

History of Low Back Pain during Previous Pregnancy Had an Effect on Development of Low Back Pain in Current Pregnancy Attending Antenatal Care Clinic of University of Gondar Hospital, Northwest Ethiopia

Eskedar Abebe¹, Kshtrashal Singh^{2}, Mulat Adefires³, Mueez Abraha⁴, Hailay Gebremichael², Rahul Krishnan²*

¹Department of Physiotherapy, College of Medicine and Health Sciences, University of Gondar, Gondar Ethiopia

²Department of Physiotherapy, College of Health Science, Mekelle University, Mekelle, Ethiopia

³Department of Gynecology and Obstetrics, College of Medicine and Health Sciences, University of Gondar, Gondar Ethiopia

⁴Department of Anatomy, College of Medicine and Health Sciences, University of Gondar, Ethiopia

Abstract

Low back pain (LBP) is one of the most common disorders associated with pregnancy. It often causes considerable physical dysfunction, poor work performance and absenteeism. Despite this problem, evidence found in attempting magnitude and associated factors are scarce in Ethiopia. Objective of this study is to assess the associated factors and prevalence of low back pain among pregnant women's who are attending antenatal clinic. A total of 300 pregnant women were interviewed using structured questionnaire. Systematic random sampling procedures were used to select pregnant women who were attending the ANC clinic during the study period. Logistic regression was used to analyze the data. A 95% confidence interval with $p < 0.05$ was taken to assess association between variables. Of 300 pregnant women, 101(33.2%) experienced low back pain during their current pregnancy. Less than half (30.7%) of the pregnant women began experiencing low back pain during the third trimester. A history of low back pain (AOR= 3.65 CI 95%:1.76, 7.56) and LBP during previous pregnancy (AOR= 2.29 CI 95%:1.02, 5.12) were significantly associated with low back pain during current pregnancy. One third of the pregnant women complained low back pain during current pregnancy. History of low back pain and low back pain during previous pregnancy were factors significantly associated with low back pain during current pregnancy. Comprehensive assessment and appropriate management, especially in the presence of back pain, should be considered during Antenatal visit by the care providers.

Keywords: Low back pain, Antenatal care, Pregnancy

*Author for Correspondence E-mail: physiokshtrashal@gmail.com

INTRODUCTION

Low back pain (LBP) is defined as pain and discomfort, localized below the costal margin and above the inferior gluteal folds, with or without leg pain [1]. Low back pain is the most common problems occurred in women of childbearing age which affect half of the women at some stage during their pregnancy [2, 3]; perhaps many obstetricians dismiss it as

unimportant [4,5]. Back pain is not a diagnosis, but it is a symptom that occurs in a wide variety of medical, musculoskeletal, and neurological conditions. There are musculoskeletal system alterations that occur during pregnancy. These include changes in posture, spinal or pelvic pain and lengthening of the abdominal and pelvic floor muscles [6]. The incidence of back pain during pregnancy

is relatively high. Researchers worldwide have suggested it may be between 30 and 70% [7–11]. Changes in the female's postural alignment are natural occurrences as pregnancy develops. The ideal posture ensures the most efficient use of our back muscles so that the least energy is required of these postural muscles [6]. Pregnancy results in an increase in overall body mass and a change in the centre of gravity. As the pregnancy progresses, the posture adapts to the changing weight and subsequent forces imposed on the body [11].

The exact postural changes that occur in response to this remain debatable; however, the general consensus is that there is an exaggeration of the curve in the lumbar spine [6]. It was thought that following the birth, a woman's posture returns to the way that it was in pre-pregnancy. However, some studies have shown that the posture after pregnancy is not significantly different to the posture developed during the later stage of pregnancy [7,9, 11].

The exact mechanism of pregnancy related low back pain is still unknown. However, the possible mechanism is an enlarging uterus causing a shift of the gravity center anteriorly resulting in strain in the lower back and pelvic girdle [12]. Moreover, hormonal (Relaxin, a polypeptide hormone that regulates collagen) changes that occur during pregnancy cause softening of ligaments and the joints, particularly of the pelvis, to enable the foetus to pass through the birth canal more easily [13–16]. This results in increased joint looseness and decreased stability. This, in conjunction with lengthening of the abdominal muscles, compromises the stability of the spine and results in excess mobility of the joints. This may be the cause of pain in the lower back and posterior pelvis [14–16].

