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Public insight into knee osteoarthritis: a cross-sectional study from the West Bank, Palestine

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Abstract

Background Osteoarthritis (OA) is a significant global health concern and is characterized by the degeneration of joint structures, leading to pain, stiffness, and functional limitations It is estimated that 654.1 million individuals are affected by osteoarthritis worldwide, with females, especially those older than 60 years of age, being the population most impacted. However, there remains a gap in understanding the awareness of knee osteoarthritis among specific populations, such as the Palestinian community in the West Bank, thus, highlighting the need for targeted research to address this health disparity.

Methods A cross-sectional survey was conducted in the West Bank from August to September 2024. Participants were recruited from 11 cities and a validated questionnaire adapted from a previous study was used to collect the data. The reliability of the questionnaire was assessed using Cronbach's alpha, yielding a value of standard alpha = 0.71, which is an acceptable value. The survey collected demographic data, clinical characteristics, knowledge of osteoarthritis risk factors, symptoms, and attitudes towards treatment options. R Statistical Software was used for data analysis, which included descriptive statistics, chi-square tests, and logistic regression to explore the relationships between demographic factors and osteoarthritis knowledge, whereby a p-value of ≤ 0.05 was set up as a significance level.

Results A total of 725 valid responses were included in our study. Among the participants, 569 were female, predominantly aged 25 or younger (66%, $n = 479$), and 62% ($n = 450$) were single. Knowledge assessment revealed that 80% ($n = 580$) recognized knee osteoarthritis as a chronic disease, while only 51% ($n = 369$) understood its impact on joint involvement. The majority identified high BMI (87%, $n = 632$), advancing age (94%, $n = 683$), and previous knee injury (72%, $n = 520$) as risk factors, although only 42% ($n = 306$) acknowledged genetics as one. Most participants were aware of the management strategies, including analgesics (70%, $n = 510$) and physiotherapy (80%, $n = 579$). However, 66% ($n = 478$) scored low for overall knowledge regarding knee osteoarthritis.

Conclusion This study emphasizes the critical importance of raising awareness and knowledge about osteoarthritis within the Palestinian community. Despite being widely known as a long-term issue, there are still noticeable gaps in the understanding of the joint impact, potential risks, and effective treatment methods for osteoarthritis. The use of informal sources highlights the importance of specific educational programs by healthcare providers.

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Keywords Knee osteoarthritis, Risk Assessment, West Bank, Awareness, Risk factors

Introduction

Osteoarthritis (OA) is a chronic disabling disorder characterized by the degeneration of the joint complex (articular cartilage, subchondral bone, and synovium) that causes friction between the two bone ends [1]. The pathological changes that occur in OA include progressive loss and destruction of articular cartilage, thickening of the subchondral bone, formation of osteophytes, variable degrees of inflammation of the synovium, degeneration of ligaments and menisci of the knee, and hypertrophy of the joint capsule [2]. These changes often cause symptoms such as pain, stiffness, reduced physical function, and limited movement, of which joint pain is considered the most common complaint and hallmark of the disease [2, 3]. The chronic nature and symptoms of OA may affect the physical function and psychological parameters of those affected by the disease, thus reducing their quality of life [4].

Worldwide, the prevalence of knee OA in individuals aged ≥ 15 years was 16.0% and 22.9% in individuals aged ≥ 40 years. The incidence of knee OA was 203 per 10,000 person-years in individuals aged ≥ 20 years. The prevalence and incidence vary substantially between countries and increase with age [5]. In general, women above the age of 60 years are estimated to be more affected by OA compared to men (18% and 9.6%, respectively) [1]. A study published in June 2022 reported the prevalence and incidence of OA in the Middle East and North Africa (MENA) region between1990 and 2019, and found that the age-standardized prevalence of OA in 2019 was 9.3% higher than that found in 1990. Similar results were found for the age-standardized annual incidence of OA, demonstrating a 9.4% increase since 1990 [6].

