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Original Research

Non-Specific Chronic Lower Back Pain among Adults in Selected Areas of Urban Puducherry - A community based cross-sectional study

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Abstract

Background: Non-specific chronic lower back pain (NSCLBP) is a major health concern currently. Being non-specific and chronic in nature along with limited effective treatment options, NSCLBP adds a huge physical, psychological, and financial burden on the individuals suffering from it. **Objective:** To estimate the prevalence of NSCLBP among adults in selected areas of urban Puducherry and to find out the risk factors associated with it. **Materials and methods:** A cross-sectional study was conducted among 1100 adults residing in the urban service areas of JIPMER Urban Health Centre, Puducherry. A Semi-structured pretested questionnaire was used to collect socio-demographic details and risk factors related to CNSLBP and JOABPEQ questionnaire was used to screen all participants for CNSLBP. Data was collected using EpiCollect5 mobile application and analyzed using Stata v 14.0. **Results:** The majority were females (59.3%) and in the age group 18-29 years. Chronic illnesses were prevalent among 55.8% of them. The prevalence of CNSLBP was found to be 18.6%. Female gender, increasing age, and increasing BMI were significantly associated with CNSLBP. While physical activity and addictive habits showed no association. **Conclusion:** CNSLBP is the most common cause of Low back pain compared to other causes and there are few modifiable risk factors leading to chronic low back pain which are preventable.

Keywords: chronic back pain, Low back pain, chronic pain..

Introduction

Chronic Low Back Pain (CLBP) is a major health concern in industrialised societies. International surveys report the point prevalence of low back pain to be around 15-30%(1). The occurrence of low back pain in India is alarming with nearly 60% of the people in India have suffered from low back pain at some time during their lifespan(2). Prevalence in Pondicherry was found to be 22.5%(3). While most patients with acute back pain recover rapidly without any treatment, around 10% of those with the condition are at risk of developing CLBP and permanent disability (4).

The low back pain may be due to a specific aetiology or may be nonspecific, acute or chronic. Most patients with acute back pain recover rapidly without requiring any treatment; however the back pain recurs in one fourth of these patients within a year(4,5). Non-specific chronic lower back pain (i.e. lower back pain of more than 12 weeks, could not be diagnosed(6)) is a major health concern in industrialized societies. The annual global prevalence has been estimated to be around 38%(5). Longer durations of sitting down, high BMI are associated with a higher risk of lower back pain.(7,8) There is also strong correlation between depression and lower back pain, especially in the severely depressed. (9) Treatment for NSCLBP remains primarily conservative with NSAIDs and physical exercise being the mainstay. While the recovery outcomes of physiotherapy are not significantly different from that of pharmacotherapy, there is some evidence that establishes the superiority of the former over the latter, in terms of quality of life. (10) There is also low to moderate certainty evidence that suggests yoga results in small to moderate improvements in back related function.(11) Being non specific and chronic in nature along with limited effective treatment options, NSCLBP adds a huge physical, psychological and financial burden on the individuals suffering from it.

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It is therefore of paramount importance to identify the risk factors associated with NSCLBP, in order to curb its occurrence. Thus the study was undertaken to estimate the prevalence of non-specific chronic low back pain among adults in selected areas of urban Puducherry and to find out the risk factors associated with it.

Materials and Methods

This was a cross sectional study conducted among the adult population residing in the urban service areas (Kurusukuppam, Vazhaikulam, Vaithikuppam and Chinnaiyapuram) of JIPMER Urban Health Centre, Puducherry from August 2019 to January 2020. Chronic bed ridden and mentally handicapped individuals were not included in the study. Considering 22.5% anticipated prevalence of low back pain from previous study(4), 5% relative precision, and 10% of non-response error, a sample of 1076 subjects was needed for this study. Probability proportional to size (PPS) sampling was used to determine the total number of households to be selected from each of the 4 areas. Then, systematic random sampling was employed to select the individuals from each of the four areas.

