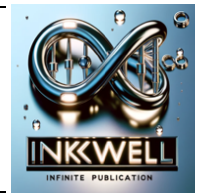


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Original Article

Awareness, Knowledge and Barriers to Physiotherapy Utilization in The Management of Knee Osteoarthritis Among the Al-Baha Population, Saudi Arabia

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Abstract

Background: Knee osteoarthritis (OA) is a prevalent degenerative joint disease-causing significant morbidity and functional limitations globally. Physiotherapy plays a key role in managing knee OA, offering non-invasive approaches to reduce symptoms and improve joint function. This study aimed to assess awareness, knowledge, and perceived barriers to physiotherapy use for knee OA among adults in the Al-Baha region of Saudi Arabia—an underrepresented area in musculoskeletal health research with limited data on physiotherapy utilization. **Methods:** A cross-sectional study was conducted among 781 participants in Al-Baha using a structured, self-administered Arabic-language online questionnaire. The survey collected demographic data, awareness and knowledge of knee OA and physiotherapy, and identified barriers and motivators to physiotherapy utilization. The instrument was pilot-tested before deployment. Participants were selected through convenience sampling. Ethical approval was obtained from the Institutional Review Board of the Faculty of Medicine, Al-Baha University. Data were analyzed using SPSS; descriptive and inferential statistics were used, with associations tested at a significance level of $p < 0.05$. **Results:** Among participants, 96.5% were familiar with knee OA. Joint pain (84.0%) was the most recognized symptom; advanced age (78.7%) and low physical activity (65.0%) were commonly identified causes. Physiotherapy was acknowledged as a treatment by 83.1%, with exercise therapy being the most recognized (67.0%). However, 51.7% believed exercise could worsen pain. Barriers included a lack of awareness (66.9%) and limited facility access (54.6%). Chi-square analysis revealed significant associations between physiotherapy knowledge and age ($p < 0.001$) and occupation ($p = 0.002$), but not with gender, education, or nationality. **Conclusion:** This study highlights high general awareness of knee OA and physiotherapy but reveals substantial knowledge gaps and barriers to service access. Public education, enhanced service availability, and culturally relevant outreach are needed to improve physiotherapy uptake in knee OA care.

Keywords: Knee osteoarthritis, Physiotherapy, Awareness, barriers, Saudi Arabia.

Introduction

Knee osteoarthritis is a prevalent degenerative joint disease that significantly impacts daily activities and quality of life, often leading to disability in advanced stages. It is characterized by progressive degeneration of the articular cartilage, resulting in pain, stiffness, joint effusion, and reduced mobility (Hsu & Siwiec, 2025). The global prevalence of knee OA has risen markedly in recent decades, primarily due to increasing life expectancy and rising obesity rates (Dantas et al., 2021).

Physiotherapy is a key non-invasive treatment modality in the management of osteoarthritis, offering effective pain relief and functional improvement for individuals with knee OA (Page et al., 2011). There is robust evidence supporting the efficacy of aerobic and strength-based exercise programs, both land- and water-based, in reducing pain and improving physical function in patients with mild to moderate knee and hip osteoarthritis (Golightly et al., 2012). However, many individuals remain unaware of the potential benefits of physiotherapy, which may reduce their likelihood of seeking this form of treatment (Teo et al., 2021). Understanding and addressing the barriers to awareness is crucial for optimizing therapeutic outcomes (Maly et al., 2006).

Targeted educational initiatives could help close the knowledge gap regarding the role of physiotherapy in managing knee OA. Research indicates that community engagement can encourage healthier behaviors and increase the utilization of physiotherapy services (Alshehri et al., 2018). Moreover, culturally tailored educational programs can potentially correct misconceptions and enhance public perceptions of physiotherapy (Bos, 2003).

Therefore, this study aims to assess the levels of

awareness and knowledge regarding physiotherapy in the management of knee OA among the population of Al Baha, to identify gaps and propose targeted interventions to improve awareness and access to care.

Methodology

This cross-sectional study was conducted to evaluate the awareness, knowledge and barriers to physiotherapy utilization in the management of knee osteoarthritis (OA) among the Al-Baha population, Saudi Arabia. A cross-sectional design was chosen for its efficiency in capturing a snapshot of population-level knowledge and perceptions at a single point in time. This approach is cost-effective, time-efficient, and particularly well-suited for public health research aiming to identify patterns and associations in large community samples.

