Prevalence and quality of medical Spanish education in US osteopathic medical schools: a national survey

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Abstract

Context: Spanish is the language in the United States with the greatest language-concordant physician deficit. Allopathic medical Spanish programs have proliferated, but the national prevalence of medical Spanish education at osteopathic medical schools has never been evaluated.

Objectives: The objectives of this study are to describe the medical Spanish educational landscape at US osteopathic schools and evaluate program adherence to previously established basic standards.

Methods: Between March and October 2022, surveys were sent to all 44 member schools of the American Association of Colleges of Osteopathic Medicine (AACOM). For non-respondents, data were obtained from publicly available websites. Primary surveys were sent to deans or diversity, equity, and inclusion officers at each osteopathic school to determine whether medical Spanish was offered and to identify a medical Spanish leader. Medical Spanish leaders received the secondary survey. The main measures of this study were the prevalence of medical Spanish programs at osteopathic schools and the extent to which existing programs met each of the four basic standards: having a faculty educator, providing a curricular structure, assessing learner skills, and awarding institutional course credit.

Results: We gathered medical Spanish information from 90.9 % (40/44) of osteopathic schools. Overall, 88.6 % (39/44) offered medical Spanish, of which 66.7 % (26/39) had formal curricula, 43.6 % (17/39) had faculty educators, 17.9 % (7/39) assessed learner skills, and 28.2 % (11/39) provided course credit. Only 12.8 % (5/39) of osteopathic schools with medical Spanish programs met all basic standards. Urban/suburban schools were likelier to offer medical Spanish than rural schools (p=0.020). Osteopathic schools in states with the highest Spanish-speaking populations were more likely to offer student-run initiatives (p=0.027).

Conclusions: Most osteopathic schools provide medical Spanish education, but work is needed to improve consistency, quality, and sustainability. Future research should focus on osteopathic student language proficiency assessment, improve medical Spanish accessibility for students at rural programs, and explore the unique content areas of osteopathic medical Spanish education.

Keywords: communication skills; Hispanic health; limited English proficiency; medical Spanish; multilingualism; non-English language preference

One in five individuals living in the United States speaks a language other than English at home, with most speaking Spanish [1]. Individuals with non-English language preference (NELP) are more likely to experience subpar clinician-patient interactions and healthcare outcomes [2, 3]. Professional medical interpreting, a strategy to address language-related health disparities, is often inaccessible [4] and inappropriately utilized [2, 4–10]. Language-concordant healthcare, which occurs when clinicians and patients are able to communicate directly in the same language, improves patient satisfaction and outcomes [11–14]. The current multilingual physician workforce is insufficient to meet the needs of the growing NELP population, and Spanish is the language with the greatest US physician deficit [15].

Medical Spanish education aims to increase the number of physicians who can provide Spanish language-concordant patient care [16]. In medical schools, such courses target students with intermediate or higher language skills [16]. The person-
centered approach to patient-physician communication that underpins medical Spanish education also compliments the philosophy of osteopathic medicine, treating the person as a fully integrated being composed of body, mind, and spirit [17]. However, only two published single-site studies report on medical student language skills at osteopathic medical schools. Researchers at one osteopathic medical school found that more than half of medical student respondents reported having non-English language skills, most commonly Spanish [18]. Another study described the outcomes of a medical Spanish course at a single osteopathic medical school [19].

Hispanic/Latinx medical students, who are underrepresented in medicine [20, 21], have historically driven medical Spanish educational advancement through organizations such as the Latino Medical Student Association (LMSA) [22, 23]. Student-led organizations allow medical students to connect with peers and faculty with shared interests and identities and play a crucial role in medical school diversity, equity, and inclusion efforts, such as medical Spanish education [24, 25]. Despite medical Spanish student leadership and course proliferation, a national allopathic medical school survey published in 2021 shows that most allopathic medical Spanish efforts (79% of reported programs) did not meet one or more basic standards: 31% of schools did not have a faculty educator, 43% did not conduct postcourse learner assessment, 46% were not in the school’s curriculum, and 69% did not provide course credit [22]. The prevalence of medical Spanish education in osteopathic medical schools has never been evaluated, nor has the extent to which medical Spanish efforts at osteopathic schools met basic educational standards. Understanding the landscape of osteopathic medical Spanish education is necessary to guide future medical Spanish curricular development.

