

# The Influence of Role Modeling and Mentorship on Primary Care Career Choice:

## What Can Be Gleaned From 30 Years of Research?

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**BACKGROUND AND OBJECTIVES:** Role modeling and mentoring are key aspects of identity formation in medical school and likely influence student specialty choice. No reviews have examined the ways that mentorship relationships impact primary care career choice.

**METHODS:** We conducted a systematic literature search to identify articles describing the influence of role models and mentorship on primary care interest, intention, or choice. A content analysis of the included articles determined which articles focused on mentorship versus role modeling and the definitions of each. We coded articles as groundwork, effectiveness, or impact depending on the methodology and outcomes of each study.

**RESULTS:** Searches yielded 362 articles, of which 30 met inclusion criteria. Three offered definitions of role modeling, and one compared and contrasted definitions of mentoring; 17 articles laid groundwork that indicated that role modeling and mentorship are important factors in career choice and specifically in primary care. Thirteen articles reported the effectiveness and impact of role modeling and mentoring in influencing intent to enter primary care or actual career choice. Primary care and non-primary care physicians influenced student interest, intent, and choice of primary care careers; this influence could be positive or negative.

**CONCLUSIONS:** Role modeling and mentorship influence primary care career choice. Very few articles defined the studied relationships. More work on the impact of mentorship and role modeling on career choice is needed.

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Role modeling and mentorship have been identified as critical to student choice of primary care (PC) and family medicine (FM) careers for more than three decades.<sup>1,2</sup> Since primary care was defined by Dr Barbara Starfield and family medicine became a specialty,

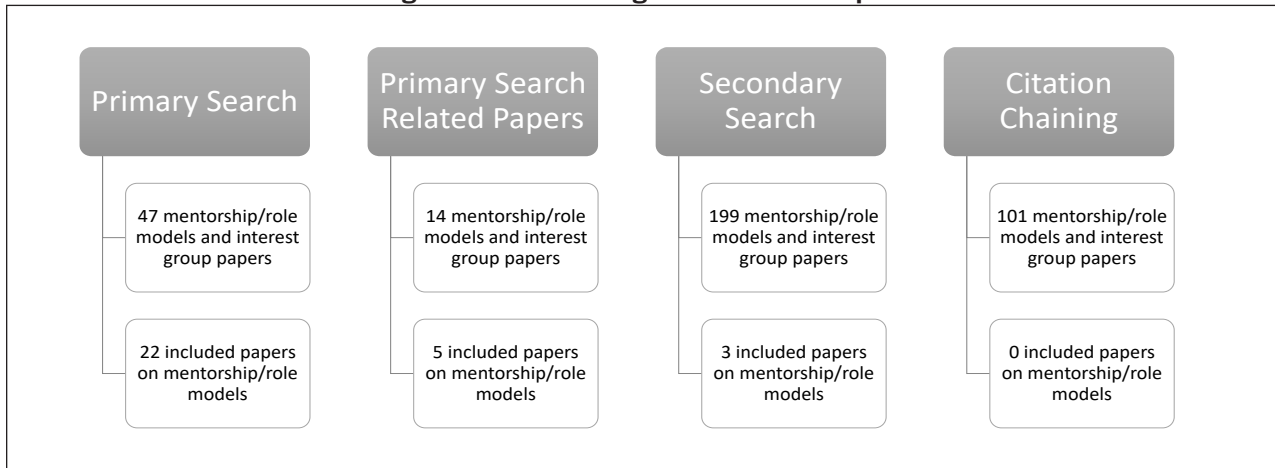
educators have studied how student relationships with physicians influence the kind of field they choose to enter.<sup>3,4</sup> Though many articles have been published about role modeling and mentorship in primary care and family medicine over decades, there are no universally-accepted

definitions of these terms. Clear definitions of these terms could help faculty effectively engage with students to support PC career choice and allow institutions and departments to devote scarce resources to evidence-based relationships that promote PC.

The goal of this study was to describe what is known about the influence of mentorship and role modeling on primary care career choice through a systematic review of the literature. Additional goals of this study were to explore published definitions of role modeling and mentoring that influence primary care career choice with the aim of clarifying a definition for each. The final goal of this study was to categorize the level of intervention for role modeling and mentoring, as described by the larger scoping review study.<sup>5</sup>

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Figure 1: Search Strategies and Included Papers



## Methods

This study used a primary and secondary search (Figure 1). The primary search strategy was performed as part of the scoping review and broadly considered medical school structures, policies, and practices that promote primary care specialty choice.<sup>5</sup> A total of 61 manuscripts examining role models and mentors (47 articles meeting the scoping review inclusion criteria and 14 related articles) were identified from this primary search.

