11 The Role of Medical Education Offices in Preparing the Physician Workforce to Care for LHS+ Individuals

Pilar Ortega, Edgar Figueroa, José E. Rodríguez, and Débora Silva

Introduction

LHS+ medical students and faculty have changed the landscape of U.S. medical education—both through collective organizational representation and individual leadership. Providing culturally and linguistically competent care to the growing U.S. LHS+ population requires more beyond increased representation of LHS+ individuals in the physician workforce [1]. While this is an undoubtedly critical step, the physician workforce, including LHS+ physicians and others interested in the care of LHS+ communities, must also receive educational opportunities that adequately prepare them to care for this vulnerable population.

Medical education must evolve to reflect the needs of the patient population to ensure that physicians are prepared to equitably care for their communities [2]. While LHS+ identified and other underrepresented minority physicians are more likely to practice in underserved communities [3, 4], the skills needed to do so are not innate abilities but rather competencies that must be taught, assessed, and sustained over the course of medical education [5]. Some evidence indicates that physicians from minority communities are more familiar with underserved communities, thus facilitating their skills training and their likelihood to serve underserved communities [6]. These skills include the ability to recognize population health disparities, to provide language-appropriate care, to identify cultural or linguistic miscommunication or misunderstandings, and to understand the social risk factors that may present unique barriers to LHS+ access to care. Furthermore, there is evidence that a medical school environment in which students are exposed to negative, explicit ethno-racial attitudes negatively affects medical student intent to practice in underserved communities [7]. Conversely, inclusion of positive experiences to learn to address racial, ethnic, and linguistic issues in health may increase physician workforce preparedness and willingness to care for vulnerable populations [8]. In this chapter, we will discuss the integration of three pivotal areas of LHS+ influence in medical education: LHS+ health and health disparities, cultural competency, and medical Spanish education.

P. Ortega (✉)
Department of Medical Education, Department of Emergency Medicine, University of Illinois College of Medicine at Chicago, Chicago, IL, USA
e-mail: portega@acgme.org

E. Figueroa
Weill Cornell Medical College, New York, NY, USA

J. E. Rodríguez
University of Utah Health, Salt Lake City, UT, USA

D. Silva
Department of Pediatrics, School of Medicine, University of Puerto Rico, San Juan, PR, USA

J. P. Sánchez, D. Rodriguez (eds.), *Latino, Hispanic, or of Spanish Origin+ Identified Student Leaders in Medicine*, Sustainable Development Goals Series, https://doi.org/10.1007/978-3-031-35020-7_11

LHS+ Health, Health Disparities, and Cultural Competency in Medical Education

LHS+ health issues are defined as diseases or health conditions that disproportionately affect the U.S. LHS+ population. The National Institute on Minority Health and Health Disparities (NIMHD) has recently proposed definitions for the terms "minority health" and "health disparities," which are often used interchangeably but have distinct meanings [9]. Extrapolating from the definition of minority health, Hispanic health can be defined as "the health characteristics and attributes of [the Hispanic ethnic group] who are socially disadvantaged due in part by being subject to potential discriminatory acts." [9] NIMHD's proposed definition of a health disparity is "a health difference that adversely affects defined disadvantaged populations, based on one or more health outcomes." [9] In the context of medical education, the significance of these distinct definitions is that educational interventions should be adjusted to include knowledge and skills related to minority health and health disparities. In particular, health topics covered in medical education should include attention to health disparities with regards to specific outcomes: differences in the prevalence of disease, including onset and progression in a minority population; premature or excessive mortality; global burden of disease; health behaviors; and self-reported daily functioning or symptom management [9]. As a further differentiation between minority health and health disparities, Hispanic health and culture present advantages and potentially protective factors (e.g., Hispanic paradox) for certain diseases; these may potentially be leveraged to improve population health [10].

