Modifying “Pico” Question into “Picos” Model for More Robust and Reproducible Presentation of the Methodology Employed in A Scientific Study

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DEAR EDITOR

The mnemonic “PICO” was originally coined to help guide a standardized and disciplined way of formulating a clinical research question, carrying out a thorough literature search to answer that question (particularly through the MEDLINE/PubMed) and resultantly generate a fulfilling and all encompassing evidence-based answer to the constructed clinical query. The elements of the PICO question included “P” for problem or patient or population, “I” for intervention or exposure, “C” for comparison and “O” for outcomes. The PICO question was recommended to be phrased into appropriate search strings to find out all the relevant published quality literature available on the cyberspace.1-3

The PICO framework is absolutely laudable for the purpose for which it was originally introduced. We modify it into PICOS model to further extend its scientific utility for the logical and thorough description of the methodology part of the scientific manuscripts. We include “S” for representing an equally important component of the research exercise. i.e. the statistical analyses employed for analyzing the data obtained from the study and the subsequent conclusions inferred there from. The advocated addition of “S” to the mnemonic PICO modifies it into PICOS, ensuring reproducibility and more robust expression of the study protocol followed in any particular scientific research.1-3

The crucial concept of statistical analyses in research studies is well established, however quite often researchers are unaware of its significance and logical implications. Resultantly their reported studies suffer the lack of robust reproducibility and translation to the general population at large.4,5 The proposed PICOS approach is intended to serve as a guide for the authors and help them efficiently and thoroughly describe their research methodology while reporting their original studies. Additionally it will also serve as a checklist guide for the reviewers and editors to more thoroughly review the manuscripts under their evaluation and hence ensure their scientific validity and statistical robustness. By ensuring uniform methodological standards and objectivity, the overall scientific value of the published literature will certainly enhance.4,5 Following is a brief summary of the proposed PICOS model for describing the methodology employed in any research pursuit:

P---Patient population: The patients or subjects who were studied in the research pursuit are specifically highlighted. This
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S---Statistical analysis (analyses): The different statistical methods and tests employed to analyze the data yielded by the research are precisely mentioned. The various statistical tools used to calculate the numerical and categorical data of the study are expressed accordingly. The statistical tests such as chi-square test applied and the significance level set are all mentioned. The statistical software such as the SPSS (Statistical package for social sciences) or any other similar software employed is mentioned. Statistically robust studies would prudently include sample size calculation and power analysis. This helps to determine the number of subjects needed in order to have a reasonable chance of showing a difference if it truly exists. A sufficiently powered study certainly has less chance of errors.

By adopting the proposed PICOS framework (i.e. Patient population- Intervention-Comparative controls- Outcomes- Statistical analyses), it is possible to ensure scientific thoroughness and objectify reporting of the methodology part of any scientific manuscript. This will ensure reproducibility of the current study as well as its comparability to other similar studies carried out by other scientific colleagues working in other institutes in any other part of the world.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

KEYWORDS
Pico; Picos; Presentation; Methodology; Study

REFERENCES

3 Groves T, Schroter S. BMJ pico for original