Individuals from every 10th house were included in the study. If the house has more than one person, the KISH table was used to select the family member. Data collection was started after obtaining informed Consent from the participants. Adults aged 18 to 100 years were screened for low back pain (LBP) using JOABPEQ questionnaire (12). JOABPEQ consists of questions related to the health of the individual having low back ache. JOABPEQ questionnaire was modified, pretested and validated. Modified questionnaire consisted of 5 subsets with 25 questions in total, same as the JOABPEQ however all responses were modified to 'yes' or 'no' form. The questionnaire was administered to the individuals by the investigator(s). The patient with lower back pain of more than 12 weeks, who could not be diagnosed(6) with a specific cause and with response to atleast 13 questions of modified JOABPEQ as yes were considered as patients with Non-specific chronic lower back pain.

Data was collected using EpiCollect5 mobile application, and analysed using STATA v 14.0. Continuous variables were summarised as mean (standard deviation) or median (interquartile range) and categorical variables as proportions. Chi square test was used to assess association between risk factors and CLBP.

Results

A total of 1100 individuals were interviewed. The area-wise distribution is as follows; Kurusukuppam- 428 (38%), Vazhaikulam- 330 (30%), Vaithikuppam- 132 (12%), and Chinnaiyapuram -220 (20%). Majority of the population belonged to the age groups 18-29 years with higher percentage being females (59.3%, 652) (**Table 1**)

Table 1: Distribution of study population based on Sociodemographic characteristics in the selected urban areas of Pondicherry (N=1100)

Characteristics	n (%)
Age (in years)	
18-29	260 (23.6)
30-39	241(21.9)
40-49	206 (18.7)
50-59	182 (16.6)
>60	211 (19.2)
Gender	
Males	448 (40.7)
Females	652 (59.3)
Marital status	
Married	800(72.7)
Divorced/widowed/separated	98(8.9)
Single	202 (18.4)
Educational status	
No formal education	192 (17.5)
Primary	141 (12.8)
Secondary	346 (31.5)
Higher secondary	168 (15.3)
Graduate/postgraduate	253 (23)
Occupation	
Employed	494 (44.9)
Unemployed	153 (13.9)
Housewife	365 (33.2)
students	88 (8)
Socio economic status (mod B.G. Prasad)	
Upper	67 (6.1)
Upper middle	13 (12.2)
Lower middle	183 (16.6)
Upper lower	368 (33.5)
Lower	348 (31.6)
Total	1100 (100)

A majority of the population used to have physical activity for less than 120 minutes per week (60.7%). Alcohol and tobacco consumption was reported by 12.3% and 6.1% population respectively. Two wheeler driving was reported by 34.2% with majority (44.9%) driving for only half an hour to an hour in a day. Majority (38.5%) of the population had Body Mass Index (BMI) between 25 -29.99, more than 30 were 13.4% (**Table 2**).

Table 2: Distribution of study population based on Lifestyle characteristics in selected urban areas of Puducherry (N=1100)

Lifestyle characteristics	n (%)
Physical activity (minutes/ week)	
<120	668 (60.7)
120-160	337 (30.7)
>160	95 (8.6)
Alcohol intake	
Yes	135 (12.3)
No	965 (87.7)
Tobacco consumption in any form	
Yes	67 (6.1)
No	1033 (93.9)
2 wheeler driving	
Yes	376 (34.2)
No	724 (65.8)
Duration spent in driving in hrs (n=376)	
<1/2	97 (25.8)
½ - 1	169 (44.9)
1-3	87 (23.1)
>3	23 (6.2)
Body Mass Index (Kg/m²)	
< 18.5	45 (4.1)
18.5-22.99	246 (22.4)
23-24.99	238 (21.6)
25 -29.99	424 (38.5)
≥ 30	147 (13.4)

Chronic illnesses were prevalent among 55.8% of them such as Diabetes mellitus (13.9%), Hypertension (19%), Bronchial Asthma (4.3%), arthritis (12.7%), CVD (1.5%) and others (4.4%) (Figure 1).