A language mapping process identified key secondary search terms (Table 1) focused on role models and mentoring. Student-run free clinics, and family medicine interest groups were also included in this secondary search and those findings are reported in a separate paper.<sup>6</sup> We conducted this search of PubMed, Scopus, and CINAHL on April 13, 2021. This secondary search resulted in 199 additional topic-specific articles.

Two researchers (A.K. and T.S.) evaluated the 61 articles from the primary search and the 199 articles from the secondary search for inclusion. The citations of articles meeting inclusion criteria were then reviewed (citation chaining) to ensure no articles had been missed. In total, titles and abstracts of 362 articles were reviewed (61 from the primary search, 199 from the secondary search, and 101 after citation chaining). Article

quality was assessed in the scoping review.

Inclusion criteria for this role model and mentoring study were:

- Articles examined the influence of role models/role modeling or mentors/mentorship in undergraduate medical education on primary care specialty choice,
- Articles published in English, and
- Studies took place in the United States, Australia, New Zealand, or Canada<sup>7</sup>

We included articles only if they included “role model” or “mentor/mentorship” as either a specific variable in the analysis (for quantitative articles) or as a theme (for qualitative articles). The outcomes of interest were student primary care interest, intention to match to primary care residency, or entering a primary care career. Primary care careers were defined as family medicine, primary care internal medicine, or primary care pediatrics. We excluded articles if they only examined exposure or contact between faculty, preceptors, and students. Uncertainty about article inclusion was resolved through consensus discussion with one or more additional researchers.

We performed two content analyses. For the first content analysis, each article was reviewed to determine if it included a definition of role model, mentor, or both. This was done by searching each article

for the words “role model” and “mentor” and identifying if the authors included a clear definition in the text (for example, “We defined role model as...”).

For the second content analysis we used a stage of intervention rubric described in the scoping review.<sup>5</sup> Six categories comprise the intervention rubric: (1) Groundwork, (2) Effectiveness, (3) Impact, (4) Planning, (5) Piloting, and (6) Outcomes. To categorize the quantitative articles, we identified the outcome measures, sample and comparison groups, and role model/mentorship variables. Articles that used qualitative methods or quantitative articles that investigated a single population without comparisons were coded as “groundwork”. Quantitative articles that compared primary care groups vs other groups were coded as either “effectiveness” (examined career intention or interest) or “impact” (examined specialty match or practice). No quantitative or qualitative articles met the intervention stages of planning, piloting, or outcomes as defined by the scoping review.

One researcher (A.K.) performed the two content analyses. This work was iteratively reviewed and reconciled with three other researchers (M.P., J.P., T.S.). The study was determined to be not human subjects research by the Michigan State University Institutional Review Board.

Table 1: Secondary Search Terms and Articles Found

| Search Terms  | Articles |
|---|----------|
| ((“physicians, family”[MeSH Terms] OR “family physicians”[tiab] OR “family physician”[tiab] OR “primary health care”[MeSH Terms] OR “primary health care”[tiab] OR “primary care”[tiab] OR “family practice”[MeSH Terms] OR “family practice”[tiab] OR “family medicine”[tiab] OR rural[tiab] OR “general practice”[MeSH Terms] OR “general practice”[tiab] OR “general practitioner”[tiab]) OR (“internal medicine”[MeSH Terms] OR (“internal”[tiab] AND “medicine” [tiab]) OR “internal medicine”[tiab] OR internist*[tiab] OR “paediatrics” [tiab] OR “pediatrics”[MeSH Terms] OR “pediatrics”[tiab] OR “pediatrician”[tiab])) AND (“professional identity”[tiab] OR “professional identification”[tiab] OR “specialty”[tiab] OR career[tiab] OR “choice behavior”[tiab] OR “choice”[tiab] OR choose[tiab] OR chooses[tiab] OR choosing[tiab] OR preference[tiab] OR discipline[tiab] OR “Career Choice”[MeSH Terms] OR “choice behavior”[MeSH Terms] OR recruit*[tiab] AND (Clerkship*[tiab] OR “Education, Medical, Undergraduate”[Mesh] OR “medical education”[tiab] OR “medical students”[tiab] OR “medical student”[tiab] OR “Students, Medical”[Mesh] OR “schools, medical” [Mesh] OR “medical schools”[tiab] OR “medical school”[tiab]) AND (mentor*[tiab] OR mentorship[tiab] OR role model*[tiab] OR interest group*[tiab] OR FMIG[tiab] OR family medicine interest group[tiab]) | 381      |

## Results

A total of 30 articles met inclusion criteria: the primary search yielded 22 articles, the secondary search yielded 3 articles, and related articles from the primary search yielded five articles. Citation chaining of these articles yielded no additional articles (Figure 1).

