Pain-related Beliefs, Coping Strategies and Pain Catastrophization in Older People with Chronic Musculoskeletal Pain

Bimali I,[1] Awal K,[2] Acharya RS[1]

[1]Department of Physiotherapy

Kathmandu University School of Medical Sciences,

Dhulikhel Hospital, Kathmandu University Hospital

Dhulikhel, Kavre, Nepal.

[2]Grace Physio and mMnual Therapy Center,

Bhaktapur, Nepal.

Corresponding Author

Inosha Bimali

Department of Physiotherapy

Kathmandu University School of Medical Sciences,

Dhulikhel Hospital, Kathmandu University Hospital

Dhulikhel, Kavre, Nepal.

E-mail: inosha@kusms.edu.np

inoshabimali@gmail.com

Citation

Bimali I, Awal K, Acharya RS. Pain-related Beliefs, Coping Strategies and Pain Catastrophization in Older People with Chronic Musculoskeletal Pain. *Kathmandu Univ Med J*. 2024;88(4):453-8.

ABSTRACT

Background

Chronic musculoskeletal pain is a major health concern among older people. The experience of chronic musculoskeletal pain is influenced by psychosocial factors such as beliefs, coping strategies, and pain catastrophizing. It is believed that culture can influence pain related factors and psychosocial factors vary across different cultures.

Objective

To identify the common pain-related beliefs, coping strategies and pain catastrophizing in older people with chronic musculoskeletal pain.

Method

A descriptive cross-sectional study was conducted in Dhulikhel among 150 older people. Semi-structured questionnaire gathered information on pain beliefs and coping strategies, while, pain catastrophizing scale was used to identify catastrophization. A convenient sampling was used and data were analyzed using SPSS, version 26.

Result

The median age of the participants was 69 years (IQR 10). The median pain score on facial pain rating scale was 6 (IQR 2). Participants believed that musculoskeletal pain was associated with aging (81%), past workload (64%) and karma (49%). They predominantly believed in doctors (78%) and physiotherapists (43%) for treatment. Nearly half also believed in spiritual healers. Commonly utilized coping strategies were self-statements like “I can handle anything” (89%) and it is not so bad, it’s normal” (81%), massage (88%), God (87%) and exercise (84%). The level of pain catastrophization was not statistically significant among the participants.

Conclusion

The findings of the study highlighted the significance of beliefs and coping strategies in influencing pain experiences, suggesting a strong need of implementation of bio-psychosocial approach in assessment and management of pain among older people.

KEY WORDS

Belief, Coping strategies, Chronic musculoskeletal pain, Older people, Pain catastrophization

INTRODUCTION

Aging is defined as "a state not solely determined by chronological age but often signifies a decline in the ability to maintain independence".[1] In 2019, WHO estimated that over a billion people worldwide were older, with projections indicating to reach 1.4 billion by 2030 and 2.1 billion by 2050.[2] According to national census 2021, Nepal has 2.97 million older individuals, marking a 38.2% rise from 2011 census.[3] The demographic now consists of 10.21% of Nepal's total population. Notably, in 2022, Dhulikhel municipality recorded that the older population constituted 9.4% of the total population.[3]

The phenomenon of increased aging brings forth several health concerns, one of which is the heightened risk of chronic musculoskeletal pain, with prevalence rates ranging from 40% to 60%.[4,5] Chronic musculoskeletal pain, according to international association for the study of pain, persists for over three months and is linked to diseases affecting bones, joints, muscles, or soft tissues.[6] Existing literatures have highlighted the experience of chronic musculoskeletal pain to be influenced by factors such as beliefs, coping strategies, and pain catastrophizing factors.[7,8] It is observed that these factors vary across different cultures. However, these factors were predominantly centered on populations from developed nations, leaving uncertainty about their relevance to the culturally dominated low- and middle-income countries like Nepal.[9]

Therefore, the study aimed to bridge the existing gap by exploring the beliefs, coping strategies, and pain catastrophization among older Nepalese individuals with chronic musculoskeletal pain. Information on these factors, would contribute insights to health professionals in implementation of bio-psychosocial approaches in assessment and interventions of chronic pain.

