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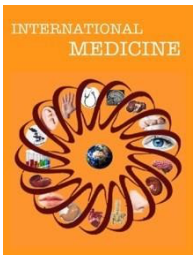

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Original Research

A Study on Public Knowledge and Misconceptions Related to Total Joint Replacement Surgery among General Population of Punjab

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Abstract

Background: Total Joint Replacement Surgery (TJRS) is a proven orthopedic intervention widely used to manage severe joint conditions such as osteoarthritis and rheumatoid arthritis. Misconceptions surrounding the procedure—ranging from age eligibility and post-operative mobility to the perceived necessity of lifelong medication—can significantly impact patient decision-making and treatment uptake. This study was conducted to evaluate the knowledge, attitudes, and misconceptions related to TJRS among the general population of Punjab and to identify key socio-demographic predictors influencing awareness levels. **Materials and Methods:** A descriptive, cross-sectional study was conducted using a structured, self-administered Google Form questionnaire distributed across digital platforms including WhatsApp, Facebook, and email. A total of 400 adult residents of Punjab participated. The questionnaire included socio-demographic questions and 20 multiple-choice items assessing knowledge and misconceptions about TJRS. Each correct answer was awarded one point, with knowledge scores categorized as Very Good (17-20), Good (13-16), Fair (9-12), and Poor (0-8). Descriptive statistics and chi-square tests were used to analyze the data, with a p-value < 0.05 considered statistically significant. **Results:** Among the 400 respondents, 64.3% demonstrated Very Good or Good knowledge of TJRS, while 35.8% had Fair or Poor knowledge. Correct response rates were highest for questions on physiotherapy (73.8%), mobility post-surgery (73.5%), and joint types commonly replaced (72.3%). However, significant misconceptions persisted—only 55.0% correctly understood that joint implants may trigger airport security, and 56.5% were aware that lifelong medication is not always required. Statistical analysis revealed significant associations between knowledge levels and age ($p = 0.019$), education level ($p < 0.001$), and residence ($p = 0.037$), while gender showed no significant correlation ($p = 0.271$). **Conclusion:** The study reveals a moderate level of awareness regarding TJRS among the general population of Punjab, with substantial gaps in specific domains. Educational level, age, and urban or rural residence were strong predictors of knowledge levels. These findings underscore the importance of targeted, culturally sensitive educational interventions to dispel myths and improve public understanding of joint replacement surgery. Addressing these knowledge deficits can enhance treatment acceptance and contribute to better orthopedic outcomes across the region.

Keywords: *Total Joint Replacement Surgery, Public Awareness, Orthopedic Misconceptions, Health Education, Punjab, Cross-Sectional Study, Socio-Demographic Factors, Patient Knowledge*

Introduction

Total Joint Replacement Surgery (TJRS) is a highly effective orthopedic intervention commonly employed to treat end-stage joint diseases, especially osteoarthritis and rheumatoid arthritis. By replacing the damaged joint surfaces with prosthetic implants, the procedure significantly reduces pain, restores function, and improves overall quality of life. The most commonly replaced joints include the knee and hip, and with advancements in surgical techniques, anesthesia, and implant technology, TJRS has become safer, more durable, and increasingly accessible.[1-3]

Despite its widespread adoption and proven benefits, there remains a considerable lack of public awareness and numerous misconceptions surrounding joint replacement surgery. Common myths include the belief that joint replacement is only for the elderly, that implants last a lifetime without complications, or that surgery leads to permanent immobility. Such misinformation can deter patients from seeking timely medical intervention, prolonging disability, reducing life quality, and increasing the societal burden of chronic joint diseases.[4-6]

In India, and particularly in Punjab—a state with a rapidly aging population and a high prevalence of lifestyle-related joint conditions—there is a growing demand for orthopedic care. However, public knowledge about surgical options remains fragmented. Sociocultural beliefs, traditional treatment practices like oil massages, limited exposure to orthopedic counseling, and disparities in educational background further influence public understanding and acceptance of TJRS. Rural-urban divides and variations in healthcare access may also contribute to differing levels of knowledge and perception.

