	100 (69.9)	72 (67.3)
Medication Use		
Yes	26 (18.2)	16 (15.0)
No	117 (81.8)	91(85.0)

*VAS: visual analogue scale

Table 5 Factors associated with low back pain in pregnancy

Variables	Crude Odd Ratio (95% CI)	*P*-value	Adjusted Odd ratio (CI 95%)	Adjusted *P* value
Prolonged postural habit				
Present	1.522(1.030–2.250)	**0.035**	1.476 (0.861–2.528)	0.157
Body mass index				
Obese	2.883(1.897–4.383)	**< 0.0001**	3.437 (1.971–5.993)	< 0.001
Low back pain in previous pregnancy				
Yes	3.003(1.785–5.050)	**< 0.0001**	2.907 (1.627–5.194)	< 0.001
History of low back pain before pregnancy				
Yes	2.659(1.467–4.821)	**0.001**	1.999 (0.958 – 4.170)	0.065
Exercise before pregnancy				
Yes	0.510 (0.339–0.766)	**0.001**	0.876 0.470–1.633)	0.678
Exercise during pregnancy				
Yes	0.403 (0.242–0.673)	**0.001**	0.211 (0.095–0.471)	< 0.001
Nature of mattress				
Soft	2.795(1.765–4.428)	**< 0.0001**	2.423 (1.282–4.581)	0.006

in the previous pregnancy [OR = 3.003(1.785–5.050), $p < 0.0001$] were more likely to have pregnancy-related LBP. Engaging in exercise before pregnancy [OR = 0.510 (0.339–0.766), $p < 0.001$] and doing exercise during pregnancy [OR = 0.403 (0.242–0.673), $p < 0.001$] decreased the likelihood of having pregnancy related-LBP (Table 3).

Factors independently associated with the occurrence of low back pain during pregnancy

After adjusting for confounders, women who were obese were 3.5 times [AOR = 3.437 (1.971–5.993), $p < 0.001$] more likely to develop LBP during pregnancy and those with LBP in a previous pregnancy were 3 times more likely [AOR = 2.907 (1.627–5.194), $p < 0.001$] to develop LBP during pregnancy. Women who slept on a soft mattress [AOR = 2.423 (1.282–4.581), $p < 0.006$] were also more likely to experience LBP. On the other hand, engaging in exercise during pregnancy reduced the likelihood [AOR = 0.211 (0.095–0.471), $p < 0.001$] of developing LBP during pregnancy (Table 5).

Discussion

Low back pain affects more than half of pregnant women globally. In low- and middle-income countries, this figure could be higher due to underreporting, because women are faced with more pressing health issues. Understanding the prevalence and risk factors of LBP and its impact on daily activities is critical to informing a comprehensive antenatal care and improving the quality of care offered to pregnant women.

The prevalence of LBP in this study was 53.9%, which is similar to the prevalence of 53.9% reported by Sencan et al. [31]. in Turkey, 55.4% reported by Jimoh et al.(11) in Ilorin, Nigeria, 52.5% reported by Ayanniyi et al. [32]. in Ibadan, Nigeria, and 57.3% by Ansari et al. [33]. in Iran. However, this prevalence is lower than 76% reported by Weis et al. [34] in Canada, and Gharaibeh et al. [35] in Jordan, but higher than the prevalence of 26.3% reported by Tariq et al. [10]. in Pakistan. The differences in the prevalence of LBP in the various studies could be attributed to the operational definition of LBP in the study designs. Cultural differences between various nations in terms of pain perception or reporting, as well as lifestyle practices may also explain the variation in the prevalence of LBP among these communities.

Lumbar pain was the most common type of LBP in this study, which is consistent with the findings of Ca et al., Sencan et al. [31]., and Uemura et al. in Japan [34], but differs from the findings of Katonis et al. in Greece [24]. In this study, the prevalence of LP was 34.9%, which is lower than 71.3% reported in Spain by Kovac et al. [1]., and 71.2% by Ansari et al. [33]. Weight gain and changes in posture throughout pregnancy contribute to an increased load on the lumbar area, making it more likely for pregnant women to experience lumbar pain.

In contrast, the prevalence of PGP in this study was 26.1%, which was similar to that reported in Canada [35]. This is lower than that reported in Spain [1], but higher than that reported in Ibadan, Nigeria [32]. These differences in prevalence could be attributed to varying diagnostic criteria and reporting practices. In this study, 7.1% of the participants had combined pain. This combined pain leads to a broader spectrum of discomfort and functional limitation, highlighting the importance of recognising it during pregnancy, as it can negatively impact the prognosis and recovery process for affected women [24].

The mean gestational age at the onset of pain was 17.9weeks for LP and 18.3weeks for PGP, which is similar to the findings of Bergström et al. in Sweden, who had the onset of pain at about the 18th week of pregnancy [36]. This indicates that pregnancy-related LBP often begins early in the second trimester. In this study, pain onset was gradual, accompanied by cramps, which is consistent with the findings of Sencan et al. [31]. This may suggest

that this gradual onset may be a common feature of pregnancy-related LBP across different populations.

The mean pain score in this study was 5, which is similar to the findings of Kovacs et al. in Spain [1] and Al-Sayegh et al. in Kuwait [37], but higher than the mean score of 2.6 found by Uemura et al. [34]. These differences could be attributed to cultural differences in pain perception as well as participant reporting. Most women in this study reported having pain for 1–2 days a week, which is similar to the findings of Uemura et al. [34]. This suggests that the pain might be intermittent pain rather than constant pain. Less than a third reported radiation of pain to the leg, which is lower than 72.5% found by Sencan et al. [31]. The above findings could reflect regional differences in how pregnancy-related LBP manifest, as well as potential differences in diagnostic criteria or participant reporting.