METHODS

A descriptive cross-sectional study using convenience sampling was conducted in Dhulikhel community with the ethical approval from KUSMS-IRC (approval number 99/23). The study was conducted over six months from June to November 2023 among community dwelling older individuals with chronic musculoskeletal pain. The inclusion criteria were older individuals 60 years and above, who could understand and speak Nepali language, diagnosed with chronic musculoskeletal pain and had at least moderate pain intensity in faces pain rating scale. Those who refused participation, experienced communication challenges, had undergone recent surgery or trauma, were diagnosed with cancer, or had known mental health conditions were excluded.

The sample size was calculated as follows:

Sample size (n) = $z^2 * p * q / e^2$

$= 1.96^2 * 0.5 * 0.5 / 0.08^2$

$= 150$

Where,

n= minimum required sample size

z= 1.96 at 95% CI

p= prevalence of chronic musculoskeletal pain in older people (40-60%).[5]

q= 1-p

e= margin of error, 8%

The sample size was calculated to be 150.

Participants were provided with the information sheet and informed consents were obtained. Socio-demographic data included information on age category (60 to 64 years, 65 to 69 years, 70 to 74 years, 75 and above), gender (male, female), religion (hindu, buddhist), ethnicity (brahmin, chettri, janajati), educational status (illiterate, primary level, secondary and above, vocational training), region of pain (body chart), intensity of pain (facial pain rating scale). A self-made semi structured questionnaire for pain beliefs and coping strategies was developed reviewing the previous literatures.[8,10-22] The pain belief questionnaire included questions on cause of pain (god's will, punishment, karma, normal aging, heavy workload, past life sins, etc), treatment believed in (doctors, health assistants, physiotherapists, traditional healers, ayurveda etc) and reason for believing in different treatment (better treatment, customs and belief, availability, accessibility etc). The coping strategy questionnaire included questions on rest, behavior distraction, cognitive distraction, social support, positive statements, faith and praying etc. Face and content validity of the questionnaire were ensured through an expert panel discussion, followed by a pilot study in thirty individuals to assess the internal consistency. With approval from Mapi trust, the valid and reliable thirteen-item Nepali version of pain catastrophizing scale (PCS) was used to collect information on catastrophization.[23] Participants were asked to rate each item on a 5-point likert scale from 0 (not at all) to 4 (all the time). The total score of the scale is 52 with higher score indicating higher level of catastrophizing. Data was analyzed using Statistical package for social sciences (SPSS) version 26. Continuous variables were described using median and interquartile range, while categorical variables were represented by frequencies and percentages.

RESULTS

The study included 150 participants with majority of female participants. The results of socio-demographic are presented in table 1. The median age of the participants was 69 years (IQR 10). The median score for facial pain rating scale was 6 (IQR 2). The commonest location of

Table 1. Socio demographic information (n=150)

Characteristics	Values
Age (Years), Median (IQR)	69 (10)
Age category, n (%)	
60 to 64	40 (26)
65 to 69	37 (25)
70 to 74	37 (25)
75 and above	36 (24)
Facial Pain rating scale, Median (IQR)	6 (2)
Region of pain, n (%)	
Upper back	23 (15)
Lower back	47 (32)
Knees	80 (53)
Gender, n (%)	
Male	52 (35)
Female	98 (65)
Religion, n (%)	
Hindu	134 (89)
Buddhist	16 (11)
Ethnicity, n (%)	
Brahmin	26 (17)
Chhetri	37 (25)
Janjati	87 (58)
Educational status, n (%)	
Illiterate	87 (58)
Primary level	22 (15)
Secondary and above	25 (17)
Vocational Training	16 (11)
Smoke, n (%)	
No	90 (60)
Currently Smoking	30 (20)
Used to but not now	30 (20)

n = number of participants, IQR = Interquartile Range

musculoskeletal pain was knee (53%) followed by lower (32%) and upper back (15%). Majority were Hindu with most of them belonging to Janajati community. More than half of the participants were illiterate and non-smokers.

An expert panel assessed the face and content validity of the belief and coping strategy questionnaire, suggesting it relevant and appropriate for use with the Nepalese older population with chronic MSK pain. Content validity ratio was greater than 0.99 for all the questions except two which were eventually eliminated from the questionnaires. The internal consistency of the final questionnaire was evaluated among thirty participants yielding a cronbach's alpha coefficient of 0.75.