Addressing these gaps is essential for improving health-seeking behavior and enabling informed decision-making. Educating the general population about the indications, benefits, risks, and realistic outcomes of joint replacement is critical to reducing fear, improving acceptance, and enhancing post-operative outcomes.

This study aims to assess the level of public knowledge and identify prevalent misconceptions regarding total joint replacement surgery among the general population of Punjab. By examining the association of knowledge levels with socio-demographic variables such as age, gender, education, occupation, and place of residence, the study intends to uncover patterns that can guide targeted awareness campaigns and public

health interventions. Ultimately, the findings will contribute to promoting evidence-based orthopedic care and empowering communities with accurate, actionable health information.

Materials and Methods

Study Design
This study adopted a descriptive, cross-sectional design to evaluate public knowledge and misconceptions related to total joint replacement surgery (TJRS) among the general population of Punjab. The data were collected using a structured, self-administered Google Form questionnaire, enabling wide digital reach and real-time data recording.

Study Area and Population
The study targeted residents of Punjab, India, covering a diverse demographic mix from both urban and rural areas. Eligible participants included adults aged 18 years and above, excluding those with medical or orthopedic training to maintain objectivity and eliminate professional bias.

Sample Size and Sampling Technique
A total of 400 participants were included in the final analysis. The sample size was determined using standard statistical formulae for cross-sectional studies, assuming a 95% confidence level, 50% expected awareness prevalence, and a 5% margin of error.
The study employed a convenience and purposive sampling technique, where the Google Form link was distributed widely via WhatsApp, email, Facebook, and other social media platforms. This method ensured participation from a broad cross-section of the population, including individuals from varied age groups, educational levels, and occupations.

Inclusion and Exclusion Criteria
Inclusion Criteria:

- Individuals aged 18 years or older
- Residents of Punjab
- Able to read and understand English, Hindi, or Punjabi
- Provided informed consent and voluntarily submitted responses

Exclusion Criteria:

- Healthcare professionals or students of medicine, pharmacy, or nursing
- Respondents with incomplete or duplicate entries

Data Collection Tool
The primary instrument for data collection was a Google Form questionnaire, developed with input from orthopedic specialists and public health professionals. The form was made available in three languages—English, Hindi, and Punjabi—to ensure inclusivity and better comprehension.
The questionnaire consisted of two major sections:

1. **Socio-Demographic Details:** Including age, gender, education, occupation, and residence.
2. **Awareness and Misconception Assessment:** Featuring 20 multiple-choice questions about TJRS, addressing common knowledge areas (e.g., joint types, surgical safety, recovery expectations) and prevalent myths (e.g., mobility loss, age limits, traditional remedies).

Each item had one correct answer based on medical guidelines and current evidence, with incorrect choices designed to reflect common public misconceptions.

Pilot Testing
Prior to large-scale distribution, the Google Form was pilot tested among 30 participants to assess clarity, language appropriateness, and technical functionality. Feedback led to minor refinements in question structure and flow to enhance user experience.

Scoring System and Knowledge Classification
Each correct answer was awarded one point, for a total maximum score of 20. Based on their scores, participants were categorized into four knowledge levels:

- **Very Good:** 17-20 points
- **Good:** 13-16 points
- **Fair:** 9-12 points
- **Poor:** 0-8 points

This classification helped identify population segments with insufficient understanding of TJRS and informed potential intervention strategies.

Ethical Considerations
An electronic informed consent statement was included at the beginning of the Google Form, informing participants about the study's objectives, the voluntary nature of participation, confidentiality assurances, and data usage. No personal identifiers were collected, and all responses remained anonymous. The study followed ethical guidelines in accordance with the Declaration of Helsinki.

