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Prevalence of low back pain among cotton farmers in Vidharbha region, Maharashtra

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Abstract
Objective
- To find the prevalence of low back pain in cotton farmers in Vidharbha.
- To find the prevalence of low back pain in male cotton farmer in Vidharbha.
- To find the prevalence of low back pain in female cotton farmer in Vidharbha.
- To find the prevalence of low back pain with respect to Age, BMI and Working Hours in cotton farmer in Vidharbha

Study design: cross section study
Methods: The procedure had began by presentation of synopsis to the ethical committee at PES MCOP
1. Data screening started once ethical approval is obtained
2. Various cotton farms will be visited in the Vidarbha region
3. The sample were selected based on the inclusion and exclusion criteria
4. A consent was oobtained on the farmers who wished to participate in the survey
5. Sample were assessed using standardised Nordic low back pain questionnaire.
6. If patient complaint of moderate to severe pain on vas scale ergonomic was taught and hot fermentation as home advice.
7. The data was collected and divided according to the age 18-35yrs and 36-50yrs
8. The data was grouped and the data analysis done

Results: Total number of subject were 130, out of which 105 i.e., 81% reported vas score of more than 5 with a mean of 7.13 and Std. Dev of 1.23 and reported vas score below 5 were 25 i.e., 19% with mean of 0.68 and Std. Dev 1.25.
- Out of 105 subject males were 39 i.e., 37% and females are 66 i.e., 63%
- Mean vas score of subjects indicated a value of 6.83 & 7.44 for age groups 18-35 and 36-50 with Std. Dev of 1.27 & 1.12 respectively the one tail p vale is <0.0001 considered extremely significant
- Mean vas score of subjects indicated a value of 6.72, 7.11, 7.84, 8.00 for BMI categories below 18.5, 18.5-24.9, 25.0-29.9 and above 30.0 with the Std. Dev 1.33, 1.22, 0.67, 0.00 respectively. the one tail p value is <0.0001 considered extremely significant.
- Mean vas score of subjects indicated a value of 6.38, 8.00 for two different working hours 35 & 42 with the Std. Dev 1.04, 1.19 respectively. the one tail p value is <0.0001 considered extremely significant.

Conclusion: The study concluded that prevalence of low back pain is high among cotton farmers of Vidarbha with higher prevalence in females compared with males.

Keywords: prevalence, low back pain, cotton, farmers

Introduction
1. Cotton is an important commercial crop for India entire cotton in India is manually picked [1].
2. Maharashtra is the largest producer and produces 29.78% of the total cotton production of India [2].
3. Over 80% of the production comes from Khandesh, Vidarbha, and Marathwada region.
4. Vidharbha is a home for approx. 3.4 million cotton farmers.
5. In Vidharbha (basically a low rainfall area), the major crop is cotton, jowar (barley) and pulses. people rely more on dry farming.
6. In developing countries 67% (n=574) of women reported chronic Musculoskeletal pain [3].
7. The prevalence of chronic pain lasting more than 3 months ranges from 42.8%-48.3% [3].
8. Carrying heavy load working with hand above the shoulder height and frequently squatting and kneeling were associated with low back pain.

9. The highest occurrence. Rate for MSDS was observed in the lower back (71.4%), followed by fingers (62.1%), shoulder (56,4%), hand/wrist (55%).
10. Factors such as age, gender, daily working hours, hand dominance, and work experience were found to be associated with musculoskeletal disorders [3].

Need of study

11. Musculoskeletal pain is significantly higher in farmer [4]
12. Cotton is an important commercial crop for India.
13. Entire cotton in India is manually picked.
14. Manual picking is not only labour intensive operation but it involves a lot of human drudgery.
15. Working with the trunk frequently flexed, carrying heavy load, working with hand above the shoulder height and frequently squatting and kneeling were associated with low back pain.
16. Little research has been done on prevalence of low back in cotton farmers.
17. No study has been done on prevalence of low back pain in farmer in Vidarbha region Maharashtra.
18. The purpose of this study is to highlight the prevalence of back pain in cotton farmers.