Table 2 shows the counts of articles that examined mentorship, role modeling, or both. It also shows the intervention category as defined by the scoping review. The terms mentorship and role modeling both appear for the first time in the primary care student choice literature in 1991; since that time five articles explored mentorship, 15 articles explored role modeling, and 10 articles explored both.

Three articles on role models offered definitions:

- Basco (1991): “The person should be someone who has influenced the student to choose the same specialty as the role model”<sup>8</sup>
- Kutob (2006): “individuals admired for their ways of being and acting as professionals”<sup>9</sup>
- Wright (1997): “a person considered as a standard of excellence to be imitated”<sup>10</sup>

One article offered a definition of mentors and this was to contrast formal vs informal mentors. Park defined formal mentors as those assigned by a medical school and informal mentors as those sought by

students when the formal mentor may not be viewed as an adequate role model.<sup>11</sup> Park found that informal mentors were often perceived by students as a more experienced version of themselves.

Three articles offered additional concepts of role modeling and mentorship. Burack discussed the idea that students are “trying on possible selves” through interaction with physicians.<sup>12</sup> Ambrozy described three specific domains of role modeling: teaching, personal, and physician.<sup>13</sup> Role modeling for teaching included specific behaviors related to bedside teaching and student interaction. Role modeling as a person reflected characteristics such as compassion, enthusiasm, and competence. Role modeling as a physician included patient-centered care and clinical reasoning. Finally, Mutha noted that students in focus groups used the words “mentor,” “role model,” and “advisor” interchangeably.<sup>14</sup>

Table 3 shows key findings, outcome measures, population, and role model/mentorship variables. Seventeen articles were groundwork in nature; these sought to understand how role modeling/mentorship influences specialty choice. Seven articles investigated the effectiveness of role modeling/mentorship on primary care career interest or intent. Six articles studied the impact of role modeling/mentorship on actually entering a primary care career.

## Groundwork

Multiple articles confirm that medical students, residents, and practicing physicians cite role models and mentors before and during medical school as influential in the choice to pursue a primary care career.<sup>1,2,15–21</sup> Articles conflict about the relative importance of role modeling within the primary care specialties and compared to other fields. Some studies have found that role modeling is more important in primary care career choice, and in family medicine in particular.<sup>9,22</sup> However, one article found no difference among primary care fields.<sup>23</sup> When asked about their own opinions about being role models, primary care physicians report strengths in patient centeredness compared to non-primary care physicians.<sup>13</sup>

Role models and mentors across practice sites and specialties can be positive or negative in their impact on primary care career interest. Hospital role models could influence either positive or negative attitudes toward general practice.<sup>24</sup> Support from mentors who were not in primary care positively influenced students who desired to match into family medicine.<sup>25</sup> Two studies found that positive primary care role models are positively influential, but negative primary care role models can weaken student interest.<sup>14,26</sup>

**Table 2: Author, Year of Publication, Role Model or Mentorship Content, and Level of Intervention for All Included Studies**