Data Management and Statistical Analysis
Responses were automatically recorded via Google Forms and exported into Microsoft Excel for data cleaning. Final analyses were conducted using Epi Info Version 7 software. Descriptive statistics (frequencies and percentages) were used to summarize demographic variables and response patterns. Chi-square tests were applied to examine associations between knowledge scores and socio-demographic variables such as age, gender, education, occupation, and residence. A p-value < 0.05 was considered statistically significant.

Results
Table 1 outlines the demographic profile of the 400 participants included in the study. The sample reflected a balanced distribution across age groups, with the majority (35.5%) falling in the 46 years and above category, followed by 26-35 years (27.0%) and 36-45 years (24.5%), indicating representation from both middle-aged and older populations—key cohorts for joint-related issues. Females constituted a slightly higher proportion (53.7%) compared to males (46.3%). Educational backgrounds varied, with the largest group holding secondary education (30.5%), followed by undergraduates (28.0%) and postgraduates (16.5%). A notable 8.5% had no formal education. Occupational diversity was also evident, with private sector employees (22.3%), homemakers (21.3%), and government employees (18.8%) forming major subgroups. Rural residents comprised 55.5% of the sample, suggesting that the study successfully captured insights from both rural and urban populations of Punjab.

Table 1: Socio-Demographic Characteristics of Participants (n = 400)

Variable	Category	Frequency (n)	Percentage (%)
Age Group (Years)	18-25	52	13.0%
	26-35	108	27.0%
	36-45	98	24.5%
	46 and above	142	35.5%

Gender	Male	185	46.3%
	Female	215	53.7%
Education Level	No formal education	34	8.5%
	Primary school	66	16.5%
	Secondary school	122	30.5%
	Undergraduate	112	28.0%
	Postgraduate	66	16.5%
Occupation	Homemaker	85	21.3%
	Student	62	15.5%
	Government Employee	75	18.8%
	Private Sector	89	22.3%
	Self-Employed	56	14.0%
	Retired/Other	33	8.3%
Residence	Urban	178	44.5%
	Rural	222	55.5%

Table 2 summarizes responses to 20 multiple-choice questions designed to assess awareness and common misconceptions regarding total joint replacement surgery. Overall, the findings reflect moderate-to-good awareness among participants. Correct response rates ranged from 55.0% (awareness of metal detectors) to 73.8% (importance of physiotherapy). High accuracy was observed in questions related to the most commonly replaced joints (72.3%), post-surgery mobility (73.5%), and traditional treatment myths (72.8%). However, knowledge gaps were evident in nuanced areas, such as implant-triggered airport security (55.0%) and need for lifelong medication (56.5%). The results highlight that while general awareness exists, deeper understanding–especially about procedural limitations, post-operative care, and contraindications–remains incomplete.

Table 2: Awareness and Misconception Questions on Total Joint Replacement Surgery (n = 400)

Q. No.	Question	Options (Correct in Bold)	Correct (n)	Correct (%)
1	What is total joint replacement surgery?	a) Muscle replacement **b) Replacing damaged joint with prosthesis** c) Removing bones d) Bone transplant	278	69.5%
2	Which joints are most commonly replaced?	a) Spine **b) Hip and knee** c) Elbow and wrist d) Shoulder and neck	289	72.3%
3	Is joint replacement only for the elderly?	a) Yes **b) No** c) Only after 70 d) Not known	263	65.8%
4	Is joint replacement a permanent cure?	a) Yes **b) No, implants may wear out** c) It lasts for life d) Unsure	238	59.5%
5	Average lifespan of a joint implant?	a) 5-7 years **b) 15-20 years** c) Lifetime d) 2 years	276	69.0%
6	Is joint replacement painful during surgery?	a) Yes **b) No, anesthesia is given** c) Very painful d) Depends on patient	252	63.0%
7	Recovery time after joint replacement?	a) 1-2 days **b) 6-12 weeks** c) 1 year d) No recovery needed	284	71.0%
8	Can you walk immediately after surgery?	a) Yes **b) With physiotherapy support** c) No d) Wait 6 months	275	68.8%
9	Is joint replacement safe?	a) Unsafe **b) Generally safe with modern methods** c) Too risky d) Not advised	288	72.0%
10	Does every joint pain require replacement?	a) Yes **b) No, only severe damage** c) Arthritis always d) Old age	259	64.8%
11	Is it true that joint replacement is not possible after age 70?	a) True **b) False** c) Depends d) Risky	267	66.8%
12	Can diabetes patients undergo joint replacement?	a) No **b) Yes, with control** c) Only young diabetics	262	65.5%