Increased joint laxity during pregnancy is considered as another causative factor affecting low back pain [9]. Various forms of corsets and supportive braces are available which may provide an increase in joint stability and alleviate low back and posterior pelvic pain. It is thought that females who have experienced back pain in the past are

more likely to report back pain during pregnancy, and females who have experienced pregnancy related back pain are more likely to experience back pain in subsequent pregnancies [3,15]. Other associated factors are a history of previous low backache not related to pregnancy [17], parity [5] physically strenuous and unrewarding occupations [18], low back pain during menstruation and, paradoxically, younger age [17,19].

Symptoms may be a continuation of ante partum back pain or may result from excessive straining during the expulsive phase of labor. Despite these natural occurring changes, undertaking physical activity and maintaining a good level of physical fitness is likely to reduce the risk of developing back pain during pregnancy [20].

Health care providers can help you identify and manage any back or pelvic pain during the pregnancy. This may include antenatal classes, yoga or consultation with a physiotherapist or other health care professional. There has not been any effort previously in this centre in looking at the problems of low back pain (LBP) in pregnancy. This was the first attempt at looking at this problem from the pregnant women's perspective.

Statement of the Problem

Low back pain (LBP) is one of the most common disorders associated with pregnancy. It often causes considerable physical dysfunction, poor work performance and absenteeism. Despite this problem, evidence found in attempting magnitude and associated factors are scarce in Ethiopia.

OBJECTIVES OF THE STUDY

Study is to assess the prevalence and associated factors of low back pain among pregnant women who are attending antenatal clinic at University of Gondar Hospital.

Purpose of the Study

One third of the pregnant women complained low back pain during current pregnancy. History of low back pain and low back pain during previous pregnancy were factors significantly associated with low back pain

during current pregnancy. Comprehensive assessment and appropriate management, especially in the presence of back pain, should be considered during Antenatal visit by the care providers.

Research Hypothesis

History of low back pain during previous pregnancy had an effect on development of low back pain in current pregnancy.

Significance of the Study

Perception of low back pain by Ethiopians mother during pregnancy considering as it is normal and expected that they don't want to disclose. As women's experience of low back pain is subjective it will likely depend on their perception of pain, which depend on social and cultural circumstances, so collaboration between the obstetricians and physiotherapists for caring of such pregnant women in order to enhance pain relief are needed by establishing a unit specifically designed to treat pregnant women.

Need of the Study

It is thought that females who have experienced back pain in the past are more likely to report back pain during pregnancy, and females who have experienced pregnancy related back pain are more likely to experience back pain in subsequent pregnancies.

Scope of the Study

Antenatal care providers should consider assessing the presence low back pain and advice the cases for appropriate management. Moreover, collaboration between the obstetricians and physiotherapists for caring of such pregnant women in order to enhance pain relief are needed by establishing a unit specifically designed to treat pregnant women.

METHODOLOGY

Cross-sectional study was conducted among pregnant women attending antenatal clinic.

Study Design

Cross-sectional study

Study Centre

University of Gonder, Ethiopia.

Samples

A Total of 300 pregnant women were selected using systematic random sampling procedure who were attending antenatal clinic.

Inclusion Criteria

Pregnant women attending antenatal clinic.

Exclusion Criteria

Complicated pregnancy.
Trauma.

VARIABLES

Dependent Variables

Back pain.

Independent Variables

Socio demographic condition.
Level of pregnancy trimester.
No. of deliveries.
No of pregnancies.
No. of abortions.