There are several risk factors that are associated with the development of OA such as older age, female sex, high body mass index (BMI), prior joint injury, genetic predisposition, occupational and physical activities, joint misalignment, and abnormal joint shape [2, 7].

The aim of this study is to assess the awareness and knowledge level regarding knee osteoarthritis and its risk factors among the general Palestinian population in the West Bank (WB). To the best of our knowledge, this is the first paper that discusses the awareness of the Palestinian population regarding osteoarthritis and among the first in the region.

Methodology

Study design, setting, and period

A descriptive cross-sectional study was conducted to assess Palestinian insight into knee osteoarthritis. The study included Palestinian individuals aged 18 years or older residing in the West Bank of Palestine. The participants were selected from 11 West Bank cities: Hebron, Jerusalem, Ramallah, Jenin, Tubas, Tolkarm, Bethlehem, Nablus, Salfeet, Qalqeliah, and Jericho. Data were gathered from August to September 2024.

Participants

Palestinian individuals aged 18 years and older residing in the West Bank, Palestine, were eligible for inclusion in the study. In contrast, individuals younger than 18 years of age, those living outside the West Bank, and those who did not complete the survey were excluded. The study recruited 725 participants, determined through sample size calculation using the Raosoft online calculator [8]. The calculation was based on a 95% confidence level, 5% margin of error, and 50% response rate. The population size, estimated at approximately 3,250,000 on July 11, 2023, was obtained from the Palestinian Central Bureau of Statistics (PCBS) [9].

Research instruments

The English and Arabic versions of the questionnaire used in this study were obtained with permission from Salahuddin Salih S. et al. [10]. This questionnaire was originally developed to measure knowledge and awareness of knee osteoarthritis among individuals aged 18 to 65 years in the United Arab Emirates. The Arabic version of the online questionnaire was presented to the participants, including a comprehensive introduction outlining the study's objectives, the process for withdrawal, privacy assurances, and data confidentiality. Participants were required to provide informed consent at this stage, with the choice to decline by selecting the "No" option. In this study, we used the Knee Osteoarthritis Awareness Questionnaire, which consists of 25 items. The reliability of the questionnaire was assessed using Cronbach's alpha, which yielded a standard alpha value of 0.71, indicating acceptable internal consistency, as shown in Appendix 1. After obtaining consent, the participants continued to complete the questionnaire, which consisted of six distinct sections. The first section collected demographic information through 8 items, including participants' gender, age, residence, educational level, marital status, employment, source of information about osteoarthritis, and question asking if they know someone diagnosed with osteoarthritis. The second section consisted of 4 items assessed participants' general awareness of knee osteoarthritis. The third section consisted of 1 item explored participants' understanding of the disease's underlying mechanisms. The fourth section consisted

of 6 items that identified the participants' knowledge of risk factors that may increase the likelihood of developing knee osteoarthritis. The fifth section examined participants' recognition of common symptoms associated with the condition through 8 items. The sixth section consisted of 6 items regarding participants' awareness of the treatment options for knee osteoarthritis. The questionnaire was modified to fit the Palestinian context. An English version of the modified questionnaire is available as a supplementary material. [Additional file 1]

Ethics statement and informed consent

This study was conducted in strict conformity with the Helsinki Declaration and cleared by Institutional Review Board (IRB) of the Palestine Polytechnic University (PPU) and was assigned the following reference number (Ref No.:KA/41/2024/3). The executives were approached with the objectives of the study to obtain administrative clearance. Informed consent was obtained from all participants through a specific question included in the online survey used to collect their responses. Participants were informed about the study's purpose, procedures, and their rights before providing consent. By completing the survey, participants indicated their voluntary agreement to participate in this cross-sectional study. Those who refused to participate indicated that by choosing 'no', in which cases their responses were neglected and not used in our study.