The region has an estimated population of approximately 500,000 individuals and serves as the geographical focus of this research. The study was conducted using a structured, self-administered questionnaire distributed exclusively through online platforms to ensure broad and accessible participation.

A total of 781 participants were included in the study. The sample comprised both males and females, with ages ranging from 18 to over 60 years. Educational levels varied from primary education to postgraduate degrees. Participants represented a range of occupational backgrounds and were drawn from both urban and rural areas within the Al-Baha region, thereby enhancing the reliability and representativeness of the findings.

Participants were eligible for inclusion if they were 18 years of age or older, resided in the Al-Baha region, were fluent in Arabic, and capable of

providing informed consent. Exclusion criteria included individuals under 18 years of age, non-residents of Al-Baha, those with cognitive impairments that could hinder comprehension, and anyone unable to complete the online form independently. To maintain data integrity, duplicate submissions and incomplete responses were excluded.

A convenience sampling technique was employed to recruit participants, targeting residents of the Al-Baha region who were accessible through online platforms. Although not randomized, this approach was considered suitable for the study's cross-sectional nature and allowed the researchers to reach a broad section of the population efficiently. Efforts were made to include individuals from varied demographic backgrounds, including different age groups, education levels, and urban or rural locations, to enhance generalizability and minimize sampling bias.

Questionnaire Structure and Data Collection

The questionnaire was developed by the research team after reviewing relevant literature and existing validated tools. It comprised several sections, including demographic information (age, gender, education level, occupation, urban/rural residence), knowledge and awareness about knee osteoarthritis, understanding of physiotherapy as a treatment option, attitudes toward its effectiveness, and perceived barriers to physiotherapy utilization. Prior to the main data collection, the questionnaire was pilot-tested on 30 individuals to assess clarity, relevance, and cultural appropriateness. Necessary adjustments were made based on participant feedback.

Data collection was carried out exclusively between November 2024 to January 2025 through an online format using Google Forms. The

questionnaire link was disseminated through popular social media platforms and messaging applications such as WhatsApp, X, and Telegram, targeting individuals from diverse demographic backgrounds within the Al-Baha community.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Review Board Committee of the Faculty of Medicine at Al-Baha University in October 2024 under Approval No. (IRB/SUR/BU-FM/2024/116). All procedures followed the ethical standards of the Declaration of Helsinki. Informed consent was obtained from all participants prior to data collection. Participants were informed of the study's purpose, the voluntary nature of their participation, and their right to withdraw at any time without consequence. Confidentiality and anonymity of all collected data were maintained throughout the study.

Sample size estimation

The sample size was determined using a standard formula for cross-sectional studies, assuming a 95% confidence level, a 5% margin of error, and an expected awareness prevalence of 50%, which yielded a minimum requirement of 385 participants.

Statistical Analysis

Data entry was performed using Microsoft Excel 2021, where a structured spreadsheet was developed to facilitate accurate and systematic data input. Comprehensive data cleaning procedures were conducted to ensure the accuracy, consistency, and integrity of the collected responses. Following appropriate data coding, statistical analysis was carried out using IBM SPSS version 26 Statistics software.

Descriptive statistics, including frequencies and percentages, were used to summarize participants' demographic characteristics and responses. Chi-square tests were employed to examine associations between demographic variables and participants' knowledge and awareness of physiotherapy in the management of knee osteoarthritis. A p-value of less than 0.05 was considered statistically significant.

Results

A total of 781 Participants were included in the analysis. Frequencies and percentages were used to describe demographic characteristics and awareness levels. The demographic characteristics of the participants are summarized in Table 1. The majority of participants were between the ages of 18 and 29 years (44.6%), followed by those aged 40 to 49 years (28.2%). Most participants were Saudi nationals (99.6%), with a slightly higher proportion of females (56.9%) compared to males (43.1%). In terms of educational attainment, the majority held a college degree (58.6%), while a smaller proportion had completed primary education (0.9%) or held doctoral degrees (0.6%). Regarding occupation, governmental employees represented the largest group (36.4%), followed by students (34.8%), while private employees and business owners constituted the smallest groups at 1.4% and 0.8%, respectively. Retirees and healthcare providers each accounted for 5.5% of the participants.

