REVIEW ARTICLE

In Search of Medical Professionalism Research: Preliminary Results from a Review of Widely Read Medical Journals

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ABSTRACT

Introduction: Professionalism is a core concept in medicine. The extent to which knowledge about professionalism is anchored in empirical research is unknown. Understanding the current state of research is necessary to identify significant gaps and create a road map for future professionalism efforts. The authors conducted an exploratory literature review to characterize professionalism research published in widely read medical journals, identify knowledge gaps, and describe the sources of funding for the identified studies.

Methods: The authors focused on Medline's Abridged Index Medicus and 4 core Medline education-oriented journal and developed a search filter using text words found in the article title or abstract addressing professionalism. Articles were further filtered to include those indicating a research focus.

Results: The search strategy resulted in 461 professionalism research articles for analysis. Articles were divided into themes of education (n = 212, 45.9%), performance (n = 83, 18%), measurement development (n = 13, 2.8%), remediation (n = 53, 11.5%), and well-being (n = 100, 21.6%). There were 36 studies from 1980 to 2002 (Era 1: before publication of Accreditation Council for Graduate Medical Education competencies) and 425 from 2003 to 17 (Era 2: after Accreditation Council for Graduate Medical Education publication of competencies). Professionalism education was the most common topic area, and most studies were from single institutions with results based on convenience samples. Most studies received no funding or were funded by the authors' own institution.

Discussion: Little empirical research is available on professionalism in widely read medical journals. There has been limited external research funding available to study this topic.

Conclusion: More investment in high quality professionalism research is justified and should be encouraged.

INTRODUCTION

Professionalism is a core concept in medical education and practice.[1] Over the past 40 years, discussions about professionalism have evolved conceptually from a focus on individuals, to microsystems, and most recently to entire organizations.[2] There has also been movement from a view of professionalism as an accepted set of timeless virtues to which individuals aspire to a more contextually based understanding of professionalism as a lifelong process of identity formation.[3-5] There is growing recognition that external organizational and societal forces also influence an individual's ability to act professionally.[2,6] These changing perspectives on professionalism illustrate the challenges of a finding a precise, agreed-upon definition of professionalism.

A burgeoning literature, including systematic reviews, offers a variety of definitions and assessments of professionalism.[7-17] The authors could find no studies that focus exclusively on the state of, and findings from, empirical research on professionalism. Understanding the current state of research is necessary to identify significant gaps and create a road map for future professionalism efforts.

Several notable initiatives affecting professionalism education and practice have occurred in the recent past. In 1990, for example, the American Board of Internal Medicine began a project to enhance the evaluation of professionalism as a component of clinical competence and to preserve and promote integrity as a standard of practice in internal medicine.[18] Five years later, the American Board of Internal Medicine launched Project Professionalism, one further outgrowth of which was the publication of the physician charter on medical professionalism in 2002.[19] Endorsed by more than 130 medical organizations, the charter laid out professional principles and commitments all physicians should aspire to. In the same year, the Accreditation Council for Graduate Medical Education (ACGME) made the assessment of professionalism and 5 other competencies mandatory for all resident trainees. A subsequent initiative by the ACGME, the Clinical Learning Environment Review program, was designed to provide periodic feedback to institutions and the public on progress and challenges in resident education. The program maintains an emphasis on professionalism as a key component of the learning

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Abbreviations: ACGME, Accreditation Council for Graduate Medical Education; AIM, Abridged Index Medicus; GME, graduate medical education; NLM, National Library of Medicine; UME, undergraduate medical education

environment, and Issue Brief #8, published in September 2017, specifically focused on the state of professionalism in graduate medical education.[20]

With this broad view of the field in mind, our study aims were to 1) identify and explore research on medical professionalism in a subset of widely read clinical journals in medicine before and after the ACGME initiative mandating assessment of professionalism, 2) identify important knowledge gaps in the research literature, and 3) describe the sources of funding for professionalism research over this time period.

METHODS

With the help of a medical librarian (DL), we developed a search strategy that focused on professionalism research. At the same time, we became aware there were no established standards for defining empirical research on professionalism and developed search criteria that were consistent with those used in more formal systematic and narrative reviews of the medical literature.[21] Articles were identified by searching for specific words or phrases in the title or abstract (professionalism, professional identity formation, professional identity development) or by searching for these words only in the abstract: conclusion/s, finding/s, method/s, methodology, objective/s, outcome/s, problem/s, result/s; or with Medical Subject Terms assigned by National Library of Medicine: Professionalism, Research. Articles identified with search terms surrounding the concepts of professionalism were grouped into 1 set with the Boolean operator "Or." Articles identified with search terms surrounding the concept of research were grouped into a second set with the Boolean operator "Or." A third set was created by using the Boolean "And" to identify those articles that share aspect of both professionalism and research.