Table 1 Baseline characteristic of the participants. (should be placed at line 167)

Characteristic	*N* = 725
Age group	
≤ 25	479 (66%)
> 25	246 (34%)
Sex	
Female	569 (78%)
Male	156 (22%)
Marital status	
Divorced| Widow	11 (1.5%)
Married	264 (36%)
Single	450 (62%)
Education. Level	
Preuniversity	96 (13%)
University| Postgrad	629 (87%)
Residency	
Bethlehem	92 (13%)
Hebron	221 (30%)
Jenin	113 (16%)
Jericho	35 (4.8%)
Jerusalem	57 (7.9%)
Nablus	18 (2.5%)
Qalqeliah	4 (0.6%)
Ramallah	38 (5.2%)
Salfeet	35 (4.8%)
Tolkarm	30 (4.1%)
Tubas	82 (11%)
Do you know someone diagnosed with osteoarthritis.	
No	306 (42%)
Yes	419 (58%)

1 n (%)

Data analysis

R Statistical Software (version 4.1.3; R Core Team, 2022) was used for all statistical analyses. Frequency distributions and percentages were utilized for categorical variables to provide descriptive statistics. We used the cross-tabulation method and chi-square test to analyze the connection between participants' demographic variables and their knowledge levels. Nevertheless, for a more in-depth examination, we employed binary logistic regression in both univariate and multivariate stages. This allowed us to identify and contrast the odds ratios (OR) and adjusted odds ratios (aOR) of the important variables related to knowledge levels. A p-value below 0.05 was considered to be statistically significant by our definition.

Results

Baseline characteristics

A total of 732 participants were initially included in the survey, and seven were excluded because of missing data, resulting in 725 participants. Among them, 569 were female, with the majority of respondents (66%, $n = 479$) being 25 years or younger. Most participants were single (62%, $n = 450$), (36%, $n = 264$) were married, and only (1.5%) were divorced or widowed ($n = 11$). The Cronbach's alpha was 0.71, indicating that the questionnaire had acceptable internal consistency.

Most participants held university or postgraduate degrees (87%, $n = 629$), while only (13%) were pre-university ($n = 96$). Participants were geographically distributed from various Palestinian areas, with the highest percentages coming from Hebron ($n = 221$,30%), Jenin ($n = 113$,16%), and Tubas ($n = 82$,11%), while areas with the smallest number of participants were from Qalqeliah ($n = 4$,0.6%) and Nablus ($n = 18$, 2.5%). Additional demographic characteristics of the participants are presented in (Table 1).

Assessing knowledge about knee osteoarthritis

The majority of participants, (80%, $n = 580$) were aware that knee osteoarthritis is a chronic disease, while (77%, $n = 559$) knew that it isn't a rare one. (51%, $n = 369$) were aware that osteoarthritis can affect joints other than the knee. Whereases, (34%, $n = 248$) didn't think it can involve all types of joints.

Regarding the risk factors of knee osteoarthritis, most participants thought that a high body mass index (BMI)

(*n* = 632, 87%), advancing age (*n* = 683, 94%), and previous knee injury (*n* = 520, 72%) are considered risk factors. Also, only 42% (*n* = 306) of the participants recognized genetic predisposition to be a risk factor of knee OA.

Most participants knew that joint stiffness (*n* = 433, 61%), locking of the knee (*n* = 535, 74%), and loss of joint movement (*n* = 525, 72%) are common manifestations of knee osteoarthritis. Regarding their knowledge of management strategies, many participants knew that analgesics (*n* = 510, 70%), hot or cold packs (*n* = 430, 59%), and steroid injections (*n* = 511, 70%) were beneficial for the management of knee osteoarthritis. Additionally, most participants knew that exercises (i.e., Swimming) (*n* = 518, 71%), and physiotherapy (*n* = 579,80%) can in some cases relieve OA symptoms. While (*n* = 500, 69%) recognized that joint replacement surgery may be necessary for knee osteoarthritis treatment.