The process for integrating LHS+ health and health disparities, or more broadly, minority health and health disparities, into medical education has been gradual. In 2000, the Liaison Committee on Medical Education (LCME) issued curriculum content standard 7.6, requiring that medical schools include curricula that teach "cultural competence and health care disparities." [11] Cultural competence has been defined by the Association of American Medical Colleges (AAMC) as "a set of congruent behaviors, knowledge, attitudes, and policies that come together in a system, organization, or among professionals that enables effective work in cross-cultural situations" and applied to patient-centered health care practice [12, 13]. Moreover, communication skills education (standard 7.8) is considered another required element of LCME curriculum content standards [11]. Interpersonal and communication skills are also recognized as one of the six core graduate medical education competencies by the Accreditation Council for Graduate Medical Education (ACGME) [14]. Thus, allopathic medical schools are required to teach cultural competence, health care disparities, and medical communication skills to form competent physicians. Although these standards for medical graduates should be intentionally integrated into—rather than "added-on" to—medical school curricula [13], efforts to address and integrate these competencies are highly variable. Often, their integration lacks structure or evidence (due to lack of prior study), and may not be consistently or sufficiently adapted to the dynamic changes in the racial, ethnic, and linguistic attributes of the U.S. population. According to a recent report of clinical learning environments in graduate medical education, "education and training on health care disparities and cultural competency was largely generic, and often did not address the specific populations served by the institution"—prompting a call to action to further define the expectations for medical schools and residency programs in effectively teaching relevant, patient- and population-centered health care disparities and cultural competency knowledge and skills [15]. In 2017, the ACGME formally established teaching health care disparities as a needed "pathway to excellence," describing that residents, fellows and faculty members should be educated on reducing health care disparities (Clinical Learning Environment Review Health Care Quality Pathway 5) [16].

Hispanic Centers of Excellence (HCOEs) established at some U.S. medical schools have played an important role in the recruitment, financial, and scholarly support of LHS+ medical

students and faculty. In some cases, HCOEs offered enrichment programs to pre-health students as early in the medical education pipeline as high school. Other HCOE programs extended through medical school, residency, and faculty careers, supporting research of relevance to Hispanic health, education, and career advancement [17, 18]. However, limited funding for Centers of Excellence has presented a challenge to sustaining such enrichment programs geared at increasing the representation and advancement of groups historically underrepresented in medicine (URM). Moreover, the potential impact of these programs and the representation of LHS+identifying individuals in medicine may not be accurately captured by data that prioritizes race but not necessarily other identifiers pertaining to ethnicity, nationality/ancestry, or language. Individuals who identify as LHS+ may identify with any race; may represent many distinct nationalities and ancestries, including combinations of multiple nationalities and racial profiles; and may have varying language proficiencies. As a result, there is a paucity of data regarding important factors that may influence access to care for Hispanic individuals, making Hispanic health research particularly challenging [19]. This is also true for Hispanic medical students and physicians, who may self-identify in diverse ways and may have different levels of language proficiencies in Spanish and varying cultural experiences, despite often being assumed to be bilingual and multicultural [20].

The rich diversity of the LHS+ physician workforce is one of the reasons that organizations, such as the Latino Medical Student Association (LMSA), have a critical role in unifying medical students and physicians in enacting needed changes in medical education. A call-to-action has been proposed to address Hispanic health and health disparities at all levels of medical education, including pre-health pipeline programs [21], medical school [18, 19], graduate medical education [22], medical practice [23], and continuing medical education [24].

In a less formal capacity, the presence of LHS+ students and faculty in the medical education classroom has had a critical, though underrecognized, role in addressing health issues and disparities in medical education. Anecdotal examples include, but are not limited to:

- The Latina medical student who raises her hand during endocrinology pathophysiology class to ask a question about why the incidence of diabetes is greater in her family's neighborhood compared to a predominantly white neighborhood three blocks away;
- The Latino physician faculty member who sits on the curriculum review committee and whose presence and voice are a constant reminder to the administration to include courses that address race, ethnicity, language, and social determinants of health into the institution's formal medical school curriculum; and
- The bilingual medical student who is overburdened with requests from her attendings or senior residents to help by interpreting for yet another Spanish-speaking patient on their inpatient service.

Not only is there evidence that medical students are often asked to serve as linguistic ambassadors and interpreters for patients without first assessing their communication skills [25], but data also suggest that unprepared and untrained interpreters such as students may carry significant psychological burdens for serving in these roles [26]. Student voices that have demanded medical education reform that addresses the needs of underserved communities have long-represented an important driver for institutional change [27].

LHS+ students and faculty have relied upon organizations such as LMSA to provide mutual support and to advocate for resolutions towards equity-driven medical education for all medical students. The publication of literature on medical education strategies to address LHS+ health and health disparities has been comparatively limited. In 2016, a systematic review identified a paucity of literature focusing on Hispanic health and education despite the Hispanic/Latino population representing the largest ethnic minority in the U.S. [28] More recently, the body of academic literature presenting data from the lens of

Hispanic health and health disparities has grown; much of this growth stems from the emergence of disease-specific literature reviewing outcomes of Hispanic patients with diabetes [29, 30], cancer [31], asthma [32], and psychiatric disorders [33], among others. Additionally, as Hispanic students and faculty sometimes work in underserved communities and assume primary care roles, often in a volunteer or service-learning capacity, curricula developed and implemented through collaboration with community-based organizations or student-run free clinics provide another avenue for cultural competency and health care disparities education [34]. However, literature specifically addressing medical education focused on Hispanic health, health disparities, and Hispanic-related cultural competency and humility is still lacking.