| First Author         | Year | Role Model | Mentorship |
|----------------------|------|------------|------------|
| <b>Groundwork</b>    |      |            |            |
| Babbott              | 1991 | Yes        |            |
| Godkin               | 1991 |            | Yes        |
| Martini              | 1994 | Yes        |            |
| Blue                 | 1996 | Yes        | Yes        |
| Ambrozy              | 1997 | Yes        |            |
| Burack               | 1997 | Yes        | Yes        |
| Mutha                | 1997 | Yes        | Yes        |
| Matorin              | 2000 | Yes        | Yes        |
| Jordan               | 2003 | Yes        | Yes        |
| Kutob                | 2006 | Yes        |            |
| Poole                | 2009 | Yes        |            |
| Parker               | 2014 | Yes        |            |
| Dogbey               | 2018 |            | Yes        |
| Kost                 | 2019 | Yes        | Yes        |
| Weiland              | 2019 | Yes        | Yes        |
| Woolley              | 2019 | Yes        | Yes        |
| Vohra                | 2019 | Yes        |            |
| <b>Effectiveness</b> |      |            |            |
| Hunt                 | 1995 | Yes        |            |
| Basco                | 2001 | Yes        |            |
| Connelly             | 2003 | Yes        |            |
| Bazargan             | 2006 | Yes        | Yes        |
| Scott                | 2007 |            | Yes        |
| Park                 | 2016 | Yes        | Yes        |
| Codsi                | 2019 | Yes        |            |
| <b>Impact</b>        |      |            |            |
| Xu                   | 1995 | Yes        |            |
| Wright               | 1997 | Yes        |            |
| Xu                   | 1997 | Yes        |            |
| Campos-Outcalt       | 2004 | Yes        |            |
| Indyk                | 2011 |            | Yes        |
| Wimsatt              | 2016 |            | Yes        |

### *Effectiveness*

Mentorship and role modeling were found to be effective at influencing interest in or intent to enter primary care across different stages of

training. Preclinical students who reported positive family medicine mentor exposure were more likely to switch their interest to that field compared to those who did not report

positive family medicine mentor exposure, although negative exposure did not impact career intentions.<sup>27</sup> However, students' beliefs that a pre-clinical preceptor was a good role model was not associated with their career intention.<sup>28</sup>

Students who planned primary care careers were more likely to report having an informal primary care mentor. Student intent to match in family medicine increased if they had good role modeling during their clerkship.<sup>29</sup> However, role modeling in clerkships had a stronger influence on students entering surgical fields than primary care fields.<sup>30</sup> The timing of student exposure to role models in the specialty they planned to pursue was not different across fields.<sup>8,11,31</sup>

### *Impact*

Finally, multiple studies suggest that role models/mentorship impact eventual entry into primary care careers. Students with sufficient role models during medical school had increased odds (OR 4.6-12.8) of matching to primary care specialties compared to other specialties.<sup>32</sup> Students who completed a formal mentoring program in primary care were more likely to match to primary care specialties compared to those who did not.<sup>33</sup> Private schools with informal mentoring in family medicine had higher match rates to the field than those without informal mentoring.<sup>34</sup> Schools with increasing family medicine match rates had increasing rates of students who reported wanting to be like a family physician.<sup>35</sup> Practicing primary care physicians' reports indicate that early role models were more important for family medicine and internal medicine physicians, compared to pediatricians, and that early role models were more important for male than female physicians.<sup>36,37</sup>

### **Discussion**

Role models and mentors are widely believed to be essential in helping students choose family medicine and primary care careers. Unfortunately,

**Table 3: Author, Study Measures, Comparison Groups, Data Sources, Variables, and Key Findings for Each Study**

| Author               | Study Measures   | Comparison Groups and Data Source   | Mentor/Role Model Variable   | Key Findings  |
|----------------------|--|---|--|---|
| Babbott, 1991        | Most important factors in choice of specialty  | Internal medicine vs medicine subspecialties vs other specialties (self-report on survey)           | Role models during medical school  | Role models ranked 1 by 10% of other and 8% by IM   |
| Martini, 1994        | Factors that PC grads rated as important   | Sample PC grads MD and DO, no comparison (AMA Masterfile)   | Role models before and during medical school                                       | Role models before and during medical school are rated as strongly influential  |
| Hunt, 1995           | Career intentions of second year medical students  | Students with primary care intention vs other intention or uncertain (self-report on survey)        | Role modeling and specialty of physical diagnosis preceptor                        | Preceptors that were good role models were associated with PC intention, but not significant in multivariate analysis |
| Xu, 1995             | Factors that influenced choice of PC   | PC physicians, males vs females (self-report specialty)   | Factor analysis that included role models during medical school, early role models | Early role models more important for males vs. females  |
| Ambrozy, 1997        | Differences in role models self-perception   | PC role models vs Non-PC role models (self-report)  | Student identified factors that make a good role model                             | PC role models report differences in physician domain compared to non-PC role models                                  |
| Wright, 1997         | Student choice of the field based on sufficient vs insufficient role models                          | Fourth-year students with different career intentions (FM, IM, pediatrics, surgery) (self-reported) | Sufficiency of role models   | Students with sufficient role models in IM, pediatrics, FM 4.6-12.8 OR of entering those fields                       |
| Xu, 1996             | Differences in factors influencing the three fields  | Practicing physicians, FP vs IM vs pediatrics (self-report)   | Factor analysis of what influenced choice, including early role models             | Early role models more important for FM/IM vs peds)   |
| Basco, 2001          | Timing of when students met role model (before or after specialty choice)                            | Student PC interest at matriculation and then at graduation (self report)                           | Role models including timing of when relationship started                          | No difference in when students found role models by specialty interest or intent                                      |
| Connelly, 2003       | Self-reported career choice at time of survey  | Students/residents planning PC career vs other career (self report)                                 | PC role model, specialty role model, or no role model                              | Students and residents with PC mentor predicted PC intent   |
| Campos-Outcalt, 2004 | Match rate of schools into family medicine   | Students at schools with increases vs decreases in FM match (AAFP data)                             | Faculty students most want to be like is a FP                                      | Schools with increasing FM match had increasing rates of students wanting to be like a FP                             |
| Kutob, 2006          | Amount of contact with physicians/ ratings of contact in chosen specialty per year of medical school | IM vs. pediatrics vs FM vs IM-peds (self-report)  | Role model in chosen field   | Differences in fields, if no role model, lower ratings, especially in FM)   |
| Poole, 2009          | Survey on factors that have a positive impact on career intention                                    | Students completing medical school (no comparison; all graduates invited)                           | Positive role model in specialty of interest (not specific to PC)                  | 88% of all students said role models had a significantly positive effect on career choice                             |