Different types of belief on the cause of pain were reported by the participants in table 2. The top five beliefs were normal process of aging, high workload in young age, fixed by karma, gods will punishment, and insufficient nutrition. In allopathy treatment, participants primarily

Table 2. Pain belief questionnaire (n=150)

Belief	Variables	n (%)
	God's will, punishment	48 (32)
	Spiritual dysfunction	16 (11)
	Witchcraft	13 (9)
	Past life sins	6 (4)
Cause of pain	Fixed by karma	74 (49)
	Heredity	7 (5)
	Normal process of aging	121 (81)
	Insufficient nutrition	31 (21)
	High workload in young age	96 (64)
Treatment believed in	Allopathic (self)	26 (17)
	Doctor	117 (78)
	Health assistant	13 (9)
	Pharmacist	50 (33)
	Physiotherapy	64 (43)
	Traditional (self)	67 (45)
	Traditional healers (Baidhya, Lama, Hakim, Amchi)	27 (18)
	Spiritual healers (Dhami-jhakri, Mata, Tantrik)	64 (43)
	Ayruveda	66 (44)
	Homeopathy	4 (3)
	Ceragem therapy	5 (3)
Reason for believing in different treatment	Better treatment	107 (71)
	Customs and belief	91 (61)
	Influence	53 (35)
	Financial reasons	10(7)
	Accessible	21 (18)
	Available	15 (10)

n = number of participants

believed on doctor followed by physiotherapist and pharmacist. While in traditional treatment, participants mostly believed on self-treatment, spiritual and traditional healers. In complementary and alternative medicine, 13% of participants believed in ayurveda, while very minimal believed in ceragem therapy and homeopathy. Reasons for choosing specific treatments varied, including factors such as better treatment, customs and beliefs, influence, accessibility, availability, and finance.

A diverse range of coping mechanisms employed by older individuals with chronic musculoskeletal pain is listed in table 3. Positive self-statements such as "I can handle anything that happens" and "It is not so bad, it's normal" were commonly reported coping strategies. Pain relief maneuvers were also popular, including various forms of massage, exercise, and use of supportive materials like bandages or assistive devices. Additionally, religious practices showed a significant role; high percentage of participants had faith in God and engagement in religious activities for pain relief. Behavioral distractions were among the most common coping strategies, with many

Table 3. Coping strategies questionnaire (n=150)

Coping strategies	Variables	n (%)
Resting	Stop activities	33 (22)
	Don't exert myself, confine to simple activities	98 (65)
	Rest by sitting or lying down	60 (40)
	Assume comfortable bodily posture	36 (24)
Behaviour distraction	Do something, I enjoy like watching TV, listening music, etc.	109 (73)
	Do something active like household chores, physical activity, etc.	126 (84)
	Retreat into restful environment	81 (54)
	Separate myself	34 (23)
	Try to be around beloved people	65 (43)
	Get drunk, smoke, chew tobacco	8 (5)
Cognitive distraction	Ignore the situation	80 (53)
	Try to forget pain	116 (77)
	Mindfulness like yoga or meditation	45 (30)
	Try to think of something pleasant	94 (63)
Seek for social support	Talk to friends about pain	107 (71)
	Talk to family about pain	111 (74)
	Talk to people with similar type of problem about pain	88 (59)
Say positive statements	Do not worry everything will be ok	117 (78)
	Be strong	85 (57)
	It is not so bad, its normal	121 (81)
	I can handle anything that happens	134 (89)
	Other people have more pain	89 (59)
	Someone will help me and it will go away	50 (33)
	What everything will be fine after I've gotten rid of pain	91 (61)
Manifest	Argue and fight	17 (11)
	Yell at others	38 (25)
	Talking to themself	84 (56)
Faith and praying	Pray for the pain to stop	107 (71)
	Rely on my faith to God	130 (87)
	Conduct and participate in religious activities	63 (42)
	Faith on folk healers	39 (26)
Implementing pain relief maneuver	Taking pain killers	84 (56)
	Using hot pack or cold pack	56 (37)
	Different forms of Massage	132 (88)
	Use supportive materials: bandage, assistive device, patuka	64 (42)
	Doing physical activity, exercise	126 (84)
	Herbal paste	7 (5)
	Careful with what I eat or drink	47 (31)

n = number of participants

participants engaged in activities they enjoy and performing household chores or physical activities. Significant number of participants also utilized cognitive distraction techniques such as "forget the pain". Seeking social support was another common coping strategy, with many individuals discussing their pain with friends and family members. More than half of the older adults manifested their pain by talking to themselves.