At the time of the writing of this chapter, searches using Google Scholar and the U.S. National Library of Medicine resources PubMed and MEDLINE demonstrated a paucity of articles related to the development, implementation, and evaluation of medical school curricula related to LHS+ health. Of articles that met search criteria (Hispanic health medical education, Latino/Latina/Latinx health medical education, minority health medical education), only three articles were identified that explored a medical school curriculum focused on Hispanic culture and health. Two articles describe teaching skills through the partnership between an academic center and community center; reports on the "Health Scholars Program" [35] and the "Hispanic Cultural Competence Project" [36] describe how academic-community partnerships can allow students to learn and apply knowledge about culture and social determinants of health in a LHS+ community. Another article describes the historical perspective, health status, and care of the Puerto Rican patient [37]. This latter publication was generated through a call to action to LHS+ trainees and faculty by J.P. Sánchez, MD, MPH, Executive Director of LMSA National and founding Associate Editor of the MedEdPORTAL collection on Diversity, Inclusion and Health Equity. Dr. Sánchez actively called for submissions describing the health status and experiences of communities of Spanish-speaking ancestry (e.g., Mexican, Spanish, Cuban, Peruvian, etc.). One article was not focused on a medical education audience but presents a Hispanic-focused educational intervention focused on caregivers for Latino elders [38]. Of note, articles specifically addressing medical education curricula pertaining to medical Spanish education are not reported in this search of Hispanic cultural competency curricula and will be reviewed in the next section of this chapter. Additional literature discusses cultural competency education in medical school but only peripherally addresses Hispanic health [39–45]; such work may also yield opportunities to replicate and expand curricula in the context of care for the LHS+ population.

U.S. medical schools in Puerto Rico (PR) provide a unique medical education experience because the great majority of their students and faculty are Hispanic, along with 98.9% of Puerto Rico's population [46]. PR's four LCME-accredited medical schools (University of Puerto Rico School of Medicine, Ponce Health Sciences University School of Medicine, Universidad Central del Caribe School of Medicine and San Juan Bautista School of Medicine) collectively graduate approximately 230 LHS+ students per year [47]. In addition, PR has 45 specialty residency programs and 30 subspecialty programs accredited by the ACGME, with a total of 965 medical residents and fellows in the 2019–2020 academic year [48]. Since the vast majority of PR clinical encounters involve Spanish-speaking LHS+ patients, medical education in PR medical schools and residency programs is necessarily bilingual and requires knowledge of LHS+ health issues. Graduates from PR programs are proficient in both English and Spanish, since they must meet the same requirements as all U.S. medical students to pass standardized licensing examinations in English, but must practice clinical medicine in Spanish. Further, since the PR medical schools graduate so many LHS+ students, PR medical schools have been an important source of LHS+ residents throughout the U.S. Moreover, PR medical schools engage in research related to health care disparities. Some examples include research partnerships with

other U.S. medical schools and research centers [49, 50], Master's programs in clinical and translational research [51], and community-based participatory research [52]. While the PR medical schools' contributions to diversity and community health have been recognized by the AAMC [53, 54], no published literature to date describes these medical schools' unique curricular characteristics that could be used to inform other programs' curricula pertaining to LHS+ health.

In the absence of medical education literature, it is important to search curricula content of other disciplines. Some published medical education curricula with a focus on global health may have important utility for locally addressing minority health [34]. For cultural competency education specifically, a majority of the cultural competency curricular literature has been published by thein allied health professions but not in medical education for physicians [55]. There is a significant need to academically evaluate and publish effective curricula for cultural competency education related to LHS+ health in medical school settings. Additionally, it will be important for future LHS+ cultural competency educational interventions to be studied with respect to their effectiveness in educational settings [56, 57], as well as their downstream effect on health outcomes and health disparities [58].