DATA COLLECTION INSTRUMENT AND PROCEDURE

Institutional based Cross sectional study was conducted among pregnant women who attended antenatal clinic at university of Gondar hospital, Gondar, Northwest Ethiopia. The antenatal clinic has an average of 30 new and 87 follow up pregnant women per week. According to the report of Gondar city administration health bureau 115 new antenatal attendants were reported in December 2012 from the university of Gondar Hospital. All pregnant women who were attending antenatal clinic and available at the time of data collection from March 18- April 30, 2012 were included in the study. Sample size was determined by the formula for single population proportions, using the following assumption of a 5% level of significance, marginal error of 5 and 10% non-response rate. Since $N = 976$, the sample size was calculated with 10% non-respondents as $n_0 = n/(1 + n/N)$ and 300 women were enrolled. Systematic random sampling procedures were used to select pregnant women who were attending the ANC clinic during the study period. There were an average of 20 pregnant women per day and every third attendee was interviewed. Data were collected by interviewing pregnant women using structured

and pre tested questionnaire. The questionnaire contained socio-demographic data, information about current pregnancy, past experiences with LBP (during previous pregnancies, during menstruation, before pregnancy) and LBP during the current pregnancy. Data collection was conducted by three trained nurses working in the antenatal clinic. Informed consent was obtained orally from each participant.

Data Entry and Analysis

Data were coded, entered and analyzed using SPSS for windows version 16. The magnitude and severity in relation to socio demographic data were analyzed using descriptive analysis. Bivariate analysis was conducted primarily to check which variables have association with the dependent variable individually. Variables found to have association with the dependent variables were then entered in to multivariate logistic regression for controlling the possible effect of confounders and finally the variable which has significant association were identified on p-values less than 0.05 and 95% CI.

RESULTS

Among the total of 300 pregnant women who participated in the study the majority of women (79.6%) were in the age group 20–30 years. Almost all (99%) women were married and 84% of them currently live in the urban area. More than half of the pregnant women (58%) were house wives. Thirty two percent (32%) of the women attended higher education in college and university level (Table 1). The prevalence of LBP during the current pregnancy was 33.2% (101/300). Less than half (30.7%) of the pregnant women began to experience LBP during the third trimester. Pain was most frequently felt over the back area (86.1%), buttock (5%) and (8.9%) in both areas. About 41% of the pain group experienced radiating pain over the thigh and/or leg. LBP was most considered occasional in the 80.2% of cases. Of 101 women with current LBP, 84.2% were from an urban area and 21.8% were not educated. Forty five percent reported a history of LBP before pregnancy, 35.6% reported LBP during a menstrual period, and 25.7% reported LBP during previous pregnancy. Among women with low back pain 42.6% of them were in

their first pregnancy (Table 2). Factors in relation to low back pain were analyzed by bivariate and multivariate analyses using a logistic regression model. In the bivariate logistic regression analysis, LBP was associated significantly with LBP during previous pregnancy, LBP during menstruation and history of LBP. However, in the multivariate logistic regression analysis, LBP was associated significantly with history of low back pain and LBP during pervious pregnancy. Thus, women with a history of LBP were more than three times more likely to experience low back pain when compared to women who had no history of LBP (AOR= 3.653 CI 95%:1.764, 7.565), and women with LBP during previous pregnancy were two times more likely to experience low back when compared to women who had no LBP during previous pregnancy (AOR= 2.295 CI 95%:1.028, 5.123) (Table 3).

Table 1: Socio Demographic Characteristics of Pregnant Women Who were Attending ANC Clinic at UOG Hospital, April 2012. (N = 300)

Variable	No (%)
Age	
<20	16(5.3)
20–30	242(79.6)
31–40	45(14.8)
>40	1(0.3)
Current residence	
Urban	257(84.5)
Rural	47(15.5)
Religion	
Orthodox	278(91.4)
Muslim	22(7.2)
Protestant	4(1.3)
Marital status	
Married	301 (99)
Single	3 (1)
Education	
Not educated	63 (20.7)
Elementary school 1–6 grade	36(11.8)
Secondary school 7–8	38(12.5)
Tertiary school 9–12	100(32.9)
Higher education	67(22)
Occupation	
Civil servant	85(28)
House wife	178(58)
Maid servant	10(3.3)
Student	18(5.9)
Trader	13(4.3)

Table 2: Prevalence and Characteristics of Low Back Pain among Pregnant Women who were Attending ANC at University of Gondar Hospital, April 2012.

