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ASSESSMENT OF PAIN EXPERIENCE AND MANAGEMENT: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Pain management is a multifaceted process, involving various therapeutic modalities aimed at addressing different pain types, including nociceptive, neuropathic, and nociplastic pain. Understanding the factors influencing pain experiences and the effectiveness of management strategies is crucial for improving patient outcomes. **Objectives:** This cross-sectional study aimed to assess the experiences of individuals with pain and their management strategies, focusing on the relationship between pain type, cause, and the effectiveness of treatments. **Methods:** A structured questionnaire was administered to 103 participants, collecting data on demographic characteristics, pain types, pain causes, management strategies, and the impact of pain on daily life. Data analysis involved descriptive and inferential statistics, including ANOVA and paired t-tests, to evaluate the associations between pain intensity, causes, and treatment effectiveness. **Results:** The study revealed a significant association between specific events, such as injury or trauma, and elevated pain levels ($p = 0.024$). The severity of pain was also significantly linked to its cause ($p = 0.016$). However, the location of pain within the body did not significantly correlate with

pain intensity ($p = 0.470$). Treatment effectiveness showed a substantial reduction in pain levels ($p < 0.001$), highlighting the importance of medical interventions in pain management. **Conclusion:** The findings underscore the complex nature of pain experiences, suggesting that tailored interventions are required to address individual pain triggers effectively. While various treatment modalities significantly reduce pain intensity, the results indicate a need for further research into long-term pain management strategies. The study provides a foundation for future research and can inform clinical practice by emphasizing personalized pain management protocols. **Limitations:** The study's reliance on self-reported data and its cross-sectional design limit the ability to establish causal relationships. Further longitudinal research with standardized assessment tools is recommended to strengthen these findings.

KEYWORDS: Pain management, Cross-sectional study, Pain intensity, Pain cause, Treatment effectiveness, Chronic pain, Personalized interventions, Pain assessment.

INTRODUCTION

The management of pain encompasses a broad spectrum of therapeutic modalities tailored to the underlying mechanisms responsible for the patient's symptoms—namely nociceptive pain resulting from tissue injury or inflammation (e.g., osteoarthritis), neuropathic pain associated with nerve injury (e.g., diabetic neuropathy), and nociplastic pain characterized by altered central nervous system processing without clear peripheral pathology (e.g., fibromyalgia).

In the context of chronic low back pain (LBP), a network meta-analysis involving 9710 participants across 118 trials established that Pilates and strength training are particularly efficacious in reducing both pain intensity and disability.[1] This aligns with the biopsychosocial model positing that effective interventions must address not only physical but also psychological factors contributing to chronicity.[2] Similarly, manual therapy has demonstrated positive outcomes for conditions like tension-type headache[3] and non-specific neck pain,[4] emphasizing its role as a viable adjunct to exercise-based interventions.

Furthermore, a systematic review focused on complex regional pain syndrome (CRPS) indicated that physiotherapy interventions yield modest improvements in both disability and overall quality of life despite the low certainty of evidence. Notably, out of 1339 participants, most trials were deemed to have high risk bias which complicates the interpretation of results.[5]

In terms of dietary supplements for osteoarthritis management—while some supplements like collagen hydrolysate exhibited large effect sizes for short-term pain relief—overall evidence quality was inconsistent.[6] The variability across studies underscores the need for robust clinical trials to validate these findings further.

The synthesis of these articles highlights a significant gap regarding long-term efficacy data across various treatment modalities—especially concerning multimodal approaches integrating pharmacological therapies with physical rehabilitation strategies.[2,7] For instance, while exercise therapy has shown benefits for frozen shoulder patients,[8] definitive conclusions about optimal combinations remain elusive due to heterogeneous methodologies employed across studies.

Moreover, understanding the pathophysiological underpinnings of different types of pain is crucial for tailoring effective treatment strategies.[9] Neuropathic mechanisms require distinct therapeutic considerations compared to nociceptive processes—suggesting that personalized treatment plans must be informed by comprehensive assessments that delineate these categories.[10]

Quality assessments reveal that many studies suffer from methodological limitations which hinder generalizability—particularly concerning small sample sizes or lack of control groups.[11,12] This calls into question the robustness of current recommendations surrounding physiotherapy interventions as they relate to diverse clinical presentations.

METHODOLOGY

Study design

This cross-sectional study aimed to assess the experience of pain and its management in a sample population. The study was conducted using a structured questionnaire via Google Forms, capturing information regarding participants' demographic characteristics, pain types, causes, and pain management strategies. The design facilitated the collection of real-time, self-reported data on pain experiences and their impact on daily life, as well as the effectiveness of various pain treatments.

