

# Prevalence and risk factors of low back pain among lower socioeconomic patients: A cross sectional study

<sup>1</sup> Dr. Mane Madan Mohan and <sup>2</sup> Dr Sunitha dabbiru

<sup>1</sup> Associate Professor, Department of General Medicine, TRR Institute of Medical Sciences, Hyderabad, Telangana, India

<sup>2</sup> Assistant professor, Department of General Medicine, Andhra Medical College/KGH, Visakhapatnam, Andhra Pradesh, India

## Corresponding Author:

Dr. Mane Madan Mohan ([madanmohanmane@gmail.com](mailto:madanmohanmane@gmail.com))

## Abstract

**Introduction:** Low back pain is one of the most common ailments as it is very disabling, reducing the quality of life and very expensive. It generally occurs due to work or occupational activities.

**Materials and Methods:** Demographic details, details of past history, range of physical exercise, posture, smoking and alcohol consumption were taken from 168 patients belonging to lower socioeconomic group.

**Results:** Females were more affected than males and the most common age group was between 18-45 years. Most of the patients were students (14.3%), housewives (23.2%), laborers (26.8%), drivers (16.1%) and farmers (10.7%). Coffee consumption was seen regularly in 149 (88.7%) patients while only 8 (4.8%) neither drank coffee or tea. 98 (58.3%) regularly consumed alcohol and 59 (35.1%) smoked regularly. In 33 (19.6%) of the patients, the most probable cause of pain was excess physical exercise while 62 (36.9%) lifted heavy weights. 47 (28%) were highly stresses and 83 (49.4%) had long sitting hours. 11 (6.5%) had a family history of chronic back pain and 57 (33.9%) were obese.

**Conclusion:** Early diagnosis and identification of risk factors would help in better management of low back pain as the patient grows older.

**Keywords:** Low back pain, risk factors, prevalence

## Introduction

Low back pain is one of the most common ailments globally. It is very disabling, reducing the quality of life and very expensive <sup>[1, 2]</sup>. It is estimated that around 60-80% of the world's population get low back pain at some point in their life and at any given time, around 20-30% people suffer from it <sup>[3]</sup>. Studies have shown that at the age of 30, low back pain is normally initiated and tends to peak at the age of around 45-60 years <sup>[4, 5]</sup>. In India, it is estimated that around 35% of the people suffer from chronic low back pain thereby effecting their normal routine <sup>[6]</sup>. It is nowadays seen commonly even among the adolescents <sup>[7]</sup>. Recovery from this is condition is quite quick, but still it leads to a limited range of activity <sup>[8]</sup>.

Low back pain generally occurs due to work or occupational activities <sup>[9, 10]</sup>. In children it may be postural of lifting heavy weights like in sports or heavy backpacks. Research has shown that the incidence of low back pain starts in teenage group and steadily increases in the elder's upto 60 years and then declines, which is attributed to the work or occupation of the patient <sup>[9]</sup> while other studies have revealed that low back pain is quite prevalent among the elder population too <sup>[11]</sup>. Other risk factors which are attributed to low back pain include stress depression, anxiety, obesity as well as a positive family history <sup>[12-15]</sup>.

There is a lot of literature regarding the management of low back pain, but there is less research done on the causes and risk factors for the low back pain. Therefore, this study was

done to identify the risk factors causing the low back pain among the young and middle aged adults so that the treatment can be given as soon as possible.