We limited the above searches using Publication Types: comparative study, evaluation studies, meta-analysis, multicenter study, observational study, randomized control trials, systematic review, validation studies, clinical study, clinical trial, clinical trial, phase i, clinical trial, phase ii, clinical trial, phase iii, clinical trial, phase iv. The search was limited to the 119 widely read clinical journals contained in MEDLINE's Abridged Index Medicus (AIM)[22] and the following 6 specialty journals: Medical Education, Medical Teacher, Patient Education and Counseling, Teaching & Learning in Medicine, Journal of Graduate Medical Education and BMC Medical Education. The search strategy is listed below.

	Search terms
1	(professionalism.ti. or professionalism.ab. or (professional identity formation or professional identity develop$).ti. or (professional identity formation or professional identity develop$).ab. or exp professionalism/))
2	Remove duplicates from 2
3	Limit 2 to "core clinical journals" (AIM)
4	Exp research/and 3
5	objective$.ab. and 3
6	method$.ab. and 3
7	((result$ or finding$ or outcome$ or conclusion$ or problem$)).ab. and 3
8	limit 3 to comparative study
9	limit 3 to evaluation studies
10	limit 3 to meta-analysis
10	limit 3 to multicenter study
11	limit 3 to observational study
12	limit 3 to validation studies
13	limit 3 to systematic reviews
13	limit 3 to randomized controlled trial
14	limit 3 to (clinical study or clinical trial, all or clinical trial, phase i or clinical trial, phase ii or clinical trial, phase iii or clinical trial, phase iv or clinical trial)
15	4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14

Inclusion/Exclusion Criteria

In August of 2017, the search filter for the AIM and additional educational journals identified 635 potential primary research citations. Articles were identified as research if the abstract clearly indicated sampling information, established methods of analysis, and accepted conventions for reporting quantitative or qualitative results. Articles excluded from the results were those lacking abstracts as well as those with abstracts but lacking a clearly defined methodology for analyzing data reporting results. Additionally, articles assigned with the following NLM publication types were excluded from the results: Biography, Comment, Editorial, Historical article, Lectures, Letters, News and Personal Narrative, along with abstracts where the focus was a self-described position, perspective, proposal, or viewpoint.

Of the 635 citations, initial coding revealed that 174 were "false positives," meaning that the keywords matched but the content was not actually based on research. The false positives included editorials, position papers, or writing about a theoretical curriculum change. The resulting 461 articles make up the database for analysis.

Search Results
↓
635 AIM articles identified on initial search
∧
461 research articles 174 non-research articles
∧
36 articles in Era 1 Pre-ACGME 1980-2002,425 articles in Era 2 ACGME 2003-2017

Coding Scheme Development

In a series of iterative consensus-building phone calls and a day-long face-to-face meeting, 4 of the authors (JHI, DZ,

RMF, FH) reviewed abstracts of all of the primary research studies and identified 5 overarching thematic categories for the 461 studies. These categories were:

1. Education (studies about undergraduate, graduate and continuing medical education programs practices, and pedagogy)
2. Performance (studies about individual, group or organizational outcomes)
3. Measurement development (studies about measurement or tool development)
4. Remediation (studies about programs and practices for dealing with professionalism lapses at all levels: undergraduate medical education [UME], graduate medical education [GME], practice)
5. Well-being (studies about self-care, resilience, and burnout as related to professionalism)

Once the coding scheme was developed and agreed upon, a research assistant was trained in how to use it to review the 461 research articles. An iterative process of reviewing and reconciling the coder's results with the development team led to increasing agreement between the 2. As a quality assurance measure, 20% of the data were double coded and compared for agreement. For the sake of simplicity and based on limited resource availability, each study was assigned by author consensus a single primary thematic category and was then coded using the following variables:

1. Study type and design (descriptive/intervention; experimental, quasi-experimental, cohort, randomized controlled trial)
2. Sample studied (students, residents, practicing physicians)
3. Level of analysis (individual, team/microsystem/organization)
4. Type of data (quantitative/qualitative)
5. Funding (local, private foundation, governmental)

When information was not available regarding funding, we assumed no external funding (ie, support by author's local institution only).