Overall, the majority of the participants (*n* = 478,66%) had a low knowledge score regarding knee osteoarthritis (Table 2). 70% was the cutoff point, which was either low (< 70%) or high (≥ 70%).

Sources of information about osteoarthritis

The top two sources of information were "friends/relatives" and "studying" (*n* = 301, 41.5%), (*n* = 280,38.6%) respectively. In contrast, the least mentioned sources were "healthcare" (*n* = 50, 6.8%), and "media" (*n* = 89, 12.5%) (Table 3).

Understanding of osteoarthritis mechanisms

The top three reported mechanisms were cartilage at the end of the bones wearing down over time (*n* = 626, 86.3%), nerve compression near the joint (*n* = 355,48.9%), and crystal accumulation in the joint (*n* = 354,48.8%) (Table 4).

Regression analysis of factors associated with knowledge about knee osteoarthritis

Data Analysis

In this multivariate logistic regression, no baseline variable association with the knowledge score was statistically significant. Females had higher odds of having higher knowledge than males (aOR: 1.22; 95%CI:0.83–1.83, *p* = 0.311). Participants aged above 25 years, however, had lower odds for higher knowledge than those aged below 25 years (aOR: 0.66; 95%CI: 0.40–1.10, *p* = 0.115). Those who had postgraduate education showed increased odds of higher knowledge compared to participants with pre-university education (aOR: 1.23; 95%CI: 0.76–2.05, *p* = 0.410). Similarly, single respondents reported higher odds of having higher knowledge than married ones (aOR: 1.79; 95%CI: 0.43–12.17, *p* = 0.471). Those who reported knowing someone suffering from OA had reduced odds of higher knowledge than those who did not know any person suffering from OA (aOR: 0.80; 95%CI: 0.58–1.10, *p* = 0.174) (Table 5). In the univariate analysis, no statistically significant associations were identified. The odds of having high knowledge were not comparable between the groups (Table 5).

Discussion

The main aim of this study is to assess the knowledge of the Palestinian general public regarding OA. Our sample was well-representative of the Palestinian population, as it included participants from all the West Bank's main regions and was diverse in terms of age, gender, education, marital status, and socioeconomic levels. To our knowledge, this is the first study to assess public awareness of OA in Palestine. However, multiple papers have discussed this matter in the region, including a recent paper from the United Arab Emirates [10] and a couple from Saudi Arabia [2, 7].

Our sample of 725 participants was predominantly female (78%), which appears to be a common theme among similar studies, [2, 10] and can be explained by females being more willing to participate in survey-based research than males [11]. Additionally, (66%) of the participants were younger than 25 years of age, which could be due to the youth being more willing to participate in research studies and more familiar with the technology and online survey format used to collect data. In addition, the population in Palestine is generally very young, with only 3.4% of the population being older than 65 [12]. This huge representation of young personnel in our study can also explain why most respondents were single (62%) compared to (36%) being married and only (1.5%) being divorced and widowed.

It is well known in the literature that people who have completed their collegiate degrees are more willing to participate in research studies, which is also evident in our study, as (87%) of our participants are among that population [13]. Moreover, (58%) of the respondents answered "yes" when asked if they knew someone diagnosed with osteoarthritis, which reflects the high prevalence of the condition in Palestine.

General Knowledge

Most papers assessing the public's awareness regarding OA in the region, which were mainly from the UAE and Saudi Arabia, indicated a low overall knowledge score among participants [7, 10]. Similarly, in our study, and despite socioeconomic differences between these mentioned countries and Palestine, we found that (66%) of respondents showed a low overall score of knowledge when it comes to knee OA.