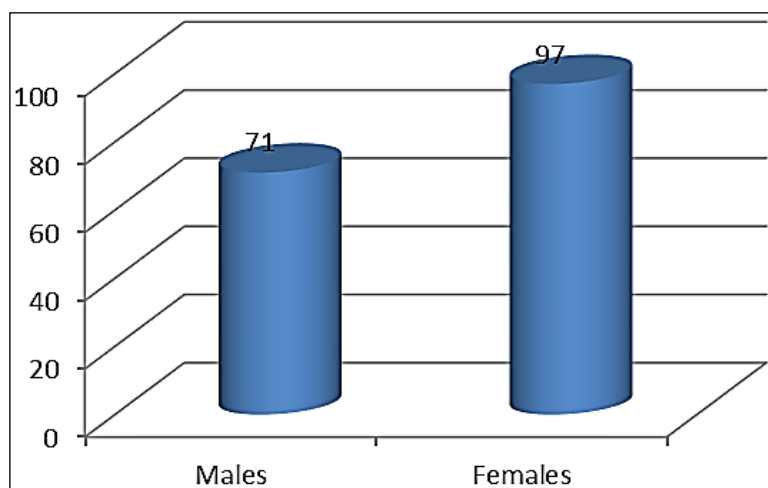
### Materials and Methods

This cross-sectional study was done on 168 adults of both sexes, between the ages 18 years and above, by the Department of General Medicine at TRR institute of medical sciences for a period of June 2021 to July 2022. This study was cleared by the Institutional Ethical Committee. The nature of the study was explained to the patients and informed consent was taken from all of them. Demographic details were taken from all the patients. Patients who belonged to the lower economic status were included in the study. Those who were in the upper economic status were excluded from the study. Their general history of smoking, alcoholism, socioeconomic status, occupation, modes and time of travel were taken from all of them. Other details that were collected was their physical activity, posture, duration and place of pain. Height and weight were measured for all of them, and Body Mass Index were calculated.

The data collected was analyzed using Microsoft Excel and Bar charts and Tables were done.

### Results

Of the 168 patients who came to the General Medicine OP with low back pain, 71 (42.3%) were males and 97 (57.7%) were females (Fig: 1).



**Fig 1:** Distribution of gender

30 (17.9%) of the total patients belonged to the 18-25 years age group, out of which 14 (19.7%) were males and 16 (16.5%) were females. The most common age group was 26-35 years (79 (47%)), where in 33 (46.5%) were males and 46 (47.4%) were females. 36-45 years age group also had a high [revalence of low back pain as seen in 27 (16.1%) patients, where 13 (18.3%) were males and 14 (16.1%) were females (table: 1)

**Table 1:** Age wise distribution

Age group	Males (n=71)	Females (n=97)	Total
18-25	14 (19.7%)	16 (16.5%)	30 (17.9%)
26-35	33 (46.5%)	46 (47.4%)	79 (47%)
36-45	13 (18.3%)	14 (14.4%)	27 (16.1%)
46-55	6 (8.5%)	9 (10%)	15 (8.9%)
56-65	3 (4.2%)	8 (8.2%)	11 (6.5%)
>65	2 (2.8%)	4 (4.1%)	6 (3.6%)

The number of vegetarians in this study was 51 (30.4%) as compared to the non-vegetarians who were 117 (69.4%). Most of the patients were married 103 (61.3%), 51 (30.4%) were

unmarried and 14 (8.3%) were either separated or widowed. 19 (11.3%) of them were illiterate while most of them 62 (36.9%) had studied upto primary level. 51 (30.4%) had finished high school and 32 (19%) had completed graduation. 24 (14.3%) were still studying and belonged to around 18-20 years, while 39 (23.2%) were housewives. 45 (26.8%) were labourers, with heavy weight lifting, 18 (10.7%) were farmers, 27 (16.1%) were drivers. 15 (8.9%) were youngsters in our study, who were working from home, mostly on a laptop or computer. The most common mode of travel for the patients was 2 wheeler which was seen in 56 (33.3%) patients followed by walking as seen in 44 (26.2%), bus in 34 (20.2%), 29 (17.3%) travelled by auto. 35 (20.8%) of the patients travelled for more than 1 hour per day, and most of them were drivers. The other only commuted for work and majority, 62 (36.9%) travelled between 30 minutes to 1 hour per day. Coffee consumption was seen regularly in 149 (88.7%) patients while only 8 (4.8%) neither drank coffee or tea. 98 (58.3%) regularly consumed alcohol and 59 (35.1%) smoked regularly (table: 2)

**Table 2:** General variables of patients

Variable	Number (%)
Food Habits	
Vegetarian	51 (30.4%)
Non vegetarian	117 (69.4%)
Marital status	
Married	103 (61.3%)
Unmarried	51 (30.4%)
Separated/Widowed/Single	14 (8.3%)
Literacy status	
Uneducated	19 (11.3%)
Primary	62 (36.9%)
Secondary/High School	51 (30.4%)
Graduate	32 (19%)
Above	4 (2.4%)
Occupation	
Students	24 (14.3%)
Housewives/unemployed	39 (23.2%)
Laborers	45 (26.8%)
Farmers	18 (10.7%)
Drivers	27 (16.1%)
Work from Home	15 (8.9%)
Mode of travel	
Car	5 (3%)
2 wheeler	56 (33.3%)
Auto	29 (17.3%)
Bus	34 (20.2%)
Walking	44 (26.2%)
Travel time in a day	
< 15 mins	32 (19.1%)
15 mins-30 mins	39 (23.2%)
30 mins-1 hour	62 (36.9%)
1hr	35 (20.8%)
Coffee/Tea intake	
Never	8 (4.8%)
Occasional	11 (6.5%)
Regular	149 (88.7%)
Alcohol	
Never	44 (26.3%)
Occasional	26 (15.5%)
Regular	98 (58.3%)

