

Exploring physicians' perception of diagnostic information in clinical practice

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Abstract

A well-informed diagnostic process results in better health outcomes and less overdiagnosis. While there have been studies conducted to explore doctors' knowledge, attitudes, and practice regarding diagnostic test information, there are no reports from Latin America. We invited physician readers of a Latin American medical journal to answer a survey on their professional and demographic characteristics and previous exposure to diagnostic information training. Two hundred fifteen responded, of whom 88% agreed to some extent that diagnostic information is helpful for clinical practice and that more training is needed. This brief exploratory survey underscores the need for more resources to train in the diagnostic process and the utilization of diagnostic information in clinical practice. However, given the limitations of this study, more evidence is needed.

MAIN MESSAGES

- ◆ Previous studies from North America and Europe report that clinicians generally have poor mastery of diagnostic test information.
- ◆ We surveyed the readers of a medical journal on their interest in diagnostic test information.
- ◆ These findings might prompt medical schools to take steps to bolster a positive attitude toward using diagnostic information.

INTRODUCTION

A well-informed diagnostic process potentially resulting in better health and less overdiagnosis largely depends on how clinicians use and interpret test properties [1]. The findings of previous studies are sobering [2,3], pointing to the importance of implementing better ways of teaching medical students and practicing physicians on probabilistic diagnostic reasoning.

With the widespread and increasing use of diagnostic tests to rule out improbable diagnostic options, compounded with spiraling healthcare costs worldwide, doctors hold a privileged position in making or breaking health budgets. Therefore, education in evidence-based practice is crucial, especially considering the extended use of evidence-based clinical guidelines. A framework for the core competencies required for evidence-based practice has been developed [4], yet medical curricula that include basic training in epidemiology and statistics are very variable and insufficient even in first-world countries [5].

Survey-based studies exploring doctors' knowledge, attitudes, and practice regarding diagnostic test information date as far back as the late seventies and early eighties. A systematic review published in 2015 evaluating how clinicians interpret and use diagnostic test information concluded that health professionals poorly understand commonly used measures [3]. More recently, two systematic reviews explored different aspects of the problem. One searched the literature for studies on interventions to boost analytical and non-analytical reasoning among doctors [6], and the other identified and appraised studies of cognitive interventions to improve diagnostic decision-making [7]. The variety of interventions reported in both reviews underscores how befuddled clinicians are even today when dealing with the diagnostic process.

Latin America is no exception to this problem. However, there are no studies regarding how and to what extent a numerical literacy curriculum on diagnostic information has been integrated into medical education in the region. Moreover, no research has been done to determine whether clinicians in this region use diagnostic test properties in their decision-making process.

Lacking a roster of the whole population of Latin American clinicians, we considered that asking physicians interested in biomedical literature, such as those registered in a regional medical journal, could be a reasonable first exploratory approach to

understanding physicians' perception of diagnostic information in clinical practice.

METHODS

We administered a web-based survey to a random selection of physicians registered in a Latin American medical journal. The only inclusion criterion was to dedicate part of their time to patient care. The survey included a general section to characterize the respondents with questions on age, gender, country of the medical degree, country of practice, years since medical graduation, specialization, academic career, degrees in addition to the clinical degree, physician-researcher status, previous training (methodology, biostatistics, epidemiology, critical appraisal of the literature), the proportion of time spent on patient care, practice setting, and health care setting. The second section of the questionnaire focused on previous training and the perceived utility of diagnostic test information.

The sampling frame used for this study was the registered readership of a Chilean medical journal. Simple random sampling was used to select 3275 physicians from the sampling frame to administer the survey, accounting for roughly 20% of the total sampling frame.

A personalized email signed by the principal investigator was sent once with the subject "Survey of self-perceived competencies of Latin American physicians regarding the use of diagnostic information." A follow-up email was sent the next day with the access link to the survey. Multiple reminder emails were sent to the sample that did not open the emails.

The analysis was descriptive. Data handling and analysis were done with Microsoft Excel (version 16.49).

RESULTS

Of the calculated study sample of 3275, we emailed the invitation to 3083 physicians in eight consecutive mailings between January 5, 2021, and March 15, 2021. Of these, 2047 emails were opened, but only 268 physicians accessed the form; 215 responded, totaling a response rate of 11% (215/2047).