Aim

- To study the prevalence of low back pain among cotton farmer in Vidarbha region, Maharashtra

Objective

- To find the prevalence of low back pain in cotton farmers in Vidharbha.
- To find the prevalence of low back pain in male cotton farmer in Vidharbha.
- To find the prevalence of low back pain in female cotton farmer in Vidharbha.
- To find the prevalence of low back pain with respect to Age, BMI and Working Hours in cotton farmer in Vidharbha

Reliability: 0.94

Methodology

1. Sample size- 130
2. Study design- cross section study
3. Sampling method-purposive sampling
4. Study population- cotton farmer male and female
5. Study setting - Vidarbha region, Maharashtra
6. Study duration- 6 months

Inclusion Criteria

1. Age 18 to 50 years
2. Working hour minimum 30 hours / week
3. Vas 5mm or more than 5mm
4. Pain more than 30 days (sub-acute pain)

Exclusion Criteria

1. Low back pain caused by recent trauma or accident
2. Excluded from the present study were those who were no longer active in farming.
3. Those had other health conditions that may interfere with the present study results (such as renal failure, symptomatic heart disease, spinal injuries or surgery).
4. Those who were involved in other occupations that may predispose to LBP (such as masons or automobile mechanics)

Materials

Pen, Standardised Nordic low back questionnaire, Visual analogue scale, Data assessment proforma, Weighing machine, Height meter scale

Outcome measures

- Standardise Nordic low back pain questionnaire
- Visual analogue scale for pain
- Validity:0.62-0.91

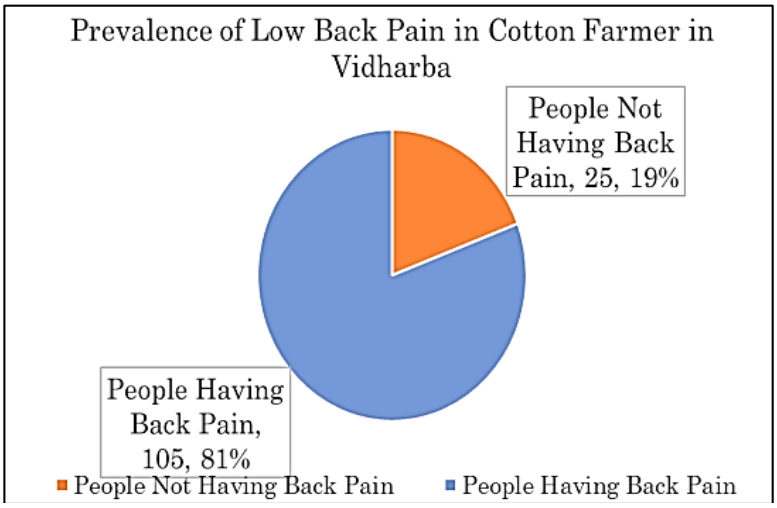

Fig 1: prevalence of low back pain cotton farmer in Vidharbha

Table 1: low back pain prevalence in farmers

Total No. of Samples	People Not Having Back Pain	People Having Back Pain
130	25	105