Osteoarthritis is a chronic and progressive condition that affects (3.3–3.6%) of the global population and is

Table 2 Participants' knowledge regarding knee osteoarthritis. (should be placed after line 186)

Do you think that knee osteoarthritis is a chronic problem.	
No	58 (8.0%)
Yes	580 (80%)
Not sure	87 (12%)
Do you think that knee osteoarthritis is rare.	
No	559 (77%)
Yes	77 (11%)
Not sure	89 (12%)
Do you think that all types of joints may suffer from osteoarthritis.	
No	227 (31%)
Yes	369 (51%)
Not sure	129 (18%)
Do you think that knee osteoarthritis is the result of a cold or moist atmosphere.	
No	248 (34%)
Yes	244 (34%)
Not sure	233 (32%)
Do you think that genetics is a risk factor for osteoarthritis.	
No	258 (36%)
Yes	306 (42%)
Not sure	161 (22%)
Do you think that advancing age is a risk factor for osteoarthritis.	
No	27 (3.7%)
Yes	683 (94%)
Not sure	15 (2.1%)
Do you think that high BMI is a risk factor for knee osteoarthritis.	
No	38 (5.2%)
Yes	632 (87%)
Not sure	55 (7.6%)
Do you think that the incidence of knee osteoarthritis is equal between males and females	
No	477 (66%)
Yes	106 (15%)
Not sure	142 (20%)
Do you think that being active makes osteoarthritis feel better.	
No	106 (15%)
Yes	490 (68%)
Not sure	129 (18%)
Do you think that previous knee injury is a risk factor for osteoarthritis.	
No	66 (9.1%)
Yes	520 (72%)
Not sure	139 (19%)
Do you think that pain is the only symptom of knee osteoarthritis.	
No	486 (67%)
Yes	154 (21%)
Not sure	85 (12%)
Do you think joint stiffness is a sign of knee osteoarthritis.	
No	89 (12%)
Yes	443 (61%)
Not sure	193 (27%)
Do you think knee redness is a sign of knee osteoarthritis.	
No	249 (34%)
Yes	309 (43%)
Not sure	167 (23%)
Do you think locking of the knee is a sign of knee osteoarthritis.	
No	87 (12%)

Table 2 (continued)

Do you think that knee osteoarthritis is a chronic problem.	
Yes	535 (74%)
Not sure	103 (14%)
Do you think increased joint warmth is a sign of knee osteoarthritis.	
No	188 (26%)
Yes	322 (44%)
Not sure	215 (30%)
Do you think that osteoarthritis may lead to loss of joint movement.	
No	96 (13%)
Yes	525 (72%)
Not sure	104 (14%)
Do you think weakness of the muscle is a sign of knee osteoarthritis.	
No	161 (22%)
Yes	374 (52%)
Not sure	190 (26%)
Do you think numbness is a sign of knee osteoarthritis.	
No	234 (32%)
Yes	268 (37%)
Not sure	223 (31%)
Do you think that analgesics may improve symptoms.	
No	168 (23%)
Yes	510 (70%)
Not sure	47 (6.5%)
Do you think that hot or cold packs to the knee may improve symptoms.	
No	165 (23%)
Yes	430 (59%)
Not sure	130 (18%)
Do you think that some types of exercises such as swimming are suitable for osteoarthritis patients.	
No	90 (12%)
Yes	518 (71%)
Not sure	117 (16%)
Do you think that physiotherapy can improve the symptoms of osteoarthritis.	
No	70 (9.7%)
Yes	579 (80%)
Not sure	76 (10%)
Do you think that steroid injections in the joint help to relieve severe symptoms temporarily.	
No	56 (7.7%)
Yes	511 (70%)
Not sure	158 (22%)
Do you think that joint replacement surgery will be needed at some point for osteoarthritis.	
No	69 (9.5%)
Yes	501 (69%)
Not sure	155 (21%)
Knowledge score	
Low	478 (66%)
High	247 (34%)

[1] n (%)

one of the most debilitating diseases worldwide. OA can affect several joints of the human body including hips, knees, proximal and distal interphalangeal joints to name a few [14]. Our study showed that the majority of Palestinians were aware of the fact that OA is both a chronic and common condition (80% and 77%, respectively). However, only approximately half of the participants recognized the involvement of joints other than the knee (51%). This result may interfere with or delay the diagnosis of osteoarthritis if started in joints other than the knee joint.