The primary aim of this study was to assess the presence of medical Spanish programming at US osteopathic medical schools and to evaluate to what extent existing medical Spanish programs meet the four basic educational standards previously identified as necessary for effective and sustainable courses (having a faculty educator, providing a curricular structure, assessing learner skills, and awarding institutional course credit) [16, 22]. Finally, we explored the association of schools’ regional, state, and local geographic context with the likelihood of meeting basic standards.

**Methods**

**Design**

We surveyed US osteopathic medical schools about their medical Spanish educational opportunities. To ensure a representative sample, we utilized the American Association of Colleges of Osteopathic Medicine (AACOM) website to identify all member osteopathic medical schools [25]. Multi-campus institutions in which each separate campus reported an independent curriculum were treated separately, resulting in a total of 44 osteopathic medical schools. We sent an initial electronic survey invitation in March 2022 to all 44 schools, and nonrespondents received up to three reminders over 8 months, following the protocol previously described for the national allopathic survey in 2019 [22]. We collected primary and secondary survey data between March and October 2022. For nonrespondent schools, additional data were obtained by reviewing publicly available institutional websites and course catalogs for medical Spanish information; key terms included “medical Spanish” and “Spanish.” The University of Illinois Institutional Review Board determined that this study met exemption criteria on October 28, 2017 (Protocol# 2017-1157).

**Participants**

We searched each school’s website for contact information of institutional deans and education leaders (e.g., Assistant/Associate Dean of Curriculum or Diversity, Equity, and Inclusion) and LMSA or medical Spanish faculty advisors. If contact information was unavailable, we contacted LMSA student leadership to identify medical Spanish faculty. Institutional leaders not known to be directly involved in medical Spanish initiatives received a brief six-item primary survey to determine whether medical Spanish was offered at the school and, if so, identify a leader involved in medical Spanish. If applicable, medical Spanish leaders received a 14-item secondary survey requesting more detailed information.

**Main measures**

Primary and secondary surveys had been previously developed for the allopathic medical school national survey [22] based on evidence-based guidelines [16, 27, 28] and commonly cited barriers to high-quality medical Spanish education [29]. The research team, including a physician faculty member, an osteopathic medical student, an allopathic medical student, and a psychometrician, reviewed the prior surveys for applicability to osteopathic medical schools. Because the questions focused on structural elements of medical Spanish programs rather than on detailed content, only minor changes were needed. The research team modified the surveys to (a) update the introduction describing the rationale and purpose of the study, (b) add the word “osteopathic” within the survey questions, as appropriate, and (c) add a response option to the question about the types of medical Spanish education provided to include Spanish-language training for student volunteers at student-run free clinics. The surveys are available in Supplementary Material.

The main measures included, first, the presence of any medical Spanish program. Secondly, for schools that offered medical Spanish, we asked to what extent their programs met each of the previously published basic standards: having a faculty educator, providing a curricular structure, assessing learner skills, and awarding institutional course credit [16, 22]. For nonrespondent schools, information about meeting basic standards was extracted from their website by following a series of steps. If a Spanish-related program (course, club, activity, etc.) was identified, we then reviewed the relevant portions of the website for specific information corresponding to each standard: whether a course educator was listed, whether it was listed in the course catalog, whether an assessment/examination was offered, and whether course credit was provided.
### Results

We gathered medical Spanish education information from 90.9% (44/44) of US osteopathic medical schools utilizing survey data and website review. The majority of these institutions (25/44, 56.8%) participated in the national survey; participation was defined as responding to either or both the primary and/or secondary surveys. Half of the institutions (22/44) completed at least one of the surveys fully. Three survey responses were incomplete such that we were unable to determine the presence of medical Spanish at their institutions; we counted these three institutions as respondents but supplemented the insufficient data by reviewing their websites as we did for nonrespondents. Four schools (9.1%) neither responded to surveys nor had available online information regarding medical Spanish.

In the primary survey, 56.8% of osteopathic schools (25/44) participated. Of these 25 schools, 22 (88.0%) responded to all survey questions, and 19 (76.0%) identified a medical Spanish leader to receive the secondary survey. Five medical Spanish leaders (26.3%) completed the secondary questionnaire. Of the 22 schools that had insufficient survey data to determine whether they offered medical Spanish programming (which included 19 nonrespondents and three incomplete responses), 19 schools (86.4%) had medical Spanish information publicly available on their websites to incorporate for analysis.