		d) Not safe		
13	Will patients become completely immobile post-surgery?	a) Yes **b) No, mobility improves** c) Depends on age d) Possibly	294	73.5%
14	Is metal allergy a contraindication?	a) Yes for all **b) Only in rare cases** c) Never d) Not studied	248	62.0%
15	Can joint implants trigger airport security systems?	a) No **b) Yes, sometimes** c) Never d) Only for hips	220	55.0%
16	Do joint replacements require lifelong medication?	a) Yes **b) No, only short term** c) Always d) Herbal only	226	56.5%
17	Can physiotherapy be avoided after surgery?	a) Yes **b) No, it's essential** c) Depends d) Not necessary	295	73.8%
18	Are joint replacements commonly done in India?	a) No **b) Yes, increasing rapidly** c) Rarely d) Only abroad	286	71.5%
19	Is traditional oil massage enough for severe joint arthritis?	a) Yes **b) No, medical treatment is required** c) Ayurveda only d) Not sure	291	72.8%
20	Are all types of joint replacements very expensive?	a) Yes **b) Varies by material and hospital** c) Always d) Not available	277	69.3%

Table 3 categorizes participants based on their total knowledge scores out of 20. A significant proportion (30.3%) demonstrated Very Good knowledge (17-20 correct responses), and 34.0% fell in the Good category (13-16). However, 22.8% scored only Fair (9-12), while 13.0% had Poor knowledge (≤8), indicating notable knowledge gaps in over one-third of the sample. This distribution underscores the need for targeted educational interventions, particularly for individuals with limited understanding of joint replacement indications, safety, and post-operative care. The data also suggest that awareness campaigns could build on the existing moderate baseline of knowledge and focus on eliminating misconceptions rather than introducing the topic from scratch.

Table 3: Knowledge Score Classification Among Participants (n = 400)

Knowledge Level	Score Range (out of 20)	Frequency (n)	Percentage (%)
Very Good	17-20	121	30.3%
Good	13-16	136	34.0%
Fair	9-12	91	22.8%
Poor	0-8	52	13.0%

Table 4 explores the relationship between participants' knowledge scores and key socio-demographic factors. Statistically significant associations were observed with age ($p = 0.019$), education level ($p < 0.001$), and residence ($p = 0.037$). Higher knowledge levels were more prevalent among participants aged 26-45 and those with undergraduate or postgraduate degrees. Conversely, individuals with no formal or primary education had higher frequencies in the "Poor" knowledge category. Urban residents also displayed better awareness compared to rural counterparts. Interestingly, no significant differences were found based on gender ($p = 0.271$), suggesting similar knowledge levels between males and females. These findings emphasize that educational attainment and geographic location are key predictors of TJRS awareness and should inform the focus of public health strategies.