Table 3 Sources of information about Osteoarthritis: (should be placed after line 190)

What is your source of information about osteoarthritis. *n* (%)	
friends/relatives	301(41.5%)
Healthcare	50(6.8%)
Media	89(12.2%)
Others	115(15.8%)
Personal history	95(13.1%)
Study	280(38.6%)

Table 4 Understanding of Osteoarthritis mechanisms (should be placed after line 194)

What do you think is the underlying mechanism of osteoarthritis *n* (%)	
cartilage at the end of the bones wearing down over time	626(86.3%)
crystal accumulation in the joint	354(48.8%)
decreased blood supply to the joint	159(21.9%)
Infection	121(16.6%)
nerve compression near the joint	355(48.9%)

Participants provided a wide variety of information sources when asked about their primary knowledge sources. "Friends and relatives" were chosen the most by respondents (41.5%). Although this result is consistent with similar studies in the region [7], it raises a lot of concerns as "friends and relatives" can in most cases, be unqualified or unable to provide accurate and updated medical knowledge. On the other hand, (12.2%) considered the media to be their main source of information regarding OA, which can spread false outdated medical knowledge, as online Arabic medical websites have proven in many studies to offer low-quality health-related material [15, 16]. Additionally, (38%) of the participants relied on traditional academic education, (13.1%) relied on their personal history of OA, and unfortunately, only (6.8%) of the sample relied on healthcare professionals as their main source of knowledge regarding OA. These outcomes are indeed concerning, as most alternative sources can spread false information and enforce misconceptions regarding the disorder. Thus, healthcare professionals should put more effort into educating the public by providing patient education materials that are easily accessible and read by the Arab public.

It is worth mentioning that these results are consistent with other studies [7, 10]. One study showed that people who used "media", "personal history", and "friends and relatives" as their source of information showed mostly poor knowledge of the disorder [10]. Additionally, the same paper indicated that higher education levels and having "study" and "healthcare" as primary information sources were significantly associated with higher levels of awareness of OA [10]. A paper assessing OA awareness in Jeddah, Saudi Arabia showed that those who know a patient diagnosed with OA, or who chose "educational institution" as their primary source of information had scored significantly higher than other subgroups [7].

Regarding the underlying mechanism of Osteoarthritis, (86.3%) of the participants identified the correct process, which is the slow wearing down of cartilage over time. Nerve compression near the joint was chosen by (48.9%) of respondents as the mechanism of osteoarthritis. It was also reported in similar studies that people may confuse gout with osteoarthritis [7], which may explain why (48.8%) of participants chose "crystal accumulation in the joint" as the underlying mechanism.

Risk factors

Spreading knowledge of the different risk factors associated with common disorders is ofhigh importance. Awareness of these risk factors can facilitate early diagnosis by encouraging high-risk individuals to undergo routine checkups, and, in some cases, delay the development of the disorder by altering modifiable risk factors.

As mentioned previously, a combination of genetic and environmental factors are associated with the development of knee OA, such as aging, prior knee injury,

Table 5 Univariate and multiple logistic regression of the associations between baseline variables of the study participants and knowledge score (high vs. low) (should be placed after line 208)