Time Frames

In its attempt to define professional behaviors, the ACGME mandated in 2002 that a proficiency assessment be completed for all graduating medical residents. Given the major shift in assessment and reporting requirements, we chose to analyze abstracts based on whether they occurred before the introduction of competencies (Era 1: Pre-ACGME, 1980-2002) or after (Era 2: ACGME, 2003-2017). We further refined the search results into studies in which professionalism was the primary or secondary focus of the research.

Identification of Study Participants

In order to better identify the subjects who were being studied, we analyzed the citations in the database according to standard categories:

1. UME
2. GME
3. Practice
4. Misc. (if it could not be determined from the abstract or body of the study)

Research Setting

To understand the context and historical trends associated with professionalism research, we analyzed the pre- and post-ACGME competency eras settings in which studies took place. Single sites were considered to be medical schools (including those with multiple campuses), residency programs, health systems, hospitals, clinics or individual medical practices. Likewise, studies involving multiple institutions were considered as consortia or other groups of independent participants.

Study Design and Sample Selection

To be able to describe similarities and differences in the approaches used to study professionalism, we compared the study designs used in the 2 Eras.

1. Descriptive studies were defined as nonexperimental quantitative or qualitative studies that did not manipulate any variables.
2. Intervention studies were defined as using hypothesis testing and prospective comparison of an intervention group(s) vs controls, (standard treatment, no treatment or placebo).
3. Clinical trials were defined by some form of randomization either of individuals or groups.

We further coded the studies according to whether sample selection was nonrandom (convenience), a statistically representative sample of a particular population (eg, residents in a consortium of schools) or an entire population (eg, all residents across the United States).

RESULTS

Time Frames

There were 36 research studies identified between 1980 and 2002 (Era 1, Pre-ACGME) and 425 identified between 2003 and 2017 (Era 2, ACGME), a 12-fold increase after professionalism assessment became a programmatic requirement (Figure 1). Of the 36 studies in Era 1, 18 (50%) had a major focus on professionalism; in Era 2 a similar proportion (n = 213, 50%) of the 461 studies cited had professionalism as a major focus..

Study Participants

Table 1 describes the study participants.

Research on professionalism at the undergraduate medical education level was most frequent in both Eras 1 and 2. One third of all professionalism research studies in Era 1 focused on UME; this rose to nearly one half of all studies in Era 2. A similar, but smaller, increase in studies

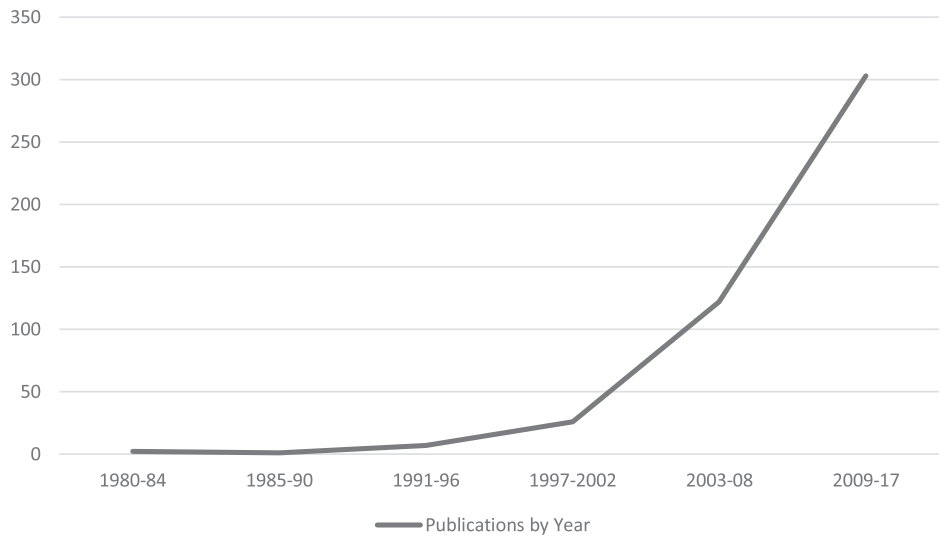

Figure 1. Professionalism research articles by year.