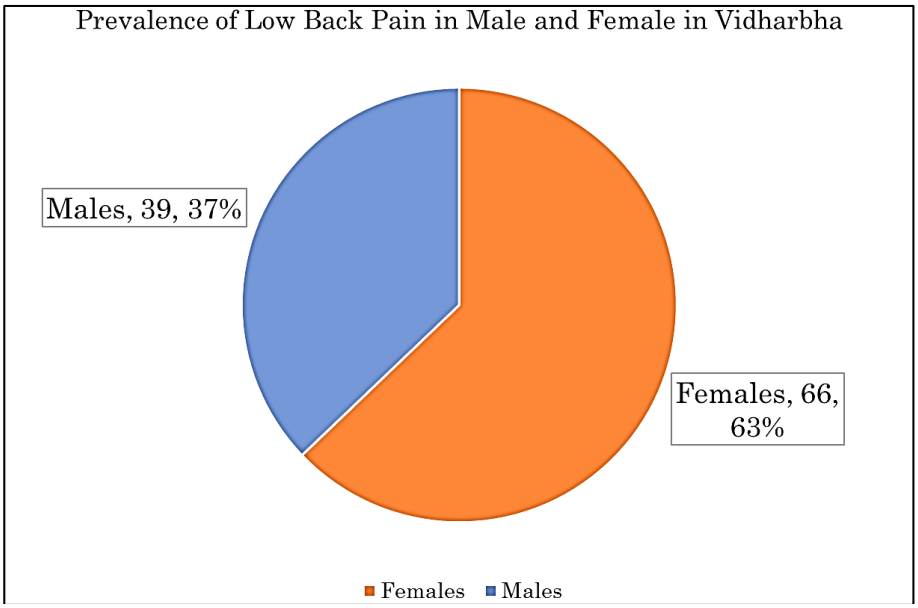

Fig 2: Prevalence of low back pain in female and male farmers

Table 2: low back prevalence in male and female

Total No. Of People Having Back Pain	Females	Males
105	66	39

Table 3: Prevalence of low back pain in age wise distribution

Age Group	Mean Age	Mean VAS	STD Dev Age	STD Dev VAS	P Value
18-35 (Age)	28.15	6.83	4.06	1.27	P < 0.0001 (S)
36-50 (Age)	43.52	7.44	4.17	1.12	

