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*Letter to Editor*

# Unveiling statistical discrepancies: Methodological review of chronic neck pain study

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**Quick Response Code:**

Dear Editor,

We were intrigued by the recent publication by Khan *et al*., titled "Effects of a scapular stabilization program (SSP) on pain, range of motion, and disability in patients with chronic non-specific neck pain (NNP)," which was published on January 31, 2024.[1] The study demonstrates the significant efficacy of the SSP in improving pain, range of motion (ROM), and disability among patients with chronic NNP when compared to relaxation exercises alone. These findings underscore the potential of SSP as an effective intervention for addressing pain, enhancing mobility, and reducing disability in individuals suffering from NNP. We have identified certain methodological and statistical aspects that warrant further discussion. First, including prevalence data from referenced articles would be advantageous to provide a comprehensive understanding of neck pain's prevalence and incidence rates. For instance, integrating data of global age-standardized prevalence and incidence rates reported in 2017 (3551.1 and 806.6/100,000, respectively) would enrich the introductory section and provide valuable context for readers.[2]

Second, we noted a lack of detailed explanation regarding sample size calculation. Including references to the study or studies used for sample size calculation would enhance transparency and aid in understanding the methodology employed in the study.[3] The absence of a normality test in the statistical analysis is also notable. Verifying the normality of data is crucial to ensure that statistical analyses adhere to the assumptions of parametric tests, thereby enhancing the validity of research findings. Including normality testing in statistical analysis adds transparency to the research process and allows readers and reviewers to assess the robustness of the chosen statistical methods and the reliability of the study's conclusions.[4] To further elucidate the clinical significance of the outcomes observed in both Groups A and B, we conducted Cohen's D effect size analysis. The resulting effect sizes, particularly those for Group A (3.70 for numeric pain rating scale [NPRS], 0.857 for neck disability index [NDI], 4.40 for flexion ROM, and 1.59 for extension ROM), highlight substantial impact across multiple measures. Conversely, in Group B, the effect sizes (1.00 for NPRS, 0.53 for NDI, 12.61 for flexion ROM, and 1.47 for extension ROM) underscore pronounced changes in outcomes, indicating the intervention's significant therapeutic potential.

Furthermore, *post hoc* analysis for the outcome measures was conducted using G*Power, employing a parametric statistical test. The results of *the post hoc* analysis reveal robust statistical assurance in detecting significant differences across all measured outcomes, with power levels reaching 100% for

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NPRS, NDI, and flexion ROM and 99% for extension ROM. This underscores the reliability and validity of the findings, indicating that observed outcomes are likely attributable to the studied interventions or conditions rather than random chance. The study shows the effectiveness of SSPs in managing chronic NNP. Methodological enhancements are suggested, such as integrating prevalence data and conducting normality tests. In addition, employing Cohen's D effect size and robust *post hoc* analysis strengthens the study's findings, highlighting its importance in neck pain management.

## EDITOR'S NOTE

The corresponding author of the original article (Khan MA) was contacted and was given a chance to respond, but he did not send his response in spite of several reminders.

## AUTHORS' CONTRIBUTIONS

NY and AKS designed this letter, provided the data material, interpreted the data, wrote the initial and final manuscript, and reviewed the literature. NY and AKS have critically reviewed and approved the final draft and are responsible for the manuscript's content and similarity index.

## 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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