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ORIGINAL ARTICLE

Prevalence of Musculoskeletal Disorders among Pregnant Women: Cross-Sectional Study

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ABSTRACT

Aim: To identify the prevalence of most common musculoskeletal disorders in pregnant women according to trimester.
Method: A cross-sectional study was conducted from September 2019 to February 2020. The study was conducted after taking approval from the study setting and by the research ethics committee. The data was collected from the Family health hospital Islamabad. Data was raised through non-probability convenient sampling technique. Pregnant females with the age group of 20 to 40 years were included in the study. Those who had a chronic musculoskeletal conditions and previous history of orthopedic surgery were excluded. Data was collected after taking written informed consent. Data was collected using semi structured questionnaire which included demographic information, questions related to pregnancy and questions about musculoskeletal problems during pregnancy.
Results: The mean age of 385 participants was 27±4.76. Low back pain (38.7%) was the most prevalent musculoskeletal disorder among pregnant women. In first trimester, low back pain and muscle cramps were found to be (33.3%) and (20%). In second trimester the most frequent problem was low back pain (37.6%), leg muscle cramps (17.6%), pedal edema (10.3%) and carpel tunnel syndrome (9.1%) respectively. Whereas, in third trimester 40.5% mentioned pain in low back, 16.3% leg muscle cramps, 10% pedal edema, 8.4% had reported carpal tunnel syndrome.
Conclusion: Low back pain, leg muscle cramps and pedal edema were the most experienced musculoskeletal problems in pregnant woman.
Key words: Pregnancy, Low back pain, muscle cramps, musculoskeletal disorders, ankle swelling.

INTRODUCTION

A woman experiences multiple physiological, vascular and hormonal changes during pregnancy which includes alterations in posture, increased in overall body weight, increased laxity in ligaments and joints accompanied by numerous other musculoskeletal changes resulting in pain and aches in body. Most pregnant women do not visit clinician help until the pain and discomfort affect their daily activities[1]. The most common musculoskeletal problem during pregnancy is low back pain with a worldwide prevalence of approximately 30 to 70%. Peripheral neuropathy, pain in upper limb, lower limb and pain in pelvic region are other common complaints during pregnancy[2]. The risk factors for low back pain among pregnant women include multiparity, pregnancy at young age, pelvic injury, back pain in previous pregnancy[3].

Approximately eighty percent of pregnant women experience soft tissue edema due to increased fluid retention leading to nerve cramps and other soft tissue compression in pregnancy. Increase in size of uterus changes the center of gravity of body which places mechanical stress on body function [4]. The increased production of relaxin, progesterone, estrogen has been known as responsible for increased laxity in joints in 2nd and 3rd trimester. Relaxin promotes collagen remodeling and allows pelvic joints to become more flexible preparing for delivery[5]. Literature showed that low back pain or pelvic pain may be linked to increased level of relaxin. Pubic symphysis widens 10mm normally during 10 to 12 weeks of gestation under the effect of relaxin which causes pain and discomfort[6]. Weakened ligaments and weight gain makes pregnant women susceptible to multiple joint disorders. It is reported that approximately 20% weight gain increases the force exerted by joint up to 100%. Enlarging uterus, weight gain, forward rotation of the pelvis, increased lumber lordosis and weakness of sacroiliac ligament induce excess pressure on low back, pelvic region and sacroiliac joint[7].

Pregnancy and breastfeeding is associated with overall irreversible decrease in bone mineral density, however incidence of osteoporosis is unclear. Vertebral osteoporosis is observed among lactating mothers within three months after delivery resulting in vertebral fractures[8]. The incidence of carpel tunnel syndrome is found to be 8-43% during 2nd and 3rd trimesters. It is presented bilaterally in majority females as a result of accumulation of fluid in tendon sheath found within the carpal tunnel[9]. Pain in the coccyx during sitting also known as coccydynia is commonly caused by childbirth. The prevalence of coccydynia is found to be 7.3% in females. The risk factor for this complaint is use of forceps during delivery and the symptoms are presented soon after delivery[10]. Pregnancy related musculoskeletal disorder have limited the capacity of pregnant women to fully participate in society leading to major source of disability[11]. There is limited research done on prevalence of musculoskeletal problems experienced by a pregnant woman throughout the trimesters.

The current study aimed to find out the prevalence of musculoskeletal problems among pregnant women across different trimesters.