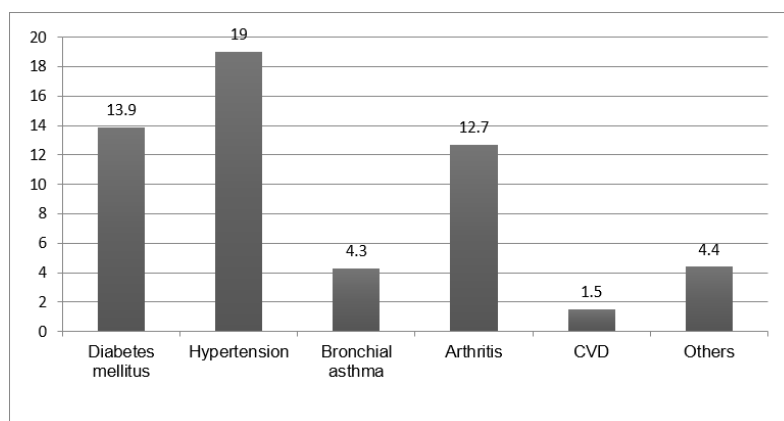


Figure 1: Distribution of study population based on chronic illnesses in the selected urban areas of Pondicherry (N=1100)

Table 3: Distribution of study population based on Low back pain history in the selected urban areas of Pondicherry (N=1100)

Characteristics	n(%)
H/o LBP	
Yes	304 (27.6)
No	796 (72.4)
Duration of LBP (n=304)	
<6 wks	18 (5.9)
6-12 wks	47 (15.5)
>12 wks	239 (78.6)
Family history of LBP (n=304)	
Yes	58 (19.1)
No	246 (80.9)

Table 4: Distribution of study population based on specific causes of Low back pain history in the selected urban areas of Pondicherry (N=304).

Specific causes	n(%)
RTA	12 (3.9)
Disc Prolapse	9 (3)
Malignancies	3 (1)
Fracture	5 (1.6)
Osteoporosis	18 (5.9)
Gynecological Malignancies	3 (1)
Others	49 (16.2)
Non-Specific Lower Back Pain	205 (67.4)

The prevalence of chronic non specific low back pain was found to be 18.6%.

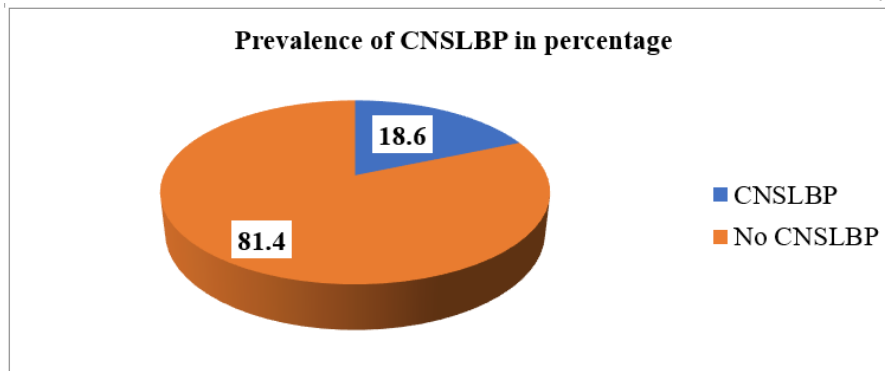


Figure 2: Prevalence of CNSLBP among study population (N=1100)

Table 5: Association between Sociodemographic characteristics and NSCLBP among study participants

	NSCLBP		P- Value
	Present N (%)	Absent N(%)	
Gender			
Male	40 (19.5)	408(45.6)	<0.001
Female	165(80.5)	487 (54.4)	
Age (yrs)			
18-29	12(5.9)	248 (27.7)	<0.001
30-39	36(17.6)	205(22.9)	
40-49	41(20)	165(18.4)	
50-59	51(24)	131(14.7)	
≥60	65(31.7)	146(16.3)	
Educational status			
No formal education	69 (33.7)	123 (13.7)	<0.001
Primary	35 (17.1)	106(11.8)	
Secondary	67 (32.7)	279 (31.2)	
Higher secondary	14 (6.8)	154 (17.2)	
Graduate/Postgraduate	20(9.8)	233 (26.1)	
Socioeconomic status			
I	4(2)	63(7)	0.001
II	19(9.3)	115(12.8)	
III	37(18)	146(16.3)	
IV	60(29.3)	308(34.4)	
V	85(41.5)	263(29.4)	
Marital status			
Married	161 (78.5)	639(71.4)	<0.001
Single	10(4.9)	192(21.5)	
Widow/separated/divorced	34(16.6)	64(7.2)	
Occupation status			
Employed	80 (39)	414(46.3)	<0.001
Unemployed	32(15.6)	121(13.5)	
Housewife	89(43.4)	276 (30.8)	
student	4(2)	84(9.4)	
Total	205	895	