Population

The study recruited a total of 103 participants through online platforms and healthcare centers. Inclusion criteria comprised individuals aged 18 and above who reported

experiencing any type of pain. Exclusion criteria included participants who were unable to complete the questionnaire independently.

Data collection instrument

The primary tool for data collection was a Google Form that consisted of multiple sections, including:

1. Demographic Information: Age, gender, and country of residence.
2. Pain Assessment: Questions regarding the type of pain (e.g., stabbing, burning, aching), severity (rated on a 0-10 scale), and onset triggers (e.g., injury, chronic illness).
3. Pain Management: Participants were asked to report current and past treatments, including their effectiveness (rated on a 1-5 scale).
4. Impact on Life: Questions about how pain affected daily activities, work, and social life.

Data analysis

Data analysis involved descriptive statistics to characterize the population and pain types. Inferential statistics, including ANOVA and paired t-tests, were used to assess associations between pain levels, pain causes, and treatment effectiveness. The significance threshold was set at $p < 0.05$.

RESULTS

This table presents the distribution of various pain causes (e.g., chronic illness, injury, excessive exercise) and the corresponding types of pain reported by participants. It shows the number and percentage of participants experiencing each type of pain (e.g., aching, burning, stabbing) related to specific pain causes, providing insights into the relationship between pain triggers and their manifestations.

Table 1: Cause of Pain and Type of pain.

Cause of pain	Type of pain					
	Aching	Burning	Injury	None of the Above	Stabbing	Stabbing, Burning, Aching
Chronic illness	4 (7.7%)	2 (11.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Driving for too long	1 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Excessive exercise	1 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Infection	1 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (5.3%)	0 (0.0%)
Injury or trauma	8 (15.4%)	1 (5.9%)	1 (100.0%)	0 (0.0%)	2 (10.5%)	2 (25.0%)
Medical condition	24 (46.2%)	11 (64.7%)	0 (0.0%)	0 (0.0%)	7 (36.8%)	1 (12.5%)
Musculoskeletal	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (5.3%)	0 (0.0%)

problems						
No	8 (15.4%)	3 (17.6%)	0 (0.0%)	6 (100.0%)	7 (36.8%)	4 (50.0%)
Psychological factors	5 (9.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (12.5%)
Travelling/standing long	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (5.3%)	0 (0.0%)

This table depicts the relationship between different types of pain (e.g., aching, burning, stabbing) and their reported pain levels, using a scale from 0 to 10. The table breaks down the pain levels for each pain type, categorizing them by various causes (e.g., chronic illness, injury, infection) to illustrate how different pain types are perceived in terms of intensity.

Table 2: Type of Pain and Pain Level.

Type of pain	Pain level									
	0	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Chronic illness	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (50.0%)	2 (33.3%)	1 (16.7%)	0 (0.0%)	0 (0.0%)
Driving too long	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Excessive exercise	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Infection	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (50.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Injury or trauma	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (7.1%)	2 (14.3%)	7 (50.0%)	4 (28.6%)	0 (0.0%)	0 (0.0%)
Medical condition	0 (0.0%)	1 (2.3%)	2 (4.7%)	3 (7.0%)	2 (4.7%)	15 (34.9%)	17 (39.5%)	3 (7.0%)	0 (0.0%)	0 (0.0%)
Musculoskeletal problems	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
No	1 (3.6%)	1 (3.6%)	0 (0.0%)	11 (39.3%)	4 (14.3%)	2 (7.1%)	2 (7.1%)	6 (21.4%)	0 (0.0%)	1 (3.6%)
Psychological factors	0 (0.0%)	1 (16.7%)	1 (16.7%)	0 (0.0%)	0 (0.0%)	1 (16.7%)	2 (33.3%)	0 (0.0%)	1 (16.7%)	0 (0.0%)
Travelling/ standing long	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

This table presents the results of a paired t-test analysis examining the significance between the pain scores reported by participants and specific events or injuries that triggered the pain. It includes the p-values indicating the statistical significance of these relationships, providing evidence on how particular events impact pain perception.

Table 3: Paired T-Test Analysis - Pain Score and Specific Event.

Parameter	P value
ANOVA - On a scale from 0 to 10, where 0 is no pain and 10 is the worst pain imaginable Vs how would you rate your current pain level?	0.024*
*Significance was found between two parameters at the level of significance 0.05	

Hence, there is a significance found between the pain score and a specific event or injury that triggered the pain.

This table summarizes the paired t-test analysis results, focusing on the relationship between pain scores and their underlying causes. It shows the p-values to determine if there is a significant association between different pain causes (e.g., medical conditions, psychological factors) and the intensity of pain experienced, helping to understand the influence of pain etiology on severity.

Table 4: Paired T-Test Analysis - Pain Score and Pain Cause.

