Cross-sectional Study

Level of activity limitations and predictors in women with pregnancy-related pelvic girdle pain: Prospective cross-sectional study

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A R T I C L E   I N F O

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A B S T R A C T

Background: For many pregnant women, pelvic girdle pain caused by pregnancy has an impact on their daily living. Women with lumbo-pelvic pain have moderate to severe discomfort that makes daily activities like getting out of a chair, bending, and walking difficult. The aim of this study was to determine the extent of daily activity restrictions and to discover predictors of pregnancy-related pelvic girdle pain.

Study design: Prospective cross-sectional study.

Methods: This prospective cross-sectional study was undertaken from January October 2018 to October 29/2019 among 337 gravid mothers with pregnancy-related limbo-pelvic pain. A structured questionnaire adapted from the activity limitation-related pelvic girdle pain questionnaire was used for data collection. Epi-info version 7.1 for data entry and STATA version 14 for statistical analysis were used. Ordinal regression with an odds ratio of 95% confidence interval and p-value < 0.05 were cast-off to assess the association between the outcome and dependent variables.

Results: Among 324 pregnant women with pelvic girdle pain 96 (29.6%) had small extent level of activity limitation, 185 (57.1%) had moderate activity limitation, and 43 (13.3%) large extent level of activity limitation. Having previous children (AOR = 0.37, 95% CI:0.14, 0.98), occupation (AOR = 1.77, 95% CI: 1.06, 2.95) and alcohol taking (AOR = 0.43, 95% CI: 0.19, 0.99) were the independent predictors for activity limitation.

Conclusion: Nearly one-third of the participants had a modest degree of activity restriction, while more than half of the pregnant women with PPGP had a moderate to high level of restriction. Previous children, occupation, and alcohol consumption were all independent predictors of activity limitation among pregnant women.

1. Introduction

Gestation is related to numerous biological and biomechanical changes [1–3]. During pregnancy, a woman’s body goes through a variety of changes, including weight increase, changes in posture, joint, and ligament laxity, and changes in musculotendinous strength [4,5]. Postural deviations are caused by biomechanical changes that occur during pregnancy, resulting in a variety of musculoskeletal pain syndromes [1]. The pain of musculoskeletal origin over the anterior and posterior parts of the pelvic region of pregnant women, between the levels of the posterior iliac crest and the gluteal fold, is referred to as pregnancy-related pelvic girdle pain [5,7].

Pelvic girdle pain (PGP) and low back pain (LBP) are two prevalent pain syndromes related to pregnancy that are reported by pregnant
women all over the world [8–10]. According to the European guidelines PGP can be defined as: ‘Pelvic girdle pain that generally arises in relation to pregnancy, trauma, arthritis, and osteoarthritis. Pain is experienced between the posterior iliac crest and the gluteal fold, particularly in the vicinity of the sacroiliac joints; and the pain may radiate in the posterior thigh and can also occur in conjunction with/or separately in the pubis symphysis [7].

In a systematic evaluation of twenty-eight studies, the average reported prevalence of pregnancy-related pelvic girdle discomfort was 45.3%, ranging from (3.9–89.9%) [11–13]. In Ethiopia, the annual prevalence rates of PPGP were reported to be 24.3% [14]. Many pregnant women experience pelvic pain as a result of their pregnancy [15]. Pregnant women’s health-related quality of life is reduced by PGP, notably in the physical, psychological, and social dimensions [16].

PGP is a common maternal morbidity that has a severe impact on women’s health throughout pregnancy and can last far into the postpartum period [9]. PGP impairs daily tasks such as getting out of a chair, bending, and walking, and women with it report moderate to severe discomfort [17]. The ability to do housework, care for children, and execute work obligations is all dented, with PGP being the leading cause of sick leave during pregnancy [6]. Both during and after pregnancy, PPGP can transmit self-limiting symptoms of short duration during pregnancy to severe pain and activity limitation [18,19].