The median PCS score was 16 (IQR 8), which suggests absence of clinically relevant level of catastrophization in our participants.

DISCUSSION

The aim of the study was to explore belief, coping strategies and catastrophization adopted by Nepalese older people with chronic musculoskeletal pain. The result suggests that older people with moderate level of chronic musculoskeletal pain shared varieties of beliefs, employed various coping strategies and had less pain castrophization.

Participants in our study held a mindset that pain is a normal process of aging, a finding consistent to previous literature.8 Age-related changes could influence one's ability to tolerate pain.[24] A previous study done in Nepalese with low back and pelvic girdle pain has reported low disability level despite of high intensity of pain.[25] Nevertheless, adopting pain surrendering or ignoring mindset may be detrimental.[24,26] Our participants held a strong belief that pain in old age was caused by two potential reasons; high workload at young age and karma. In our context, frequent engagement in physically demanding work, coupled with challenging environmental conditions and unadjusted work postures, may initiate micro-damage or tissue fatigue, ultimately contributing to musculoskeletal pain in old age.[27] In Nepal, cultural and religious influences shape believes, response and coping, affecting individuals' pain perception, due to which people believes karma playing a central role in attributing pain from past actions and behavior.[10]

Older people in our study predominantly believed in doctors for treatment. This could be the significant impact of increase health awareness in developing countries.[14] Most participants opted doctors with the belief that they will alleviate their pain permanently. Their selection was primarily motivated by satisfaction with the service, a factor consistent with prior studies.[15] A study done in Nepal28 reported that majority of health professionals were well aware about physiotherapy and referral rate to physiotherapy was high which could be the reason behind physiotherapy becoming another most chosen treatment by our study population. Positive impacts of physiotherapy treatment in managing pain and improving daily functions could have influenced the positive attitude toward physiotherapy profession leading to increasing referral to physiotherapy services.[29]

Larger group of participants in this study still believed in spiritual and traditional healing. The finding aligns with a previous study which reported that western countries support scientific remedies, while eastern countries like Nepal still holds strong belief's in spiritual and traditional interventions.[30] This trust on spiritual and traditional interventions still remains prevalent, as it has been deeply rooted in our culture which could be due to high illiteracy rates.[14] Previous study has highlighted that pain and treatment are significantly influenced by culture, customs, and beliefs.[30] Ayurveda was selected by significant number of participants in our study which aligns with a finding from a study done in India. The Indian study suggested that Ayurveda is deeply ingrained in the culture and is considered a safe treatment option that not only alleviates pain but also aids in the healing and enhances daily functions.[31] Given the cultural and traditional similarities between India and Nepal, a similar context can be expected in our culture as well.

Positive statements like "I can handle anything" and "It's not so bad, it's normal" were highly reported coping strategies by our participants. It has been reported that such positive self-statements are associated with better psycho-social health and decrease in pain persistence, leading to enhanced daily functioning.[32,33] Our study also reported the use of pain relief maneuvers such as massage and exercise as coping strategies. Massage alleviates pain by increasing blood flow, aiding tissue repair, and activating pain-inhibitory systems though pain gate theory.[34] Exercise proves beneficial as it also enhances blood flow and releases pain-suppressing hormones.[35] Engaging in activities to distract from pain was another coping strategy reported by our participants. Studies have reported that distraction effectively reduces pain severity, enhances physical function, and positively impacts the psychological well-being and overall quality of life by engaging the mind in activities or enjoyable pursuits.[36]

Notably, our study did not find a clinically significant level of catastrophization among our participants. This finding could be attributed to cultural differences, particularly in beliefs.[37] Many older individuals like ours perceive pain as a natural process of life, influenced by karma, which fosters greater acceptance.[38] Also, increasing age seems to empower individuals with greater control over pain, thereby reducing the levels of catastrophization.[38]

The study has some limitations. First, the cross-sectional design used in the study does not establish the cause-and-effect relationship. Additionally, as the research was conducted in Dhulikhel, the findings may not be generalizable to the older adults from other communities or regions of Nepal. Furthermore, the study was based on the self-reported data which could have led to recall or social desirability bias, where participants may have underreported or over reported certain behaviors or beliefs.