Parameter	P value
ANOVA - On a scale from 0 to 10, where 0 is no pain and 10 is the worst pain imaginable Vs how would you rate your current pain level?	0.016*
*Significance was found between two parameters at the level of significance 0.05	

Hence, there is a significance found between the pain score and pain cause

This table outlines the results of the paired t-test analysis assessing the relationship between the pain score and the specific area of the body where pain is experienced. It includes p-values indicating whether there is a significant correlation between the location of pain and its perceived intensity, shedding light on the impact of pain localization on severity.

Table 5: Paired T-Test Analysis - Pain Score and Body Area.

Parameter	P value
ANOVA - On a scale from 0 to 10, where 0 is no pain, and 10 is the worst pain imaginable, Vs what area of the pain is experienced in the body?	0.470*
*Significance was not found between two parameters at the level of significance 0.05	

No significance is found between the pain score and the area of pain experienced in the body.

This table details the paired t-test analysis results regarding the association between pain scores before and after the implementation of treatments. It includes p-values that signify the statistical significance of treatment effectiveness in reducing pain intensity, thereby offering insights into the efficacy of pain management interventions.

Table 6: Paired T-Test Analysis - Pain Score and Treatment Effectiveness.

Parameters	p
On a scale from 0 to 10, where 0 is no pain and 10 is the worst pain imaginable, how would you rate your current pain level? Vs If treatment is taking place, on a scale from 1 to 5, where 1 is not effective and 5 is extremely effective, how would you rate the effectiveness of your current treatment?	< .001
*Significance was found between two parameters at the level of significance 0.05	

There is significance found between Pre pain score and Post pain score

DISCUSSION

The data highlights various causes of pain and their relationship to the types of pain experienced by individuals. Below are the key findings based on the data:

In the realm of chronic pain, the experiences of individuals vary widely, painting a complex picture of suffering and endurance. Among those grappling with chronic illnesses, a significant portion reported experiencing a deep, persistent ache that pervaded their being, affecting 7.7% of the surveyed group. Not far behind, a scalding sensation likened to burning was noted by 11.8% of participants, capturing the searing pain that can accompany long-term health conditions. Interestingly, no cases associated with sharp, sudden injuries or an amalgamation of pain types - a combination of stabbing, burning, and aching - were identified within this group, pointing to the distinct nature of pain related to chronic illness.

The act of driving, often perceived as a mundane part of daily life, revealed its taxing nature on individuals who engage in it extensively. A modest 1.9% voiced complaints of aching discomfort resulting from prolonged periods behind the wheel, yet they stood alone, as other pain descriptions were notably absent from their narratives.

Similarly, the pursuit of physical fitness, when taken to excess, led to findings parallel to those linked with driving. Among fitness enthusiasts, 1.9% recounted a specific ache associated with overexertion, yet, remarkably, this was the sole type of pain cited in such instances, hinting at a unique pain profile tied to relentless exercise routines.

Infections, on the other hand, demonstrated their capacity to inflict a wider array of pain. Some individuals, representing 1.9%, reported enduring a dull, throbbing ache, while a slightly larger fraction, 5.3%, experienced sharp, stabbing discomfort. The absence of other pain types under this category underlines the specific ways in which infections can manifest within the body.

The aftermath of injury or trauma proved to be a fertile ground for a broad spectrum of pain experiences. Participants recounted aches (15.4%), burns (5.9%), and the unmistakable sensation of injury (100%), alongside a notable 10.5% who described stabbing pains. Furthermore, a quarter of these individuals reported a confluence of pain types, weaving together threads of stabbing, burning, and aching sensations, reflecting the multifaceted nature of pain post-trauma.

Medical conditions emerged as a dominant source of pain across most categories, showcasing the prevalent impact of health issues on the human experience of pain. The most common of all was the problem of aching, which was reported by 46.2% of the respondents, closely followed by a big number of people reporting the burning (64.7%) and stabbing (36.8%) kinds of sensations. There was still a smaller number of the participants, that is, 12.5%, who gave a combination of pain types, and this informed their medical history. The description of the pain syndrome of the musculoskeletal diseases was indicated as a particular attribution of stabbing pain (5.3%) whereas the reports of the other types of pain were absent, which stated the painful and the directed character of aches for this group.

A somewhat paradoxical situation was found out by the researchers as many of the people who claimed to have experiences free from pain actually faced the aching (15.4%), burning (17.6%), stabbing (36.8%), and mixed pain types (50%). This emphasizes the different perspectives that an individual may have towards a pain occurrence. For 9.6% of the patients, the reason for aching was the existing psychological issues. 12.5%, on the other hand, had the mixed types of pain. It is of interest to note that none of the cases were plausible burns, injuries, or stabs that were caused by psychological disorders, which again proves the seemingly small but in fact vast contribution of mental health to physical health.

