

Pain perception and Coping Strategies Among Agricultural Farmers with Low Back Pain in Mizoram: A Community- Based Cross- Sectional Study.

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Abstract:

Background: Low back pain (LBP) is a leading cause of disability worldwide and is particularly prevalent among agricultural workers due to repetitive physical strain and prolonged manual labor. In rural and tribal communities, pain perception and coping behaviors are often influenced by cultural, religious, and socioeconomic factors.

Objective: To assess pain perception, coping strategies, and psychosocial dimensions related to low back pain among agricultural farmers in Mizoram.

Methods: A community-based cross-sectional study was conducted among 1,012 agricultural farmers aged 40–55 years using convenience sampling. After obtaining informed consent and permission from local leaders, participants completed a structured questionnaire that included both closed- and open-ended items. Quantitative data were analyzed using SPSS version 22. Open-ended responses were analyzed using descriptive thematic coding to identify recurring coping patterns and perceptions.

Result: The prevalence of self-reported LBP was 68.4% (n = 692). Self-medication was the most common coping strategy (43.9%), primarily due to affordability and easy accessibility of over-the-counter analgesics. Approximately 30.2% coped by enduring pain and resting without seeking formal treatment, while 15.3% sought care from local healers. Only 11.9% consulted medically trained professionals. Nearly half (49.3%) reported work-related stress, although job satisfaction was high (88.5%). Pain frequently interfered with work ability in 55.5% of participants.

Conclusion: Low back pain is highly prevalent among agricultural farmers in Mizoram and significantly impacts work capacity. Coping strategies are largely informal and culturally influenced, with limited use of formal healthcare services. Culturally sensitive, community-based interventions are needed to promote appropriate pain management and improve musculoskeletal health in rural farming populations

Keywords: Low back pain; Agricultural workers; Pain perception; Coping strategies; Rural health; Occupational stress, Work-related stress, Traditional healing, Self-medication.



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INTRODUCTION

Pain is a multidimensional experience resulting from interactions between peripheral nociception and central processing. Early theories such as the Specificity Theory proposed that pain is transmitted through dedicated neural pathways (1,2), while the Pattern Theory

emphasized the role of stimulus intensity and neural summation (3). A major advancement was the Gate Control Theory, which described spinal modulation of pain influenced by cognitive and emotional factors (4). The Neuromatrix Theory further proposed that pain is generated by distributed brain networks integrating

sensory, affective, and cognitive inputs, explaining chronic pain without clear tissue pathology (5). These perspectives support the Biopsychosocial Model, which recognizes biological, psychological, and social determinants of pain (6), and the Fear-Avoidance Model, which explains the progression from acute to chronic musculoskeletal pain through maladaptive beliefs and avoidance behaviors (7).

Cultural context significantly shapes pain perception, reporting, and coping strategies (8,9). In India, low back pain (LBP) is a leading cause of disability, with substantial occupational contribution (10). Agricultural workers are particularly vulnerable due to repetitive bending, load carrying, and prolonged postures (11). Sociocultural beliefs regarding endurance, work obligation, and healthcare access may further influence pain experiences in rural populations such as those in Mizoram. Understanding these multidimensional and cultural determinants is essential for evaluating LBP among agricultural communities.

Coping strategies for pain are strongly influenced by cultural beliefs, social norms, and shared community expectations. Culture shapes how individuals interpret pain, whether they express it openly or suppress it, and the type of help they seek (12, 13). In many collectivist and rural societies, pain endurance is often viewed as a sign of strength, resilience, and responsibility, particularly among manual laborers whose livelihoods depend on sustained work participation (14). Such beliefs may encourage persistence despite pain but can also delay healthcare utilization and contribute to chronicity. Cultural norms further influence coping behaviors, including reliance on family support, spiritual practices, traditional remedies, or community healers (12,15). Emotional coping responses such as acceptance, normalization of symptoms, or catastrophizing may be reinforced through shared cultural narratives about illness and suffering (16). Among agricultural workers, economic pressures, occupational demands, and limited access to formal healthcare services further shape coping responses and pain-related behaviors (17). Understanding culturally embedded coping strategies is therefore essential for interpreting symptom reporting, treatment adherence, and rehabilitation outcomes in chronic musculoskeletal conditions such as low back pain.