Table 6: Association between lifestyle characteristics and NSCLBP among study participants

	NSCLBP		P- Value
	Present N (%)	Absent N(%)	
BMI (kg/m²)			
<18.5	5(2.5)	40(4.5)	<0.001
18.5-22.99	30(14.6)	216(24.1)	
23-24.99	33(16.1)	205(22.9)	
25-29.99	95(46.3)	329(36.8)	
≥ 30	42(20.5)	105(11.7)	
Driving 2- wheeler			
Yes	38 (18.5)	338 (37.8)	<0.001
No	167 (81.5)	557 (62.2)	
Duration of physical activity/wk (mins)			
<120	51 (24.9)	286 (32)	0.010
120 to 160	143 (69.8)	525 (58.7)	
>160	11 (5.4)	84 (9.4)	
Total	205	895	
Duration spent in driving in hrs (n=376)			
<1/2	11 (28.9)	86 (25.4)	0.427
½ - 1	13 (34.2)	156 (46.2)	
1-3	10 (26.3)	77 (22.8)	
>3	4 (10.6)	19 (5.6)	
Total	38	338	

Table 7: Association between history of chronic diseases and NSCLBP among study participants

	NSCLBP		P- Value
	Present N (%)	Absent N(%)	
Diabetes			<0.001
Yes	45 (22)	108 (12.1)	
No	160 (78)	787 (87.9)	
Hypertension			<0.001
Yes	63 (30.7)	146 (16.3)	
No	142 (69.3)	749(83.7)	
Arthritis			<0.001
Yes	51 (24.9)	89 (9.9)	
No	154 (75.1)	806 (90.1)	
Total	205	895	

Other factors such as other chronic illnesses, tobacco usage were not found to be significant.

Discussion

Chronic non-specific low back pain has been emerging as a major public concern among the residents of urban areas. The prevalence of the same worldwide was seen to be 23% (13). Prevalence in Pondicherry was found to be 22.5% (3). From our study, we have found that the prevalence of non-specific low back pain in the population in urban parts on Puducherry is 18.6%. Similar studies have been conducted by Jaiswal A (14) which reports the prevalence in a similar range. However, a study conducted in rural areas of Puducherry, among females, showed a higher prevalence of 42% and of which majority of the population had moderate disability (3). It has also been observed that non-specific back pain remains the major cause of low back pain (15), which is in concordance with our study. Further study needs to be done in this area to explore occupational factors and their influence on NSCLBP.

Age plays a significant role in CNSLBP. The findings from our study show that the prevalence of low back pain increases with age which is in accordance with other studies (16). A few studies have shown incidence is highest in the third decade (17-20) and overall prevalence increases with age until ages 60 or 65 years, and then gradually declines (21,22). It was also seen that the prevalence is more among females in the study conducted by us and other studies (23). It is also observed that there is an increasing trend of low back pain with an increase in the Body Mass Index (BMI), which is also been highlighted in two studies done to find the association between obesity and low back pain (24, 25). The extremes of the spectrum of physical activity, which include lack of physical activity and strenuous exercises, have been associated with chronic non-specific low back pain (26). In our study, the measures of physical activity included duration of physical exercises per week, usage of two wheelers and duration of usage of two wheelers. However significant association of CNSLBP was observed in those who did not use Two-wheeler.

Chronic conditions like Diabetes, Hypertension and Arthritis showed negative association with CNSLBP, however Lawrence et al in their study found that arthritis was related to other musculoskeletal diseases (22).

The limitations of the study was that since the data collection was done during working hours, the working class population were not adequately represented in the study.

From our study, we understand that there are a few modifiable factors that lead to chronic low back pain. Thus, life style changes can act as a preventive measure from development of back pain.

Conclusion

Prevalence of CNSLBP in urban Puducherry is found to be 18.6%. From our study, we understand that there are a few modifiable factors like Usage of two wheeler, increasing body mass index, lack of physical activity that lead to chronic low back pain.

Recommendation: Life style changes can act as a preventive measure from development of back pain. Further study needs to be done in this area to explore occupational factors and their influence on NSCLBP.

Conflict of interest: None

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