

Pain During Pregnancy, is it Chronic and Widespread? A Cross-sectional Study in Galle Sri Lanka

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Abstract. Chronic Widespread Pain (CWP) is defined as “pain reported in at least two sections of two contralateral limbs and in the axial skeleton and has been present for at least three months”. Chronic pains in multiple sites are common during pregnancy. This study was conducted to assess the prevalence and associated factors of CWP among pregnant mothers in the Galle district. A sample of mothers attending randomly selected antenatal clinics from Bope-Poddala Medical Officer of Health area was interviewed by trained data collectors using an interviewer-administered questionnaire and a diagram of the body to locate sites of pain. Data was analysed using descriptive statistics and statistical tests through SPSS version 25, and 0.05 was used as the cut-off p-value for significance testing. Three hundred mothers (response rate 85.8%) have participated in the study ages ranging from 19 to 43 (median = 28/ IQR = 9). Nearly one-third were in the first pregnancy (35.7%) or having a living child (36.7%) and they were in the second (49.3%) and third (50.7%) trimester. Nearly one-fifth of mothers (20.3%) had complained of pain lasting more than three months, however only 15.3% of mothers met the criteria for CWP. Lower back was the commonest site of pain (48.7%) and around 20% of mothers complained of pain in different sites of lower limbs. The majority (87.3%) were aware of the pain during pregnancy and Public Health Midwives (42.3%) and friends and relatives (35.3%) were the commonest sources of information. While 68.0% of mothers relieved their pain through resting 12.7% have sought treatments from a doctor. CWP was associated with a history of pain ($p=0.002$) and better awareness of pain in pregnancy ($p=0.02$) and was found to be higher in the third trimester ($p=0.07$). None of the other factors like age, education level, socioeconomic status, occupation, BMI, parity, or mode of delivery in a previous pregnancy was associated with CWP. Though a higher prevalence of pain in pregnancy was noted, the prevalence of CWP is relatively low. Lower back and lower limbs have been the most common sites of pain during the pregnancy. More attention needs to be paid to pains during the pregnancy as a majority are not seeking medical treatment.

Keywords: Chronic widespread pain, Pregnancy, Awareness, Health seeking

INTRODUCTION

Chronic body aches and pains in multiple sites are extremely common complaints during pregnancy. This can be broadly categorized into two categories depending on the onset of pain, as pre-existing pain aggravated during the pregnancy and non-obstetric pain during pregnancy (1). Pre-existing pains usually aggravate due to the omission or reduction of medications to prevent potential harm to the fetus and non-obstetric pain during the pregnancy is due to anatomical and hormonal changes during this period (1). Pain during the pregnancy

period can negatively affect maternal satisfaction and the outcome of the pregnancy (1).

It has been found that more than half (56%) of women have experienced pain during pregnancy in a study conducted among 200 post-partum mothers. Lower back pain was the most common site of pain followed by the lower extremities. Pains were found to be increased towards the latter part of the day and sleep disturbance was common among mothers with pain. The same study highlighted that Caucasians are at a higher risk of developing pain during pregnancy. However, age, the weight gained by the

mothers during pregnancy, the baby's weight, the number of previous pregnancies, number of prior children were not associated with back pain (2). Being the commonest site of, lower back and pelvic pain showed an average prevalence of 45.3%, with large variation (range 3.9–89.9%, median 49.0%) in a systematic review that included 41 articles on lumbopelvic pain (3).

Though maternal mortality and major morbidities have been paid large attention, pain in pregnancy which is considered a minor ailment during pregnancy is paid very little attention (4). A study conducted in the Anuradhapura district showed that 32.6 % (152/466) of pregnant women have suffered from back pain and 77.8 % have claimed that they had mild to severe incapacitation due to pain (4).

Strenuous work and a history of pain were identified as risk factors for pregnancy-related pain. Further, maternal height, maternal weight, foetal weight, the use of oral contraceptives, smoking, epidural anaesthesia, and a prolonged second stage of labour have shown a weak association with pain in pregnancy. However maternal age, number of pregnancies, and maternal ethnicity were not shown associations with pain in pregnancy (3).