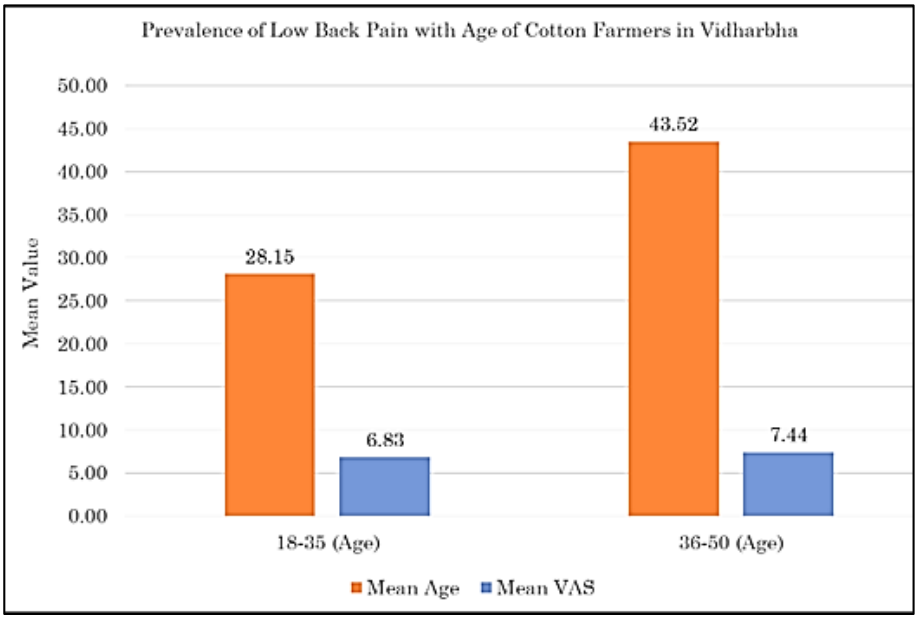

Fig 3: prevalence of low back pain in age wise distribution

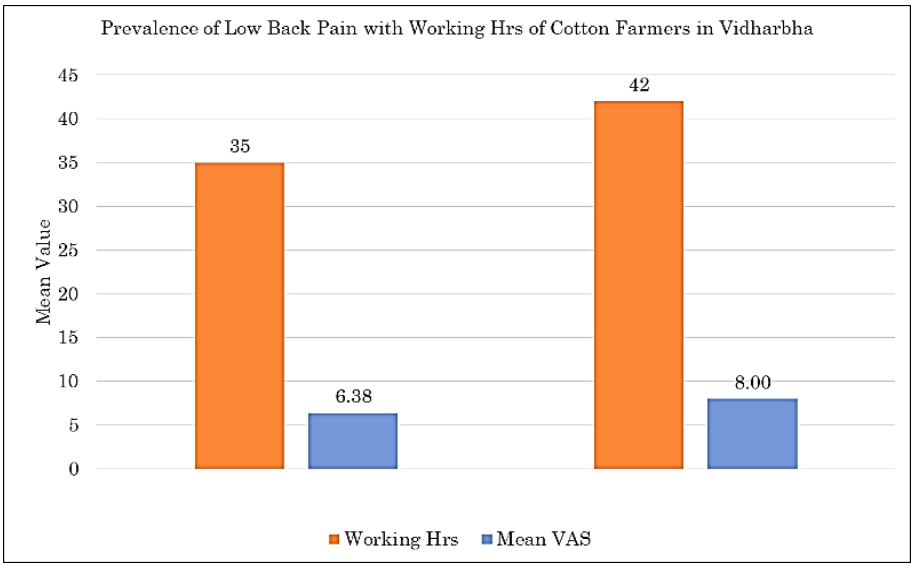

Fig 4: Prevalence of low back pain working hours distribution

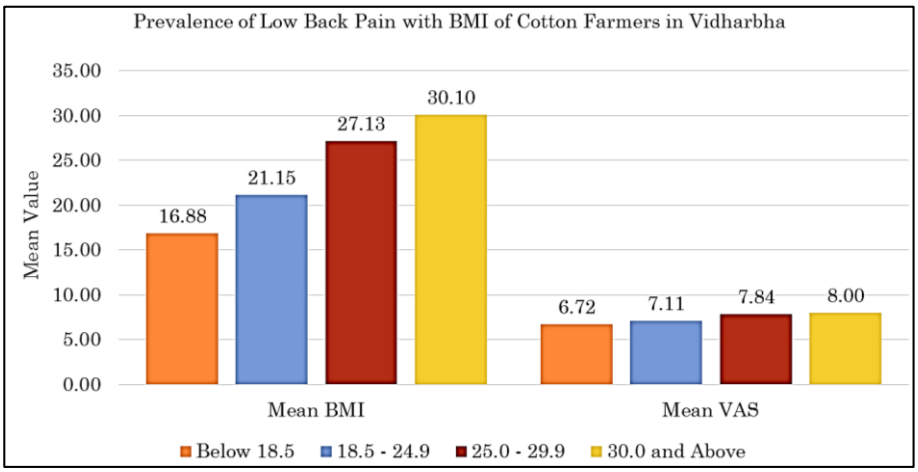

Fig 5: Prevalence of low back pain with BMI

Table 4: Pain wise distribution low back pain

Working Hrs	Mean VAS	STD Dev of VAS	P Value
35	6.38	1.04	P < 0.0001 (S)
42	8.00	1.19	

Results

Total number of subject were 130, out of which 105 i.e., 81% reported vas score of more than 5 with a mean of 7.13 and Std. Dev of 1.23 and reported vas score below 5 were 25 i.e., 19% with mean of 0.68 and Std. Dev 1.25.

- Out of 105 subject males were 39 i.e., 37% and females are 66 i.e., 63%
- Mean vas score of subjects indicated a value of 6.83 & 7.44 for age groups 18-35 and 36-50 with Std. Dev of 1.27 & 1.12 respectively the one tail p vale is <0.0001 considered extremely significant
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- Mean vas score of subjects indicated a value of 6.38, 8.00 for two different working hours 35 & 42 with the Std. Dev 1.04, 1.19 respectively. The one tail p value is <0.0001 considered extremely significant.

Discussion

- This study demonstrated the point prevalence of low back pain and associated factors among cotton farmers.
- The results of the current study showed a very high prevalence of 81% of low back pain in cotton farmers.
- Cotton farming activities in Vidarbha region require considerable physical effort which may predispose to LBP.