Across primary survey respondents, 88.0% (22/25) indicated that medical Spanish is wanted or needed at their schools, and 56.0% (14/25) indicated that faculty development for medical Spanish teaching and assessment would be helpful to their institution.

### Prevalence of medical Spanish and association with school characteristics

Of all 44 osteopathic medical schools, 39 (88.6%) offered opportunities in medical Spanish education. Of the 22 schools for which we obtained sufficient information from the surveys, all but one (95.5%) reported teaching medical Spanish; similarly, of the 22 schools for which website review was utilized to gather data, all but 4 (81.8%) had medical Spanish offerings.

Table 1 shows the distribution of current osteopathic medical Spanish programs by US region, local setting (urban, suburban, rural), and the state’s Spanish-speaking population with LEP. When we grouped urban and suburban settings, we found that urban and suburban schools were significantly more likely to offer medical Spanish programs than those in

### Table 1: Prevalence of medical Spanish by school characteristics (row %).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No medical Spanish (n=5, 11.4%)</th>
<th>Medical Spanish (n=39, 88.6%)</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Region</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td>12.5</td>
<td>87.5</td>
<td>0.752</td>
</tr>
<tr>
<td>Northeast</td>
<td>0.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>15.8</td>
<td>84.2</td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>9.1</td>
<td>90.9</td>
<td></td>
</tr>
<tr>
<td><strong>Local setting</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>33.3</td>
<td>66.7</td>
<td>0.059</td>
</tr>
<tr>
<td>Urban</td>
<td>10.0</td>
<td>90.0</td>
<td></td>
</tr>
<tr>
<td>Suburban</td>
<td>4.0</td>
<td>96.0</td>
<td></td>
</tr>
<tr>
<td><strong>State Spanish-speaking population</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>States with &lt;500,000</td>
<td>13.9</td>
<td>86.1</td>
<td>0.263</td>
</tr>
<tr>
<td>Spanish speakers with LEP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>States with &gt;500,000</td>
<td>0.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

* p values based on chi-squared test. LEP, limited English proficiency. States with >500,000 Spanish speakers with LEP are Florida, Illinois, New Jersey, Texas, California, and New York [30]. *When urban and suburban schools were grouped together for analysis, 94.3% had medical Spanish; p=0.020 (94.3% urban/suburban vs. 66.7% rural).
Table 2: Adherence to basic educational standards for osteopathic medical schools that offer medical Spanish education (n=39).

<table>
<thead>
<tr>
<th>Basic standard</th>
<th>Number (%) of schools meeting the standard</th>
<th>Number (%) of schools not meeting the standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal curriculum</td>
<td>26 (66.7%)</td>
<td>13 (33.3%)</td>
</tr>
<tr>
<td>Faculty educator</td>
<td>17 (43.6%)</td>
<td>22 (56.4%)</td>
</tr>
<tr>
<td>Learner assessment</td>
<td>7 (17.9%)</td>
<td>32 (82.1%)</td>
</tr>
<tr>
<td>Course credit</td>
<td>11 (28.2%)</td>
<td>28 (71.8%)</td>
</tr>
<tr>
<td>All basic standards</td>
<td>5 (12.8%)</td>
<td>34 (87.2%)</td>
</tr>
</tbody>
</table>

Bold is used to signify the number and percentage of schools meeting or not meeting all four basic standards for medical Spanish education, including formal curriculum, faculty educator, learner assessment, and course credit.

Other noncurricular medical Spanish offerings reported by schools included asynchronous, non-faculty-led online courses reported by five (12.8 % of 39) schools. Three schools incorporated medical Spanish into clinical experiences and simulations, such as standardized patient interactions to teach students how to work with professional medical interpreters and study abroad opportunities in Spanish-speaking countries. Of the two schools that indicated Spanish-related study abroad trips, one included a formal medical Spanish educational component, and the other did not. One school reported canceling medical Spanish due to COVID-19 and indicated efforts toward restarting the program. One school that did not currently offer medical Spanish reported active program development.