CONCLUSION

The findings of the study shed light on common beliefs linking pain to aging, past workloads, and karma. Despite increased trust in doctors due to growing awareness, coping strategies leaned towards self-positivity and social support. Our participants had less pain catastrophization. Information on these factors would provide insights to health professionals in implementation of bio-psychosocial approaches in assessment and interventions emphasizing culturally sensitive pain education programs for older individuals in Nepal. Moving forward, future research should focus on developing culturally sensitive interventions, blending both traditional and modern approaches.

ACKNOWLEDGEMENTS

We extend our heartfelt thanks to all the participants who generously contributed their time and data, making this study possible. This study was made possible through the collaborative efforts of all the experts and physiotherapists from Dhulikhel hospital, and we acknowledge their contributions with profound appreciation.

REFERENCES

1. Guccione AA, Avers D, Wong R. Geriatric physical therapy-ebook. Elsevier Health Sciences; 2011 Mar 7.
2. Ageing [Internet]. 2021 [cited 20 December 2023]. Available from: https://www.who.int/health-topics/ageing#tab=tab_1.
3. Government of Nepal. National Population and Housing Census 2021. Kathmandu, Nepal: Central Bureau of statistics. Available online: https://censusnepal.cbs.gov.np/results/literacy. Accessed on March 2024.
4. Gibson SJ, Lussier D. Prevalence and relevance of pain in older persons. *Pain Med*. 2012 Apr;13 Suppl 2:S23-6. doi: 10.1111/j.1526-4637.2012.01349.x. PMID: 22497744.
5. Welsh TP, Yang AE, Makris UE. Musculoskeletal Pain in Older Adults: A Clinical Review. *Med Clin North Am.* 2020 Sep;104(5):855-872. doi: 10.1016/j.mcna.2020.05.002. Epub 2020 Jul 15. PMID: 32773050; PMCID: PMC8034863.
6. Treede RD, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R, et al. A classification of chronic pain for ICD-11. *Pain*. 2015;156(6):1003-7.
7. Sharma S, Abbott JH, Jensen MP. Why clinicians should consider the role of culture in chronic pain. *Braz J Phys Ther*. 2018 Sep-Oct;22(5):345-346. doi: 10.1016/j.bjpt.2018.07.002. Epub 2018 Aug 14. PMID: 30126712; PMCID: PMC6157457.
8. Reis FJJ, Nijs J, Parker R, Sharma S, Wideman TH. Culture and musculoskeletal pain: strategies, challenges, and future directions to develop culturally sensitive physical therapy care. *Braz J Phys Ther.* 2022 Sep-Oct;26(5):100442. doi: 10.1016/j.bjpt.2022.100442. Epub 2022 Sep 15. PMID: 36209626; PMCID: PMC9550611.
9. Sharma S, Pathak A, Jha J, Jensen MP. Socioeconomic factors, psychological factors, and function in adults with chronic musculoskeletal pain from rural Nepal. *J Pain Res*. 2018 Oct 17;11:2385-2396. doi: 10.2147/JPR.S173851. PMID: 30425551; PMCID: PMC6200427.

10. Tung WC LZ. Pain beliefs and behaviors among Chinese. *Home Health Care Manag Pract*. 2015;27(2):95-7.

11. Hocking LJ, Generation S, Morris AD, Dominiczak AF, Porteous DJ, Smith BH. Heritability of chronic pain in 2195 extended families. Eur J Pain. 2012;16(7):1053-63. doi: 10.1002/j.1532-2149.2011.00095.x. Epub 2012 Jan 26. PMID: 22337623.

12. Vandenkerkhof EG, Macdonald HM, Jones GT, Power C, Macfarlane GJ. Diet, lifestyle and chronic widespread pain: results from the 1958 British Birth Cohort Study. *Pain Res Manag.* 2011 Mar-Apr;16(2):87-92. doi: 10.1155/2011/727094. PMID: 21499583; PMCID: PMC3084409.