Chronic pain that lasts for more than three months duration, has been a major challenge for obstetricians and specialists involved in pain management. It has been a prevalent condition even among uncomplicated pregnancies. A study among uncomplicated pregnant women showed a prevalence of chronic pain at 38% (5), whereas 28.2% of mothers with mental disorders complained of chronic pains (6). Further, the majority of chronic pain tends to resolve following the delivery mostly within two weeks of the postpartum period (5). Like simple pain during pregnancy, chronic pain also has not shown an association with any of the socio-demographic factors (6). Various management options have been suggested for chronic pain conditions in pregnancy. Non-pharmacological treatment such as muscle strengthening exercises, physical support etc. and pharmacological management like low-dose aspirin, acetaminophen, and short

use of NSAIDs are recommended for chronic pain during pregnancy (7).

Chronic Widespread Pain (CWP) is defined as the “pain reported in at least two sections of two contralateral limbs and the axial skeleton and have been present for at least three months” (8). This definition termed as Manchester definition has been the most widely accepted and has been used in many parts of the world. A study conducted in the suburb of north Manchester showed a prevalence of (CWP) at 4.3% when age structure standardization was done (9). A recent systematic review which included 23 different studies with 32 prevalence estimates concluded that the prevalence of CWP can vary from 0% to 24% with a pooled prevalence of 10.6% in the random effect model (10). Both above studies highlighted that CWP is associated with female gender and advanced age (9,10). CWP was found to be associated with various conditions such as chronic fatigue syndrome and psychiatric disorders (11–13). A couple of studies have found that CWP is associated with depression and psychological distress (8). CWP is also associated with several other socio-demographic and lifestyle risk factors such as lower educational level, lower socio-economic status (14), family history of chronic pain, minimal social support, and smoking (14).

Though CWP is a common condition among females, its prevalence during pregnancy has not been widely studied in the global context. Similarly, studies on CWP and pregnancy are not done in Sri Lanka. Sri Lanka is well known for its low-cost high-impact maternal care services which have contributed to significant achievements in maternal and child health indicators such as maternal mortality ratio, and low birthweight rates. However, while paying more attention to major issues such as maternal mortality and major morbidities in pregnancy, it should be noted that there are significant minor ailments that are common and can adversely affect a significant number of pregnant women and thus the outcome of pregnancy.

It has been shown that pain is a common complaint during pregnancy in studies done at both global and local levels. At the same

time, such symptoms had caused significant disturbance to the functional status of pregnant women and their psychological well-being as well. Further, psychological well-being during pregnancy has become a major concern due to the increase in maternal morbidity and mortality due to psychological conditions.

Thus, it is high time to address these issues and consider minor ailments with achievements in reducing maternal mortality and major morbidities. However, CWP was not properly studied in the local context and among this specific group of women. And factors associated with it were not well understood. Therefore, the findings of the present study will be useful to healthcare planners and providers to understand, prevent and treat pain conditions during pregnancy. The study aims to determine the Prevalence and correlate factors of CWP among pregnant mothers in selected Medical Officer of Health (MOH) areas in Galle Sri Lanka

METHODS

A (descriptive) cross-sectional study was conducted to determine the prevalence and factors associated with CWP among pregnant mothers in selected MOH areas in Galle, Sri Lanka. The study was carried out at randomly selected antenatal clinics from the list of antenatal clinics in the Bope-Poddala MOH area in the Galle district. Antenatal mothers attending field clinics during the second and third trimesters were considered as the study population. A convenient sample of mothers attending field clinics was selected as the study sample while excluding first-trimester mothers.

The sample size was determined using the formula for the sample size calculation in cross-sectional studies aiming to assess the prevalence of health-related events (15). The estimated prevalence was considered as 50% because no studies have been conducted to assess the prevalence of CWP during pregnancy. Desired alpha and beta errors were set at 95% and 80% respectively and estimated precision was kept at 5%. The ultimate sample size was 384.

An interviewer-administered pre-tested questionnaire was used to collect data on Socio-demographic data, data on pregnancy, data on body pain and data on health-seeking behaviour and substance use. Items for the questionnaire was determined by referring to the available literature and getting the opinion from local experts in public health and field antenatal care. Site/s of pain was determined using the picture of body manikins depicting the axial and limbs used in the Manchester definition of CWP. Body Mass Index (BMI) and other pregnancy-related data were extracted by referring to the pregnancy record (H512A) of the pregnant mother. Content and consensual validity of the questionnaire were ensured by the local experts as well.

CWP was defined as “the pain reported in at least two sections of two contralateral limbs and the axial skeleton and lasts for more than three months” as defined in the Manchester definition. In addition, pain that lasted more than three months though it did not meet the number of sites to fulfill the criteria for CWP, was considered as chronic pain during the pregnancy. The presence of long-lasting (more than three months) pain before the pregnancy was considered a history of pain.