Women’s during pregnancy reported limitations in activities of daily life; furthermore, significantly reported limitations in physical abilities. Women during antenatal care, those linked to physiotherapy clinics as a result of PPGP, reported a considerable level of complaints in activities of daily living such as walking, standing, sitting, lying down, and changing position [15,20]. A high proportion of women with PPGP could no longer carry out activities such as lifting, carrying, and vacuum cleaning by themselves [19]. On the other hand, low-grade activity limitation was reported by the majority of women with PPGP in late pregnancy [21].

Despite the vague pain, pregnant women have a poor quality of life, frequent sick days, functional impairments, absenteeism, disability, and a high health-care expense. In order to select appropriate treatment approach, it is necessary to assess the effects of PPGP in terms of activity and functional limitation during the rehabilitation process. Furthermore, there is a scarcity of data and expertise about the level of disability and activity limitation experienced by pregnant women with PPGP. Hence, the aim of this study was to determine the level of activity restriction and parameters linked to PPGP in Ethiopian pregnant women.

2. Material and methods

2.1. Study design, period, and area

This prospective cross-sectional study was conducted from January 10th, 2018 to October 29th, 2019 among pregnant women who complained of PPGP during antenatal care follow-up (ANC) at the University of Gondar comprehensive specialized hospital and were referred to the physiotherapy outpatient department (OPD), which is located in the northern part of Ethiopia. According to the 2016 population estimates of the Gondar city administration bureau, Gondar had a total population of 335,000 people, with a density of 3200 people per square kilometer, a total household count of 53,725 people, and among them, 18,200 were women [22].

The Ethiopian health system provides free health services to all pregnant women in a public health setting, and the majority of them seek out maternity care units. The hospital features a prenatal clinic that provides daily antenatal treatment and a physiotherapy clinic that opened in 2002. Approximately 10–20 pregnant women visited the physiotherapy OPD per day because of pelvic girdle pain and pregnancy-induced musculoskeletal issues, with over 20,000 pregnant mothers visiting the hospital for ANC services each year.

2.2. Study participants, procedure, and sample size

Pregnant women who had been diagnosed with PGP in a Gondar comprehensive specialty hospital were included in the study population. During the data collecting period, all expecting mothers with PPGP aged 18–40 years who were consulted for physiotherapy services during any trimester of pregnancy were included in the study population. Women with PPGP who had substantial non-musculoskeletal pathology, such as pre-eclampsia, eclampsia, serious intellectual or psychiatric impairment, systemic disease(s), or recent spinal fracture, trauma, or surgery, as determined by their medical records, were excluded from the study to prevent overestimation of the outcome.

The sample size was calculated using Epi Info 7; A total of 337 study participants were participated in the study by using a single population proportion formula [23] with systematic sampling methods.

2.3. Data collection tools and procedures

The data was collected using a structured questionnaire (Additional file 1) based on the activity limitation related pelvic girdle pain questionnaire (PGQ), which had high intra-class correlation coefficient estimates: 0.93 (95% confidence interval 0.86–0.96) for the PGQ activity subscale and 0.91 (95% confidence interval 0.84–0.95) for the PGQ symptom subscale [6,12]. The Pelvic Girdle Pain Questionnaire (PGQ) is a condition-specific tool that evaluates activity restrictions and symptoms in individuals with pelvic girdle pain. It was created for women experiencing pelvic girdle pain during pregnancy and after delivery, and it can be utilized in both research and clinical treatment [18].

This questionnaire consists of 20 activity items and 5 symptom items on a 4-point response Likert scale. The Likert scale responses for PGQ items are; not at all ‘0’, to a small extent ‘1’, to some extent ‘2’, and to a great amount ‘3’. The results were summed and converted to percentage values ranging from 0 (no problem at all) to 75 (to a large extent).

Interviews, patient record reviews, and physical examinations were used to gather information. Three musculoskeletal physiotherapists from the women’s health unit took part in the data collection during the first visit on the physiotherapy, which was overseen by two senior physiotherapist supervisors.

2.4. Operational definition of outcome variable

Level of activity limitation according to PGQ: A pregnant woman who reported limitation of activity of daily living due to PGP; not at all actively limited ‘0’, to small extent activity limited with a total score of PGQ 1 to 25, to moderate extent activity limited 25 to 50 and to large extent activity limited with total score range from 50 to 75 [18].