Table 2 highlights the participants' awareness of knee osteoarthritis. A large majority (96.5%) reported having heard of the condition. Commonly identified symptoms included joint pain (84.0%), stiffness (51.2%), and swelling (34.7%).

Table 1: Demographic factors of the participants (N=781).

Variables		No	%
Age	18-29	348	44.6%
	30-39	110	14.1%
	40-49	220	28.2%
	50-60	84	10.8%
	> 60	19	2.4%
Nationality	Saudi	778	99.6%
	Non-Saudi	3	0.4%
Gender	Male	337	43.1%
	Female	444	56.9%
Educational level	None	1	0.1%
	Primary	7	0.9%
	Intermediate	17	2.2%
	High	158	20.2%
	Diploma	93	11.9%
	College	458	58.6%
	Master	42	5.4%
	Doctoral	5	0.6%
Occupation	Student	272	34.8%
	Governmental employee	284	36.4%
	Private employee	11	1.4%
	Own business	6	0.8%
	Not employee	122	15.6%
	Retired	43	5.5%
	Healthcare provider	43	5.5%

Fewer participants identified loss of movement (33.2%) as a symptom, while 7.7% reported no knowledge of symptoms. Regarding causes, advanced age (78.7%) and low physical activity (65.0%) were the most recognized, followed by obesity (63.8%) and injuries (46.4%). Genetics was less frequently identified (29.3%), and 4.4% of participants reported no knowledge of causes. The cartilage was the most frequently recognized part of the knee affected by osteoarthritis (75.6%), while the role of bones and muscles was less commonly identified. Preventative measures most cited were maintaining a healthy weight (89.5%) and avoiding high-impact activities (58.9%).

Table 2: Awareness of the participants toward knee osteoarthritis (N=781).

Questions	Response	No	N %
Have you heard of knee osteoarthritis?	No	27	3.5%
	Yes	754	96.5%
Symptoms of knee osteoarthritis	Joint pain	656	84.0%
	Stiffness	400	51.2%
	Swelling	271	34.7%
	loss of movement	259	33.2%
	I do not know	60	7.7%
Causes of knee osteoarthritis	Advanced age	615	78.7%
	Injuries	362	46.4%
	Obesity	498	63.8%
	Genetics	229	29.3%
	Low physical activity	508	65.0%
	Do not know	34	4.4%
Part of knee affected by knee osteoarthritis	Cartilage	590	75.6%
	Bone	271	34.7%
	Muscle	92	11.8%
	Do not know	70	9.0%
How to prevent knee osteoarthritis	Avoid high-impact activities.	416	58.9%
	Maintain a healthy weight	632	89.5%
	Use of knee braces	205	29.0%
	I do not know	28	4.0%

The participants' awareness of physiotherapy as a treatment for knee osteoarthritis is summarized in Table 3. Most participants (83.1%) were aware of physiotherapy as a treatment option, with the most common sources of knowledge being family and friends (39.8%), social media (37.6%), and the internet (37.5%). Among the therapeutic options, exercise was the most commonly recognized (67.0%), followed by massage (57.6%) and the use of assistive devices (39.4%). Regarding effective exercises, strengthening exercises (60.1%) and walking (57.9%) were the most frequently identified. A large proportion of participants (96.0%) believed that physiotherapy could reduce pain and improve joint function, while 73.6% believed it could reduce reliance on painkillers.

About 51.6% of participants reported that they or someone they knew had received physiotherapy, and 76.7% believed physiotherapy could prevent or delay the need for surgery.

Table 3: Awareness of the participants toward physical therapy (N=781).

Questions	Response	No	N %
Have you heard of physical therapy as an option for treating knee osteoarthritis?	No	132	16.9%
	Yes	649	83.1%
Source of knowledge about physical therapy and its role in treating knee osteoarthritis	Physician	263	33.7%
	Internet	293	37.5%
	Social media	294	37.6%
	Family and friends	311	39.8%
	Never hear of it	116	14.9%
Types of physical therapy can be used in treating knee osteoarthritis	Exercise	523	67.0%
	Massage	450	57.6%
	Use of assistive devices (such as braces)	308	39.4%
	Awareness and education	262	33.5%
	I do not know	81	10.4%
Which exercise is effective in treatment of knee osteoarthritis	Walking	452	57.9%
	Strengthening exercises	469	60.1%
	yoga or stretching exercises	243	31.1%
	High impact sports (such as running and jumping)	71	9.1%
	I do not know	83	10.6%
Can physical therapy help reduce pain and improve joint function in osteoarthritis?	No	31	4.0%
	Yes	750	96.0%
Do you think	No	212	27.1%