Pain is not solely a sensory experience but is profoundly shaped by psychological and social factors. Emotional states such as anxiety, depression, and stress can amplify pain perception through central modulation mechanisms, influencing both intensity and chronicity (18, 19). Cognitive processes—including catastrophizing, fear of movement, and maladaptive beliefs—are strongly associated with increased disability and poor recovery in musculoskeletal conditions (20). The Fear-Avoidance Model explains how negative appraisal of pain may lead to avoidance behaviors, physical deconditioning, and persistence of symptoms (21). Social determinants such as family responses, occupational demands, socioeconomic status, and cultural norms further influence pain expression,

coping strategies, and healthcare-seeking behavior (22, 23). Supportive social environments may buffer distress and improve functional outcomes, whereas social reinforcement of illness behavior may contribute to prolonged disability. In chronic conditions such as low back pain, these psychological and social dimensions interact dynamically with biological factors, reinforcing the biopsychosocial understanding of pain and underscoring the need for multidisciplinary assessment and management approaches.

Despite the high prevalence of musculoskeletal pain among agricultural workers, most existing research has focused on quantitative prevalence estimates and ergonomic risk factors. Limited qualitative evidence explores how farmers perceive, interpret, and cope with pain within their sociocultural and occupational contexts. Understanding lived experiences, beliefs about endurance, and work-related obligations is essential, as these factors may influence pain reporting and healthcare utilization. The scarcity of qualitative studies in farming populations restricts comprehensive understanding of pain experiences and limits the development of culturally appropriate interventions

AIM: to explore pain perception and coping patterns among agricultural farmers in Mizoram.

OBJECTIVES

Primary Objective

To assess pain perception and coping strategies related to low back pain among agricultural farmers aged 40–55 years in Mizoram.

Secondary Objectives

1. To explore cultural, religious, and traditional influences on pain coping behaviors.
2. To examine the association between low back pain and work-related stress.
3. To assess the impact of low back pain on work ability and daily occupational functioning.
4. To evaluate healthcare-seeking patterns, including self-medication, traditional healing, and formal medical consultation.
5. To assess job satisfaction among agricultural farmers and its relationship with pain experience.

METHODOLOGY

This community-based analytical cross-sectional study was conducted among agricultural farmers in Mizoram, India, to assess pain perception and coping strategies and to examine their association with the presence of low back pain.

Agricultural farmers aged 40–55 years who were actively engaged in farming activities were included in the study. Participants were recruited from selected rural communities using convenience sampling. Farmers who were unwilling to participate or unable to complete the questionnaire were excluded.

The sample size was calculated using the formula for estimation of proportion in a cross-sectional study:

$$n = \frac{Z^2 P(1-P)}{d^2}$$

Assuming a 95% confidence level ($Z = 1.96$), expected prevalence of low back pain of 50% (due to limited regional data), and a precision of 5%, the minimum required sample size was calculated. To improve statistical power and account for non-response, a total of 860 participants were included in the study.

Ethical approval was obtained from the Human Ethics Committee from Mizoram University. Permission to conduct the study was obtained from respective local community leaders prior to data collection. The purpose and procedures of the study were explained to all participants in their local language. Written informed consent was obtained from each participant before administration of the questionnaire. Confidentiality and anonymity were strictly maintained throughout the study.

Data were collected using a structured questionnaire comprising sections on sociodemographic characteristics, occupational details, presence of low back pain, pain perception, and coping strategies. Participants were asked whether they had experienced low back pain, and responses were recorded for analytical comparison. All data were collected during a single interaction. Pain perception responses that involved descriptive or open-ended components were analyzed using thematic coding. Responses were reviewed, coded, and grouped into emerging themes to identify recurring patterns related to pain beliefs, emotional responses, and coping behaviors. Quantitative data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 22. Descriptive statistics were used to summarize participant characteristics. Associations between low back pain status and coping variables were assessed using appropriate statistical tests. A p -value <0.05 was considered statistically significant.