METHODOLOGY

A cross-sectional study was conducted from September 2019 to February 2020. The study was conducted after taking approval from the study setting and by the research ethics committee. The study adhered to the guidelines of the Declaration of Helsinki. The participants were explained about the nature, purpose of the study and questions in Urdu (primary) language. The data was collected from the Family health hospital Islamabad. Sample size was calculated using epi tool with 95% confidence interval (CI) and 5% of margin error. Data was raised through non-probability convenient sampling technique. Pregnant females with the age group of 20 to 40 years were included in the study. Those who had a chronic musculoskeletal conditions and previous history of orthopedic surgery were excluded. All study participants were explained and describe about the study purpose and nature and data was collected after taking written informed consent. Data was collected using semi structured questionnaire which consist of 2 sections. First section included demographic data gender, age, education level, weight, height, and BMI. Body mass index was calculated by using standard formula weight (kg)/ height (m²).

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Furthermore, questions related to pregnancy included parity, gender of infant, exercise during pregnancy, gestational age. The 1st, 2nd and 3rd trimesters were classified as gestational weeks 1 to 13, 14 to 26 and 27 to 40, respectively. Second section comprised of musculoskeletal pain sites diagram in which women were asked to mark pain areas. A self-reported 4-point Likert scale was used for assessment of severity of discomfort and pain (1 = no pain; 2 = mild; 3 = moderate; and 4 = severe).

Statistical analysis: Descriptive statistics, frequencies and percentages were calculated for categorical variables. Mean and standard deviation for continuous variables. Cross tubulation was used to find the MSD during trimesters and pain severity. Data was analysed using SPSS 25.

RESULTS

Mean age of the study participants was 27±4.76. Overall BMI was 24.3±2.76. Out of 385 participants 73(18.9%) had one parity, 142 (36.9%) had two parity and 170(44.2%) had greater than three parities. From the study respondents 30 (7.8%) were in 1st trimester, 165(42.9%) were in 2nd trimester and 190 (49.3%). Detail description of study participants was given in Table 1.

In the first trimester, the most prevalent musculoskeletal problems experienced 10(33.3%) was low back pain and leg muscle cramps were 6(20%). In the second trimester, the most stated problem was low back pain 62(37.6%), which was followed by leg muscle cramps 29(17.6%), pedal edema 17(10.3%) and carpel tunnel syndrome 15(9.1%) respectively. From the 190 females from the third trimester 77(40.5%) mentioned pain in low back, 31(16.3%) leg muscle cramps, 19(10%) pedal edema, 16(8.4%) had reported carpal tunnel syndrome (Table 2).

Severity of musculoskeletal disorders among pregnant women was shown in Table 3. Most of the study participants had reported mild and moderate pain symptoms during pregnancy.

Table 1: Demographic characteristics of study participants

Variables	N	%
Age	27±4.76	
BMI Kg/m²	24.3±2.76	
Weight Gained during pregnancy	14.6± 3.48	
Education Level		
Primary	38	9.9
Secondary	212	55.1
Graduate & above	135	35.0
Employment Status		
Working	178	46.2
Nonworking	207	53.8
Parity		
1	73	18.9
2	142	36.9
>3	170	44.2
Gender of Infant		
Male	177	45.0
Female	208	55.0
Exercise During Pregnancy		
Regular	42	11.0
2-3 times a week	128	33.0
Not at all	215	56.0
Gestational Age		
1st Trimester	30	7.8
2nd Trimester	165	42.9
3rd Trimester	190	49..3

Table 2: Description of musculoskeletal pain sites during trimesters.

Pain sites	First trimester%	Second trimester%	Third trimester%	Total%
Low back Pain	10 (33.3)	62 (37.6)	77 (40.5)	149 (38.7)
Knee joint pain	1 (3.3)	10 (6.0)	11(5.8)	22(5.7)
Ankle joint pain	0 (0.0)	9 (5.5)	9(4.7)	18 (4.7)
Hip joint pain	3 (10.0)	7 (4.2)	7 (3.8)	17 (4.4)
Neck pain	2 (6.7)	3 (1.8)	5 (2.6)	10 (2.6)
Pedal edema	3 (10.0)	17 (10.3)	19 (10.0)	39 (10.1)
Leg muscle Cramps	6 (20.0)	29 (17.6)	31 (16.3)	66 (17.2)
De-quervain tendinitis	0 (0.0)	2 (1.2)	3 (1.6)	5 (1.3)
Carpal tunnel syndrome	3 (10.0)	15 (9.1)	16 (8.4)	34 (8.8)
Coccydynia	2 (6.7)	11 (6.7)	12 (6.3)	25(6.5)
Total	30 (100)	165 (100)	190 (100)	385(100.0)