Medical Spanish in Medical Education

The development of medical Spanish education within U.S. medical schools has been primarily driven by medical student demand and frequently facilitated through student leadership in LMSA [59]. Medical students who identify as Hispanic are significantly more likely to report higher proficiencies in Spanish compared to the general medical student population, according to Electronic Residency Application System (ERAS) data [60]. Specifically, over 95% of Latino residency applicants in 2013 reported at least intermediate Spanish language skills compared to 53.2% of all applicants, and 84.5% Latinos reported native/functionally native proficiency [60]. This data reinforces the pre-existing linguistic communication skills that Hispanic candidates bring to medical school and residency. These skills, however, must be developed, enriched, assessed, and certified in order to ensure patient safety [61] and to properly recognize the values of medical bilingualism. Despite lack of formal medical Spanish education or assessment, many students, resident physicians, and practicing physicians with self-reported bilingual abilities—or who are assumed by superiors to have bilingual skills based on factors such as last name, skin color, or Hispanic self-identity—are placed in the position of using their limited skills in patient care [25, 61]. Such encounters may endanger patient safety due to risk of miscommunication [5, 61, 62].

Medical Spanish experts, including medical education experts, physicians, and language professors have recently developed a growing body of literature on best practice guidelines regarding medical Spanish education in medical schools [63–65]. Best practice recommendations agree on the need to focus on medical students with existing intermediate or greater Spanish skills; the importance of longitudinal, progressive skills acquisition; and the need for skills assessment and training in interpreter use for all medical students regardless of Spanish skill level. Examples of medical Spanish medical school curricula that have been published include: one medical Spanish course with objective structured clinical examinations [66], two web-based modules or vignettes [67, 68], a student-run Spanish program [69], a proposed method for certifying medical students as trained interpreters [70], a medical Spanish clinical conversational skills course for medical students [71], and a description of three medical Spanish programs at three medical schools and discussion of best practices in medical Spanish [2].

Among best practices in medical Spanish education, regional varieties of Spanish and other factors that affect the linguistic diversity of LHS+ individuals must be acknowledged in efforts to teach linguistic competency for medical students. For example, U.S. cities and regions may vary in the nationality or ancestry of origin of their local

LHS+ populations, and regional variations in language may affect patient and provider communication due to differences in word choice, accent, pronunciation, and cultural beliefs [72]. Additionally, many U.S. immigrants from Latin America may report a primary language that is not Spanish [73]; indigenous languages such as Maya, Nahuatl, Zapoteco, Mixteco, K'iche', Q'eqchi', and Mam are spoken in some regions of the U.S. Awareness of the dynamic linguistic attributes of patient populations should be used to inform and enhance medical education language and communications curricula.

National LMSA resolutions have supported the growth and development of medical Spanish educational opportunities at U.S. medical schools [74]. Many LMSA chapters are further involved in a national collaborative group known as the Medical Spanish Taskforce (MST), which was initiated following an expert panel meeting—the Medical Spanish Summit—in March 2018 [65]. The MST is a volunteer interdisciplinary team of medical Spanish experts, including participants with professional background in medicine, linguistics, second language education, health policy, medical education, and interpreting/translation, among others. Through the MST, collaborators from medical schools across the U.S. contribute to the advancement of evidence-based medical Spanish education and are currently evaluating a national standardized curriculum for medical Spanish education.

While medical Spanish courses in medical school address an important need in building the Spanish language-concordant physician workforce, efforts in linguistic competency education for physicians should not end there. Researching clinical outcomes of language concordance in medical communication is a critical step to documenting the effectiveness of medical Spanish educational efforts. Language concordance research to date indeed demonstrates improved patient outcomes for patients with non-English language preference when patients and physicians speak the same language [75]. Language skills in medical communication should be a continued area of assessment, one that should include documentation of physician language proficiencies beyond medical school, and one in which bilingual LHS+ physicians have a significant vested interest in order to address the growing Spanish-speaking physician deficit [76].

Conclusions

As the LHS+ population in the U.S. continues to grow, LHS+ leaders and educators must continue to advocate for and actively promote thoughtful integration by medical schools of curricular components covering LHS+ health issues, health disparities faced by LHS+ communities, cultural competency, and medical Spanish. Sustaining programs that implement strategies to teach and address these facets of LHS+ healthcare will require formal integration into the operations of undergraduate and graduate medical education institutions. Moreover, the maintenance and expansion of such programs depend on the production of peer-review research demonstrating that LHS+-focused curricular efforts help institutions improve patient outcomes, achieve public health priorities, enhance learner competencies and performance outcomes, and meet licensing and accreditation requirements of agencies such as the LCME and the ACGME. Next steps needed in medical education implementation and research include introducing improved assessment and documentation of medical student and physician language proficiencies, enhanced structure to LHS+-specific cultural competency and health disparities curricula, and increased opportunities for interdisciplinary and interinstitutional collaborations to standardize and evaluate best practices in medical education programs that respond to the health needs in the LHS+ community.