2.5. Data processing and analysis

Data was double-checked for accuracy before being entered into Epi Info version 7.1, which was then exported to STATA version 14.0 statistical software [24] (StataCorp LP) for coding, recoding, storage, and analysis. The statistical association was assessed using an ordinal regression model, and the significance of the statistical association was secured or evaluated using a 95% confidence interval and a P value of less than 0.05. The assumption of the proportional odds was tested. Finally, this study was reported in accordance with the STROCSS statement checklist [25] (Additional file 2) and registered at www.researchregistry.com with research registry UIN 7756.

3. Results

3.1. Maternal socio-demographic characteristics

This study included 324 women with PGP ranging in age from 18 to 40 years old, with a mean age of (26.77 ± 4.4 years). This is a response
rate of 96.1%, which is higher than the power calculated sample size (n = 306). Two hundred and thirty (67.9%) of the respondents were between the ages of 25 and 35 years. The majority of the participants (95.4%) were married, with more than half (54.3%) having children. 65.4% of the participants reported good work satisfaction, followed by fair work satisfaction (13.3%). The maternal socio-demographic characteristics of pregnant women are presented in (Table 1).

### 3.2. Maternal obstetrics related characteristics

About one-third (33.3%) of the participants were in their second trimester. The study participants had a mean and standard deviation gestational week of (31.6 ± 6.9). The majority of pregnant women (91.1%) had a planned pregnancy and no history of abortion (93.2%). Three hundred and three (43.5%) of women experiencing pelvic girdle pain during pregnancy had not used any anti-pain medication. The obstetric features of pregnant mothers with PPGP are shown in (Table 2).

#### Table 1
Maternal Sociodemographic characteristics of pregnant women with pregnancy-related pelvic girdle pain, Gondar, Ethiopia (n = 324).

| Variables                  | Categories                          | Frequency | Percent |
|----------------------------|-------------------------------------|-----------|---------|
| Age in years               | 18-24                               | 94        | 29.0    |
| (Mean age ((26.77 ± 4.4))  | 25-35                               | 220       | 67.9    |
| Residence                  | Greater than 35                     | 10        | 3.1     |
|                            | Urban                               | 279       | 86.1    |
|                            | Rural                               | 45        | 13.9    |
| Marital status             | Married                             | 309       | 95.4    |
|                            | relationship but not married        | 11        | 3.4     |
|                            | Others (+)                          | 4         | 1.2     |
| Religion                   | Orthodox Christian                  | 283       | 87.3    |
|                            | Muslims                             | 33        | 10.2    |
|                            | Others (+)                          | 8         | 2.5     |
| Occupation                 | Housewife                           | 155       | 47.8    |
|                            | Farmer                              | 12        | 3.7     |
|                            | Civil servant                       | 77        | 23.8    |
|                            | Merchant                            | 42        | 13.0    |
|                            | Unemployed                          | 9         | 2.8     |
|                            | Others*                             | 29        | 9.0     |
| work status in week/hour   | None                                | 7         | 2.2     |
|                            | 0-20 h                              | 131       | 40.4    |
|                            | 20-40 h                             | 90        | 27.8    |
|                            | more than 40 h                      | 96        | 29.6    |
| work type                  | very heavy                          | 6         | 1.9     |
|                            | Heavy                               | 42        | 13.0    |
|                            | Fair                                | 137       | 42.3    |
|                            | Light                               | 124       | 38.3    |
|                            | Very light                          | 15        | 4.6     |
|                            | very bad                            | 3         | 0.9     |
| work satisfaction          | Bad                                 | 9         | 2.8     |
|                            | Fair                                | 43        | 13.3    |
|                            | Good                                | 212       | 65.4    |
|                            | Very good                           | 57        | 17.6    |
| Level of education         | No formal school                    | 73        | 22.5    |
|                            | Primary school                      | 69        | 21.3    |
|                            | Secondary school                    | 62        | 19.1    |
|                            | Diploma                             | 62        | 19.1    |
| Income (ETB/month)         | <1000                               | 79        | 24.4    |
|                            | 1000-2000                           | 73        | 22.5    |
|                            | 2001-3000                           | 69        | 21.3    |
|                            | >3000                               | 103       | 31.8    |
| Smoking habit              | Never                               | 322       | 99.4    |
|                            | Past smoker                         | 1         | 0.3     |
|                            | Current smoker                      | 1         | 0.3     |
| Drinking alcohol habit     | Never                               | 226       | 69.8    |
|                            | Past alcoholic                      | 24        | 7.4     |
|                            | Current alcoholic                   | 74        | 22.8    |
| Physical exercise          | No                                  | 250       | 77.2    |
|                            | Yes                                 | 74        | 22.8    |
| Self-rated health status   | very good                           | 162       | 50.0    |
|                            | Quite good                          | 96        | 29.6    |
|                            | Fair                                | 37        | 11.4    |
|                            | Quite poor                          | 24        | 7.4     |
|                            | Poor                                | 1         | 0.3     |

