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Knowledge of osteoarthritis and its risk factors among the general population in Bisha, Saudi Arabia, 2024–2025

Elwaleed Mohamed Elsheikh[1], Bayan Mathaf Aloqaybi[2,*], Hayf Zayed Oraidah[2], Lina Mathaf Aloqaybi[2]

Corresponding author

Bayan Mathaf Aloqaybi*

*College of Medicine and Surgery, University of Bisha, Bisha, Saudi Arabia.

Telephone: 0506424196.

*Email: dr.bayan.aloqaybi@gmail.com

Affiliations

[1] Orthopedics and Arthroplasty Consultant, King Abdullah General Hospital, Bisha, Saudi Arabia.

[2] College of Medicine and Surgery, University of Bisha, Bisha, Saudi Arabia.

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Abstract

Introduction:

Osteoarthritis is the most common type of arthritis. It is characterized by degenerative changes in the articular cartilage and other joint tissues, with variable synovial inflammation. Its prevalence is rising worldwide, and an estimated 528 million people were affected in 2019.

Methods:

A descriptive cross-sectional study was conducted among residents of Bisha aged 18 years or older. Data were collected with an Arabic, self-administered online questionnaire using convenience sampling. A total of 442 respondents took part. Statistical analysis was performed with SPSS version 26.

Results:

Cartilage degeneration was identified as the mechanism of osteoarthritis by 47.5% of respondents, while 52.5% chose another response or were unsure. Osteoarthritis was recognized as a chronic disease by 62.0%, and 64.7% recognized that it is not rare. Knowledge of symptoms varied: 48.4% knew that joint pain is not the only symptom and 64.9% were aware that osteoarthritis can reduce joint mobility. For risk factors, 30.8% did not know whether genetics contributes, 74.4% recognized aging as a contributor, and 48.0% correctly rejected equal prevalence in males and females. For diagnosis, 58.8% stated that physical examination and X-rays are used. No statistically significant association was found between knowledge category and sex ($p = 0.615$), age ($p = 0.522$) or education level ($p = 0.839$).

Conclusion:

Respondents showed substantial gaps and misconceptions in their knowledge of osteoarthritis. Many understood that the disease is chronic, but misunderstandings about its causes, risk factors and diagnostic methods persisted.

Keywords: Health education; knowledge; osteoarthritis; joint degeneration; chronic joint inflammation.

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Introduction

Osteoarthritis (OA) is the most common type of arthritis. It is marked by gradual degenerative changes that affect not only the articular cartilage but the whole joint structure, including the subchondral bone and the synovial membrane [1,2]. Many pathological alterations are evident in joints affected by OA, among them degeneration of the articular cartilage, thickening of the subchondral bone, formation of osteophytes, varying levels of synovial inflammation, degeneration of the ligaments and knee menisci, and hypertrophy of the knee capsule [1]. Osteoarthritis causes pain, swelling and stiffness and difficulty in moving the affected joint; as movement is reduced, muscles lose strength and people become less able to perform physical activities [3]. The risk factors most strongly associated with OA are increasing age, female sex, obesity, previous joint injury, genetic factors, malalignment and abnormal joint morphology [1,2].

Background

Osteoarthritis is an important cause of disability worldwide, although estimates vary with the population studied and the definition used; research in the United Kingdom has described trends in its incidence and prevalence [4]. An analysis of Global Burden of Disease 2017 data reported 303.1 million prevalent cases of hip and knee osteoarthritis worldwide in that year [5], and the World Health Organization reports that 528 million people were living with osteoarthritis in 2019 [3]. These estimates come from different assessment rounds and are not directly comparable.

A cross-sectional study of knowledge and awareness of osteoarthritis and its risk factors in the Hail region of Saudi Arabia, conducted in 2023, found that about 59.1% of participants had poor knowledge of OA, and its authors recommended wider public education [6].

The present study assessed knowledge of osteoarthritis and its risk factors among adults in Bisha, Saudi Arabia, in order to identify the misconceptions most in need of attention in local health education.