13. Gnudi S, Sitta E, Gnudi F, Pignotti E. Relationship of a lifelong physical workload with physical function and low back pain in retired women. *Aging Clin Exp Res*. 2009 Feb;21(1):55-61. doi: 10.1007/BF03324899. PMID: 19225270.

14. Thorsen RS, Pouliot M. Traditional medicine for the rich and knowledgeable: challenging assumptions about treatment-seeking behaviour in rural and peri-urban Nepal. *Health Policy Plan*. 2016 Apr;31(3):314-24. doi: 10.1093/heapol/czv060. Epub 2015 Jun 29. PMID: 26130610; PMCID: PMC4779144.

15. Bhattarai S, Parajuli SB, Rayamajhi RB, Paudel IS, Jha N. Health seeking behavior and utilization of health care services in Eastern Hilly Region of Nepal. *JCMS-Nepal*. 2015 Nov 12;11(2):8-16.

16. Villatoro AP, Aneshensel CS. Family Influences on the Use of Mental Health Services among African Americans. *J Health Soc Behav*. 2014 Jun;55(2):161-180. doi: 10.1177/0022146514533348. Epub 2014 May 27. PMID: 24872466; PMCID: PMC4395552.

17. Kraaimaat FW, Evers AW. Pain-coping strategies in chronic pain patients: psychometric characteristics of the pain-coping inventory (PCI). *Int J Behav Med*. 2003;10(4):343-63. doi: 10.1207/s15327558ijbm1004_5. PMID: 14734263.

18. Kohut SA, Stinson J, Chambers CT, Reid GJ, Pillai Riddell RR. The Pain Coping Questionnaire short-form: preliminary reliability and validity. *Pain reports*. 2022;7(1):e982.

19. Rodríguez Franco L, Cano García FJ, Blanco Picabia A. Evaluación de las estrategias de afrontamiento del dolor crónico [Assessment of chronic pain coping strategies]. *Actas Esp Psiquiatr*. 2004 Mar-Apr;32(2):82-91. Spanish. PMID: 15042468.

20. la Cour P, Petersen M. Effects of mindfulness meditation on chronic pain: a randomized controlled trial. *Pain Med*. 2015 Apr;16(4):641-52. doi: 10.1111/pme.12605. Epub 2014 Nov 7. PMID: 25376753.

21. Barry LC, Kerns RD, Guo Z, Duong BD, Iannone LP, Reid MC. Identification of strategies used to cope with chronic pain in older persons receiving primary care from a Veterans Affairs Medical Center. *J Am Geriatr Soc*. 2004 Jun;52(6):950-6. doi: 10.1111/j.1532-5415.2004.52263.x. PMID: 15161460.

22. Shah RK. Nepalese patuka in prevention of backpain. *Lancet*. 1993 Jul 31;342(8866):311. doi: 10.1016/0140-6736(93)91861-f. PMID: 8101342.

23. Sharma S, Thibault P, Abbott JH, Jensen MP. Clinimetric properties of the Nepali version of the Pain Catastrophizing Scale in individuals with chronic pain. *J Pain Res.* 2018 Jan 31;11:265-276. doi: 10.2147/JPR.S153061. PMID: 29430196; PMCID: PMC5797459.

24. Mullins S, Hosseini F, Gibson W, Thake M. Physiological changes from ageing regarding pain perception and its impact on pain management for older adults. *Clin Med* (Lond). 2022 Jul;22(4):307-310. doi: 10.7861/clinmed.22.4.phys. PMID: 35882493; PMCID: PMC9345212.

25. Shijagurumayum Acharya R, Tveter AT, Grotle M, Eberhard-Gran M, Stuge B. Prevalence and severity of low back- and pelvic girdle pain in pregnant Nepalese women. *BMC Pregnancy Childbirth*. 2019 Jul 15;19(1):247. doi: 10.1186/s12884-019-2398-0. PMID: 31307421; PMCID: PMC6631866.

26. Benyon K, Muller S, Hill S, Mallen C. Coping strategies as predictors of pain and disability in older people in primary care: a longitudinal study. *BMC Fam Pract*. 2013 May 24;14:67. doi: 10.1186/1471-2296-14-67. PMID: 23705997; PMCID: PMC3665454.