Smoking	
Never	67 (39.9%)
Occasional	42 (25%)
Regular	59 (35.1%)

The most common time frame of the pain was more than 1 year and < 3years as seen in 80 (47.6%) patients while 37 (22%) experienced pain for less than an year and more than a month. In 34 (20.2%), the pain was present for more than 3 years. 45 (26.8%) of the patients stooped while sitting, while 19 (11.3%) sat with straight back, 97 (57.7%) sat with back inclined and 7 (4.2%) sat with front inclined. 97 (57.7%) used a back support while sitting while 71 (42.3%) were comfortable without a back support. In 33 (19.6%) of the patients, the most probable cause of pain was excess physical exercise while 62 (36.9%) lifted heavy weights. 47 (28%) were highly stresses and 83 (49.4%) had long sitting hours. 11 (6.5%) had a family history of chronic back pain and 57 (33.9%) were obese. 46 (27.4%) carried heavy loads on backs, as was seen among some of the students and laborer's (Table: 3).

**Table 3:** Back pain parameters

Variables	Number (%)
Time duration of pain	
< 1 month	17 (10.1%)
➤ 1 month < 1 year	37 (22%)
➤ 1 year < 3 years	80 (47.6%)
➤ 3 years	34 (20.2%)
Sitting posture	
Straight back	19 (11.3%)
Stoop	45 (26.8%)
Back inclined	97 (57.7%)
Forward inclined	7 (4.2%)
Use of back support	
Yes	97 (57.7%)
No	71 (42.3%)
Probable causes	
Excess physical exercise	33 (19.6%)
Lifting heavy weights	62 (36.9%)
Stress	47 (28%)
Sitting for long	83 (49.4%)
Family history	11 (6.5%)
Obesity	57 (33.9%)
Standing for long	43 (25.6%)
Back packs/carrying heavy weights on back	46 (27.4%)

## Discussion

Low back pain can be quite debilitating, leading to abstinence from work and other activity. It results in frequent visits to hospital, thereby increasing physical, mental and financial stress among patients <sup>[16-19]</sup>.

In the present study, females were more affected with low back pain rather than men and 18-45 years age group was the most affected mainly due to the occupation of the patient. In contrast in a study by Aggarwal *et al.*, the number of females were lesser than the males <sup>[20]</sup>. Hoy *et al.* also reported more incidence in females rather than males <sup>[1]</sup>. A study by Kopec *et al.* reported that low back pain was most prevalent among patients in the third decade of life, which was similar to the findings of our study <sup>[21]</sup>. Some studies have shown no gender differentiation <sup>[22, 23]</sup>.

We have not studied the prevalence of back pain among the patients, but had considered only patients with complaints of lower back pain. However, a study by Aggarwal *et al.* reported a prevalence of 48% among medical students, while another study by Kennedy *et al.* reported a

prevalence of 43% [20, 24].

Although the number of vegetarians were far less compared to the non-vegetarians, we found this incidence to be coincidental considering the fact that we had taken the lower strata group of patients who were primarily non vegetarians and hence not significant. We found that there was no significant difference in the marital status or the educational background of the patients. In a study by Ganesan *et al.*, a relation of the marital status to back pain was reported [23].

However, we found that almost all the students who carried back packs had low back pain. Similar was seen among the laborers and house wives who also carried heavy weights. Farmers whose occupations involve bending for long periods and drivers who sit for too long also were prone to back pain. Backpack was the reason of low back pain in the study by Aggarwal *et al.*, corroborating our study [20].

People who smoked and consumed alcohol either regularly or occasionally were seen to have lower back pain compared to those who never took them. Shiri *et al.* also found that smoker had a higher prevalence to LBP rather than in non-smokers [25]. This is probably because smoking results in the reduction of the mineral content of the bones, thereby increasing the risk of osteoporosis and other micro injuries in the body apart from increasing intradiscal and intraabdominal pressures during coughing [26, 27].