Looking forward, medical education must use the lessons learned over the past hundred years to catalyze sustainable change in medical education that promotes LHS+-focused health education. First, medical education core content should formally incorporate health issues and health care disparities present in diverse U.S. patient populations, specifically including LHS+ groups. Health care disparities and cultural competency courses

should not be solely addressed through add-on or extracurricular enrichment activities but rather as a core element in medical education content, which should be dynamically reviewed to appropriately address changes in population demographics. Secondly, integrated LHS+ health curricula should be rigorously evaluated using medical education research methodology, and validated educational strategies should be published and shared for more widespread accessibility and implementation. The experience of PR's medical schools may represent an important example of curricular integration that should be further evaluated and published. Thirdly, the incorporation of cultural and linguistic competencies in medical education should promote and incentivize professional multilingualism and patient-centered communication skills, including the formal structuring of medical Spanish educational programs, competencies, and assessment, as well as the academic publication of peer-reviewed Spanish-English bilingual medical education materials. Finally, the continued creation and growth of LHS+ identified organizational networks such as LMSA and the promotion, support, and retention of LHS+ individuals in medical education leadership roles will remain critical to maintaining forward momentum to enhance LHS+-responsive medical education.

References

1. Fernández A, Pérez-Stable EJ. ¿Doctor, habla Español? Increasing the supply and quality of language-concordant physicians for Spanish-speaking patients. J Gen Intern Med. 2015;30(10):1394–6. https://doi.org/10.1007/s11606-015-3436-x.
2. Ortega P, Pérez N, Robles B, Turmelle Y, Acosta D. Strategies for teaching linguistic preparedness for physicians: medical Spanish and global linguistic competence in undergraduate medical education. Health Equity. 2019, July 1;3(1):312–8. https://doi.org/10.1089/heq.2019.0029.
3. Rodríguez JE, Campbell KM, Pololi LH. Addressing disparities in academic medicine: What of the minority tax? BMC Med Educ. 2015;15:6.
4. Neill T, Irwin G, Owings CS, Cathcart-Rake W. Rural Kansas family physician satisfaction with caring for Spanish-speaking only patients. Kans J Med. 2017;10:1–15.
5. Diamond LC, Jacobs EA. Let's not contribute to disparities: the best methods for teaching clinicians how to overcome language barriers to health care. J Gen Intern Med. 2010;25(2):189–93. https://doi.org/10.1007/s11606-009-1201-8.
6. Marrast LM, Zallman L, Woolhandler S, Bor DH, McCormick D. Minority physicians' role in the care of underserved patients: Diversifying the physician workforce may be key in addressing health disparities. JAMA Intern Med. 2013;174(2):289–91.
7. Phelan SM, Burke SE, Cunningham BA. The effects of racism in medical education on students' decisions to practice in underserved or minority communities. Acad Med. 2019;94(8):1178–89. https://doi.org/10.1097/ACM.0000000000002719.
8. O'Connell TF, Ham SA, Hart TG, Curlin FA, Yoon JD. A national longitudinal survey of medical students' intentions to practice among the underserved. Acad Med. 2018;3(1):90–7. https://doi.org/10.1097/ACM.0000000000001816.
9. Duran DG, Pérez-Stable EJ. Novel approaches to advance minority health and health disparities research. Am J Public Health. 2019;109(S1):S8–S10. https://doi.org/10.2105/AJPH.2018.304931.
10. The Lancet Editorial Board. The Hispanic paradox. Lancet. 2015;385(9981):1918. https://doi.org/10.1016/S0140-6736(15)60945-X.
11. Liaison Committee on Medical Education. Functions and structure of a medical school: Standards for accreditation of medical education programs leading to the MD degree; 2020. http://lcme.org/publications
12. Cross TL. Towards a culturally competent system of care: a monograph on effective services for minority children. National Center for Cultural Competence: Georgetown University; 1989.
13. Association of American Medical Colleges. Cultural competence education; 2005. https://www.aamc.org/system/files/c/2/54338-culturalcomped.pdf
14. Accreditation Council for Graduate Medical Education. ACGME core competencies; 2023. https://www.ecfmg.org/echo/acgme-core-competencies.html
15. Wagner R, Koh N, Bagian JP, Weiss KB. CLER 2016 national report of findings. Issue Brief #4: Health Care Disparities. Accreditation Council for Graduate Medical Education, Chicago, Illinois USA; 2016. ISBN-13: 978-1-945365-07-2.
16. CLER Evaluation Committee. CLER pathways to excellence: Expectations for an optimal clinical learning environment to achieve safe and high quality patient care (health care quality pathway 5), Version 1.1; 2017. Accreditation Council for Graduation Medical Education.
17. Martínez GA. Medical Spanish for heritage learners: a prescription to improve the health of Spanish-speaking communities. In: Building communities and making connections. Cambridge: Cambridge Scholars Publishing; 2010.
18. Ghaddar S, Ronnau J, Saladin SP, Martínez G. Innovative approaches to promote a culturally competent, diverse health care workforce in an