27. Bláfoss R, Skovlund SV, López-Bueno R, Calatayud J, Sundstrup E, Andersen LL. Is hard physical work in the early working life associated with back pain later in life? A cross-sectional study among 5700 older workers. *BMJ Open*. 2020 Dec 7;10(12):e040158. doi: 10.1136/bmjopen-2020-040158. PMID: 33293310; PMCID: PMC7722822.

28. Acharya RS, Khadgi B, Shakya NR, Adhikari SP, Basnet SM, Sharma S, et al. Physiotherapy awareness among clinical doctors in Nepal. *JIOM Nepal*. 2011 Aug 31;33(2):1-5.

29. Calner T, Isaksson G, Michaelson P. Physiotherapy treatment experiences of persons with persistent musculoskeletal pain: A qualitative study. *Physiother Theory Pract*. 2021 Jan;37(1):28-37. doi: 10.1080/09593985.2019.1622162. Epub 2019 May 27. PMID: 31131673.

30. McLaughlin LA, Braun KL. Asian and Pacific Islander cultural values: considerations for health care decision making. *Health Soc Work*. 1998 May;23(2):116-26. doi: 10.1093/hsw/23.2.116. PMID: 9598394.

31. Chopra A, Saluja M, Tillu G. Ayurveda-modern medicine interface: A critical appraisal of studies of Ayurvedic medicines to treat osteoarthritis and rheumatoid arthritis. *J Ayurveda Integr Med*. 2010 Jul;1(3):190-8. doi: 10.4103/0975-9476.72620. PMID: 21547047; PMCID: PMC3087360.

32. You DS, Hettie G, Darnall BD, Ziadni MS. Spontaneous self-affirmation: an adaptive coping strategy for people with chronic pain. *Scand J Pain.* 2023 Mar 20;23(3):531-8. doi: 10.1515/sjpain-2022-0099. PMID: 36935574.

33. Roditi D, Robinson ME, Litwins N. Effects of coping statements on experimental pain in chronic pain patients. *J Pain Res*. 2009 Aug 19;2:109-16. doi: 10.2147/jpr.s6357. PMID: 21197299; PMCID: PMC3004623.

34. Tsao JC. Effectiveness of massage therapy for chronic, non-malignant pain: a review. *Evid Based Complement Alternat Med.* 2007 Jun;4(2):165-79. doi: 10.1093/ecam/nel109. Epub 2007 Feb 5. PMID: 17549233; PMCID: PMC1876616.

35. Asadi H, Darvishpour A, Ezzati K, Gholami-Chaboki B. The effect of corrective exercises on musculoskeletal disorders among the older adults residing in a nursing home in Rasht, Guilan, Iran. *BMC Musculoskelet Disord.* 2023 Oct 17;24(1):820. doi: 10.1186/s12891-023-06915-8. PMID: 37848869; PMCID: PMC10580666.

36. Geneen LJ, Moore RA, Clarke C, Martin D, Colvin LA, Smith BH. Physical activity and exercise for chronic pain in adults: an overview of Cochrane Reviews. *Cochrane Database Syst Rev*. 2017 Jan 14;1(1):CD011279. doi: 10.1002/14651858.CD011279.pub2. Update in: Cochrane Database Syst Rev. 2017 Apr 24;4:CD011279. doi: 10.1002/14651858.CD011279.pub3. PMID: 28087891; PMCID: PMC6469540.

37. Sharma S, Ferreira-Valente A, de C Williams AC, Abbott JH, Pais-Ribeiro J, Jensen MP. Group Differences Between Countries and Between Languages in Pain-Related Beliefs, Coping, and Catastrophizing in Chronic Pain: A Systematic Review. *Pain Med*. 2020 Sep 1;21(9):1847-1862. doi: 10.1093/pm/pnz373. PMID: 32044980; PMCID: PMC7553014.

38. Murray CB, Patel KV, Twiddy H, Sturgeon JA, Palermo TM. Age differences in cognitive-affective processes in adults with chronic pain. *Eur J Pain.* 2021 May;25(5):1041-1052. doi: 10.1002/ejp.1725. Epub 2021 Jan 24. PMID: 33405280; PMCID: PMC8055045.