Patients who rode on bikes for longer periods and those who travelled by buses were also victims of back pain. Abnormal posture and long time sitting was significantly associated with back pain in our study. Similar results were observed in another study by Ganesan *et al.* where long duration of sitting was found to be associated with LBP [23].

Excessive physical exercise and lifting heavy weights were directly associated with LBP in our study. This was also observed in a study by Triki *et al.* on school children, wherein many students suffered low back pain due to physical exercise [28]. Skoffer and Foldspang found LBP was more in patients who put in more number of hours in jogging and gymnastics and other forms of physical exercise [29]. Similar results were observed in other studies [30-32].

Stress was a risk factor for LBP in our study in 28%. Ganesan *et al.* also reported stress to be related to LBP as did Atkinson *et al.* [33]. In the present study, family history of LBP was observed in only 6.5% of the cases. Matsui *et al.* observed that LBP was seen in patients with a family history [34].

Obesity causes overloading of the articular structures in the lumbar spine, thereby contributing to back pain [35]. However, our study showed no considerable association between obesity and low back pain. Similar results were observed in a study by Ganesan *et al.* [23], while a study by Webb *et al.* showed that higher BMI was directly associated with higher prevalence of low back pain [12].

## Conclusion

It has been reported that low back pain in the early years of life would manifest again in the later life. Therefore, early diagnosis and identification of risk factors would help in better management of low back pain as the patient grows older.

## References

1. Hoy D, *et al.* A systematic review of the global prevalence of low back pain. *Arthritis and rheumatism.* 2012;64:2028-2037.
2. Vos T, *et al.* Global, regional and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990-2016: a systematic analysis for the Global Burden of Disease Study. *Lancet.* 2017;390:1211-1259.
3. Cassidi JD, Wedge JH. *The Epidemiology and Natural History of LBP and spinal degeneration.* 2<sup>nd</sup> ed. New York: Churchill Livingstone; c1988. p. 345.
4. Bratton RL. Assessment and management of acute low back pain. *Am Fam Physician.* 1999;60:2299-308.
5. Ehrlich GE. Low back pain. *Bull World Health Organ.* 2003;81:671-6.
6. Volinn E. The epidemiology of low back pain in the rest of the world: A review of