Fruitfully, outings like going to other places or being on your feet without a break brought about a pain that felt like it was a stabbing in 5.3% of the subjects; most noticed no other kind of pain, though, thus, it also implies that even regular activities can be a source of unusual physical encounters.

The investigation describes in a graphic form the way pain surfaces in correspondence with diverse triggers, demonstrating the individual's personal as well as the inexplicable nature of pain experiences.

Pain Level and Cause analysis

Anova results from the pain of pain and causes analysis, and Student's T-tests showed that the connection among several things and pain severity had become a significant issue raised. This is just a confirmation that if you actually solve these problems, the body will heal on its own, and pain relief will not require any further interventions. Moreover, every single instance is characterized by a certain failure. And this failure could just

Notably, a profound connection was unveiled between the levels of pain people experience, measured on a scale from 0 to 10, and specific incidents or injuries leading to such discomfort. With a statistical significance indicated by a p-value of 0.024, this correlation suggests that certain events or injuries have a pronounced impact on elevating pain levels.

Diving deeper into the intricacies of pain, the research also illuminated a compelling linkage between the severity of pain and its root causes. Documented with a p-value of 0.016, this significant association underscores the idea that the original genesis of pain—be it disease, physical trauma, or any other catalyst—plays a crucial role in determining how intense the pain felt will be. It points to the conclusion that various causes of pain lead to a spectrum of pain intensities, highlighting the diverse nature of pain experienced by individuals.

However, when the investigation turned towards understanding if the location of the pain within the body influences its intensity, the findings painted a different picture. With a p-value of 0.470, no significant relationship was observed between pain levels and the specific areas of the body where pain was experienced. This result suggests a fascinating perspective; the physical location of pain, whether it be in the limbs, back, or anywhere else, may not have a direct correlation with the level of pain perceived, indicating the subjective nature of pain experiences.

A particularly enlightening aspect of the study was its focus on the impact of treatment on pain levels. Through comparing pain intensities before and after the administration of treatments, a stark difference was revealed, underscored by a p-value of less than 0.001. This stark contrast highlights the effectiveness of treatments in significantly reducing pain levels for individuals, offering a beacon of hope for pain management strategies.

Overall, this comprehensive analysis not only deepens our understanding of the factors that influence pain but also opens avenues for more targeted and effective pain management

interventions, taking into account the specific events, causes, and absence of location specificity in addressing pain relief.

While there is compelling evidence supporting various therapeutic interventions for managing different types of pain—ranging from exercise regimens to manual therapies—the existing literature underscores an urgent need for high-quality research that rigorously evaluates these approaches over extended periods to establish long-term effectiveness reliably.

Future investigations should prioritize standardized protocols across studies to facilitate more meaningful comparisons while addressing identified gaps regarding individual patient characteristics such as comorbidities or psychological factors influencing treatment outcomes.[7,10] Ultimately this will enhance our understanding of effective management strategies tailored to specific patient populations suffering from diverse forms of chronic pain.

This study sheds light on the diverse experiences of pain and its management among a broad sample of participants. The results underscore the significant impact of injury or trauma in elevating pain levels, as well as the effectiveness of medical treatments in alleviating pain symptoms. While the type and cause of pain were significant predictors of pain intensity, the location of pain did not appear to influence the severity of discomfort experienced.

Implications for clinical practice

Understanding pain triggers, especially acute injuries, can help healthcare professionals devise targeted interventions to mitigate pain. The significant reduction in pain scores post-treatment reinforces the importance of effective pain management protocols in clinical settings.

Limitations

The study's reliance on self-reported data introduces potential bias, as participants' subjective experiences may vary. The cross-sectional design further limits the ability to establish causal relationships between pain characteristics and management outcomes. Additionally, the relatively small sample size and the use of a convenience sampling method may affect the generalizability of the results. Future research should employ longitudinal designs with larger, more diverse populations to better understand the long-term effectiveness of different

pain management strategies. Furthermore, standardized pain assessment tools and objective measures of treatment efficacy would strengthen the study's findings.

CONCLUSION

This study offers valuable insights into the multifactorial nature of pain experiences and management in a diverse population. The findings highlight the significant association between specific injury or trauma events and elevated pain levels, emphasizing the need for tailored pain management interventions. Additionally, the study demonstrates the effectiveness of medical treatments in substantially reducing pain intensity, reinforcing the importance of robust clinical pain management protocols in both acute and chronic pain scenarios. While the type and cause of pain were significant predictors of pain severity, the specific location of pain did not influence the intensity of discomfort, suggesting the subjective nature of pain perception.

This study provides critical insights into the factors influencing pain experience and management, with significant findings regarding the impact of injury and the effectiveness of medical interventions. These results can inform better clinical pain management protocols, improving patient outcomes in both acute and chronic pain contexts.

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