Table 3: Severity of the MSDs on Four-Point Likert Scale

Pain sites	Mild%	Moderate%	Severe%	Very Severe%	Total%
Low back Pain	63(42.3)	46 (30.9)	31(20.8)	9 (6.0)	149 (100.0)
Knee joint pain	11(50.0)	6 (27.3)	3 (13.6)	2 (9.1)	22(100.0)
Ankle joint pain	10 (55.5)	5 (27.8)	3(16.7)	0 (0.0)	18 (100.0)
Hip joint pain	6 (35.3)	5 (29.4)	4 (23.5)	2 (11.8)	17 (100.0)
Neck pain	5 (50.0)	3 (30.0)	2 (20.0)	0 (0.0)	10 (100.0)
Leg muscle Cramps	46 (69.7)	13 (19.7)	5 (7.6)	2 (3.0)	66 (100.0)
De-quervain tendinitis	3(60.0)	2(40.0)	0 (0.0)	0 (0.0)	5 (100.0)
Carpal tunnel syndrome	21(61.8)	9(26.5)	3(8.8)	1(2.9)	34 (100.0)
Coccydynia	13(52.0)	7 (28.0)	3(12.0)	2(8.0)	25(100.0)

DISCUSSION

The result of our study showed that low back pain 40.5% was most prevalent among pregnant women during third trimester. A study conducted by Preetha Ramachandra et al LBP 33.7% was common in 3rd trimester as compared to 2nd and 1st trimester[1]. In another study done by Steven D. Manyozo and colleagues also found LBP was common during pregnancy and indicated that at 2 in every 3rd pregnant women had stated LBP complaint. Their study results further depicted that during gestational period LBP can start at any point but its frequencies were higher in 2nd and 3rd trimesters[3]. Fulya Bakilan et al found the prevalence rate of LBP was 34.8% among pregnant women during 3rd trimester[12]. Serdar Kesikburun et al in their work mentioned that about 70% of the study participants had reported LBP during their pregnancy. [13] Savas Sencan et al in their survey also found prevalence of PRLBP was 53.9% reported most during 3rd trimester. Additionally, they also concluded that 1 in 2 pregnant women had PRLBP in any phase of pregnancy and considered as moderately disabling condition during 3rd trimester in comparison to 1st and 2nd trimester[14]. NO Onyemaechi, et al in their survey on pregnancy related MSDs predominantly found LBP prevalence rate of 56.8% among their study participants[15].

In current study, the second most common musculoskeletal complaint reported was leg muscle cramps in the 2nd and 3rd trimesters. Previous literature also found predominantly high prevalence of leg muscle cramps in pregnant women. A survey conducted by Fulya Bakilan et al and NO Onyemaechi et al found

leg muscle cramps second prevailing condition among pregnant women during pregnancy with prevalence rate of 30.8% and 54.8% respectively[12,15]. Kanika Sharma et al in their study on seventy antenatal women, found that 77% women had leg cramps during 3rd trimester.[16] Sharifah Najwa Syed Mohamad et al in their work on pregnant women of 2nd and 3rd trimester stated that frequency of leg muscle cramps was 71.7% during their current pregnancy. They also mentioned that about half of women experienced leg cramps once to twice a week and had moderately painful[17].

In the present study 3rd identified musculoskeletal problem in pregnant women was pedal edema that increased progressively from 2nd and 3rd trimester. The study results were similar with the previous literature that stated that pedal edema was frequently most common during the 3rd trimester[1,12].

Other frequent problem identified in the current study was carpel tunnel syndrome, coccydynia and knee joint pain during 2nd and 3rd trimester. In previous literature carpel tunnel syndrome was most frequent problem among pregnant women during 3rd trimester[15]. A study conducted by Gladys Alexandra Dias de Oliveira et al found prevalence rate of CTS among pregnant women was 23.03% with mild severity of symptoms[18]. The study findings were also consistent with the previous study results[12,15,19].

CONCLUSION

Low back pain, leg muscle cramps and pedal edema were the most experienced musculoskeletal problems in pregnant woman.
Limitations: The main limitation of our study was small sample size. Moreover, associated risk factors of musculoskeletal disorders in trimesters among pregnant women were not reported. Future studies should identify effects of early diagnosis and treatment of MSK disorders in pregnant women.
Conflict of interest: Nil

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