The main proportion of the respondents (64%) was dedicated to general practice, internal medicine, pediatrics, and family

medicine; 53% were connected to a university in some way, and 52% either had a master's degree or a Ph.D., consistent with the 47% of physicians practicing in a tertiary setting. At least 73% of the respondents had previous training in either methodology, biostatistics, epidemiology, or critical analysis of biomedical literature. Conversely, 27% had not received any formal education regarding the above. More than half of the physicians stated that they had participated in some educational course to learn how to use sensitivity, specificity, or likelihood ratio of diagnostic tests in medical school or after. Furthermore, 88% agreed that diagnostic information is helpful for clinical practice. Most believe that training is necessary both in medical school and postgraduate studies.

DISCUSSION

In the case of our surveyed Latin American physicians, while most of the respondents had been exposed to some courses in methodology and biostatistics in their graduate and postgraduate training, they still considered that this training should be reinforced.

The expressed need for further training may indicate a loss of skill in using diagnostic test information in clinical decision-making or a never-acquired skill, given that over one in four surveyed physicians stated that they never had any prior training in these areas. The reality of Latin American medical schools is that these subjects are insufficiently incorporated into medical school curricula and clinical specialization [8].

Although continuing medical education is one way to address the knowledge gap in diagnostic information, we believe there should be focused efforts at the medical school level and during specialization with a cross-cutting curriculum covering biostatistics and epidemiology. Also, medical curricula should foster a positive attitude towards evidence-based medicine from the early stages of medical school, thus enhancing the likelihood that students will use diagnostic information after graduating [9]. However, there is still much to be done in curricular expansion in these subjects since only 31 of the 140 medical schools in the United States, as reported in a 2018 paper, teach epidemiology and biostatistics in independent courses [5]. Education programs and associated curricula act as a crucial means of shaping healthcare professionals' knowledge, skills, and attitudes and thus play an essential role in determining the quality of care provided [10].

Our study has several limitations. One was the low response rate, which could be explained by the survey's date—between the summer recess and the beginning of the academic year. Moreover, no incentives were offered to those who participated. Another was the lack of information regarding the number of emails that ended up in the junk email folder, so we could not determine the number of emails sent that were never seen by the recipients. As for the sample of our study, we believe that although it is not representative of Latin American practicing physicians, it allows us to explore the need for

training and education in diagnostic information methods in a significant segment of practicing physicians, even though this may have led us to overestimate the results.

CONCLUSIONS

This survey is the first at the Latin American level to explore whether clinicians have had previous training in diagnostic test properties and their opinion regarding their use and application in clinical practice. While our subsample of respondents is not representative of Latin American practicing physicians and considering the limitations mentioned above, this exploratory study provides some insight into the need for furthering training and foundational education in diagnostic information methods. However, more evidence is needed with more robust study designs.

Notes

Contributor roles

VCB was the lead investigator. All authors contributed to the study question, methods, data extraction, and analysis. The original draft was written by VCB, RO, DSV, and CUA. MSN provided methodological guidance and critically reviewed the manuscript draft.

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Competing interests

The authors declare no conflicts of interest regarding this work. VCB declares she is co-editor-in-chief of *Medwave* but had no part in the decision to publish this manuscript.

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Ethics

The survey was approved by the Institutional Ethics Committee Universidad de Santiago de Chile [Report N° 512/2020].

Supplementary files

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Exploración de la percepción de los médicos sobre la información diagnóstica en la práctica clínica

Abstract

Un proceso de diagnóstico bien informado da lugar a mejores resultados de salud y a menos sobrediagnósticos. Aunque se han realizado estudios para explorar los conocimientos, las actitudes y la práctica de los médicos en relación con la información sobre las pruebas diagnósticas, no existen estudios realizados en América Latina. Invitamos a los médicos lectores de una revista médica latinoamericana a responder una encuesta de opinión sobre sus características profesionales y demográficas y su exposición previa a la formación en información diagnóstica. Recibimos 215 respuestas, de las cuales el 88% estuvo de acuerdo en que la información diagnóstica es útil para la práctica clínica, y que se necesita más capacitación. Esta breve encuesta exploratoria subraya la necesidad de dedicar más recursos en la formación sobre el proceso diagnóstico y la utilización de la información diagnóstica en la práctica clínica. Sin embargo, dado las limitaciones de este estudio se hace necesario mayor evidencia al respecto.



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