exercise can increase the pain associated with knee osteoarthritis?	Yes	404	51.7%
	I do not know	165	21.1%
	No	86	11.0%
Do you think physical therapy can reduce the need for painkillers?	Yes	575	73.6%
	I do not know	120	15.4%
	No	378	48.4%
Have you or anyone you know ever received physical therapy for knee osteoarthritis?	No	378	48.4%
	Yes	403	51.6%
In your opinion, how effective is physical therapy in treating knee osteoarthritis?	I do not know	138	17.7%
	Ineffective	38	4.9%
	Effective	430	55.1%
	Very effective	175	22.4%
Do you think physical therapy can prevent or delay the need for knee surgery?	No	64	8.2%
	Yes	599	76.7%
	I do not know	118	15.1%

Barriers and motivators related to accessing physiotherapy are outlined in Table 4. The most commonly reported barriers were a lack of awareness (66.9%), belief in its ineffectiveness (55.6%), and a lack of nearby facilities (54.6%). Costs were also identified as a barrier by 40.8% of

participants (Figure 1). Despite these barriers, 85.3% of participants indicated they would consider physiotherapy if diagnosed with knee osteoarthritis, and 49.8% were very likely to recommend it to others. To increase awareness, most participants suggested public awareness campaigns (84.1%) and social media platforms (67.3%) as effective strategies.

Table 4: Barriers and motivators of using physical therapy (N=781).

Questions	Response	No	N %
How likely would you be to recommend physical therapy to someone with knee osteoarthritis?	Unlikely	24	3.1%
	Neutral	98	12.5%
	likely	270	34.6%
	Very likely	389	49.8%
Would you consider physical therapy if you were diagnosed with knee osteoarthritis?	No	41	5.2%
	Yes	666	85.3%
	I do not know	74	9.5%
What should be done to increase the awareness of physical therapy in treating knee osteoarthritis	Public awareness campaigns	656	84.1%
	Community workshops	320	41.0%
	Social Media and Digital Platforms	525	67.3%