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Table 3: Continued

| Author        | Study Measures   | Comparison Groups and Data Source  | Mentor/Role Model Variable                                | Key Findings   |
|---------------|--|--|---|--|
| Parker, 2014  | MS4 focus groups, attitudes towards general practice   | Qualitative  | Role models who are GP vs. hospital doctors               | Hospital role models could influence positive or negative attitudes towards GP, not all students have GP role model  |
| Codsi, 2019   | Change in intention to pursue FM   | Clerkship students (pre vs post FM clerkship; all students in clerkship)                           | Exposure to FM role model                                 | Increased intent to match to FM if had good role model   |
| Vohra, 2019   | Qualitative, interviews with GPs and students and residents  | Qualitative  | Role models are a key factor to GP choice                 | Role models are a key part of social factors that impact specialty choice  |
| Godkin, 1991  | Importance of non-curricular factors, ranking of mentor exposure                                   | Surveys of family medicine residents (no comparison; identified by their school as matching to FM) | Mentor exposure   | 61% of residents said having a mentor was important/very important   |
| Scott, 2007   | Career switch towards or away from FM  | Pre/post of preclinical medical students (school identified)                                       | No mentor or encouraging mentor                           | Positive mentor exposure associated with switching to FM, neg exposure did not impact switch to or from  |
| Indyk, 2011   | Specialty match  | Students who complete PC mentoring program vs noncompleters vs all others (institutional records)  | Enrollment in primary care mentoring program              | Completers matched to PC at higher rates than non-completers, others   |
| Wimsatt, 2016 | % match to FM for public and private medical schools   | Informal mentor vs no informal mentoring (AAFP and school records)                                 | Mentorship offered to students                            | For private schools, informal mentoring associated with higher match, no difference for public schools   |
| Dogbey, 2018  | Mean importance of mentorship in career choice   | Osteopathic students vs residents vs physicians (self-reported)                                    | Mentor or preceptor influences                            | Mentorship ranked 5-6 on 10-point scale, no difference in impact between groups  |
| Blue, 1996    | Rating of influence of factors on PC career choice and selected current specialty based on factors | IM vs pediatrics vs. FM graduates (self-reported)  | Mentors/role importance and influence on career selection | No difference between PC fields, mentor relationship rated minor to important factor, role modeling somewhat to moderately important when selecting career |
| Burack, 1997  | Focus groups of graduating seniors, PC and non-PC reported NRMP match specialty                    | Qualitative  | Role models/mentors during medical school                 | Role models/mentors mentioned more often by PC students than non-PC students as influencing specialty choice   |
| Mutha, 1997   | Focus groups of senior students on career choice   | Qualitative  | Positive and negative role models/mentors in FM/IM        | Positive role models are necessary but not sufficient, negative role models can dissuade)  |
| Matorin, 2000 | Factors that impact specialty choice, not specific to primary care                                 | Third year medical students (no comparison groups; identified by school)                           | Importance of role models and mentors in specialty choice | 32% rated role models/mentors as very important, 12% rated them extremely important  |