**Faculty educator**

Among osteopathic schools that offered medical Spanish programming, 43.6 % (17/39) reported having faculty educators. These faculty members most frequently included physicians (MD/DO), whereas two schools reported non-physician faculty, including one PhD (field of expertise unspecified) and one language professor.

**Learner assessment**

Seven schools with medical Spanish offerings (17.9 % of 39) reported having a postcourse assessment of learner skills. Evaluation methods were variable, including observed patient interviews, standardized patient encounters, written examinations, and learner confidence self-assessments.

**Course credit**

Across osteopathic schools with medical Spanish, 28.2 % (11/39) reported granting institutional course completion credit ranging from 1 to 2.5 credit hours per course. Some institutions issued certificates of completion or listed the course as a 0-credit elective in official transcripts as course credit alternatives.

**Meeting all basic standards**

Overall, 12.8 % (5/39) of osteopathic medical schools that offered medical Spanish programming met all four basic curricular standards: formal curriculum, faculty educator, learner assessment, and course credit. There was no

rural locations (p=0.020). There were no significant differences by US region nor by state Spanish-speaking population. Notably, all osteopathic schools in the six states with the highest Spanish-speaking LEP population reported a medical Spanish program, as opposed to 86.1 % of schools in other states; however, the differences were not statistically significant.

**Basic standards for medical Spanish programs**

Table 2 summarizes the number and percentage of osteopathic medical schools reporting medical Spanish education who met each of the basic standards.

**Formal curriculum**

Twenty-six osteopathic schools reported offering formal medical Spanish curricula, representing 59.1 % (26/44) of all US osteopathic medical schools, with two-thirds of those reporting some form of medical Spanish (26/39). Most formal curricula were elective courses (92.3 %, 24/26), whereas two schools (7.7 %) had a medical Spanish requirement.

One-third of schools offering medical Spanish (13/39) did so only as an extracurricular activity, whereas 10 sites (25.6 % of 39) indicated a combination of formal curricular and extracurricular options. Over half of all osteopathic schools (52.3 %, 23/44) offered student-run Spanish clubs or workshops; there were no significant differences in likelihood of having student-run programs by US region (p=0.91) or local setting (p=0.68). Osteopathic schools in states with the highest Spanish-speaking populations were more likely to offer student-run initiatives than states with smaller Spanish-speaking populations (30.4 vs. 4.8 %, p=0.027).
significant difference in meeting the four basic standards by US region (p=0.49), local setting (when analyzed separately by urban, suburban, or rural sites, p=0.43; when analyzed by grouping suburban/urban vs. rural sites, p=0.11), nor by state Spanish-speaking LEP population (p=0.91).

Discussion

This study evaluated the prevalence of medical Spanish education across a national sample of osteopathic medical schools. Nearly 90% of US osteopathic medical schools offer medical Spanish educational opportunities. Additionally, most institutional leaders who responded to the survey perceived that medical Spanish is a needed and desired element of their medical school.

The structure of medical Spanish programs at osteopathic schools was variable, and many courses did not comply with basic educational standards. Among osteopathic schools with medical Spanish offerings, only five (12.8%) met all four basic standards, similar to the small percentage of allopathic schools (21%) that met all standards in 2019 [22]. The standard most frequently met by osteopathic schools was having a formal curriculum, achieved by 66.7% of schools with medical Spanish offerings. Nearly half (43.6%) had faculty educators, and just under one-third (28.2%) provided course credit. The standard least often achieved by osteopathic medical schools was learner skills assessment, which was reported by only 17.9% of schools that offered medical Spanish.

Understanding the prevalence and gaps in meeting basic standards can help inform key focus areas for future osteopathic medical Spanish educational development. Although it is inspiring to note the national proliferation of medical Spanish courses across osteopathic schools, it is concerning that assessment practices to confirm medical student proficiency in Spanish prior to patient care have fallen behind. Learner assessment is considered a basic standard of medical Spanish courses to protect patient safety; when student or physician skills in a non-English language are left unassessed, the individual may use the language with patients out of perceived necessity even when they feel unprepared to do so [31], or mistakenly consider themselves ready for language-concordant care when they are not, a concept known as “false fluency” [32]. Furthermore, providing formative feedback is a standard educational practice for progressive skills improvement. To advance the field and promote patient safety, osteopathic schools with medical Spanish programs should develop or adopt a validated process for learner proficiency assessment, such as the Physician Oral Language Observation Matrix [33] or the Clinician Cultural and Linguistic Assessment [34].