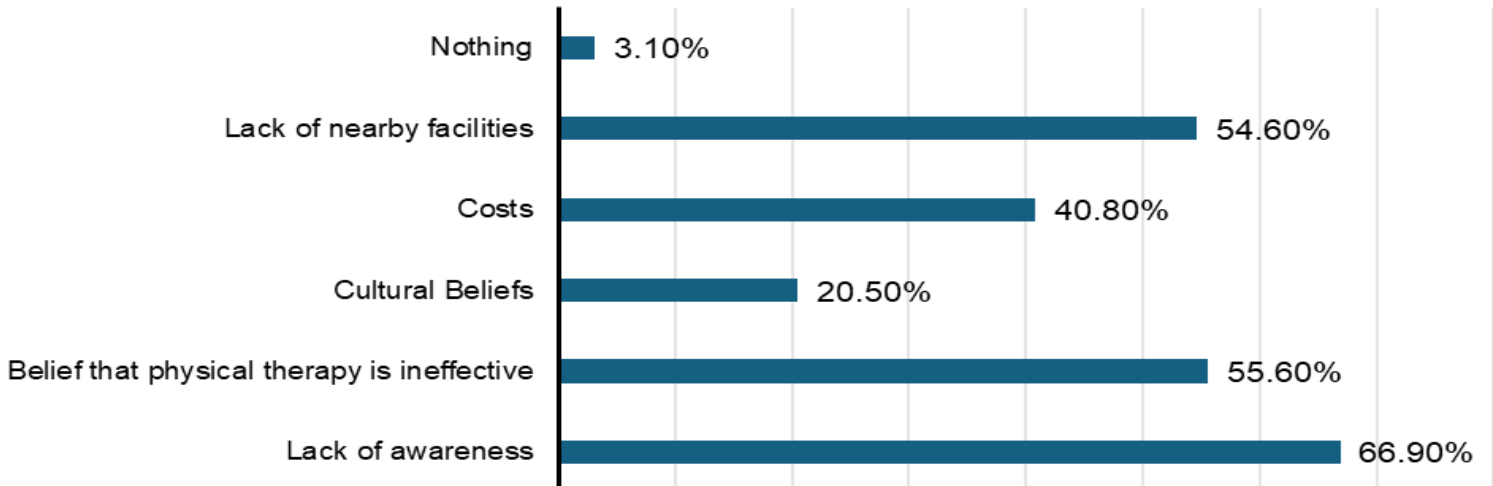


Figure 1: Barriers preventing people from accessing the physical therapy

To examine the association between awareness of physiotherapy's role in managing knee osteoarthritis (OA) and demographic characteristics, chi-square tests of independence were conducted. As shown in Table 5, awareness levels varied significantly across age groups and occupational categories. Participants aged 50–60 years demonstrated the highest awareness (96.4%), while those aged 18–29 years reported the lowest (76.7%). Similarly, retired individuals

(95.3%) and governmental employees (86.3%) showed notably higher awareness compared to other occupational groups. The associations between awareness and both age ($p < 0.001$) and occupation ($p = 0.002$) were statistically significant. In contrast, no significant associations were found between awareness and gender ($p = 0.331$), nationality ($p = 0.434$), or educational level ($p = 0.375$), indicating consistent awareness across these variables.

Table 5: The association between awareness of physical therapy and demographic factors of the participants (N=781).

Variables		Have you heard of physical therapy as an option for treating knee osteoarthritis?				
		No		Yes		P-value
		F	%	F	%	
Age	18-29	81	23.3%	267	76.7%	0.000*
	30-39	9	8.2%	101	91.8%	
	40-49	35	15.9%	185	84.1%	
	50-60	3	3.6%	81	96.4%	
	> 60	4	21.1%	15	78.9%	
Nationality	Saudi	132	17.0%	646	83.0%	0.434
	Non-Saudi	0	0.0%	3	100.0%	
Gender	Male	62	18.4%	275	81.6%	0.331
	Female	70	15.8%	374	84.2%	
Educational level	None	0	0.0%	1	100.0%	0.375
	Primary	1	14.3%	6	85.7%	
	Intermediate	1	5.9%	16	94.1%	
	High	35	22.2%	123	77.8%	
	Diploma	11	11.8%	82	88.2%	
	College	77	16.8%	381	83.2%	
	Master	7	16.7%	35	83.3%	
	Doctoral	0	0.0%	5	100.0%	
Occupation	Student	67	24.6%	205	75.4%	0.002*
	Governmental employee	39	13.7%	245	86.3%	
	Private employee	0	0.0%	11	100.0%	
	Own business	1	16.7%	5	83.3%	
	Not employee	17	13.9%	105	86.1%	
	Retired	2	4.7%	41	95.3%	
	Healthcare provider	6	14.0%	37	86.0%	

Discussion

This study assessed the awareness and knowledge of physiotherapy in the management of knee osteoarthritis (OA) among residents of Al-Baha, Saudi Arabia. The results demonstrate a high overall awareness of knee OA (96.5%) and physiotherapy (83.1%), yet reveal specific knowledge gaps and considerable barriers to accessing physiotherapy services. While joint pain was the most commonly identified symptom (84.0%), awareness of other features such as stiffness (51.2%) and reduced joint mobility (33.2%) was relatively low. Participants also recognized advanced age (78.7%) and low physical activity (65.0%) as key risk factors, but showed limited awareness of hereditary influences (29.3%). These trends align with global literature indicating that while general awareness of OA is widespread, knowledge of its full clinical profile remains incomplete (Hsu & Siwiec, 2025; Dantas, Salvini, & McAlindon, 2021). Similar findings have been reported in various regions of Saudi Arabia (PAGE, Hinman, & Bennell, 2011; Golightly, Allen, & Caine, 2012; Teo et al., 2021) and other Gulf countries, including the UAE (Bunzli et al., 2019).

Most participants cited family and friends (39.8%), social media (37.6%), and internet sources (37.5%) as their primary sources of information on physiotherapy. This underscores the growing role of digital and informal networks in health education—a trend supported by prior research in Saudi Arabia (Kazi et al., 2023; Alyami et al., 2020). Notably, nearly one-third of participants received their information from physicians, a higher proportion than that reported in similar studies where physician input was under 10% (Alanazi et al., 2021; Alahmed et al., 2023).