institution serving Hispanic students. Acad Med. 2013;88(12):1870–6.
19. Ortega P. Spanish language concordance in U.S. medical care: a multifaceted challenge and call to action. Acad Med. 2018;93(9):1276–80. https://doi.org/10.1097/ACM.0000000000002307.
20. Diamond LC, Tuot DS, Karliner LS. The use of Spanish language skills by physicians and nurses: policy implications for teaching and testing. J Gen Intern Med. 2012;27(1):117–23.
21. Ortega P, Park YS, Rodriguez AJ, Girotti JA. Evaluation of a Spanish health topics course for undergraduate pre-health Latino students. Cureus J Med Sci. 2019;11(10):e5825. https://doi.org/10.7759/cureus.5825.
22. Maldonado, M.E., Fried, E.D., DuBose, T.D, Nelson, C. & Breida, M. (2014). The role that graduate medical education must play in ensuring health equity and eliminating health care disparities. Ann Am Thorac Soc, 11(4), 603–607. doi:https://doi.org/10.1513/AnnalsATS.201402-068PS.
23. Nesbitt S, Palomarez RE. Review: Increasing awareness and education on health disparities for health care providers. Ethn Dis. 2016;26(2):181–90. https://doi.org/10.18865/ed.26.2.181.
24. Like RC. Educating clinicians about cultural competence and disparities in health and health care. J Contin Educ Heal Prof. 2011;31(3):196–206. https://doi.org/10.1002/chp.20127.
25. Vela MB, Fritz C, Press VG, Girotti J. Medical students' experiences and perspectives on interpreting for LEP patients at two U.S. medical schools. J Racial Ethn Health Disparities. 2016;3:245–9.
26. Showstack R. Patients don't have language barriers; the healthcare system does. Emerg Med J. 2019;36(10):580–1. https://doi.org/10.1136/emermed-2019-208929.
27. Poma PA. Hispanic cultural influences on medical practice. J Natl Med Assoc. 1983;75(10):941–6.
28. Price JH, Khubchandani J. Health education research and practice literature on Hispanic health issues. Health Promot Pract. 2016;17(2):172–6. https://doi.org/10.1177/1524839915626675.
29. Aguayo-Mazzucato C, Diaque P, Hernandez S, Rosas S, Kostic A, Caballero AE. Understanding the growing epidemic of type 2 diabetes in the Hispanic population living in the United States. Diabetes Metab Res Rev. 2019;35(2) https://doi.org/10.1002/dmrr.3097.
30. Parker MM, Fernández A, Moffet HH, Grant RW, Torreblanca A, Karter AJ. Association of patient-physician language concordance and glycemic control for limited-English proficiency Latinos with type 2 diabetes. JAMA Intern Med. 2017;177(3):380–7. https://doi.org/10.1001/jamainternmed.2016.8648.
31. Moreno PI, Yanez B, Schuetz SJ. Cancer fatalism and adherence to national cancer screening guidelines: Results from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL). Cancer Epidemiol. 2019;60:39–45. https://doi.org/10.1016/j.canep.2019.03.003.
32. Baek J, Huang K, Conner L, Tapangan N, Xu X, Carrillo G. Effects of the home-based educational intervention on health outcomes among primarily Hispanic children with asthma: a quasi-experimental study. BMC Public Health. 2019;19(1) https://doi.org/10.1186/s12889-019-7272-5.
33. Alarcón RD, Parekh A, Wainberg ML, Duarte CS, Araya R, Oquendo MA. Hispanic immigrants in the USA: social and mental health perspectives. Lancet Psychiatry. 2016;3(9):860–70. https://doi.org/10.1016/S2215-0366(16)30101-8.
34. Webber S, Butteris SM, Houser L, Coller K, Coller RJ. Asset-based community development as a strategy for developing local global health curricula. Acad Pediatr. 2018;18(5):496–501. https://doi.org/10.1016/j.acap.2018.02.001.
35. O'Brien MJ, Garland JM, Murphy KM, Shuman SJ, Whitaker RC, Larson SC. Training medical students in the social determinants of health: The Health Scholars Program at Puentes de Salud. Adv Med Educ Pract. 2014;5:307–14. https://doi.org/10.2147/AMEP.S67480.
36. Nora LM, Daugherty SR, Mattis-Peterson A, Stevenson L, Goodman LJ. Improving cross-cultural skills of medical students through medical school-community partnerships. West J Med. 1994;161(2):144–7.
37. Silva DH, García G, Clare C. Taking care of the Puerto Rican patient: Historical perspectives, health status, and health care access. MedEdPORTAL. 2020;16:10984.
38. Cruz-Oliver, D.M., Ellis, K., Sánchez-Reilly, S. (2016). Caregivers like me: an education intervention for family caregivers of Latino elders at end-of-life. MedEdPORTAL, 12, 10448. doi.org/10.15766/mep_2374-8265.10448.
39. Tervalon M. Components of culture in health for medical students' education. Acad Med. 2003;78(6):570–6. https://doi.org/10.1097/00001888-200306000-00005.
40. Neff J, Holmes SM, Knight KR. Structural competency: curriculum for medical students, residents, and interprofessional teams on the structural factors that produce health disparities. MedEdPORTAL. 2020;16:10888. https://doi.org/10.15766/mep_2374-8265.10888.
41. DallaPiazza M, Padilla-Register M, Dwarakanath M, Obamedo E, Hill J, Soto-Greene ML. Exploring racism and health: an intensive interactive session for medical students. MedEdPORTAL. 2018;14:10783. https://doi.org/10.15766/mep_2374-8265.10783.
42. Perdomo J, Tolliver D, Hsu H. Health equity rounds: an interdisciplinary case conference to address implicit bias and structural racism for faculty and trainees. MedEdPORTAL. 2019;15:10858. https://doi.org/10.15766/mep_2374-8265.10858.
43. Chow CJ, Case GA, Matias CE. Tools for discussing identity and privilege among medical students, trainees, and faculty. MedEdPORTAL. 2019;15:10864. https://doi.org/10.15766/mep_2374-8265.10864.