Socio-demographic factors, pregnancy-related factors and health seeking are described using descriptive statistics as frequencies, mean, or median. Sites of pain were described using the manikin depicting the axial and limb sites. Measures of dispersion were used appropriately to infer summary measures to the population. The Chi-Square test was used to check associations between selected factors and CWP and chronic pain while taking 0.05 as the cut-off p-value.

Ethical approval for the study was obtained from the Ethical Review Committee, Faculty of Medicine, University of Ruhuna. Administrative approval was obtained from the Regional Director of Health Services – Galle district. Informed written consent was obtained from all participants before data collection. Participants identified with problems were referred to Teaching Hospital Karapitiya.

The study was conducted while adhering to the World Medical Association Declaration of Helsinki on ethical principles for medical research involving human subjects.

RESULTS

Three hundred antenatal mothers consented to participate in the study 350 mothers were invited to take part in the study (response rate 85.8%). Age ranges from 19 to 43 years (median = 28/ IQR = 9).

A vast majority of the study sample (79.0%) were Sinhalese in nationality and only 21.0% belonged to Muslim and Tamil nationalities. More than three-fourths of the mothers (77.3%) have been educated up to GCE Ordinary Level or Advanced Level as their highest education level. Most mothers were not employed during the antenatal period. The median pre-pregnancy BMI value was 22 kg m⁻² (IQR = 6.61) and 58.0% of mothers were in the normal BMI range. While the median period of amenorrhea was 27 weeks with an IQR of 12, mothers in the study sample were divided almost equally into second and third trimesters. Importantly 94.0% of mothers have had someone's support during the pregnancy period. Table 1 describes the socio-demographic and pregnancy-related characteristics of the study sample.

Most of the antenatal mothers (234/300, 78%) complained of aches and pains during the antenatal period. However, only 20.3% (61/300) of mothers complained of chronic pain while 15.3% of the total sample of mothers met the criteria to be classified as CWP. The lower back was the commonest site of pain and nearly half of the pregnant mothers (146/300, 48.7%) reported pain in the lower back and it was followed by different sites in the lower limbs. Around 10-25% of mothers reported pain in different sites of both lower limbs. However, 165 (65%) mothers reported pain at any site of a lower limb. A reasonable percentage of mothers reported abdominal pain (44/300, 14.7%) and upper back (47/300, 15.7%). Figure 1 illustrates the commonest sites of

pain reported by the mothers who participated in the study.

The majority of mothers (262/300, 87.3%) were aware of pains during pregnancy and Public Health Midwives (PHM) (42.3%), friends and relatives (35.3%) were the commonest sources of information. Among pregnant mothers, 62.3% were aware of how to minimize their pain. Resting (68.0%) and seeking treatment (12.7%) were the commonest measures to minimize pain practised by them. However, home remedies, ayurvedic treatments and self-medication were practised to a lesser extent (less than 10%) in this specific group.

Having a history of pain was associated with CWP ($p = 0.002$) and a good awareness of pain in pregnancy was also associated with CWP ($p = 0.02$). However, age, higher BMI, employment status and education level were not associated with the presence of CWP. Pregnancy-related factors such as parity were not found to be associated with CWP and specially having family or social support was also not associated with the presence of CWP in pregnancy.

DISCUSSION

The study was conducted to assess the prevalence of CWP and its associated factors and awareness and health-seeking for CWP among pregnant women in the Galle district. The response rate was 85.8% which is favorable to provide a valid outcome from the study. Considering the population structure, the majority was Sinhalese while a significant proportion of Muslim and Tamil participants were included in the sample. This resembles the population structure in the Galle district (16). The majority of mothers (58.0%) were in the normal BMI range while 14.0% and 28.0% were in low and high BMI ranges, respectively. It tallies with the national values published by the Family Health Bureau (Family Health Bureau, 2022).