Subjects and Methods

Study design and participants

This descriptive cross-sectional study was conducted among adults in Bisha, Saudi Arabia, during 2024–2025. Eligible participants were residents of Bisha aged 18 years or older who provided informed consent. Individuals younger than 18 years, those living outside Bisha and those who did not consent were ineligible.

Sample size

The sample size was calculated with the Raosoft online sample size calculator [7] and estimated at a minimum of 384, using a 5% margin of error, a 95% confidence level, a population size of 202,096 (the population reported for Bishah governorate in the 2022 Saudi census [8,9]) and a 50% response distribution. The final sample included 442 respondents.

Sampling and recruitment

Convenience sampling was used. The self-administered online questionnaire was distributed to residents of Bisha through social media and WhatsApp.

Questionnaire

An Arabic, self-administered questionnaire was used. Its content addressed themes examined in earlier Saudi research on OA awareness [10]. It comprised three sections covering demographic characteristics, general knowledge of OA, and 17 questions on causes, symptoms, risk factors, diagnosis and management. Responses to the knowledge items were summarized as frequencies and percentages.

Knowledge classification

Overall knowledge was classified as high (211 participants) or low (231 participants), and these categories were used for exploratory comparisons by sex, age and education.

Statistical analysis

Data were entered into Excel for cleaning and analyzed with SPSS Statistics version 26. Categorical variables were described using frequencies and percentages. Unadjusted associations between demographic characteristics and knowledge categories were examined with Pearson’s chi-square test. A p-value below 0.05 was considered statistically significant.

Ethical approval and consent

Ethical approval was obtained from the Ethics and Research Committee of the College of Medicine, University of Bisha, reference UB-RELOC H-06-BH-087/(01/05/47). Participants provided informed consent before completing the questionnaire, and those who did not consent did not proceed. Confidentiality was maintained.

Results

Table 1 shows the demographic characteristics of the 442 participants. Females made up 77.1% of the sample. Participants aged 18-29 years formed the largest age group (42.3%), followed by those aged 40-49 years (30.1%), with only 2.3% older than 60 years. Most participants (75.6%) held a bachelor’s degree.

Table 1. Sociodemographic characteristics of the respondents (N = 442).

Variable	Category	n	%
Sex	Female	341	77.1%
	Male	101	22.9%
Age (years)	18-29	187	42.3%
	30-39	44	10.0%
	40-49	133	30.1%
	50-59	68	15.4%
	More than 60	10	2.3%

Variable	Category	n	%
Educational level	Less than high school education	14	3.2%
	Secondary education	73	16.5%
	Bachelor's degree	334	75.6%
	Higher education	21	4.8%

Values are numbers (n) and percentages of the 442 respondents.

As shown in **Table 2**, 47.5% of participants knew that osteoarthritis occurs when the protective cartilage on the ends of the bones wears away with age, while the remaining 52.5% chose another response or were unsure. Osteoarthritis was identified as a chronic disease by 62.0%, and 64.7% were aware that it is not a rare disease.

Table 2. General knowledge of osteoarthritis (N = 442).

Item	Response	n	%
Do you know someone in your family who has previously been diagnosed with osteoarthritis?	Yes	212	48.0%
	No	127	28.7%
	I'm not sure	103	23.3%
Which of the following do you think is the main cause of osteoarthritis?	It occurs when the protective cartilage on the ends of the bones wears away with age	210	47.5%
	It occurs when blood flow to the joint decreases with age	56	12.7%
	It occurs due to pressure on the nerves that pass near the joint	54	12.2%
	It occurs due to the accumulation of acid in the joints	29	6.6%
	I don't know	93	21.0%
Do you think osteoarthritis is a chronic disease?	Yes	274	62.0%
	No	67	15.2%
	I'm not sure	101	22.9%
Do you think osteoarthritis is a rare disease?	Yes	63	14.3%
	No	286	64.7%
	I'm not sure	93	21.0%
Do you think all types of joints are affected by osteoarthritis?	Yes	182	41.2%
	No	123	27.8%
	I'm not sure	137	31.0%

Values are numbers (n) and percentages of the 442 respondents.