- surveys in low and middle income countries. *Spine*. 1997;22:1747-54.
7. Allan DA, Waddell G. An historical perspective on low back pain and disability, *Acta Orthopaedica Scandinavica*. 1989;60:1-23.
  8. Lis AM, Black KM, Korn H, Nordin M. Association between sitting and occupational LBP, *European Spine Journal*. 2007;16(2):283-298.
  9. Balague F, Nordin M, Skovron ML, Dutoit G, Yee A, Waldburger M. Non-specific low-back pain among schoolchildren: a field survey with analysis of some associated factors. *J Spinal Disord*. 1994;7:374-379.
  10. Frank JW, Kerr MS, Brooker A, *et al*. Disability resulting from occupational low back pain: I: What do we know about primary prevention? A review of the scientific evidence on prevention before disability begins. *Spine*. 1996;21:2908-2917.
  11. Palacios-Ceña D, Alonso-Blanco C, Hernández-Barrera V, Carrasco-Garrido P, Jiménez-García R, Fernández-de-las-Peñas C. Prevalence of neck and low back pain in community-dwelling adults in Spain: an updated population-based national study. *Eur. Spine J*. 2015;24:482-92.
  12. Webb R, Brammah T, Lunt M, Urwin M, Allison T, Symmons D. Prevalence and predictors of intense, chronic and disabling neck and back pain in the UK general population. *Spine (Phila Pa 1976)*. 2003;28:1195-1202.
  13. Battie MC, Videman T, Gibbons LE, Fisher LD, Manninen H, Gill K. Volvo Award in clinical sciences. Determinants of lumbar disc degeneration: a study relating lifetime exposures and magnetic resonance imaging findings in identical twins. *Spine (Phila Pa 1976)*. 1995;20:2601-2612.
  14. Nuwayhid IA, Stewart W, Johnson JV. Work activities and the onset of first-time low back pain among New York City fire fighters. *Am J Epidemiol*. 1993;137:539-548.
  15. Hoogendoorn WE, Van Poppel MN, Bongers PM, Koes BW, Bouter LM. Systematic review of psychosocial factors at work and private life as risk factors for back pain. *Spine (Phila Pa 1976)*. 2000;25:2114-2125.
  16. Papageorgiou AC, Croft PR, Ferry S, Jayson MI, Silman AJ. Estimating the prevalence of low back pain in the general population: evidence from the South Manchester Back Pain Survey. *Spine (Phila Pa 1976)*. 1995;20:1889-1894.
  17. Hart LG, Deyo RA, Cherkin DC. Physician office visits for low back pain: frequency, clinical evaluation and treatment patterns from a U.S. national survey. *Spine (Phila Pa 1976)*. 1995;20:11-19.
  18. Hoy D, Toole MJ, Morgan D, Morgan C. Low back pain in rural Tibet. *Lancet*. 2003;361:225-226.
  19. Jin K, Sorock GS, Courtney TK. Prevalence of low back pain in three occupational groups in Shanghai, People's Republic of China. *J Safety Res*. 2004;35:23-28.
  20. Aggarwal N, Anand T, Kishore J, Ingle GK. Low back pain and associated risk factors among undergraduate students of a medical college in Delhi. *Educ Health*. 2013;26:103-8.
  21. Kopec JA, Sayre EC, Esdaile JM. Predictors of back pain in a general population cohort. *Spine (Phila Pa 1976)*. 2004;29:70-77.
  22. Smith BH, Elliott AM, Hannaford PC, Chambers WA, Smith WC. Factors related to the onset and persistence of chronic back pain in the community: results from a general population follow-up study. *Spine (Phila Pa 1976)*. 2004;29:1032-1040.
  23. Ganesan S, Acharya AS, Chauhan R, Acharya S. Prevalence and risk factors for Low back pain in 1355 young adults: a cross sectional study. *Asian Spine J*. 2017 Aug;11(4):610-617.
  24. Kennedy C, Kassab O, Gilkey D, Linnel S, Morris D. Psychosocial factors and low back pain among college students. *J Am Coll Health*. 2008;57:191-5.
  25. Shiri R, Karppinen J, Leino-Arjas P, Solovieva S, Viikari-Juntura E. The association between smoking and low back pain: a meta-analysis. *Am J Med*. 2010;123:87.
  26. Rubin DI. Epidemiology and risk factors for spine pain. *Neurol Clin*. 2007;25(2):353-71.
  27. Palacios-Ceña D, *et al*. Prevalence of neck and low back pain in community-dwelling

- adults in Spain: an updated population-based national study (2009/10-2011/12). *Eur Spine J.* 2015;24(3):482-92.
28. Moez Triki, Abdessalem Koubaa, Liwa Masmoudi, Nicole Fellmann, Zouhair Tabka. Prevalence and risk factors of low back pain among undergraduate students of a sports and physical education institute in Tunisia, *Libyan Journal of Medicine.* 2015;10:1-6.
  29. Skoffler B, Foldspang A. Physical activity and low-back pain in schoolchildren. *Eur Spine J.* 2008;17:373-9.
  30. Alnaami I, *et al.* Prevalence and factors associated with low back pain among health care workers in southwestern Saudi Arabia. *BMC Musculoskelet Disord.* 2019;20(1):1-7.
  31. Shieh SH, *et al.* Increased low back pain risk in nurses with high workload for patient care: a questionnaire survey. *Taiwanese J Obstet Gynecol.* 2016;55(4):525-9.
  32. Terzi H, Terzi R, Altýnbilek T. Pregnancy-related lumbopelvic pain in early postpartum period and risk factors. *Int. J Res Med Sci.* 2015;3(7):1617-21.
  33. Atkinson JH, Slater MA, Grant I, Patterson TL, Garfin SR. Depressed mood in chronic low back pain: relationship with stressful life events. *Pain.* 1988;35:47-55.
  34. Matsui H, Maeda A, Tsuji H, Naruse Y. Risk indicators of low back pain among workers in Japan: association of familial and physical factors with low back pain. *Spine (Phila Pa 1976).* 1997;22:1242-1247.
  35. Meucci RD, Fassa AG, Faria NMX. Prevalence of chronic low back pain: systematic review. *J Public Health.* 2015;49:1.