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Educational Material on Prostate Cancer Screening is Overly Complex and Fails to Meet Recommended Layperson Readability Guidelines

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Following 20 years of decline, prostate cancer mortality has plateaued while the incidence of advanced-stage disease is rising.¹ This may be in part due to the 2012 United States Preventive Services Task Force recommendation against routine prostate-specific antigen (PSA) screening.² The United States Preventive Services Task Force has since updated its recommendation in 2018, stating that men aged 55–69 should make screening decisions after a conversation with their physician by engaging in a shared decision-making (SDM) process.³ The SDM process seeks to weigh patient values against the potential harms of overdiagnosis and overtreatment. However, the quality of SDM can vary significantly, particularly in the setting of time constraints, language barriers, or health literacy limitations, potentially leaving patients uncertain about the implications of pursuing or foregoing screening.⁴

According to pooled data from the National Cancer Institute Health Information National Trends Survey (HINTS)⁵ only 29% of patients reported “Yes” to the question of whether a physician informed them that PSA testing was a choice. Only 12% of respondents reported that a health care professional had told them that there was disagreement among doctors regarding PSA recommendations. Moreover, 47.5% of respondents thought that they had “very low” or “low risk” of ever developing prostate cancer. The National Cancer Institute HINTS data also suggest that patients are increasingly turning to online resources. An estimated 80% of the respondents in 2018 had looked for health information online while using the internet in the past year, up from approximately 50% in 2003. Other HINTS data show that 45.8% of patients specifically looked up “advice or information about cancer” every few months or more frequently. However, despite this, patient trust in online resources

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has declined over this timeframe, with approximately 80% of patients reporting trust level of “some,” “a little,” or “not at all” in 2018. These findings are both promising and worrisome, as it is encouraging that patients are increasingly taking an active role in their medical decision-making by utilizing available online resources to educate themselves, but there is clearly a risk that shared information may be overly complex or inaccurate.

National professional groups are in a unique position to fill this gap by creating comprehensive and accurate materials which can serve as trusted resources for patients regarding PSA screening. We evaluated publicly available online education materials for PSA screening from professional societies using multiple readability metrics as measures of text difficulty. Readability, defined as the “the ease of understanding or comprehension due to the style of writing,” can significantly impact the effectiveness of written educational material.⁶ Readability metrics are typically reported in grade-level equivalents, describing what educational grade level is required to understand a particular text. Readability is recognized as a component of effective written communication. The National Institute of Health recommends that patient materials be written at the eighth grade level and the American Medical Association (AMA) recommends a more aggressive target of sixth grade or below.^{7,8}

For this study, we used 7 validated metrics to assess the readability of 12 patient education materials describing PSA screening from 11 leading professional society websites (Table). Figure 1A illustrates the grade-level equivalent readability scores for the identified materials, with a Raygor distribution describing individual materials provided in Figure 1B. Mean readability level for materials ranged from 9.7 to 11.3 grade, well above AMA and National Institute of Health recommended sixth and eighth grade reading levels ($P<.0001$). Only 3 of 12 met the eighth grade level by at least 1 readability measure, and none met the sixth grade level recommended by the AMA by any measure.

These results identify an opportunity to improve the education materials developed for communicating nuanced information about prostate cancer screening by ensuring adequate readability of the materials provided. Evidence from analyses of large datasets suggests that racial disparities in prostate cancer outcomes, previously thought to be a consequence of biological differences, may be actually driven by nonbiological differences.⁹ Low health literacy and misconceptions regarding cancer prevention and treatment, both implicated as predictors of worse clinical outcomes, have been shown to be more prevalent in minority and socioeconomically vulnerable populations.¹⁰ These groups, therefore, are particularly in need of accessible resources to improve healthcare communication, promote quality of care, and enhance outcomes on a large scale. Improvement of patient education materials for patients regardless of health literacy by ensuring appropriate readability removes an important barrier to achieving these goals, especially in the context of recommendations that encourage SDM in settings of complex decisions like prostate cancer screening. While our analysis of such reading materials was limited to professional societies from the United States (and did not include informative sources from Europe and elsewhere), a push to improve readability is likely universally beneficial.

Taking action to improve the readability, and therefore accessibility, of prostate cancer screening materials developed by professional groups may make PSA screening more effective and potentially decrease disparities in care. We recognize that this is only a first step along the long road to reducing disparities and improving outcomes, but it is a step we should not further delay.

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Figure 1.

Readability of prostate cancer screening education materials from professional societies (A), with a Raygor distribution of individual documents (B). Included metrics for this investigation are: Degrees of Reading Power-Grade Equivalent (DRP [GE]); Flesch-Kincaid; FORD, CAYLOR, STITCH index; Fry score; Gunning Fog; Raygor Estimate; Simple Measure of Gobble-dygoon (SMOG). The NIH recommends that patient materials be written at the eighth grade level or below (blue dotted line). The AMA recommends that patient materials be written at the sixth grade level or below (red dotted line).

Table.**Included professional groups**

Society or Group
American Academy of Family Physicians
American Cancer Society
American College of Physicians
American College of Preventative Medicine
American Medical Association
American Society of Clinical Oncology
American Urological Association
Centers for Disease Control and Prevention
National Cancer Institute
National Institute of Health
United States Preventative Services Task Force