*+divorced and singles; ++protestant, catholic; *students and daily labours.

#### 3.3. Level of activity limitation among pregnant women with pregnancy related pelvic girdle pain

Out of 324 pregnant women with PGP had 96 (29.6%) of small extent level of activity limitation, 185 (57.1%) had moderate activity limitation, and 43 (13.3%) large extent level of activity limitation. The severe activity limitation was significantly higher in the third trimester (28.5%) followed by the second trimester (14.3%). In all level of activity limitation, the activity limitation due to pregnancy-related pelvic girdle pain significantly reported in the age ranged between 25 and 35 years. The activity restriction was higher among urban dwellers (77.2%) and women who did not report engaging in the recommended amount of physical activity (86.1%). Table 3 shows the level of activity limitation among pregnant women with pelvic girdle pain.

#### Table 2
Obstetrics related characteristics of pregnant women with PPGP; Gondar, Ethiopia (n = 324).

| Variables                  | Categories                          | Frequency | Percent |
|----------------------------|-------------------------------------|-----------|---------|
| Gestational weeks          | 1st trimester                       | 1         | 0.3     |
|                            | 2nd trimester                       | 108       | 33.3    |
|                            | 3rd trimester                       | 215       | 66.4    |
| Previous gravidity         | No                                  | 148       | 45.7    |
|                            | One                                 | 88        | 27.2    |
|                            | Two                                 | 52        | 16.0    |
|                            | Three and above                     | 36        | 11.0    |
| Do you have children?      | No                                  | 148       | 45.7    |
|                            | Yes                                 | 176       | 54.3    |
| History of abortion        | No                                  | 302       | 93.2    |
|                            | Yes                                 | 22        | 6.8     |
| Pattern of current pregnancy| Planned                             | 295       | 91.1    |
|                            | Unplanned                           | 29        | 8.9     |
| Taking medication          | No                                  | 303       | 43.5    |
|                            | Yes                                 | 21        | 6.5     |
| History of back pain       | No                                  | 113       | 34.9    |
|                            | Yes                                 | 211       | 65.1    |
| How much experience PPGP in morning | Some                  | 256       | 79.0    |
|                            | Moderate                            | 53        | 16.4    |
| How much experience PPGP in evening | Considerable | 15        | 4.6     |
|                            | Moderate                            | 112       | 34.6    |
|                            | Considerable                        | 47        | 14.5    |

PPGP—pregnancy related pelvic girdle pain; wk-weeks.
Table 3 Level of activity limitation among pregnant women with PPGP; Gondar, Ethiopia (n = 324).

