



Letter to Editor

Comments on the methods of “Effect of knee pain on muscles imbalance and physical limitation in individuals with bilateral knee osteoarthritis: A comparative cross-sectional study”

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Dear Editor,

We read with great interest an article by Khan *et al.*^[1] in your esteemed journal titled “Effect of knee pain on muscles imbalance and physical limitation in individuals with bilateral knee osteoarthritis: A comparative cross-sectional study,” which gathered our attention, and we found a few intriguing findings. The authors studied the effect of knee pain on the strength of quadriceps muscle length of hamstring muscle, and physical limitations in people with osteoarthritis of bilateral knees and established that persons suffering more knee pain had reduced strength of quadriceps muscle and augmented tightness in hamstring; also people with greater pain in knees displayed more physical limitations in osteoarthritis of bilateral knees. There are certain notable concerns raised about the methodological aspects of the study.

Sample size: It was determined using a 95% confidence interval and a population size of 85. However, it has been proposed that for the study design of a cross-sectional type, a population parameter in public or the average value of the quantitative variable in a populace should be discovered.^[2] Hence, the sample size should have been precisely mentioned employing the formula n (number of partakers) = $Z\alpha^2 P(1-P)/d^2$ where $Z\alpha$ = level of significance set as 1.96 for 95% confidence interval, P = proportion, and d = error (recommended to be set as 5%).^[2]

Knee pain classification: The authors mentioned that knee pain was categorized into two groups, namely, the group of more pain and less pain group; however, no cutoff values for defining more pain and less pain were mentioned. Authors of a recent study have defined the cutoff points for patients suffering from knee osteoarthritis in a brief pain inventory, categorizing pain as mild (1–4), moderate (5–7), and severe (8–10).^[3]

Number of participants: The authors mention in Table 2 that the more painful knee had 70 participants and the less painful knee had 70 participants, which is not possible as the total number of participants was 70. The authors have nowhere mentioned in the manuscript what percentage of people were in the more painful knee group and what percentage were in the less painful group.

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Criteria of Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist: The authors reported that the study design was a type of cross-sectional study. All the considerations of the “Strengthening the Reporting of Observational Studies in Epidemiology” checklist have not been addressed.^[4] The STROBE guidelines seek to deliver a checklist to ensure a precise depiction of the planned and carried-out characteristics of an observational study, like a cross-sectional study.^[4] The authors have not defined exposures, predictors, possible confounders, and effect modifiers; they have not described any means used to study subgroups and interactions. Furthermore, there has been no mention of how the authors have addressed the potential sources of bias.^[4]

P-value: Next, under results, the authors have mentioned *P*-value as 0.000 in Table 2. The probability of a study outcome can be very small, but it is never zero. Therefore, *P*-value should not be reported as 0.0000; it must be declared lower than a value and ought not to appear without the corresponding test statistic.^[5]

Although the authors’ work is credible, addressing the raised concerns would particularly improve the study’s accuracy and rationality.

AUTHORS’ CONTRIBUTIONS

HV designed the letter, conducted the research, and interpreted the data. DS interpreted the data and wrote the final draft of the article. Both authors have critically revised and approved the final draft and are accountable for the manuscript’s content.

Authors’ reply

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We read the comments by the authors of the Letter to Editor (200_2024) on our article,^[1] “Effect of Knee Pain on Muscle Imbalance and Physical Limitation in Individuals with Bilateral Knee Osteoarthritis: A Comparative Cross-Sectional Study.” In response to the points raised, we have provided clarifications to address the concerns and ensure a comprehensive understanding of our study.

Sample size: Based on our study, we focused on a unique target population, specifically recruiting patients with bilateral knee osteoarthritis. To determine the appropriate sample size, we first measured the population size of

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY FOR MANUSCRIPT PREPARATION

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

CONFLICTS OF INTEREST

There are no conflicting relationships or activities.