Table 4: Association between Knowledge Score and Socio-Demographic Variables (n = 400)

Variable	Category	Very Good	Good	Fair	Poor	p-value
Age Group	18-25	13 (3.3%)	19 (4.8%)	14 (3.5%)	6 (1.5%)	0.019
	26-35	41 (10.3%)	39 (9.8%)	20 (5.0%)	8 (2.0%)	
	36-45	29 (7.3%)	34 (8.5%)	24 (6.0%)	11 (2.8%)	
	46 and above	38 (9.5%)	44 (11.0%)	33 (8.3%)	27 (6.8%)	
Gender	Male	52 (13.0%)	62 (15.5%)	42 (10.5%)	29 (7.3%)	0.271
	Female	69 (17.3%)	74 (18.5%)	49 (12.3%)	23 (5.8%)	
Education Level	No formal education	4 (1.0%)	6 (1.5%)	10 (2.5%)	14 (3.5%)	<0.001
	Primary school	12 (3.0%)	18 (4.5%)	22 (5.5%)	14 (3.5%)	
	Secondary school	40 (10.0%)	44 (11.0%)	26 (6.5%)	12 (3.0%)	
	Undergraduate	41 (10.3%)	43 (10.8%)	20 (5.0%)	8 (2.0%)	
	Postgraduate	24 (6.0%)	25 (6.3%)	13 (3.3%)	4 (1.0%)	
Residence	Urban	56 (14.0%)	63 (15.8%)	37 (9.3%)	22 (5.5%)	0.037
	Rural	65 (16.3%)	73 (18.3%)	54 (13.5%)	30 (7.5%)	

Discussion

This study aimed to assess the level of public knowledge and identify prevalent misconceptions regarding total joint replacement surgery (TJRS) among the general population of Punjab. With an emphasis on socio-demographic factors such as age, gender, education, occupation, and residence, the study sought to uncover knowledge patterns that could inform future awareness initiatives and health education strategies.

The findings revealed a moderate-to-good overall awareness among participants, with 64.3% of respondents scoring in the "Very Good" or "Good" knowledge categories. This indicates a promising foundation of general awareness, likely influenced by increasing public exposure to surgical advancements through digital media, physician consultations, and peer experiences. However, a significant proportion—35.8%—still demonstrated fair or poor understanding, highlighting notable gaps in specific areas of knowledge that must be addressed to ensure informed health decision-making.

One of the key strengths of the study is its detailed analysis of individual knowledge components. Participants showed strong awareness in certain areas—particularly regarding the importance of physiotherapy post-surgery (73.8%), improved mobility post-surgery (73.5%), and the increasing prevalence of TJRS in India (71.5%). These results reflect a growing acceptance of modern surgical interventions and the partial effectiveness of ongoing public discourse around joint health.

However, substantial misconceptions persist in more nuanced areas. For example, only 55.0% correctly identified that joint implants can sometimes trigger airport security systems, and just 56.5% knew that lifelong medication is not always necessary post-surgery. These misconceptions suggest a lack of clarity around the practical and long-term realities of living with joint implants. Additionally, beliefs such as traditional oil massage being sufficient for severe arthritis (incorrect for 27.2% of participants) indicate the ongoing influence of cultural practices over evidence-based treatment. These findings point to the need for targeted educational efforts that go beyond surface-level awareness and address deeper misconceptions rooted in tradition, hearsay, or incomplete information.[7,8]

The association between knowledge levels and socio-demographic factors was statistically significant for age ($p = 0.019$), education level ($p < 0.001$), and residence ($p = 0.037$). Individuals aged 26–45 years—arguably the most active and economically productive age group—demonstrated better knowledge, possibly due to greater digital access and a proactive approach to health information. In contrast, participants above 46 years, despite being most likely to need TJRS, had a lower proportion of very good knowledge, underscoring a disconnect between medical need and awareness. This suggests that awareness campaigns must especially target older adults to bridge this critical gap.[9,10]

The education level of participants showed a clear, positive correlation with knowledge scores. Those with undergraduate and postgraduate qualifications had significantly higher awareness than those with no formal or only primary education. This is consistent with existing literature that links health literacy to educational attainment. It also reinforces the importance of designing low-literacy educational materials—including visual aids, vernacular media, and community-based workshops—to reach individuals from less-educated backgrounds.[9-11]

Furthermore, the study observed that urban residents demonstrated significantly higher awareness than rural counterparts, which may be attributed to better healthcare access, more frequent interactions with medical professionals, and greater exposure to informational media in urban settings. Conversely, rural populations may still depend heavily on traditional practices and local opinions, emphasizing the need for localized, rural health outreach programs led by trusted community health workers.