| Variables | Categories | Level of Activity limitation (Based on PGQ) |
|-----------|------------|------------------------------------------|
|           | Small n (%) | Moderate n (%) | Large n (%) |
| Age in years | 18–24 | 27 (28.7%) | 58 (61.7%) | 9 (9.6%) |
|             | 25–35 | 66 (30) | 124 (56.4%) | 30 (13.6%) |
|             | >35 | 3 (30) | 3 (30) | 4 (40) |
| Residence | Urban | 87 (90.6) | 157 (84.9) | 35 (81.4) |
|            | Rural | 9 (9.4) | 28 (15.1) | 8 (18.6) |
| Marital status | Married | 93 (96.9) | 174 (94.1) | 42 (97.7) |
|             | Not married but not divorced | 2 (2.1) | 8 (4.3) | 1 (2.3) |
| Religion | Orthodox Christian | 86 (89.6) | 16 (87.0) | 36 (83.7) |
|          | Others | 1 (1.0) | 3 (1.6) | 0 (0.00) |
| Occupation | Housewife | 52 (54.2) | 82 (44.3) | 21 (80.0) |
|           | Farmer | 3 (3.1) | 7 (3.8) | 2 (4.7) |
|            | Civil servant | 22 (22.9) | 46 (24.9) | 9 (20.9) |
|            | Merchant | 7 (7.3) | 24 (14.1) | 9 (20.9) |
|            | Unemployed | 3 (3.1) | 6 (3.2) | 0 (0.00) |
|            | Others* | 9 (9.4) | 18 (9.7) | 2 (4.7) |
| Work status in week/hour | 0–20 h | 31 (32.3) | 79 (42.7) | 21 (48.8) |
|            | 20–40 h | 32 (33.3) | 49 (26.5) | 9 (20.9) |
|            | >40 h | 28 (29.2) | 55 (29.7) | 13 (30.2) |
| Work type | Very heavy | 2 (2.1) | 6 (3.3) | 0 (0.00) |
|            | Heavy | 7 (7.3) | 23 (14.6) | 8 (18.6) |
|            | Fair | 42 (43.9) | 77 (41.6) | 18 (41.9) |
|            | Light | 39 (40.6) | 72 (38.9) | 13 (30.2) |
|            | Very light | 6 (6.2) | 7 (3.8) | 2 (4.7) |
| Work satisfaction | Very bad | 0 (0.00) | 3 (1.6) | 0 (0.00) |
|            | Bad | 2 (2.1) | 4 (2.2) | 3 (7.0) |
|            | Fair | 12 (12.5) | 24 (13.5) | 7 (16.3) |
|            | Good | 64 (66.7) | 125 (67.6) | 23 (53.5) |
|            | Very good | 18 (18.8) | 29 (15.7) | 10 (23.3) |
| Level of education | No formal school | 20 (20.8) | 38 (20.5) | 15 (34.9) |
|            | Primary school | 21 (21.9) | 40 (21.6) | 8 (18.6) |
|            | Secondary school | 23 (24.0) | 33 (17.8) | 6 (14.0) |
|            | Diploma | 15 (17.7) | 44 (23.8) | 3 (7.0) |
|            | Degree and above | 17 (17.7) | 30 (16.2) | 11 (25.6) |
| Income (ETB/ month) | <1000 | 22 (22.9) | 48 (25.9) | 9 (20.9) |
|            | 1000–2000 | 26 (27.3) | 40 (21.6) | 7 (16.3) |
|            | 2001–3000 | 14 (14.6) | 47 (25.4) | 8 (18.6) |
| Smoking habit | Never | 94 (98.0) | 185 (100) | 43 (97.9) |
|            | Past smoker | 1 (1.0) | 0 (0.00) | 0 (0.00) |
|            | Current smoker | 1 (1.0) | 0 (0.00) | 0 (0.00) |
| Drinking alcohol habit | Never | 60 (62.5) | 134 (72.4) | 32 (74.4) |
| Physical exercise | Yes | 22 (22.9) | 40 (21.6) | 12 (27.9) |
|            | No | 50 (52.1) | 92 (49.7) | 20 (46.5) |
| Self-rated health status | Very good | 10 (10.4) | 13 (7.0) | 1 (2.3) |
|            | Quite good | 22 (22.9) | 60 (32.4) | 14 (32.6) |
|            | Poor | 9 (9.4) | 8 (4.3) | 7 (16.3) |
| Number of previous Pregnancies | No | 46 (47.9) | 91 (49.2) | 23 (52.9) |
| Do you have children? | Yes | 50 (52.1) | 94 (50.8) | 32 (74.4) |
| Taking medication | Yes | 16 (64.0) | 23 (74.2) | 6 (60.0) |

| Variables | Categories | Level of Activity limitation (Based on PGQ) |
|-----------|------------|------------------------------------------|
|           | Small n (%) | Moderate n (%) | Large n (%) |
| History of back pain | Yes | 9 (36.0) | 8 (25.8) | 4 (40.0) |
|            | No | 32 (33.3) | 64 (34.6) | 17 (39.5) |
| How much experience PPGP in morning | Moderate | 6 (5.9) | 37 (20.7) | 10 (23.3) |
|            | Considerable | 6 (5.9) | 7 (3.9) | 2 (4.7) |
| How much experience PPGP in evening | Some | 78 (76.5) | 84 (47.0) | 3 (7.0) |
|            | Considerable | 18 (17.6) | 74 (41.3) | 20 (46.5) |
|            | None | 6 (5.9) | 21 (11.7) | 20 (46.5) |