Table 1. Socio-demographic and pregnancy-related characteristics of the study sample (N=300)

Characteristics of the mothers	Number	Percentage (%)
Nationality		
Sinhala	237	79.0
Muslim / Tamil	63	21.0
The highest education level attained		
Below GCE Ordinary Level	44	14.7
Passed GCE Ordinary Level	105	35.0
Passed GCE Advanced Level	127	42.3
Tertiary education	24	8.0
Occupation during pregnancy		
Employed	85	28.3
Not employed	215	71.7
Distance to the nearest government hospital		
< 30 min	228	76.0
=>30 min	72	24.0
Distance to the nearest private hospital		
< 30 min	239	79.7
=>30 min	61	20.3
Pre-pregnancy BMI category*		
Less than 18.5	7	14.0
18.5 – 25.0	29	58.0
More than 25.0	14	28.0
Parity		
1	107	35.7
2	105	35.0
3 or more	88	29.3
Number of living children		
No children	125	41.7
1 -2	159	53.0
3 or more	16	6.3
Trimester		
Second	148	49.3
Third	152	50.7
Support during pregnancy		
Yes	282	94.0
No	18	6.0

*pre-pregnancy BMI value was available only for 50 pregnant mothers

Table 2. Factors associated with CWP

Characteristic	Having CWP No (%)	No CWP No (%)	Chi-square value	p-value
Age				
less than 30 years	23 (15.0%)	130 (85.0%)	0.02	1.00
30 years and more	23 (15.6%)	124 (84.4%)		
Highest education qualification				
Up to GCE Ordinary Level	27 (18.1%)	122 (81.9%)	1.77	0.18
Higher than GCE Ordinary Level	19 (12.6%)	132 (87.4%)		
Employed				
Yes	10 (11.8%)	75 (89.9%)	1.16	0.28
No	36 (16.7%)	179 (83.3%)		
Having children				
Yes	27 (12.8%)	184 (87.2%)	0.003	1.00
No	19 (15.2%)	106 (84.8%)		
BMI* (missing 250)				
High	16 (55.2%)	13 (44.8%)	0.44	0.51
Low or normal	5 (13.9%)	31 (86.1%)		
Having comorbid conditions				
Yes	10 (20.4%)	39 (79.6%)	1.32	0.25
No	35 (14.0%)	215 (86.0%)		
History of pain				
Yes	44 (18.9%)	190 (91.1%)	9.87	0.002*
No	2 (3.0%)	64 (97.0%)		
Parity				
Primi	18 (16.8%)	89 (83.2%)	0.29	0.59
Multi	28 (14.5%)	165 (85.5%)		
Trimester				
Second	17 (11.5%)	131 (88.5%)	3.33	0.07
Third	29 (19.1%)	123 (80.9%)		
Support during pregnancy				
Yes	41 (16.1%)	214 (83.9%)	2.28	0.13
No	5 (27.8%)	13 (72.2%)		
Awareness of pain in pregnancy				
Yes	45 (17.2%)	217 (82.8%)	5.41	0.02*
No	1 (2.6%)	37 (97.4%)		