Exercise was the most commonly recognized physiotherapy intervention (67.0%), consistent with

clinical guidelines recommending exercise as first-line therapy for OA (Nguyen et al., 2016; Kong, Wang, & Zhang, 2022; Zeng et al., 2021). However, the belief that exercise could worsen OA symptoms (51.7%) reveals persistent misconceptions. Such views may reduce adherence to physiotherapy and delay treatment-seeking behavior, highlighting the need for corrective public education campaigns.

Barriers to physiotherapy utilization were substantial. A lack of awareness (66.9%) and doubts about physiotherapy's effectiveness (55.6%) were the most cited obstacles, followed by limited access to facilities (54.6%) and cost concerns (40.8%). These findings mirror barriers reported in both Saudi and international studies (Al Ghamdi et al., 2019; Alzakri et al., 2023; Shakya et al., 2024; Alnaqbi et al., 2021), underscoring the importance of addressing structural and perceptual obstacles through health policy and system-level interventions.

Demographic analysis revealed significant associations between awareness levels and factors such as age and occupation. Adults aged 50–60 years reported the highest awareness (96.4%), likely reflecting their greater exposure to OA-related symptoms. Governmental employees and retirees showed higher awareness than students, aligning with prior evidence linking occupational exposure and age to increased health literacy (Jack et al., 2010; Abuduxike et al., 2019).

Participants overwhelmingly endorsed public awareness campaigns (84.1%) and the use of social media platforms (67.3%) as effective strategies to improve understanding and promote physiotherapy. This suggests strong public support for scalable, culturally appropriate outreach efforts tailored to community needs.

Study Limitations

Several limitations should be acknowledged. First, the use of a self-reported questionnaire may have introduced recall or social desirability bias. Second, the cross-sectional design limits causal inferences between demographic variables and awareness levels. Third, as the study was confined to a single region, findings may not be generalizable to the broader Saudi population. Lastly, the absence of qualitative data limited the exploration of personal beliefs and experiences that may influence physiotherapy utilization.

Conclusion

This study highlights a high general awareness of knee OA and physiotherapy among Al-Baha residents but also reveals critical gaps in specific knowledge and significant barriers to physiotherapy access. Targeted education, improved service availability, and digital outreach strategies are essential to enhance public engagement and optimize the management of knee OA in the region. Further research is warranted to evaluate the impact of such interventions on patient behavior and health outcomes.

Implications and Future Research

To address identified gaps, multi-pronged strategies are needed. These include expanding access to physiotherapy services, developing culturally tailored education programs, and leveraging digital platforms for community

outreach. Future research should incorporate mixed-method designs and broader geographic sampling to enhance understanding of barriers and facilitators to physiotherapy utilization across diverse Saudi communities.

Declaration Statements

Author Contributions

All authors significantly contributed to the work reported, including conception, study design, execution, data acquisition, analysis, and interpretation. They actively participated in drafting, revising, or critically reviewing the manuscript, provided final approval of the version to be published, agreed on the journal submission, and accepted accountability for all aspects of the work.

Data Availability Statement

The authors will transparently provide the primary data underpinning the findings or conclusions of this article, without any unjustified reluctance. If need from editorial team.

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Conflicts of Interest

The authors declare no potential conflicts of interest related to the research, writing, or publication of this work.

Reference

- Abuduxike, G., Aşut, Ö., Vaizoğlu, S. A., & Cali, S. (2019). Health-seeking behaviors and its determinants: A facility-based cross-sectional study in the Turkish Republic of Northern Cyprus. *International Journal of Health Policy and Management*. <https://doi.org/10.15171/ijhpm.2019.106>
- Al Ghamdi, A., Al Shehri, A., Ramirez, O., Shamshi, S., & Khan, S. (2019). Perceived barriers among healthcare professionals for access to physical therapy service in Saudi Arabia. *Physikalische Medizin, Rehabilitationsmedizin, Kurortmedizin*, 29(1), 26–38. <https://doi.org/10.1055/s-0043-124973>
- Alahmed, S. K., Mohyeldin, A. M., Alshammari, A., Alshammari, Z. F., Alhamdi, R. A., Alghaslan, S. A., Alshammari, H. F., Alshamry, F. F., Alshammari, A. H., & Alhamdi, M. S. G. (2023). Knowledge