ETB-Ethiopian Birr; PPGP-Pregnancy related Pelvic Girdle Pain.

4. Discussion

This study, which is the first of its kind in Ethiopia, uses the PGQ to assess the amount of activity limitation associated with pregnancy-related pelvic girdle pain in women with PPGP and to identify the predictors. Our findings are alarming, all study subjects suffered daily activity limitations ranging from a little restriction to a significant restriction due to PPGP. Following PPGP based on PGQ, 29.6% of study participants reported some level of activity limitation, 57.1% reported moderate activity limitation, and 43 (13.3%) indicated a large amount of activity limitation. More than two-thirds of pregnant women urban dweller and more than three-quarters of young adults aged 25 to 35 indicated a significant level of activity limitation. This could be as a result of the observed frequency of urban dweller is high compared with rural participants and most study participant were with in the young adult age group. Several factors were found to be associated with significant activity limitation. Having previous children, occupation and taking alcohol were the independent predictors for activity limitation.

Pregnant women who were diagnosed with PPGP had a considerable restriction on their regular activities. Nearly one-third of the study participants were reported low level of activity limitation while more than half pregnant women with PPGP had moderate to high level of activity limitation. These findings are in line with those of earlier research that found that pregnancy reduced quality of life without taking into account pregnancy-related back pain and PPGP [26,27]. This implies that the addition of PGP which related to pregnancy had a significant impact on activity and functional limitations.

This study also showed that the odds of being at higher level of activity limitation among pregnant women with PPGP who had no children were decrease by 63% as compared to their counterpart primiparous women. This conclusion is consistent with the findings of other investigations [28–30]. This is because women who have a larger number of children need to be more active and higher energy expenditure.

Women with PPGP who had outdoor work were 1.77 times higher odds of having a higher level of activity limitation than pregnant women whose work indoor. This result is supported by the finding of other studies [30] [31]. This could be owing to the lack of labor-saving technology in Ethiopia, which causes daily outdoor activities to consume more energy. Another factor could be because majority of Ethiopia is at a high elevation, equal activity needs more effort and energy than at sea level. As a result, Ethiopian women have a high energy expenditure, which may greatly surpass their calorie intake.

In addition, those women with the odds of having a higher level of
activity limitation among pregnant women with PGP with a history of drunk alcohol were decreased by 57% compared to pregnant women whom never drank alcohol. The result of this study supported by the finding of a systematic review study [33] and prospective cohort article [34]. In terms of functional activity, those who drink alcohol differ significantly from people who do not drink alcohol, and worries remain that the lower activity limitation associated with moderate drinking may be owing solely to the favorable risk factor profile seen in moderate drinkers.

4.1. Strength and limitation of the study

This is the first research of its kind in both the study area and the country. To assess activity limitation with a representative sample size, we employed a validated tool, the PGQ, which demonstrated excellent inter- and intra-observer reliability. Some notable limitations are addressed for the benefit of future research. Because there is a scarcity of literature in this field, and no earlier studies on its responsiveness have been published, comparisons in the discussion section are problematic.

5. Conclusion

In conclusion, this study revealed, nearly one-third of the study participants were reported low level of activity limitation while more that half pregnant women with PPGP had moderate to high level of activity limitation. Having previous children, occupation and taking alcohol were the independent predictors of pregnant women for activity limitation.