The high prevalence of LBP among farmers is most likely the result of injury to the spinal structures, which may arise from working postures and movements of the lower back during the work process.

The study from India analyzed farming postures and showed that the farmers were working with forward lumbar bending and twisting and were carrying weights of 10 kg or less and that these postures seemed to generate their LBP [5].

A number of other authors have reported that these working postures are associated with LBP. the postures in the cotton picking process are awkward, constrained, asymmetric,

repeated, and prolonged. These postures can generate load on the lumbar region, which can overload tissues and exceed their thresholds of tolerable stress, causing injury due to overexertion or imbalance [6].

The maintenance of static postures for prolonged periods of time compresses the veins and capillaries inside the muscles, causing micro lesions due to the absence of tissue oxygenation and nutrition. some cotton farming tasks cannot be easily separated from the transplanting process. All of these factors can contribute to imbalance, fatigue, discomfort, and pain due to disruption of tissues [7].

Low back pain was more prevalent in the 36-50 years age group (mean-43.52) the association of age with LBP was statistically significant (p <0.0001). Increasing prevalence of LBP with age appears more plausible, considering the prevalence of osteoarthritis, disc degeneration, osteoporosis and spinal stenosis in older populations, all of which may cause LBP.

It has also been postulated that once back pain occurs it is likely to be ongoing, so increasing prevalence with age is not surprising. The high LBP prevalence in the 36-50 years age group could be because this group forms the bulk of the work force, greater efforts should be made to address LBP in this group to avoid disability.

There was also a significant association between gender and LBP (p=0.0001) with the prevalence higher among females (63%). Women are biologically predisposed to LBP due to risk factors such as pregnancy, young maternal age at first birth, duration of oral contraceptive use and use of estrogens during menopause, all of which result in hormonal changes responsible for a global laxity in the muscles and ligaments of the back, compromising the stability of the spine.

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In this study, the interaction between BMI and low back pain was significant and the prevalence of LBP increased with increase in BMI.

There are several possible explanations for the association between excess weight and LBP. obesity could increase the mechanical load on the spine by causing a higher compression or tear on the lumbar spine structures. obese people may also be more prone to injuries.

This study be of great concern because many LBP cotton farmers probably have poor knowledge on self-care and work modification, and could consequently risk further disability.

The results suggested that preventive measures for LBP should be encouraged among health care professionals

Conclusion

The study concluded that prevalence of low back pain is high among cotton farmers of Vidarbha with higher prevalence in females compared with males.

36-50 years age group were more likely to experience LPB than those in age group 18-35 years.

The prevalence of LBP pain increased with increase in BMI and working hours.

LBP was found to be a cause of work absenteeism in the farming population

Limitations

The sample size of the present study was limited in the Vidarbha region.

Acute and chronic cases were not considered which could probably reflect poor health access within the present study population.

Finally information bias was an important limitation to the study results.

Future scope

Future study should expand the sample size to represent the entire cotton farming population in Maharashtra.

Further risk factor analysis could be included in future research.

Fig 6: Consent form distribution female

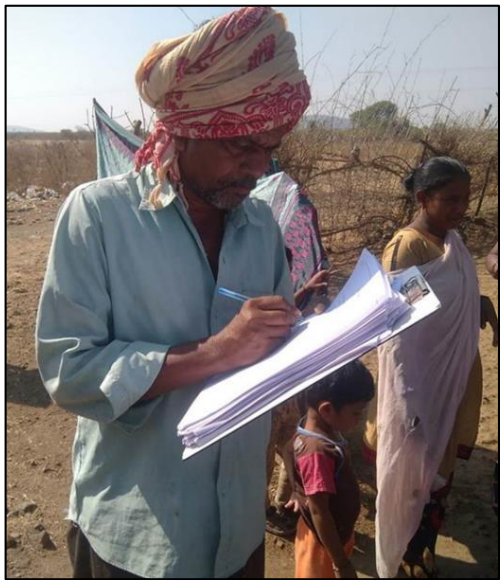

Fig 7: Consent form distribution male

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