Table 3 presents knowledge of the causes, symptoms and risk factors of osteoarthritis. Cold or wet weather was given as a cause by 34.6%, and 32.8% were unsure. Joint pain was correctly identified as not the only symptom by 48.4%. On risk factors, 30.8% did not know whether genetics plays a role in the development of the disease and 29.9% answered no, while 74.4% recognized aging as a contributing factor. On sex differences, 48.0% correctly rejected equal prevalence in males and females, 30.3% answered yes and 21.7% did not know. For diagnosis, 58.8% believed that physical examination and X-rays are used to diagnose osteoarthritis and 36.2% believed that blood tests are used. A further 44.8% were unsure whether aspirin relieves symptoms. On management, 44.1% believed that acid-free diets are a proven treatment, and 55.4% believed that joint replacement surgery is the final option.

Table 3. Participants' knowledge of the causes, symptoms and risk factors of osteoarthritis (N = 442).

Item	Yes, n (%)	No, n (%)	I don't know, n (%)
Do you think osteoarthritis is caused by cold or wet weather?	153 (34.6%)	144 (32.6%)	145 (32.8%)
Do you think osteoarthritis is caused by bacteria or viruses?	76 (17.2%)	202 (45.7%)	164 (37.1%)
Do you think joint pain is the only symptom of osteoarthritis?	106 (24.0%)	214 (48.4%)	122 (27.6%)
Do you think joint stiffness is a symptom of osteoarthritis?	285 (64.5%)	46 (10.4%)	111 (25.1%)
Do you think that swelling and inflammation in the joint is a sign of osteoarthritis?	253 (57.2%)	78 (17.6%)	111 (25.1%)
Do you think that osteoarthritis can lead to loss of joint movement?	287 (64.9%)	53 (12.0%)	102 (23.1%)
Do you think genetics is a risk factor for osteoarthritis?	174 (39.4%)	132 (29.9%)	136 (30.8%)
Do you think aging is a risk factor for developing osteoarthritis?	329 (74.4%)	38 (8.6%)	75 (17.0%)
Do you think men and women are equally affected by osteoarthritis?	134 (30.3%)	212 (48.0%)	96 (21.7%)
Do you think physical examination and X-rays are used to diagnose osteoarthritis?	260 (58.8%)	38 (8.6%)	144 (32.6%)
Do you think blood tests are used to diagnose osteoarthritis?	160 (36.2%)	151 (34.2%)	131 (29.6%)
Do you think aspirin can improve the symptoms of osteoarthritis?	121 (27.4%)	123 (27.8%)	198 (44.8%)
Do you think that some types of exercise, such as swimming, are suitable for people with osteoarthritis?	221 (50.0%)	66 (14.9%)	155 (35.1%)
Do you think acid-free diets are a proven treatment for osteoarthritis?	195 (44.1%)	59 (13.3%)	188 (42.5%)
Do you think physical therapy can significantly improve the symptoms of osteoarthritis?	293 (66.3%)	62 (14.0%)	87 (19.7%)
Do you think that intra-articular stem cell injections are an effective way to treat osteoarthritis?	219 (49.5%)	57 (12.9%)	166 (37.6%)
Do you think joint replacement surgery is the final option to relieve the symptoms of osteoarthritis?	245 (55.4%)	74 (16.7%)	123 (27.8%)

Values are numbers with percentages of the 442 respondents in parentheses.

Table 4 shows no statistically significant association between knowledge category and sex ($p = 0.615$), age ($p = 0.522$) or education level ($p = 0.839$). Of the 211 participants classified as having high knowledge, 165 (78.2%) were female, 97 (46.0%) were aged 18-29 years and 161 (76.3%) held a bachelor's degree. High knowledge was recorded in 48.4% of females (165/341) and 45.5% of males (46/101).

Table 4. Association between sociodemographic variables and participants' total knowledge of osteoarthritis and its associated risk factors.