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individuals with bilateral knee osteoarthritis in the specified setting. The sample size was then calculated using the OpenEpi tool [Table 1]. When dealing with a limited population, the sample size equations can be modified to reflect the population size. The finite population size can be determined from databases, records, or field experience and is factored into the sample size calculation.^[2,3]

Knee pain classification: Referring to the outcome measure, it was reported that “Pain intensity was evaluated using the Numeric Pain Rating Scale (NPRS), which ranges from 0 to 10. Here, “0” signifies no pain, while “10” denotes pain of the most severe.” Furthermore, in the results section, it was reported that “The median interquartile range of pain intensity in a more painful knee was 8.00 (1.00) while in a less painful knee was 4.00 (2.00).” These descriptions clearly outline the range of pain intensity, similar to those mentioned in the previous study.^[4]

Number of participants: It is clearly stated in the last paragraph of the outcome measures that “Using the NPRS, a composite pain score (ranging from 0 to 10 points) for both knees was acquired followed by individual scores for each knee to identify the leg experiencing more and less pain.” In addition, in the inclusion criteria, it is reported that “Pain experienced in both knees should be equal to or >1 on the NPRS with a minimum difference of 1 point on the NPRS between the two knees.” These statements indicate that data were collected from both knees of each individual, with one knee being more painful than the other. Thus, the study included 70 knees in the more painful group and 70 knees in the less painful group, consistent with the findings of a previous study.^[4]

Criteria of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist: I concur with the author regarding the importance of adhering to the STROBE checklist for cross-sectional studies. Our study

assessed knee pain and bilateral knee osteoarthritis as the exposures of interest. The predictors examined included the severity of knee pain, age, and body mass index, all of which are detailed in Table 1. To mitigate potential confounding effects, patients with comorbidities, those using medications, and individuals with previous injuries or surgeries were excluded from the study. In addition, effect modifiers such as participation in physical therapy or specific exercise programs designed to manage knee osteoarthritis were also excluded from the study. “The exclusion criteria were known cases of polyarthritis, systemic inflammatory arthropathies, underwent lower extremity surgery within the past year (e.g., knee arthroplasty), participants used pain killers or supervised rehabilitation past week, participants received steroid injections in the knee joint in the past month, known case of neurological and musculoskeletal-related conditions, which affect their balance or movement and physical activity (multiple sclerosis, Parkinson disease, osteomalacia, Meniere’s disease, and benign paroxysmal positional vertigo), and participants having a history of malignancy or trauma.”

P-value: Based on current evidence, it is recommended to report precise *P*-values (e.g., *P* = 0.034) when presenting results of significance tests rather than solely referring to critical values.^[5] In line with the CONSORT statement, reporting actual *P*-values (e.g., *P* = 0.003) is strongly preferred over imprecise threshold reports, such as *P* < 0.05.^[6] Our study reported *P*-value as 0.000, indicating a significant mean difference, as shown in Table 2.

We are grateful to the authors for allowing us to clarify our article and enhance the understanding of our results.

AUTHORS’ CONTRIBUTIONS

UA contributed to the work’s concept and design. SK and HW drafted and critically reviewed the reply for important intellectual content. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index.

Table 1: OpenEpi calculator shows sample size calculation.

Sample size for frequency in a population	
Population size (for finite population correction factor or FPC) (<i>N</i>)	85
Hypothesized % frequency of outcome factor in the population (<i>p</i>)	50%±5
Confidence limits as % of 100 (absolute±%) (<i>d</i>)	5%
Design effect (for cluster surveys- <i>DEFF</i>)	1
Sample size (<i>n</i>) for various confidence levels	
Confidence level (%)	Sample Size
80%	57
90%	65
95%	70
97%	73
99%	76
99.9%	79
99.99%	81
Equation	

Sample size $n = (DEFF * Np[1-p]) / ((d^2 / Z^2_{1-\alpha/2} * [N-1] + p * [1-p])$.
 $Z^2_{1-\alpha/2}$: Confidence interval.

Table 2: Independent sample t-test from SPSS shows the actual statistics.

	Independent samples test								
	Levene’s test for equality of variances			<i>t</i> -test for equality of means					
	F	Sig.	<i>t</i>	df	Sig. (two-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference	
								Lower	Upper
Womac_Physical_function									
Equal variances assumed	0.036	0.851	-17.178	68	0.000	-31.70279	1.84554	-35.38551	-28.02006
Equal variances not assumed			-17.698	34.273	0.000	-31.70279	1.79128	-35.34203	-28.06354

SPSS: Statistical Package for the Social Sciences. Sig.: Significant, df: Degree of freedom.

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