Dependent variable	Category	Low Knowledge	High Knowledge	OR (univariable)	aOR (multivariable)
Gender	Male	110 (70.5)	46 (29.5)	-	-
	Female	368 (64.7)	201 (35.3)	1.31 (0.89–1.93, $p=0.174$)	1.22 (0.83–1.83, $p=0.311$)
Age group	≤ 25	305 (63.7)	174 (36.3)	-	-
	> 25	173 (70.3)	73 (29.7)	0.74 (0.53–1.03, $p=0.074$)	0.66 (0.40–1.10, $p=0.115$)
Education	Pre-University	69 (71.9)	27 (28.1)	-	-
	University| Postgrad	409 (65.0)	220 (35.0)	1.37 (0.86–2.24, $p=0.188$)	1.23 (0.76–2.05, $p=0.410$)
Marital status	Divorced| Widow	9 (81.8)	2 (18.2)	-	-
	Married	178 (67.4)	86 (32.6)	2.17 (0.55–14.46, $p=0.327$)	2.12 (0.52–14.25, $p=0.347$)
	Single	291 (64.7)	159 (35.3)	2.46 (0.62–16.26, $p=0.254$)	1.79 (0.43–12.17, $p=0.471$)
Know someone with osteoarthritis	Yes	271 (64.7)	148 (35.3)	-	-
	No	207 (67.6)	99 (32.4)	0.88 (0.64–1.20, $p=0.405$)	0.80 (0.58–1.10, $p=0.174$)

female sex, increased body mass index (BMI), and most importantly, genetic predisposition [17]. It is not fully understood how aging facilitates the development of OA; however, the collective effects of aging-associated senescence, mitochondrial dysfunction, and changes in both metabolism and epigenetics ultimately leads to the development of the disease [18].

Regardless of the mechanism, it is clear that our sample was well-educated about the effects of aging on joint health, as the vast majority (94%) of participants recognized advanced age as a major risk factor for OA. Similar results have been reported in other studies [2, 7, 10]. Another well-known risk factor for knee OA is high body mass index. Many studies have discussed this relationship, as weight loss has been proven to slow the process of knee cartilage degeneration and improve OA-related symptoms [17]. Most participants in our study were aware of this interplay between increased BMI and Osteoarthritis (87%), which is also comparable to other studies where increased BMI was recognized as a key risk factor for OA [2, 10].

Knee osteoarthritis is also influenced by a previous knee injury, as studies have shown that those who have experienced an injury to the anterior cruciate ligament (ACL), or a meniscal tear, for example, are more likely to develop knee OA. It is also important to note that undergoing a surgical reconstruction in these cases doesn't hinder the development of the disease [17]. (72%) of our respondents were aware of the effects of prior knee injuries on the development of OA.

More than 21 susceptibility loci have been identified in genome-wide associated scan studies, reinforcing the huge role of genetics in the development of osteoarthritis [17]. Despite this obvious influence of genetics, less than half of the participants (42%) recognized heredity as a possible risk factor for OA. However, this is common among similar studies in this region [7, 10].

Symptoms

Cognizance of OA symptoms help patients create a complete and easy-to-interpret image for physicians, thus easing early diagnosis and leading to faster initiation of treatment and a better prognosis. The most prominent symptom of osteoarthritis is joint pain, which is typically described as gradual, chronic, and activity-related [19]. Despite pain being the most well-known symptom of OA and the main reason for patients to seek medical consultation, the majority of our sample (67%) answered 'no' when asked if it was the only symptom of OA. However, when asked about other symptoms, (61%) recognized joint stiffness as a common manifestation. Higher numbers were observed when asked about "locking of the knee" and "the loss of joint movement" symptoms (74% and 72%, respectively). These numbers are higher than those reported in other similar studies [7, 10].

It is obvious that the Palestinian population is well-educated about different risk factors and symptoms of OA, which may help in explaining the increased numbers of diagnosed cases seen in recent years, as this knowledge can make it easier to recognize early cases of osteoarthritis, therefore, seek medical consultation and achieve early diagnosis.

Treatment

Methods for the treatment of osteoarthritis are abundant, and many new modalities have been introduced in recent years. Typically, patients with mild symptoms are managed by non-pharmacological methods (exercise, weight loss, physical therapy, etc.), whereas patients with severe symptoms are managed by pharmacological methods (NSAIDs, etc.), and surgical treatment (total knee replacement, etc.) [14]. Non-pharmacological methods of treatment play a pivotal role in OA management. One of the most prominent examples of those are exercises such as swimming and cycling, which have been proven to reduce osteoarthritis-associated joint pain, stiffness, and functional impairments [20]. (71%) were aware of the efficacy of exercise as a treatment modality. Moreover, (59%) of the respondents were aware of the efficacy of hot and cold packs, while (80%) recognized the role of physiotherapy in the management of OA. A pattern of increased awareness of these treatment modalities can be observed among Palestinians.