Our study highlighted a few notable findings regarding osteopathic school characteristics. First, institutions in urban and suburban areas were more likely than those in rural areas to have some form of medical Spanish programming (94.3 vs. 66.7%), which may be related to decreased racial/ethnic diversity in rural populations [35]. The osteopathic profession emphasizes its dedication to providing primary care to rural underserved areas [17]. Rural areas are also home to migrant workers and undocumented individuals who may be undercounted in official population counts and experience numerous access-to-healthcare barriers besides language discordance [36, 37]. Furthermore, professional interpreter availability may be more limited in rural hospitals [38]. Thus, while language-discordant encounters may be less frequent in rural areas, when they do occur, the patient’s situation may be particularly complex and would greatly benefit from a language-concordant clinician [39]. Additionally, rural schools might have more challenges in teaching medical Spanish due to difficulty identifying local qualified faculty educators or clinical sites where students can regularly use their Spanish skills with supervision once they have achieved the desired proficiency. Faculty-taught, live virtual medical Spanish courses are one strategy to address this challenge because faculty do not need to be in the same geographic area as students [40].

We identified trends across osteopathic schools in the six states with the highest Spanish-speaking populations. Student-run medical Spanish efforts were more prevalent in these states than those with fewer Spanish speakers, highlighting the importance of student initiatives to drive medical Spanish education in conjunction with state/local population health needs [41]. All medical Spanish programs in the six highest Spanish-speaking LEP states included a formal curriculum, which is also a testament to the power of student advocacy. Efforts in these states, however, had adherence to all basic standards as low as states with smaller Spanish-speaking populations. Although student-run initiatives are essential for advocacy and may address an acute need for medical Spanish instruction, institutional support in the form of faculty educators, course credit, and formal assessment are critical to ensure program effectiveness and sustainability. Osteopathic schools in areas with high numbers of Spanish-speaking patients could explore opportunities to recruit and train ethnically, racially, and linguistically diverse faculty as a strategy to better prepare students to address the needs of the population.

As a descriptive study, our scope focused on evaluating osteopathic medical Spanish course prevalence and adherence to basic standards. In the future, educators and researchers should explore the unique aspects of osteopathic medicine for inclusion in osteopathic medical Spanish courses. For example,
compared to allopathic counterparts, osteopathic schools teach more musculoskeletal content due to their roots in osteopathic manipulative medicine [42]. Secondly, osteopathic curricula are most commonly organ-system–based, followed by team-based, whereas allopathic curricula are most often organ-system–based, followed by discipline-based [43]. These differences may impact the content and structure of medical Spanish courses to most effectively align with osteopathic institutional curricula.

This survey study has limitations, such as respondent bias; schools that valued medical Spanish education may have been more motivated to participate. Our survey response rate was 56.8%, which is average for survey studies but may still affect generalizability. To address this, we supplemented our data through a detailed review of nonrespondent and incomplete respondents’ publicly available websites and found that most school websites provided detailed medical Spanish information. Nonetheless, websites may be outdated or inaccurate, potentially resulting in underestimating or overestimating how many schools offered medical Spanish or met basic standards. Finally, although we evaluated basic standards in medical Spanish education, we acknowledge that, even among schools meeting each standard, there is a high degree of course variation. As a relatively nascent field of academic inquiry, gold-standard approaches to medical Spanish curricula, pedagogy, and assessment have yet to be established.

Conclusions

Our study provides an empirical landscape of osteopathic medical Spanish education. Osteopathic medical Spanish programs are both common and desired, but additional work is needed to achieve basic standards for quality and sustainability. Future work should focus on student proficiency assessment to ensure patient safety, consider collaborations that facilitate the participation of rural osteopathic students in medical Spanish courses, and explore unique aspects of osteopathic medicine that should be highlighted in medical Spanish courses contextualized in osteopathic medical schools.

Research ethics: The University of Illinois Institutional Review Board determined that this study met exemption criteria (Protocol # 2017-1157).

Informed consent: Not applicable.

Author contributions: All authors provided substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; all authors drafted the article or revised it critically for important intellectual content; all authors gave final approval of the version of the article to be published; and all authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Data availability: The raw data can be obtained on request from the corresponding author.

References


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