RESULT

This qualitative study using thematic coding examined pain perception, coping strategies, and psychosocial dimensions among 1,012 agricultural farmers in Mizoram. Among the participants, 68.4% ($n = 692$) reported experiencing low back pain (LBP), while 31.6% ($n = 320$) did not report LBP. The high proportion of LBP underscores the substantial musculoskeletal burden associated with physically demanding agricultural labor.

Thematic analysis revealed that self-medication was the most common coping strategy, reported by 43.9% of participants. Over-the-counter analgesics were frequently used based on advice from co-workers,

friends, or family members. Ease of availability, low cost, and rapid symptomatic relief were the primary reasons for this practice. Several participants indicated that medication use was combined with rest to enhance recovery. Reflecting the strong religious orientation of the Mizo community, some respondents described pain relief as being mediated through faith, viewing medication as a channel of divine intervention.

Approximately 30.2% of participants reported coping by enduring pain and resting when symptoms intensified. Many expressed high pain tolerance and perceived pain as an expected component of agricultural work. This normalization of discomfort led to delayed help-seeking behavior, particularly when pain was considered “not severe.” While this reflects psychological resilience, it may also indicate limited awareness regarding the long-term consequences of untreated musculoskeletal conditions.

Traditional and faith-based healing practices also emerged as significant themes. About 15.3% sought care from local healers, including spiritual healers, practitioners of folk remedies, and traditional massage therapists, who are culturally respected within rural Mizo society. Prayer and faith were frequently cited as important coping mechanisms, particularly during episodes of severe pain. Formal medical consultation was comparatively low, with only 11.9% reporting seeking care from trained healthcare professionals. Barriers included financial cost, limited accessibility in rural areas, and the time required to obtain medical appointments.

Regarding psychosocial factors, 49.3% ($n = 499$) of participants reported experiencing work-related stress, while 50.7% ($n = 513$) reported no significant occupational stress. Despite the high prevalence of LBP, job satisfaction was notably high, with 88.5% ($n = 896$) expressing satisfaction with their occupation and only 11.5% ($n = 116$) reporting dissatisfaction. However, pain significantly affected functional capacity, as 55.5% ($n = 562$) reported that pain often interfered with their ability to work, whereas 44.5% ($n = 450$) stated that pain did not prevent them from working. Overall, the findings suggest that pain perception and coping among agricultural farmers in Mizoram are shaped by occupational demands, cultural beliefs, economic considerations, and strong religious influences. Although job satisfaction remains high, a substantial proportion of farmers experience functional limitations and rely predominantly on informal coping mechanisms rather than professional healthcare services.

Table 1: Psychological status of job-related and stress of the participant

Exposure		Frequency	Percentage
Stress due to work	No	513	50.7
	Yes	499	49.3
Job satisfaction	No	116	11.5
	Yes	896	88.5
Inability to work due to pain	Often	562	55.5
	Not at all	450	44.5

Table 2: Theme extracted for coping of pain

	Theme extracted	No of participants	Percentage
Coping with pain	Medical treatment	83	11.9
	bearing pain and rest	209	30.2
	self-medicated	304	43.9
	Seek local healer and devoted to God	106	15.3

DISCUSSION

This study identified a high prevalence of self-reported low back pain (LBP) (68.4%) among agricultural farmers in Mizoram, underscoring the significant musculoskeletal burden associated with manual farming activities. Globally, LBP remains one of the leading causes of disability and years lived with disability, particularly among populations engaged in physically demanding occupations such as agriculture (24, 25). Repetitive bending, sustained awkward postures, heavy lifting, and prolonged field work have consistently been linked with increased LBP risk (26, 27). Similar findings have been reported in rural Indian populations, where agricultural laborers demonstrate elevated rates of musculoskeletal disorders due to ergonomic strain and limited preventive awareness (28).