Medical assistance can sometimes be hard to obtain for Palestinians in the West Bank due to restrictions on travel and medical supplies, which makes it difficult to seek medical consultation [21]. Thus, alternative treatment modalities are of high importance for Palestinians and can offer an alternative method to relieve OA symptoms without the need to seek medical consultation.

Moreover, the estimated individual annual cost range for OA is between 700$ to 15,600$ a year [22]. This can be extremely challenging due to the dire financial situation in the WB, as most Palestinians are restricted from working due to the establishment of settlements [21]. Therefore, using such cheap modalities in mild cases can clearly be of great benefit to the Palestinian population.

Participants were familiar with pharmacological methods for treatment such as analgesics (70%), and steroid joint injections (70%). Additionally, (69%) of the participants were aware that total knee replacement surgery could be a part of the treatment in advanced stages of OA.

Participant's level of knowledge about OA was not significantly affected by sex, age groups, education levels, marital status, or knowing someone diagnosed with OA. However, certain factors were associated with higher

awareness, such as female sex, being older than 25 years, having pre-university, or postgraduate education, being single, and knowing someone diagnosed with OA.

Limitations

The present study has some limitations. Our sample consisted of 725 Palestinians residing in different parts of the WB; however, (78%) of these were females, which can misrepresent the Palestinian public, where the male-to-female ratio was last recorded to be 103.8 males per 100 females in 2022 [12]. Moreover, most of the respondents held either a university or postgraduate degree (87%), while (66%) were younger than 25 years. These factors can distort the results of this study. Furthermore, participants were not asked about their income, which is a major factor that can influence participant's health awareness.

Conclusion

This research emphasizes a notable lack of understanding and recognition of OA within the Palestinian community, as many participants displayed misunderstandings about the condition, its causes, and how it can be treated. Many participants were not knowledgeable about how joints are affected and how genetics can increase the risk of OA, despite being aware of it as a chronic condition. Relying on informal sources such as friends and family may lead to doubts regarding the accuracy of the information shared. Hence, major steps should be taken, as OA is a major chronic debilitating disorder that has the potential to affect the lives of both patients and their families. Therefore, it is crucial for healthcare professionals to conduct specific educational programs and awareness campaigns and provide trustworthy sources of information by healthcare professionals to improve public knowledge about OA, increase awareness, encourage early detection, and reduce the negative effects of this disabling condition on both individuals and communities. Additionally, Updated and trustworthy Arabic patient education materials should be provided, which should be written in simple and easy-to-comprehend Arabic without the use of complicated overwhelming medical jargon. Social media can also be used to advance knowledge and broadcast updated and accurate information about OA's major risk factors, symptoms, and treatment modalities because it is both accessible and cheap. Utilizing readily available media and clear educational materials can help to create a more knowledgeable population that can effectively identify and address OA. It is clear, based on the results of this study, that raising the Palestinian population's awareness regarding osteoarthritis is crucial, as it helps in achieving early detection and eliminating misconceptions among the public.

Abbreviations

OA	Osteoarthritis
MENA	Middle East and North Africa
OR	Odds Ratio
aOR	adjusted Odds Ratio
BMI	Body Mass Index
WB	West Bank

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12889-025-21581-2.

Supplementary Material 1

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Data availability

All data generated or analyzed during this study are included in this article [Tables, Figures, and Supplementary data]. Original data set/raw data are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Palestine Polytechnic University Ethics Committee, and it conformed to the ethics guidelines of the Declaration of Helsinki. All written consent was signed voluntarily and was obtained online. All adult subjects gave their permission to participate themselves. However, participants under 18 of age were automatically excluded.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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