Variable	Category	High (n = 211)	Low (n = 231)	p-value
Sex	Female	165 (78.2%)	176 (76.2%)	0.615
	Male	46 (21.8%)	55 (23.8%)	
Age (years)	18-29	97 (46.0%)	90 (39.0%)	0.522
	30-39	19 (9.0%)	25 (10.8%)	
	40-49	61 (28.9%)	72 (31.2%)	
	50-59	31 (14.7%)	37 (16.0%)	
	More than 60	3 (1.4%)	7 (3.0%)	
Educational level	Less than high school education	5 (2.4%)	9 (3.9%)	0.839
	Secondary education	35 (16.6%)	38 (16.5%)	
	Bachelor's degree	161 (76.3%)	173 (74.9%)	
	Higher education	10 (4.7%)	11 (4.8%)	

Pearson's chi-square test; $p < 0.05$ considered statistically significant. Percentages are within knowledge columns (high, n = 211; low, n = 231).

Discussion

Adults surveyed in Bisha showed uneven knowledge of osteoarthritis. Most recognized the disease as chronic and common and identified aging as a risk factor, but fewer than half identified the underlying mechanism, and misconceptions about diagnosis and treatment were frequent. Comparable surveys have been reported from other Saudi regions [11], including one in Hail whose authors recommended wider public education [6].

Nearly half the sample (48.0%) reported a family member who had been diagnosed with OA, which reflects familiarity with the disease rather than its prevalence. Alahmed et al. reported that 13.6% of participants in Hail had themselves been diagnosed with osteoarthritis and that 40.3% knew someone with the disease, an item broader than the family-specific question used here [6].

The mechanism of osteoarthritis was correctly identified by 47.5% of participants, close to the 54.16% reported by Alkalash et al. in Al-Qunfudah, Saudi Arabia, for the item on the underlying mechanism of the disease [12]. Osteoarthritis was correctly identified as chronic by 62.0%, and 64.7% correctly rejected the statement that it is rare, while 14.3% considered it rare and 21.0% were unsure. Most respondents therefore recognized that OA is common, although one in five remained uncertain. In the same Al-Qunfudah survey, 49.60% classified OA as chronic and 74.53% acknowledged it as a common disease, a higher proportion than in the present study [12].

Joint pain was known not to be the only symptom by 48.4% of participants, while 64.5% recognized joint stiffness and 57.2% recognized joint swelling and inflammation as manifestations of OA. Loss of joint mobility was correctly reported as a consequence of OA by 64.9%. Salih et al. found a similar pattern in a survey of knee osteoarthritis in the United Arab Emirates, where 51.0% were aware that joint pain is not the only symptom, 52.1% knew that joint stiffness is a sign of the disease, and 65.8% answered that osteoarthritis may lead to loss of joint movement [13]. That survey also asked about muscle weakness, recognized by 54.5%, an item the present questionnaire did not include.

Genetics was recognized as a risk factor by 39.4% of participants, and 74.4% correctly answered that aging is a risk factor. Recognition of a genetic contribution is consistent with evidence that hereditary factors influence susceptibility to osteoarthritis, including inherited variation in joint shape [14]. Almoftery et al. reported similar figures among women attending the clinics of Aseer Central Hospital, where 43.17% believed that genetic factors could lead to OA and 65.47% said that aging is a factor in OA [15].

Physical examination and X-rays were identified as diagnostic methods by 58.8% of participants, and 36.2% believed that blood tests are used. Osteoarthritis can be diagnosed clinically and imaging is not routinely required [16], while blood tests serve to exclude other causes of symptoms rather than to confirm the diagnosis [17]. Responses on aspirin were divided: 27.4% answered yes, 27.8% answered no and 44.8% did not know. Alghamdi et al. in Makkah, Saudi Arabia, reported that 62.9% identified clinical examination and X-rays as diagnostic methods, while 45.6% answered that blood tests are not used for diagnosis and 33.0% were unsure; that survey asked about analgesics in general rather than aspirin, and 35.0% agreed that they could improve symptoms [18].