Variables	Total (N=304)	Low back pain	
		Yes (n=101)	No (n=203)
Age			
<20	16(5.3)	2(2)	14(6.9)
20–30	242(79.6)	85(84.2)	157(77.3)
>30	46(15.1)	14(13.9)	32(15.8)
Current residence			
Urban	257(84.5)	85(84.2)	172(84.7)
Rural	47(15.5)	16(15.8)	31(15.3)
Educational status			
Elementary and not educated	99(32.6)	35(34.7)	64(31.5)
Grade 7–12	138(45.4)	41(40.6)	97(47.8)
Higher education	67(22)	25(24.8)	42(20.7)
Occupation			
Civil servant	85(28)	28(27.7)	57(28.1)
House wife	178(58)	57(56.4)	121(59.6)
Maid servant	10(3.3)	3(3)	7(3.4)
Student	18(5.9)	9(8.9)	9(4.4)
Trader	13(4.3)	4(4)	9(4.4)
Months of pregnancy			
First trimester	20 (6.6)	7 (6.9)	13(6.4)
Second trimester	89 (29.3)	23(22.8)	66(32.5)
Third trimester	195 (40.8)	71(70.3)	124(61.1)
No of previous pregnancy			
0	118(38.8)	43(42.6)	75(36.9)
>1	157(51.6)	46(45.5)	111(51.6)
≥5	29(9.5)	12(11.9)	17(8.4)
LBP during pervious pregnancy			
Yes	43(23.1)	23(39)	20(15.7)
No	143(76.9)	36(61)	107(84.3)
LBP during menstruation			
Yes	75(24.7)	36(35.6)	39(19.2)
No	229(75.3)	65(64.4)	164(80.8)
History of LBP			
Yes	77(25.3)	46(45.5)	31(15.3)
No	227(74.7)	55(54.5)	172(84.7)

DISCUSSION

There has been variety of reports on the prevalence of low back pain among pregnant women. The rate reported ranges from 25 to 90%, with most studies estimating 50% [4, 5, 21]. In this study the prevalence of LBP was 33.2%, resembling the result in the study conducted in South Australia with 35.5%

prevalence [22]. Almost comparable (40.2%) result was also presented in Iranian study [19, 23]. However, this result was less compared to the study in Pakistan [23], Nigeria [7, 24], Connecticut, USA [18] and Sweden [9, 10] which was 47.5, 52.5, 68.6 and 76%, respectively. These differences could be due to study designs, inclusion of very mild pain,

higher working proportion of mothers in their respondents and large sample sizes. Other explanation could be perception of low back pain by Ethiopians mother during pregnancy considering as it is normal and expected that they don't want to disclose. As women's experience of low back pain is subjective it will likely depend on their perception of pain, which depend on social and cultural circumstances.

In this study the onset of LBP was not shown to be affected by the months of the pregnancy: first trimester (34%), second (34%) third (30.7%). This result is in agreement with the study conducted in Connecticut that LBP can start at any time during Pregnancy [18]. However, in Iran pain onset for the women was most frequently (40.7%) reported in the third trimester of pregnancy [23, 25]. This could be due to the design, that they interview the women after delivery which may lead to recall bias compare to the cross sectional or prospective studies. Severity of the pain during pregnancy was described mostly as moderate that is similar to other studies reported on pregnant women in Iran and USA [18, 19, 23]. Even though the results shows similarity, in this study the application of the visual analog scale to assess severity of pain was found to be difficult due to the understanding of the respondents on pointing out their pain level on a visual line. Therefore, modification was done in to the verbal scale (VAS) to allow

pregnant women to describe the severity of their pain orally as mild, moderate and so on.

In this study women who had a history of LBP before pregnancy were more likely to develop LBP during pregnancy. Having a history of LBP increased the likelihood by 3.68 times to develop low back pain when compared to pregnant women who did not have a history of LBP before pregnancy (AOR= 3.65 CI 95%:1.764, 7.56). On the other hand, the logistic regression model on the study in Iranian women demonstrated that the LBP during menstruation predicted a high risk for LBP during the current pregnancy. In agreement with this study it also stated that previous LBP is useful for diagnosing the proportion of subjects with the clinical outcome [19,23–30]. The high risk of having a low back pain could be due to the pre-existing abnormal back physiology. Low back pain during pervious pregnancy was also significantly associated with the occurrence of current LBP among pregnant women in this study. Women with LBP during previous pregnancy were two times more likely to experience low back when compared to women who had no LBP during previous pregnancy (AOR= 2.29 CI 95%:1.028, 5.12). This is similar with study conducted in the USA where low back pain during the current pregnancy was predicted by history of LBP without pregnancy during menstruation and during a previous pregnancy [18, 30–33].