*Fisher exact test used to test statistical significance

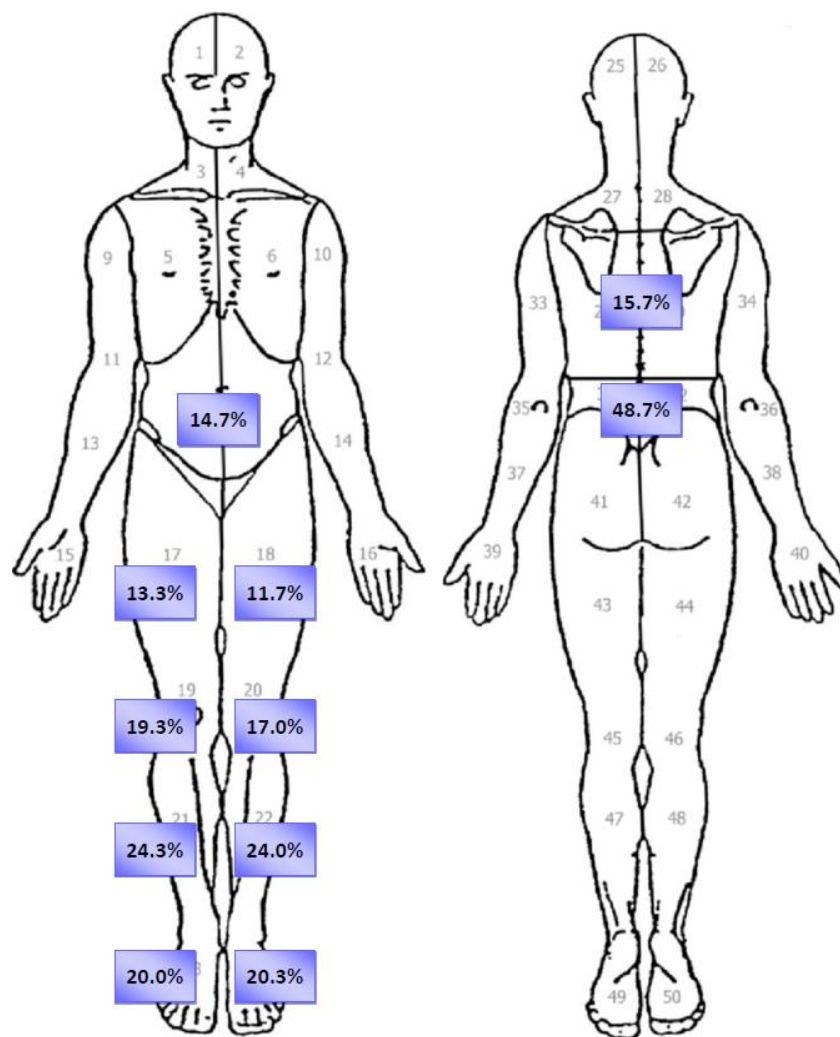


Figure 1. Different sites of pain

Prevalence of CWP among pregnant mothers was 15.3% {95% Confident Interval (CI) 11.5% - 20.0%}. According to a systematic review and meta-analysis, CWP prevalence ranged from 0%-24% and pooled prevalence was 10.6% (10). The current study reported a slightly higher prevalence of CWP among pregnant mothers compared to previous studies. This can be explained in two ways. First, the prevalence of CWP was higher in females as highlighted in Hunt et al. (9) and Mansfield et al.(10). Second, pregnancy is the period where several hormonal and anatomical changes take place leading to non-obstetric pain in pregnancy (1). Therefore, a higher prevalence of pains including CWP is inevitable during the pregnancy period. However,

studies on the prevalence of CWP in pregnant women are limited in the local and global context to have a good comparison. The current study reported that 78% of pregnant mothers complained of any type of pain during the pregnancy. This tallies with findings from a local study by Agampodi et al. (4) where 77.8% of pregnant mothers reported incapacitation due to pain.

Most mothers have identified PHM as the source of information. PHM is a key healthcare worker working at the grassroots level to uplift maternal and child health and they have developed a good rapport with the community to be the first healthcare provider to consult on health issues faced by the community. On the other hand, PHM are conducting health education sessions where

they educate pregnant mothers on common symptoms during pregnancy and their management (18).

The current study found that mothers with a previous history of pain were more likely to have CWP during pregnancy. It has been evident that a history of pain can predispose to pain during pregnancy (3). On the other hand, CWP was associated with chronic pain and fatigue (12,13). Good awareness of pain in pregnancy was associated with CWP in this study. However, it should be interpreted with caution as the temporality of events cannot be established with a cross-sectional study. Therefore, it can be interpreted either as raised awareness of pain in pregnancy leads to increased identification of CWP or vice versa. Though CWP was found to be associated with low education and socioeconomic status (14), the current study reveals that there is no association of those factors with CWP. However, the current study sample was from urban and suburban communities. Therefore, variation of these factors may be less leading to masking such actual association. Higher pre-pregnancy BMI showed association with CWP though it was not statistically significant. However, it should be noted that nearly five-sixths of the sample did not report their pre-pregnancy BMI values. However, being overweight and obese can aggravate anatomical and mechanical changes in pregnancy leading to increased non-obstetric pain (1). As evident

in a previous study, maternal characteristics were not associated with CWP (3).

CONCLUSION AND RECOMMENDATIONS

Pain is a common complaint during pregnancy while a reasonable percentage of pregnant mothers complained of CWP. Prevalence of CWP among pregnant mothers was low and PHM has been the commonest source of information on pain during pregnancy while awareness was reasonably high among pregnant mothers.

The study recommends interventions for pain during pregnancy through field healthcare workers and further studies in more diverse samples with robust research methodologies to determine factors associated with pain and CWP during the pregnancy period.

Strengths and limitations. A higher response rate and representative sample were the strengths of the current study. The data quality was ensured using an interviewer-administered questionnaire to increase the internal validity of the study. However, cross-sectional design has been a limitation itself as it is unable to establish the temporal relationship in the associations. On the other hand, the less diversity in the sample was another limitation affecting the external validity of the study.

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