Table 1. Study samples in professionalism research 1980-2017

	UME	GME	Multiple Ed[a]	Practice[b]	Misc.[c]
Era1: Pre-ACGME (1980-2002)	12 (33%)	7 (19%)	6 (17%)	10 (28%)	1 (3%)
Era 2: ACGME (2003-2017)	190 (45%)	99 (23%)	54 (13%)	70 (16%)	12 (3%)

[a]When more than 1 group was studied with at least 1 group being either UME or GME (eg, UME and GME or UME, GME, and Practice).
[b]Practice refers to research involving physicians who have completed their training and are practicing medicine.
[c]Includes studies in which the samples were not clear.
ACGME = Accreditation Council for Graduate Medical Education; GME = graduate medical education; UME = undergraduate medical education.

Table 2. Area of professionalism research 1980-2017

Era	Education	Performance	Measurement development	Remediation	Well-being
Era1: Pre-ACGME (1980-2002)	21 (58%)	5 (14%)	1 (3%)	0 (0%)	9 (25%)
Era 2: ACGME (2003-2016)	191 (45%)	78 (18%)	12 (3%)	53 (12%)	91 (21%)

ACGME = Accreditation Council for Graduate Medical Education.

was noted for GME. At the same time, there was a notable decrease in practice-based professionalism research in Era 2.

Area of Study

Next, the team reviewed the citations according to the area of study each fell under. Table 2 summarizes these results. In Era 1, 58% of professionalism research (n = 21) occurred in the educational arena. In Era 2, the percentage of educationally oriented studies fell to 45% (n = 191), whereas the number of studies focusing on performance, measurement, and well-being, remained relatively stable. Remediation, an area of growing concern in training and practice, was virtually absent from the database in Era 1 and increased significantly in Era 2.

Research Setting

Table 3 describes the types of sites at which research was conducted.

In both eras, the most frequently studied sites were single institutions, with a notable uptick in single institution studies in Era 2. Likewise, there was a drop in the percentage of multi-institutional studies from Era 1 to Era 2. There were no national studies in Era 1 and a few in Era 2; the same held true for international studies. Interestingly, in both eras, there were several studies where the type(s) of group(s) could not be determined, and these were categorized as "other."

Study Design and Sample Selection

Three quarters of the studies in Eras 1 and 2 were descriptive, and only 1 out of every 5 studies involved any kind of intervention. Of the intervention studies in both time periods, there were very few controlled trials with professionalism as a major focus: only 4 in Era 1 and none in Era 2. In both Era 1 and Era 2, over 80% of the research studies had a sample selection that was nonrandom (convenience).

Table 3. Site of professionalism research 1980-2017

Era	Single institution	Multiple institutions	National[a]	International[b]	Other[c]
Era 1: pre-ACGME (1980-2002)	14 (39%)	15 (42%)	0 (0%)	0 (0%)	7 (19%)
Era 2: ACGME (2003-2016)	236 (56%)	105 (25%)	19 (4%)	26 (6%)	39 (9%)

[a]Study had to be based in the US and national in scope.
[b]Study used data from more than 1 country.
[c]Not mentioned.
ACGME = Accreditation Council for Graduate Medical Education.

Table 4. Funding for professionalism research 1980-2017

Funding source	Number of studies
Author's Institution	78 (35.9%)
Arnold P. Gold Foundation	12 (5.5%)
NIH	11 (5.1%)
National Board of Medical Examiners	10 (4.6%)
American Board of Internal Medicine	8 (3.7%)
Josiah Macy Jr. Foundation	6 (2.8%)
Medical Council of Canada	6 (2.8%)
Arthur Vining Davis Foundation	5 (2.3%)

Funding

Slightly more than half (n = 244, 53%) of the 461 studies in the database had received some sort of funding. Of these 113 (52%) focused primarily on professionalism, and nearly half (n =104, 48%) had professionalism as a secondary focus.

Table 4 lists the institutions or agencies that provided some source of funding.

The majority of these studies were underwritten by the investigators' own institutions. Furthermore, there was no clear leader or major sponsor of professionalism research among the rest of the funding agencies either in Era 1 or 2.

DISCUSSION

Although there has been an emerging literature on assessing professionalism[23], empirical research on medical professionalism remains quite limited. In this exploratory study of the most widely read medical journals, we found that there has been a dramatic increase in the number of studies published in the years since the ACGME mandated professionalism competency assessment. Further, the majority of studies were descriptive, conducted within single institutions, and used sampling strategies that limited their generalizability. Substantively, what does exist is focused on the educational and performance domains with less attention to measurement. There appears to be an emerging interest in professionalism remediation and a shift from practice-based to educational settings and from assessing performance to developing effective educational pedagogies.