On management, 50.0% of participants were aware that exercise benefits people with osteoarthritis, and 44.1% believed that acid-free diets are an effective treatment. Physical therapy was thought to relieve symptoms by 293 participants (66.3%), intra-articular stem cell injection was considered effective by 49.5%, and 55.4% believed that joint replacement surgery is the final option for symptom relief. These are the beliefs respondents reported, and they can be set against current guidance: the 2019 American College of Rheumatology and Arthritis Foundation guideline recommends against stem cell injection for hip and knee OA [19], while the National Institute for Health and Care Excellence recommends considering referral for hip, knee or shoulder replacement when joint symptoms substantially affect quality of life and non-surgical management is ineffective or unsuitable [16]. Alyami et al. in Jeddah reported comparable figures, with 69.0% of participants believing that exercise such as swimming is beneficial and 52.6% that acid-free diets are a proven treatment [11].

No statistically significant association was found between knowledge category and sex, age or education level. These results do not establish equivalent knowledge across groups: the comparisons were unadjusted and some strata contained few participants.

Limitations

Participants were recruited online by convenience sampling, so the sample cannot be assumed to represent the adult population of Bisha, and the margin of error used in the sample size calculation assumes probability sampling. Women (77.1%) and holders of a bachelor's degree (75.6%) predominated, only 10 participants were older than 60 years, and residents with limited internet access are likely to be underrepresented. Responses were self-reported and therefore open to recall and social

desirability bias, and the cross-sectional design with unadjusted comparisons allows neither causal inference nor control for confounding. Several items, particularly those on acid-free diets, aspirin, blood tests and stem cell injection, may have been understood differently by different respondents, and the aspirin item did not distinguish symptom relief from treatment recommendations. Evidence on the measurement properties of the Arabic questionnaire was not reported, and the scoring key and the threshold separating high from low knowledge were not specified, which limits the reproducibility and interpretation of the overall knowledge comparisons. Differences in population, item wording and scoring also mean that comparisons with earlier surveys are descriptive.

Conclusion

Adults surveyed in Bisha recognized osteoarthritis as a chronic and common condition, and three-quarters identified aging as a risk factor. Substantial gaps remained: fewer than half identified cartilage degeneration as the underlying mechanism, 34.6% attributed the disease to cold or wet weather, 36.2% believed that blood tests are used for diagnosis, and 44.1% regarded acid-free diets and 49.5% intra-articular stem cell injection as effective treatments. No statistically significant association was found between knowledge category and sex, age or education level. Local health education should address these particular misconceptions, especially those concerning diagnosis and unproven treatments.

Declarations

Authors' contributions. All authors contributed equally to all stages of the research work. All authors have read and agreed to the published version of the manuscript.

Conflict of interest. The authors declare that there is no conflict of interest regarding the publication of this article.

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Ethical approval and informed consent. The committee, approval reference and informed consent details are reported in Subjects and Methods.