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Table 3: Continued

| Author         | Study Measures  | Comparison Groups and Data Source  | Mentor/Role Model Variable   | Key Findings   |
|----------------|---|--|--|--|
| Jordan, 2003   | Focus group of family medicine matched MS4                    | Qualitative  | Mentorship and role model experiences in school                                  | Contact with FM role models was a key theme in career choice                                 |
| Bazargan, 2006 | First specialty choice  | Fourth-year medical students plan for career in PC vs medical subspecialty vs surgery vs support specialty (self-reported) | Role models and mentors as part of a larger variable "medical school experience" | Medical school experiences strong influence on surgery vs primary care; no other differences |
| Park, 2016     | Alignment with mentor career                                  | Graduated class career intentions FM vs other (self-reported)  | Experience with formal and informal mentors in school                            | Students who planned FM career more likely to have informal FM mentor                        |
| Kost, 2019     | Institutional respect for FM, perception of future of FM      | Graduating seniors (no comparison group; self-reported)  | Mentor and role model exposure and quality, PC and non-PC                        | Non-FM mentors support predicts respect and perceptions of future of FM)                     |
| Weiland, 2019  | First year students, what influences interest in PC           | First year medical students (no comparison group; school identified)   | Exposure to role models and mentors, including positive input from non-PC        | Role models strengthen interest in PC, poor role models weaken interest in PC                |
| Woolley, 2019  | Content analysis of PC graduates of Australian medical school | Qualitative  | Mentors and role models are a theme in analysis                                  | 11%-22% of subjects identified importance of mentors or role models for PC choice)           |

Abbreviations: PC, primary care; FM, family medicine; IM, internal medicine; non-PC, non-primary care; NRMP, National Residency Matching Program; AAFP, American Academy of Family Physicians; GP, general practitioner; OR, odds ratio.

this review of decades of literature found that the very definitions of these terms were so variable, that the findings could not be synthesized into a consistent, reproducible conceptual model. What can be said is that students clearly have positive and negative experiences with the physicians they work with and learn from, and efforts to facilitate positive experiences in primary care are likely to be beneficial.

Few articles defined role models or mentoring. Clear definitions would allow institutions and departments to provide resources to support the relationships most likely to result in students choosing primary care careers. Lack of specificity in research makes it difficult to replicate or situate within the larger body of literature. It also makes it difficult to know what actionable steps should result from the findings.

The struggle to define the terms role modeling and mentorship is not a new problem.<sup>38</sup> The content analysis of definitions in this review and existing literature suggests role models influence *who* students want to become whereas mentors influence *how* students get there. This delineation of role modeling and mentorship as two separate constructs is supported by a recent systematic review of role model and mentorship throughout medical education.<sup>39</sup>

The level of intervention of the studies in this review are low. Many of the articles focused on groundwork, limiting the generalizability of the small number of articles that evaluated the effectiveness or impact of mentorship and role modeling. Those that did evaluate effectiveness or impact did not have robust comparison groups across the educational spectrum from medical student to resident to practicing physicians.

Another limitation is that many articles with outcomes of matching into internal medicine or pediatrics did not account for subsequent subspecialization.

Strengths of our study include the systematic nature of the review and the inclusion of work over 30 years. Categorizing the interventions by groundwork, effectiveness, and impact increases understanding of the existing literature and informs future directions.<sup>5</sup> Limitations of this study include a lack of search of the grey literature. The search did not include databases such as Cochrane, OVID, MEDLINE, and PsychInfo. This study is limited to role modeling and mentorship. It did not explore advising and similar concepts. Future directions should include multi-institutional studies that investigate the impact of role modeling and mentoring on students' actual entry into primary care practice.

Role modeling and mentorship during medical school probably matters for primary care career choice. The current literature has laid strong groundwork for conceptualizing how role modeling and mentorship might influence primary care career choice. Future studies should consider how the discipline of family medicine can promote high-quality mentorship and role modeling relationships. The impact of these relationships should also be explored, with a focus on higher levels of the Kirkpatrick pyramid: effectiveness of role modeling and mentorship on student interest or intent in pursuing primary care or the impact of these relationships on actual career choice.<sup>40</sup> Understanding the effectiveness and true impact of role modeling and mentorship with clear definitions of the relationships being studied could promote higher-yield interventions that ultimately could lead to a more robust primary care workforce.

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