Less than one quarter (18.2% for LP vs. 15.0% for PGP) of these women received painkillers for the pain, which is higher than 4.2% in Turkey [31] and 9% in Malawi [38]. This highlights the willingness of many women to cope with the pain without pharmaceutical intervention, possibly due to concerns about the safety of medications during pregnancy or the perception that the pain is mild enough to manage without treatment. Some authors propose expectant management and advise these women to tolerate the pain on the premise that the pain will eventually disappear after delivery [39].

The impact of pregnancy-related LBP on daily routine activities has been a concern in many studies. In this study, the daily activities of 44.1% of the women with LP and 43.0% of those with PGP were hindered because of pain. This is higher than the findings of Kovacs et al. [1]., and could reflect variations in the severity of pain, cultural differences in how pain is perceived or reported, and how the impact of pain is managed. Sleep disturbance due to pain was reported by 30.1% and 32.7% of women with LP and PGP, respectively, which is less than the findings of Al-Sayegh et al. [37], but higher than the findings of Ayanniyi et al. [32]. This shows that a significant proportion of women experience not only daytime functional impairment, but also disruptions to their sleep, which can adversely affect their overall quality of life.

In this study, obesity was independently associated with LBP in pregnancy, which is consistent with the findings of Gharaibeh et al. [40]. and Mogren et al. [3]. in Sweden. Obesity adds strain to the muscles and ligaments of the back, and to compensate for this weight, the spine tends to become tilted and stressed unevenly.

Another factor independently associated with LBP in pregnancy was a history of LBP in previous pregnancy, which is consistent with the findings of several other studies [31, 34, 35, 41]. The muscles, ligaments, and joints involved in supporting the spine and pelvis may have been weakened or stretched in the previous pregnancy, which could make them more vulnerable to pain in future pregnancies. Also, previous episodes of LBP may influence a woman's posture, movement patterns, and lifestyle choices in a way that increases her risk of experiencing pain in future pregnancies. Recognizing this as a risk factor can help healthcare providers in identifying at-risk women early in the current pregnancy.

This study also found that sleeping on a soft mattress was associated with having LBP in pregnancy, which is similar to the findings of Kovac et al. [1]. Sleeping on a soft surface, may cause excessive sinking, especially in the areas of the lower back and pelvis. This can lead to misalignment of the spine and pelvis, putting additional strain on the muscles and ligaments that support the back causing or exacerbating the already existent pain.

Exercise during pregnancy was associated with a lower risk of LBP in pregnancy in this study, which is similar to the findings of Shiri et al. [42]. and Mogren et al. [3]. In general, exercise programs that facilitate weight loss, trunk strengthening, and the stretching of musculotendinous structures appear to be helpful. Exercise such as relaxation and stretching exercises eliminate muscle tension, creating a "natural" corset by abdominal and low back muscle training are useful in treating LBP [43]. Although women who are pregnant are advised to exercise, it is important to counsel them on the type of exercise that is safe and therapeutic.

The association between LBP and age has been controversial, and this study found no association between the occurrence of LBP and maternal age. Some studies suggest that older age increases the risk of developing LBP due to factors such as cumulative musculoskeletal wear and tear, changes in posture, and increased muscle weakness over time. It has been reported that an increase in parity was associated with increased risk of LP, but no association was found in this study. The absence of this association in this study does not necessarily mean that parity is not a factor in pregnancy-related LBP but could suggest that other variables are more influential in our study.

Prolonged postural habits and history of LBP were significantly associated with pregnancy related LBP at univariate analysis, but no association was found after eliminating confounders. This suggests that the impact of these factors on pregnancy-related LBP may be influenced or explained by other variables.

Limitations

This was a cross-sectional study without any follow-up and recall bias could occur since part of the data collection was retrospective. Also, the study did not attempt to identify the common activity that led to the onset of

pregnancy related LBP. The number of women in the first trimester was too small, which could affect both the precision and reliability of the results regarding trimester as an associated factor. Some risk factors such as menstruation-related LBP, age at menarche, and use of oral contraceptives were not studied. Nonetheless this is the first study on LBP in the North West Region of Cameroon and provides baseline data that is relevant for managing and designing preventive strategies.

Conclusion

Pregnancy-related back pain affects more than half of pregnant women consulting at the Bamenda Regional Hospital. Factors associated with this pain include LBP in previous pregnancy, lack of physical exercise during pregnancy, using a soft mattress, and being obese. Given this high frequency, pregnancy-related back pain should be actively evaluated during ANC and managed accordingly. Continuous sensitization on measures to prevent LBP during regular ANC visits could be a key intervention.

Abbreviations

ANC	Antenatal care
BRH	Bamenda Regional Hospital
GBV	Gender-based violence
HIV	Human Immuno- Deficiency Virus
LBP	Low back pain
LMIC	Low and middle income countries
LP	Lumbar pain
PGP	Pelvic girdle pain
VAS	Visual analogue Scale
WHO	World Health Organization

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Author contributions

DWP, NTJ, SM, FP were involved in the design of the study and drafted the protocol with input from other authors. DWP, SM, FP analysed the data. DWP, NTJ, RNN, DJS drafted and finalized the manuscript for publication. TWA, AAA, MB, TT, and AFE critically revised the manuscript for format and scientific accuracy. All authors contributed to the writing of the paper and approved the final version.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on a reasonable request.

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from the Institutional Review Board of the Faculty of Health Sciences of the University of Bamenda, and administrative authorisations were obtained from the Regional Delegation of Public Health for the North West Region and from the Director of the Bamenda Regional Hospital. Before administering the questionnaire, the study was explained to each participant in detail, and informed consent was obtained. Those who were not literate placed thumbprints after accepting to have fully understood the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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