References

1. Vina ER, Kwoh CK. Epidemiology of osteoarthritis: literature update. Curr Opin Rheumatol. 2018;30:160-7. doi:10.1097/BOR.0000000000000479.
2. Silverwood V, Blagojevic-Bucknall M, Jinks C, Jordan JL, Protheroe J, Jordan KP. Current evidence on risk factors for knee osteoarthritis in older adults: a systematic review and meta-analysis. Osteoarthritis Cartilage. 2015;23:507-15. doi:10.1016/j.joca.2014.11.019.
3. World Health Organization. Osteoarthritis [Internet]. Geneva: World Health Organization; 2023 Jul 14 [cited 2026 Sep 13]. Available from: https://www.who.int/news-room/fact-sheets/detail/osteoarthritis
4. Swain S, Sarmanova A, Mallen C, Kuo CF, Coupland C, Doherty M, et al. Trends in incidence and prevalence of osteoarthritis in the United Kingdom: findings from the Clinical Practice Research Datalink (CPRD). Osteoarthritis Cartilage. 2020;28:792-801. doi:10.1016/j.joca.2020.03.004.
5. Safiri S, Kolahi AA, Smith E, Hill C, Bettampadi D, Mansournia MA, et al. Global, regional and national burden of osteoarthritis 1990-2017: a systematic analysis of the Global Burden of Disease Study 2017. Ann Rheum Dis. 2020;79(6):819-28. doi:10.1136/annrheumdis-2019-216515.
6. Alahmed SK, Mohyeldin AM, Alshammari A, Alshammari ZF, Alhamdi RA, Alghaslan SA, et al. Knowledge and awareness regarding osteoarthritis and its factors in Hail region, Saudi Arabia. Cureus. 2023;15(3):e36557. doi:10.7759/cureus.36557.
7. Raosoft Inc. Sample size calculator [Internet]. Seattle (WA): Raosoft Inc. [cited 2025 Feb 24]. Available from: http://www.raosoft.com/samplesize.html
8. Saudi Census Portal [Internet]. Riyadh: General Authority for Statistics [cited 2025 Feb 24]. Available from: https://portal.saudicensus.sa/portal
9. Saudipedia. Bishah governorate [Internet]. Riyadh: Saudipedia [cited 2026 Sep 13]. Available from: https://saudipedia.com/en/bishah-governorate
10. Albaker AB, Al-Awn RMM, Basalem SM, Alharbi L, Al Salhi R, Alkhalifah KM, et al. Awareness and management of knee pain and osteoarthritis in Saudi Arabia: a cross-sectional analysis. Cureus. 2024;16(1):e52736. doi:10.7759/cureus.52736.
11. Alyami AH, Alswat MM, Omer IA, Ahmed MEH, Alshammari SH, Alsaggaf KW, et al. General population knowledge about osteoarthritis and its related risk factors in Jeddah Saudi Arabia. Saudi Med J. 2020;41(5):516-23. doi:10.15537/smj.2020.5.25061.
12. Alkalash SH, Alsyed AA, Alrashdi AA, Alqarni AS, Alessa MA, Alzubaidi HH, et al. Public knowledge of osteoarthritis in Al-Qunfudah governorate, Saudi Arabia. Cureus. 2023;15(2):e34892. doi:10.7759/cureus.34892.
13. Salahuddin Salih S, Mustafa Alsalihi R, Esam Mahboub N, Yasir Jasim N, Ali Almutawa R. Assessment of public knowledge and awareness of knee osteoarthritis among individuals aged 18-65 in the United Arab Emirates (UAE). Cureus. 2024;16(1):e52134. doi:10.7759/cureus.52134.
14. Wilkinson JM, Zeggini E. The genetic epidemiology of joint shape and the development of osteoarthritis. Calcif Tissue Int. 2021;109(3):257-76. doi:10.1007/s00223-020-00702-6.
15. Almoftery IM, Alkhalifah KM, Alalyani FA, Almutairi SM, Aljohani NN, Alkhamis AA, et al. Assessing the awareness regarding osteoarthritis and its related risk factors among women in Aseer Central Hospital. Cureus. 2023;15(6):e40420. doi:10.7759/cureus.40420.
16. National Institute for Health and Care Excellence. Osteoarthritis in over 16s: diagnosis and management. NICE guideline NG226 [Internet]. London: NICE; 2022 Oct 19 [cited 2026 Sep 13]. Available from: https://www.nice.org.uk/guidance/ng226/chapter/Recommendations
17. National Institute of Arthritis and Musculoskeletal and Skin Diseases. Osteoarthritis: diagnosis, treatment, and steps to take [Internet]. Bethesda (MD): NIAMS [cited 2026 Sep 13]. Available from: https://www.niams.nih.gov/health-topics/osteoarthritis/diagnosis-treatment-and-steps-to-take
18. Alghamdi MK, Elhefny MA, Basamih KA, AlSulami MA, Amodi NO, Algahwaji EJ, et al. The public's knowledge of osteoarthritis and its related risk factors in Makkah, Saudi Arabia. Cureus. 2023;15(2):e35457. doi:10.7759/cureus.35457.
19. Kolasinski SL, Neogi T, Hochberg MC, Oatis C, Guyatt G, Block J, et al. 2019 American College of Rheumatology/Arthritis Foundation guideline for the management of osteoarthritis of the hand, hip, and knee. Arthritis Care Res (Hoboken). 2020;72(2):149-62. doi:10.1002/acr.24131.