- and awareness regarding osteoarthritis and its factors in Hail region, Saudi Arabia. *Cureus*, 15(3), e36557. <https://doi.org/10.7759/cureus.36557>
- Alanazi, F., Alhokel, K. H., Alsaadoon, S. A., Almutairi, A. J., Alshammary, F. H., Alqabbani, A. A., Kutbi, H. A. H., & Sami, W. (2021). Awareness of osteoarthritis among general population in Sudair, Saudi Arabia. *Advances in Human Biology*, 11(3), 245–249. https://doi.org/10.4103/aihbm.aihbm_46_21
- Alanzi, T., & Al-Habib, D. K. (2020). The use of social media by healthcare quality personnel in Saudi Arabia. *Journal of Environmental and Public Health*, 2020, 1417478. <https://doi.org/10.1155/2020/1417478>
- AlMuammar, S. A., Noorsaeed, A. S., Alafif, R. A., Kamal, Y. F., & Daghistani, G. M. (2021). The use of internet and social media for health information and its consequences among the population in Saudi Arabia. *Cureus*, 13(9), e18338. <https://doi.org/10.7759/cureus.18338>
- Alnaqbi, A., Shousha, T., AlKetbi, H., & Hegazy, F. A. (2021). Physiotherapists' perspectives on barriers to implementation of direct access of physiotherapy services in the United Arab Emirates: A cross-sectional study. *PLOS ONE*, 16(6), e0253155. <https://doi.org/10.1371/journal.pone.0253155>
- Alshehri, M. A., Alhasan, H., Alayat, M., Al-Subahi, M., Yaseen, K., Ismail, A., & Alghamdi, M. (2018). Factors affecting the extent of utilization of physiotherapy services by physicians in Saudi Arabia. *Journal of Physical Therapy Science*, 30(2), 216–222. <https://doi.org/10.1589/jpts.30.216>
- Alyami, A. H., Alswat, M. M., Omer, I. A., Ahmed, M. E., Alshammari, S. H., Alsaggaf, K. W., & Aljafari, D. A. (2020). General population knowledge about osteoarthritis and its related risk factors in Jeddah, Saudi Arabia. *Saudi Medical Journal*, 41(5), 516–523. <https://doi.org/10.15537/smj.2020.5.25061>
- Alzakri, A. A., Alsultan, O. A., Alhuqbani, M. N., Alaqeel, A. A., Alrashed, A. A., & Alrashidi, A. M. (2023). Barriers and facilitators to physiotherapy among adult orthopedic patients at King Khalid University Hospital, Riyadh, Kingdom of Saudi Arabia. *Saudi Medical Journal*, 44(7), 679–686. <https://doi.org/10.15537/smj.2023.44.7.20230276>
- Bunzli, S., O'Brien, P., Ayton, D., Dowsey, M., Gunn, J., Choong, P., & Manski-Nankervis, J. (2019). Misconceptions and the acceptance of evidence-based nonsurgical interventions for knee osteoarthritis: A qualitative study. *Clinical Orthopaedics and Related Research*, 477(9), 1975–1983. <https://doi.org/10.1097/CORR.0000000000000784>
- Dantas, L. O., Salvini, T. de F., & McAlindon, T. E. (2021). Knee osteoarthritis: Key treatments and implications for physical therapy. *Brazilian Journal of Physical Therapy*, 25(2), 135–146. <https://doi.org/10.1016/j.bjpt.2020.08.004>
- Fitzgerald, K., & Susko, A. (2013). The pain-relieving qualities of exercise in knee osteoarthritis. *Open Access Rheumatology: Research and Reviews*, 5, 81–87. <https://doi.org/10.2147/OARRR.S53974>
- Golightly, Y. M., Allen, K. D., & Caine, D. J. (2012). A comprehensive review of the effectiveness of different exercise programs for patients with osteoarthritis. *The Physician and Sportsmedicine*, 40(4), 52–65. <https://doi.org/10.3810/psm.2012.11.1988>
- Hsu, H., & Siwec, R. M. (2025). Knee osteoarthritis. In *StatPearls*. StatPearls Publishing. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK507884/>
- Jack, K., McLean, S. M., Moffett, J. K., & Gardiner, E. (2010). Barriers to treatment adherence in physiotherapy outpatient clinics: A systematic review. *Manual Therapy*, 15(3), 220–228. <https://doi.org/10.1016/j.math.2009.12.004>
- Kazi, A., Alrabiah, H. F., Alosaimi, K. F., Alshehri, N. A., Alhalabi, O. M. B., Alshamrani, A. S., AlQuaiz, A. M., & Hamid, B. (2023). Health-seeking behaviors and misconceptions about osteoarthritis in patients and the general population in Saudi Arabia. *Healthcare*, 11(9), 1208. <https://doi.org/10.3390/healthcare11091208>
- Kong, H., Wang, X.-Q., & Zhang, X.-A. (2022). Exercise for osteoarthritis: A literature review of pathology and mechanism. *Frontiers in Aging Neuroscience*, 14, 854026. <https://doi.org/10.3389/fnagi.2022.854026>
- Korthals-de Bos, I. B. C., Smidt, N., van Tulder, M. W., et al. (2003). Cost effectiveness of physiotherapy, manual therapy, and general practitioner care for neck pain: Economic evaluation alongside a randomised controlled trial. *BMJ*, 326(7395), 911. <https://doi.org/10.1136/bmj.326.7395.911>
- Latunji, O. O., & Akinyemi, O. O. (2018). Factors influencing health-seeking behaviour among civil servants in Ibadan, Nigeria. *Annals of Ibadan Postgraduate Medicine*, 16(1), 52–60. <https://pubmed.ncbi.nlm.nih.gov/3025455>
- Maly, M. R., Costigan, P. A., & Olney, S. J. (2006). Determinants of self-efficacy for physical tasks in people with knee osteoarthritis. *Arthritis & Rheumatism*, 55(1), 94–101.