Table 3: Factors associated with LBP among Pregnant Woman who were Attending ANC Clinic at UOG Hospital in April 2012.

Variables	Low back pain		Crude OR (95% CI)	Adjusted OR (95% CI)	P-value
	Yes	No			
Age					
>20	2	14	0.264(0.059–1.188)	0.975(0.078–12.230)	0.467
20–30	85	157	0.327(0.065–1.632)	1.650(0.123–22.149)	
>30	14	32	1	1	
LBP during pervious pregnancy					
Yes	23	20	3.418(1.683–6.941)	2.295(1.028–5.123)	0.043
No	36	107	1	1	
LBP during menstruation					
Yes	36	39	2.329(1.362–3.982)	1.087(0.479–2.468)	0.842
No	65	164	1	1	
History of LBP					
Yes	46	31	4.640(2.684–8.022)	3.653(1.764–7.565)	<0.001
No	55	172	1	1	

In this study there was no significance association of low back pain with age. This result was consistent with study conducted in Nigeria [7]. On the other hand the study in the USA [18] presented younger women were more likely to develop it. They may be sensitive to hormonal change in pregnancy or they may have different perception towards pain than older pregnant women.

This study revealed the prevalence of low back pain among pregnant women attending ANC at UOG hospital, Gondar Ethiopia. One third of pregnant women experience low back pain, in which the pain was significant and influence their physical function. It is considered that in light of this information LBP in pregnancy can be considered to be a significant problem in Ethiopian women during pregnancy in similarity to women around the world.

Physiotherapy treatment during the ante natal period can be provided to reduce pain and restore physical function. This can be implemented to prevent the onset of low back pain during pregnancy as well as to prevent worsening of the existing pain during pregnancy.

CONCLUSION

One third of pregnant women experiences low back pain at any point during pregnancy. History of low back pain during previous pregnancy is highly associated with current pregnancy, so the health professionals must assess the low back pain and suggest proper management. There must be good collaboration between physiotherapists and gynecologist for assessing such pregnant women and provide better management.

ACKNOWLEDGMENTS

We would like to thank the pregnant women attending the Antenatal clinic at University of Gondar hospital for participating in this research. We would like to add a special thank also to the University of Gondar for funding the study.

REFERENCES

1. European Guidelines for Prevention in Low Back Pain. 2004 [cited 2012 Feb 10]; Available from: www.backpaineurope.org.

2. Fast A, Shapiro D, Ducommun EJ, *et al*. Low Back Pain in Pregnancy. *Spine* 1987; 12: 368–71p.
3. Ostgaard H, Andersson G, Karlsson K. Prevalence of Back Pain in Pregnancy. *Spine* 1991; 16: 549–52p.
4. Katonis P, Kampouroglou A, *et al*. Pregnancy-Related Low Back Pain. *HIPPOKRATIA* 2011; 15(3): 205–10p.
5. Greenwood J, Stainton CM. Back Pain/Discomfort in Pregnancy: Invisible and Forgotten. *J Perinatal Educa* 2001; 10(1): 1–12p.
6. Mac Evilly M, Buggy D. Back Pain and Pregnancy: A Review. *Pain* 1996; 64: 405–414p.
7. Ayanniyi O, Sanya AO, Ogunlade SO, *et al*. Prevalence and Pattern of Back Pain among Pregnant Women Attending Ante-Natal Clinics in Selected Health Care Facilities. *Afr J. Biomed Res* 2006; 9: 149–156p.
8. Endresen EH. Pelvic Pain and Low Back Pain in Pregnant Women: An Epidemiological Study. *Scand J Rheumatol* 1995; 24: 135–141p.
9. Kristiansson P, Svardsudd K, von Schoultz B. Back Pain during Pregnancy: A Prospective Study. *Spine* 1996; 21: 702–709p.
10. Ostgaard HC. Assessment and Treatment of Low Back Pain in Working Pregnant Women. *Semin Perinatol* 1996; 20: 61–69p.
11. Darry B, Snea AB, John A, *et al*. Pregnancy: Related Low Back Pain. *Orthopaedics* 2007; 30: 839p.
12. Svensson H-O, Andersson GBJ, Hagstad A, *et al*. The Relationship of Low Back Pain to Pregnancy and Gynecological Factors. *Spine* 1990; 15: 371–5p.
13. MacLennan AH, Nicolson R, Green RC, Bath M. Serum Relaxin and Pelvic Pain of Pregnancy. *Lancet* 1986; 15: 243–5p.
14. Calguneri M, Bird HA, Wright V. Changes in Joint Laxity Occurring during Pregnancy. *Ann Rheum Dis* 1982; 41: 126–128p.
15. Brynhildsen J, Hansson A, Persson A, *et al*. Follow-up of Patients with Low Back Pain during Pregnancy. *Obstet Gynecol* 1998; 91(2): 182–186p.