44. Yoon MH, Blatt BC, Greenberg LW. Medical students' professional development as educators revealed through reflections on their teaching following a students-as-teachers course. Teach Learn Med. 2017;29(4):411–9. https://doi.org/10.1080/10401334.2017.1302801.
45. Simpson SA, Long JA. Medical student-run health clinics: important contributors to patient care and medical education. J Gen Intern Med. 2007;22:352–6. https://doi.org/10.1007/s11606-006-0073-4.
46. U.S. census bureau quickfacts: Puerto Rico. Census Bureau QuickFacts; 2020, April 29. https://www.census.gov/quickfacts/PR.
47. Association of American Medical Colleges. Diversity in Medicine: Facts and Figures 2019: Table 7. U.S. medical schools with 200 or more Hispanic or Latino graduates (alone or in combination), 2009–2010 through 2018–2019; 2019, August 19. https://www.aamc.org/data-reports/workforce/data/table-7-us-medical-schools-200-or-more-hispanic-or-latino-graduates-alone-or-combination-2009-2010.
48. Accreditation Council for Graduate Medical Education. Graduate medical education totals by state | Academic year 2019-2020 | United States; 2020. https://apps.acgme.org/ads/Public/Reports/Report/13
49. Appleyard C, Antonia S, Sullivan D. Building a long distance training program to enhance clinical cancer research capacity in Puerto Rico. Rev Recent Clin Trials. 2015;9(4):254–62. https://doi.org/10.2174/1574887110666150127110721.
50. Estapé-Garrastazu ES, Noboa-Ramos C, Jesús-Ojeda LD, Pedro-Serbiá ZD, Acosta-Pérez E, Camacho-Feliciano DM. Clinical and translational research capacity building needs in minority medical and health science Hispanic institutions. Clin Transl Sci. 2014;7(5):406–12. https://doi.org/10.1111/cts.12165.
51. Estape E, Segarra B, Baez A, Huertas A, Diaz C, Frontera W. Shaping a new generation of Hispanic clinical and translational researchers addressing minority health and health disparities. P R Health Sci J. 2011;30(4):167–75.
52. García-Rivera EJ, Pacheco P, Colón M. Building bridges to address health disparities in Puerto Rico: the "Salud Para Piñones" project. P R Health Sci J. 2017;36(2):92–100.
53. Association of American Medical Colleges. 2018 Spencer Foreman Award for Outstanding Community Service; 2018. https://www.aamc.org/what-we-do/aamc-awards/spencer-foreman/2018-university-of-puerto-rico-som
54. Howley EK. AAMC award winners honored. Association of American Medical Colleges; 2019. https://www.aamc.org/news-insights/2019-aamc-award-winners-honored
55. Abrishami D. The need for cultural competency in health care. Radiol Technol. 2018;89(5):441–8.
56. Betancourt JR. Cross-cultural medical education: conceptual approaches and frameworks for evaluation. Acad Med. 2003;78(6):560–9. https://doi.org/10.1097/00001888-200306000-00004.
57. Deliz JR, Fears FF, Jones KE, Tobat J, Char D, Ross WR. Cultural competency interventions during medical school: a scoping review and narrative synthesis. J Gen Intern Med. 2020;35(2):568–77. https://doi.org/10.1007/s11606-019-05417-5.