<https://doi.org/10.1002/art.21701>

- Mo, L., Jiang, B., Mei, T., & Zhou, D. (2023). Exercise therapy for knee osteoarthritis: A systematic review and network meta-analysis. *Orthopaedic Journal of Sports Medicine*, 11(5), 23259671231172773. <https://doi.org/10.1177/23259671231172773>
- Nguyen, C., Lefèvre-Colau, M.-M., Poiraudreau, S., & Rannou, F. (2016). Rehabilitation (exercise and strength training) and osteoarthritis: A critical narrative review. *Annals of Physical and Rehabilitation Medicine*, 59(3), 190–195. <https://doi.org/10.1016/j.rehab.2016.02.010>
- Page, C. J., Hinman, R. S., & Bennell, K. L. (2011). Physiotherapy management of knee osteoarthritis. *International Journal of Rheumatic Diseases*, 14(2), 145–151. <https://doi.org/10.1111/j.1756-185X.2011.01612.x>
- Salih, S. S., Alsalihi, R. M., Mahboub, N. E., Jasim, N. Y., & Almutawa, R. A. (2024). Assessment of public knowledge and awareness of knee osteoarthritis among individuals aged 18–65 in the United Arab Emirates (UAE). *Cureus*, 16(1), e52134. <https://doi.org/10.7759/cureus.52134>
- Shakya, N. R., Emén, A., Webb, G., Myezwa, H., Karmacharya, B. M., & Stensdotter, A.-K. (2024). Barriers and facilitators for strengthening physiotherapy services in Nepal: Perspectives from physiotherapists and health providers. *BMC Health Services Research*, 24, Article 876. <https://doi.org/10.1186/s12913-024-11272-w>
- Teo, P. L., Bennell, K. L., Lawford, B. J., Egerton, T., Dziedzic, K. S., & Hinman, R. S. (2021). Patient experiences with physiotherapy for knee osteoarthritis in Australia—a qualitative study. *BMJ Open*, 11(3), e043689. <https://doi.org/10.1136/bmjopen-2020-043689>
- Zeng, C.-Y., Zhang, Z.-R., Tang, Z.-M., & Hua, F.-Z. (2021). Benefits and mechanisms of exercise training for knee osteoarthritis. *Frontiers in Physiology*, 12, 794062. <https://doi.org/10.3389/fphys.2021.794062>