Table 4
Factors associated with activity limitation among pregnant women with PPGP, Gondar, Ethiopia (n = 324).

| Variables | Level of Activity limitation | Univariate COR (95%CI) | Multivariate AOR (95%CI) | P-value |
|-----------|------------------------------|------------------------|--------------------------|---------|
| Residence |                              | Small | Moderate | Large | Small | Moderate | Large | P-value |
| Urban     |                              | 87    | 157      | 35    | 1 ref | 1 ref     | 1 ref |         |
| Rural     |                              | 9     | 28       | 8     | 1.83 (0.93, 3.54) | 1.67 (0.90, 3.12) | 0.07 |
| Do you have children | Yes | 50    | 94       | 32    | 1 ref | 1 ref     | 1 ref |         |
| No        |                              | 46    | 91       | 11    | 0.69 (0.45,1.05)  | 0.37 (0.14, 0.98) | 0.04 |
| Number of children | No child | 46    | 91       | 11    | 1 ref | 1 ref     | 1 ref |         |
| One       |                              | 28    | 47       | 13    | 1.18 (0.70,1.98)  | 0.44 (0.16,1.21)  | 0.11 |
| Two -three | 19   | 36     | 14      | 1.61 (0.91,2.83) | 0.65 (0.23,1.82) | 0.41 |
| >three    |                              | 3     | 11       | 5     | 2.85 (1.10, 7.38) | 2.05 (0.91,5.14)  | 0.06 |
| Occupation | Indoor worker | 55    | 88       | 21    | 1 ref | 1 ref     | 1 ref |         |
| Outdoor worker | 41 | 97     | 22      | 1.33 (0.87,2.05) | 1.77 (1.06,2.95) | 0.03 |
| Alcoholic |                              | Non alcoholic | 60    | 124    | 32    | 0.47 (0.21,1.016) | 0.43 (0.19,0.99) | 0.04 |
| Previously alcoholic | 10 | 13     | 1       | 0.74 (0.04,1.24) | 0.68 (0.39,1.19) | 0.17 |
| Currently alcoholic | 26 | 38     | 10      | 1 ref | 1 ref     | 1 ref |         |
| Work satisfaction | Not satisfied | 2     | 7        | 3     | 1 ref | 1 ref     | 1 ref |         |
| Fairly satisfied | 12 | 24     | 7       | 0.53 (0.15,1.89) | 0.44 (0.12,1.64) | 0.22 |
| Satisfied |                              | 82    | 154      | 33    | 0.44 (0.14,1.38) | 0.45 (0.14,1.49) | 0.19 |
| Work hours per week | 0-20 h | 36    | 81       | 21    | 1 ref | 1 ref     | 1 ref |         |
| 21-40 h |                              | 32    | 49       | 9     | –0.45 (–0.97,0.6) | 0.61 (036,1,04) | 0.07 |
| >40 h    |                              | 28    | 55       | 13    | –0.15 (–0.66–0.36) | 0.66 (0.33,1,13) | 0.12 |

were strictly directed ensured the privacy and confidentiality of information.

Consent for publication

Consent for publication is not relevant.

Data sharing statement and availability

The study contains all of the study data related to these findings. Requests for more information on the dataset and questions about data sharing should be directed to the corresponding author via mogesgashaw1@gmail.com.

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Ethical approval

Ethical clearance was secured from the ethical review committee of the department of Physiotherapy, University of Gondar, Ethiopia.

Consent

Personal identifiers in the manuscript and during data collection processes were not included. So, consent for publication not applicable.

Author contribution

MG, BJ and AZ developed the proposal, organized data collection, analyzed the data, prepared and revised the manuscript. AK, MM, FM,
ME, DG, NT, and MH involved in data collection, data analysis, and revised the manuscript. All authors approved the final manuscript for submission.

Registration of research studies

The research is registered in Research registry UIN 7756.

Guarantor

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Declaration of competing interest

The authors report no conflicts of disclosure in this work.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.amsus.2022.103754.

Abbreviations

ANC antenatal care follow-up;
AOR Adjusted Odds Ratio
BP Back Pain
COR Cruds Odds Ratio
LMICs Low-middle income countries
MoH Ministry of Health
PGQ Pelvic Girdle Pain Questionnaire;
PGP Pelvic Girdle Pain
PPGP Pregnancy-related Pelvic Girdle Pain
SD Standard Deviation
UoGCSH University of Gondar Specialized Hospital

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