We were unable to find any English language studies similar to ours; however, a scoping review of medical professionalism research published in the Chinese language included 695 publications. Similar to our findings, the majority of publications occurred after 2002. The vast majority of these were position papers, and only 7% were based on empirical research.[24]

Our findings suggest there is a need for a rigorous systematic program of research in this domain to inform education and clinical practice policy. More emphasis on developing substantive and robust measurements of the key components of professionalism will enable the field to move forward methodologically. Better measures of professionalism-related constructs, including complex ideas such as predictors of ethical actions,[25] professional identity formation, moral and ethical reasoning, relevant communication skills and reflective capacity,[26] will enable scholars to use predictive models of professional behavior. Better measurement will also enhance our ability to accurately assess individual trainee behaviors, which are critical for competency-based medical education. Evidence-based guidance on the remediation of professionalism lapses is very limited but growing.[27-29] Much of what there is exists outside of the medical literature.[29] in disciplines such as in sociology, moral psychology, and other professions.

Although it was not a specific focus of our study, we need research to understand the continuum from early medical education into independent practice in order to ensure high-quality health care for patients and to effective and personally supportive education for the physician workforce. The increase in both UME- and GME-focused research in Era 2 is likely attributable to a renewed emphasis on professionalism by accreditation bodies such as the Liaison Committee on Medical Education and the ACGME. In turn, both policy-making and the uptick in research were likely bolstered by the publication of a series of papers by Papadakis et al[30,31], starting in 2001, that demonstrated an associated link between unprofessional behavior in medical school and the risk of censure for unprofessional behavior in practice. A better understanding of the links between medical education and practice would no doubt improve the impact of education on practice outcomes. Large-scale studies based on nationally representative randomized samples drawn from multiple institutions would address what is currently a gap in the literature.

The fact that much of the current literature is based on convenience samples from single institutions makes it

impossible to assess the impact of context on medical professionalism. There is an emerging descriptive literature exploring the cultural context of professionalism across countries.[32] Variations in context likely affect professionalism, including institutional, clinical discipline, stage of training, health care system, and generational. More multi-institutional, national, and international studies are needed to address questions of developing standards of practice that apply across the board in training and practice.

A cause for concern is the fact that relatively few primary studies have been externally funded, and those that have been were largely underwritten by the authors' own institution. Although this is an important funding source, it also represents a limitation and likely reflects the local interests of the institution in question. In turn, local funding may also shape the focus of research (eg, study population), driving down the number of national and international studies. As well, in assessing the range of other funding resources, it appears that no governmental agency or private foundation has made professionalism research a major portion of its portfolio. Without such a lead agency it is unlikely that a comprehensive roadmap and multi-institutional funding for this type of research will appear as it did, for example, in mapping the human genome.[33]

As is true in other industries, investment in research is, and should be, a priority in developing new knowledge and approaches to topics like professionalism. Without a roadmap for dealing systematically with the opportunities and challenges to professionalism posed in training and practice, and perhaps more importantly in collaboration with public and private funding agencies, little progress in scientific understanding and policies to promote, sustain, and remediate professional behavior can be expected.

Limitations

This study has several limitations. First, our literature review was exploratory and limited to the most frequently read clinical journals as cited in the AIM. Although they may be the most frequently read by the academic medicine community, the AIM journals do not represent the entire scope of professionalism writing. Although we tried to be systematic in how we parsed the data, published definitions of professionalism research proved elusive, and our operationalization of the concept included decisions that were arbitrary. As a result, our conclusions must be considered preliminary and subject to further exploration and refinement. Dividing professionalism research into time periods based on national programs and policies, although carefully considered, likely provides a limited view of how the field has evolved. We chose to classify articles under only 1 primary theme, but some may have represented elements of more than 1 theme. In addition, a Medical Subject Headings term for professionalism only came into existence in 2016.[34] As a result, we relied on methods described in study abstracts that were consistent with research standards. This approach may have missed some research articles on professionalism. Finally, we did not include a quality appraisal of the articles studied.

CONCLUSION

The picture that emerges from our exploration of widely read medical journals over the past 40 years reveals that there has been only a modest focus on research in this domain within medicine. The research that has been conducted has been descriptive and unsystematic, more characteristic of a field in its early stages of evolution.[35] If professionalism is really at the heart of medicine, the question of whether we can afford to invest more heavily in research should properly be reframed by asking, "Can we afford not to?" ❖

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Author Contributions

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