Interestingly, the study found no statistically significant association between knowledge levels and gender ($p = 0.271$). This contrasts with some earlier studies that have shown gender disparities in health knowledge and utilization, suggesting a shift toward more gender-neutral health awareness in Punjab, or potentially reflecting equal digital access and exposure among male and female participants.

Another notable point is the alignment between perceived awareness and actual misconceptions. For example, while many participants could correctly identify what TJRS entails and which joints are typically replaced, misconceptions were more common in areas related to post-operative expectations, contraindications (e.g., diabetes and metal allergies), and long-term care. This underscores a critical gap between superficial awareness and functional understanding, which can affect patient decision-making and post-surgical compliance.[8,10,11]

From a public health perspective, these findings are highly relevant. The observed knowledge patterns suggest that public health messaging should be multifaceted, combining online campaigns, community-based interventions, and physician-led counseling. Special attention should be given to older adults, rural populations, and individuals with lower educational attainment, who are disproportionately affected by joint disorders but less likely to have accurate information. Orthopedic departments and rehabilitation centers could partner with media and local NGOs to develop culturally sensitive content that debunks myths and explains procedures in simple, relatable terms.[7,8,11]

Implications for Practice and Policy

- Awareness programs should be age-specific, particularly targeting older adults with realistic expectations about surgery outcomes.
- Culturally tailored education must address traditional beliefs and offer evidence-based alternatives in understandable language.
- Rural outreach programs should incorporate interactive community sessions and visual content for low-literacy groups.
- Healthcare providers, especially orthopedic specialists, should be encouraged to offer pre-surgical counseling that addresses common myths and clarifies post-operative expectations.
- Government and private hospitals can integrate educational modules into outpatient clinics to improve patient preparedness and reduce surgery hesitancy.

Limitations

While this study provides valuable insights into public knowledge and misconceptions surrounding total joint replacement surgery (TJRS) in Punjab, it is not without limitations. First, the use of a Google Form as the sole mode of data collection may have inadvertently excluded individuals lacking digital literacy or internet access—particularly older adults, low-income groups, and those in remote rural areas—thus limiting the generalizability of the findings to more digitally connected populations. Second, the convenience and purposive sampling method introduces the possibility of selection bias, as participants who chose to respond may already possess a greater interest in or exposure to health-related topics. Third, as with all self-reported surveys, response accuracy depends on the participants' honesty and comprehension, raising the risk of social desirability bias or misinterpretation of questions. Lastly, the cross-sectional design captures knowledge at a single time point, preventing the study from assessing changes over time or establishing causal relationships between socio-demographic variables and knowledge levels. Despite these limitations, the study offers a strong foundation for understanding awareness trends and guiding targeted educational interventions in the region.

Conclusion

This study highlights a critical yet underexplored aspect of orthopedic public health—the awareness and misconceptions surrounding total joint replacement surgery (TJRS) among the general population of Punjab. While a majority of participants demonstrated moderate to good understanding, significant knowledge gaps persist, especially among older adults, individuals with lower educational attainment, and rural residents. Misconceptions about post-operative outcomes, contraindications, and traditional treatments continue to influence public perception and decision-making. Importantly, factors such as education, age, and place of residence were found to be significantly associated with knowledge levels, indicating specific subgroups that require focused outreach. These findings underscore the urgent need for comprehensive health education campaigns, particularly in rural and underserved areas, to promote evidence-based decision-making and enhance patient preparedness. By addressing these informational deficits, healthcare systems can improve not only the acceptance and outcomes of TJRS but also the overall quality of orthopedic care. This research serves as a stepping stone toward developing targeted, culturally sensitive, and accessible interventions to dispel myths and empower communities with accurate, actionable health information.

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