Self-medication emerged as the most common coping strategy (43.9%). This aligns with existing evidence suggesting that individuals in low-resource settings frequently rely on over-the-counter analgesics due to affordability, accessibility, and rapid symptomatic relief (29). However, excessive or unsupervised analgesic use carries risks including masking of chronic pathology and potential medication-related complications (30). The intertwining of pharmacological coping with religious beliefs observed in this study reflects the broader biopsychosocial model of pain, which recognizes spiritual and cultural dimensions as influential in pain perception and management (31).

A substantial proportion of participants (30.2%) coped by enduring pain and relying on rest, often normalizing discomfort as an inevitable part of farm work. Such endurance-based coping strategies have been documented in occupational groups where pain is perceived as a routine occupational hazard (32). While resilience may sustain work participation, delayed care-seeking is associated with chronicity and long-term disability (33). Additionally, 15.3% of participants sought care from traditional or local healers, reflecting culturally embedded health-seeking behaviors. In many rural Indian and tribal communities, traditional practitioners remain trusted and socially accessible sources of care (34).

Although 49.3% reported work-related stress, job satisfaction was high (88.5%), suggesting that agricultural work remains closely linked to identity and livelihood stability. Nevertheless, 55.5% reported that pain often interfered with their ability to work, indicating significant functional impact. Chronic LBP is known to reduce productivity and contribute to presenteeism in physically demanding occupations (35). Despite this, only 11.9% sought formal medical consultation, likely due to financial constraints, limited healthcare access, and time barriers—factors commonly

reported in rural healthcare utilization studies in India (36).

Overall, the findings reinforce that pain perception and coping among farmers in Mizoram are shaped by occupational exposure, cultural norms, religious beliefs, and healthcare accessibility. Addressing LBP in such settings requires culturally sensitive, community-based interventions that integrate ergonomic education, early screening, and awareness regarding appropriate pain management strategies.

STRENGTH

This study has several notable strengths. It included a large sample size (n = 1,012), enhancing the reliability of findings. The mixed-method approach, incorporating both quantitative analysis and qualitative thematic coding, provided comprehensive insight into pain perception and coping behaviors. The study specifically focused on an under-researched rural and tribal farming population in Mizoram, contributing valuable regional data. Additionally, the inclusion of psychosocial factors such as work-related stress, job satisfaction, and functional impact offers a holistic understanding of low back pain within a cultural and occupational context.

LIMITATIONS

This study has certain limitations. The cross-sectional design precludes causal inference. Convenience sampling limits generalizability to all farmers in Mizoram. Data were self-reported and may be subject to recall and reporting bias. Low back pain was not clinically verified, which may have resulted in misclassification. Additionally, the qualitative findings were based on brief open-ended responses rather than in-depth interviews, limiting the depth of contextual understanding.

FUTURE RESEARCH

Future studies should use longitudinal and randomly sampled designs to better understand causal relationships and improve generalizability. Clinical assessments and ergonomic evaluations are recommended for objective measurement of low back pain. In-depth qualitative research could further explore cultural and religious influences on coping. Interventional studies focusing on ergonomic education and community-based pain management programs are needed to reduce the burden of low back pain among rural farmers.

CONCLUSION

Low back pain is highly prevalent among agricultural farmers in Mizoram and significantly affects work

capacity despite high levels of job satisfaction. Coping strategies are predominantly informal, with widespread reliance on self-medication, endurance-based approaches, and traditional healing practices, while formal healthcare utilization remains low. These behaviors are strongly influenced by cultural beliefs, economic factors, and limited healthcare access. Targeted public health interventions focusing on musculoskeletal education, safe analgesic use, ergonomic awareness, and culturally appropriate healthcare integration are essential to reduce the long-term burden of LBP in rural farming communities.

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