16. Szlachter BN, Quagliarello J, Jewelewicz R, et al. Relaxin in Normal and Pathogenic Pregnancies. *Obstet Gynecol* 1982; 59: 167–170p.
17. Ostgaard HC, Andersson GBJ. Previous Back Pain and Risk of Developing Back Pain in a Future Pregnancy. *Spine* 1991; 16: 432–6p.
18. Wang S, Dezinno P, Maranets I, et al. Low Back Pain during Pregnancy: Prevalence, Risk Factors, and Outcomes. *Obstet Gynecol* 2004; 104(1): 65–70p.
19. Ansari N, Hasson S, Naghdi S. Low Back Pain during Pregnancy in Iranian Women: Prevalence and Risk Factors. *Physiother Theory Prac* 2010; 26: 40–8p.
20. Ostgaard HC, Andersson GB, Schultz AB, et al. Influence of Some Biomechanical Factors on Low-back Pain in Pregnancy. *Spine* 1993; 18: 61–65p.
21. May S. Back Pain and Pregnancy. A Review. McKenzie (UK). *Newsletter* 2000; 8: 3–14p.
22. David SB, Alastair MH, Per k. The Prevalance of Recalled Low Back Pain during and after Pregnancy: A South Australian Population Survey. *Aus N Z J Obstet Gynaecol* 2002; 42(5): 482p.
23. Salen B, Spangfort E, Nygren A, et al. The Disability Rating Index: An Instrument for the Assessment of Disability in Clinical Settings. *J Clin Epidemiol* 1994; 47: 1423–35p.
24. Kausar S, Tajammul A, Sheikh S. Backache in Pregnancy. *Biomedical* 2006; 22(1): 12–5p.
25. Ritchie J. Orthopedic Considerations during Pregnancy. *Clinical Obstet Gyne* 2003; 46: 456–66p.
26. Jayson MIV. ABC of Work Related Disorders: Back Pain. *BMJ* 1996; 313: 355–8p.
27. Deyo R. Acute Low Back pain: A New Paradigm for Management. *BMJ* 1996; 313: 1343–4p.
28. Ostgaard HC, Andersson GBJ. Postpartum Low Back Pain. *Spine* 1992; 17: 53–5p.
29. Grove LH. Backache, Headache and Bladder Dysfunction after Delivery. *Br J Anaesth* 1973; 45: 1147–9p.
30. Monthly Report Gondar City Administration Health Beureaue, 2012.
31. Han I-H. Pregnancy and Spinal Problems. *Current Opinion in Obstetrics and Gynecology* 2010; 22: 477–81p.
32. Perkins J. Identification and Management of Pregnancy Related Low Back Pain. *J Nurse-Midwifery* 1998; 43(5): 331–40p.
33. Bandpei-Mohseni M, M Fakhri, M S-A. Low Back Pain in 1,100 Iranian Pregnant Women: Prevalence and Risk Factors. *Spine J* 2009; 9: 795–801p.