58. Butler M, McCreedy E, Schwer N. Improving cultural competence to reduce health disparities. Agency for Healthcare Research and Quality (US); 2016.
59. Morales R, Rodríguez L, Singh A. National survey of medical Spanish curriculum in U.S. medical schools. J Gen Intern Med. 2015;30(10):434–9.
60. Diamond L, Grbic D, Genoff M, Gonzalez J, Sharaf R, Mikesell C, Gany F. Non–English-language proficiency of applicants to US residency programs. JAMA. 2014;312(22):2405–7.
61. Flores G, Mendoza FS. ¿Dolor aquí? ¿Fiebre?: A little knowledge requires caution. Arch Pediatr Adolesc Med. 2002;56(7):638–40.
62. Regenstein M, Andres E, Wynia MK. Appropriate use of non-English language skills in clinical care. JAMA. 2013;309(2):145–6.
63. Reuland DS, Frasier PY, Slatt LM, Alemán MA. A longitudinal medical Spanish program at one US medical school. J Gen Intern Med. 2008;23(7):1033–7.
64. Hardin KJ, Hardin DM. Medical Spanish programs in the United States: a critical review of published studies and a proposal of best practices. Teach Learn Med. 2013;25(4):306–11.
65. Ortega P, Diamond L, Alemán MA, Fatás-Cabeza J, Magaña D, Pazo V, Pérez N, Girotti JA, Ríos E. Medical Spanish standardization in U.S. medical schools: consensus statement from a multidisciplinary expert panel. Acad Med. 2020;95(1):22–31.
66. Ortega P, Park YS, Girotti JA. Evaluation of a medical Spanish elective for senior medical students: improving outcomes through OSCE assessments. Med Sci Educ. 2017;27(2):329–37. https://doi.org/10.1007/s40670-017-0405-5.
67. Cesari WA, Brescia WF, Harricharan Singh K, Oni A, Cheema A, Coffman C, Creek A, Torres C, Mencio M, Clayton S, Weaver C, Weaver J. Medical Spanish. MedEdPORTAL. 2012;8 https://doi.org/10.15766/mep_2374-8265.9171.
68. Rampal A, Wang C, Kalisvaart J. Pediatric medical Spanish vignettes. MedEdPORTAL. 2009;5:5110. https://www.mededportal.org/publication/5110
69. Dawson AL, Patti B. Spanish acquisition begets enhanced service (S.A.B.E.S.): a beginning-level medical Spanish curriculum. MedEdPORTAL. 2011;7:9057. https://www.mededportal.org/publication/9057
70. O'Rourke K, Gruener G, Quinones D, Stratta E, Howell J. Spanish bilingual medical student certification. MedEdPORTAL. 2013;9:9400. https://www.mededportal.org/publication/9400
71. Pérez N. Student acceptance of clinical conversational Spanish in medical curriculum. Cogent Med. 2018;5(1):1475691.
72. Ortega P, Prada J. Words matter: translanguaging in medical communication skills training. Perspect

Med Educ. 2020;9:251–5. https://doi.org/10.1007/s40037-020-00595-z.
73. Flood D, Rohloff P. Indigenous languages and global health. Lancet Global Health. 2018;6(2):e134–5. https://doi.org/10.1016/S2214-109X(17)30493-X.
74. Latino Medical Student Association. Resolution: medical Spanish curriculum in medical schools; 2016. https://lmsa.net/policy/wp-content/uploads/2016/10/ReferenceCommitteeReport.pdf
75. Diamond L, Izquierdo K, Canfield D, Matsoukas K, Gany F. A systematic review of the impact of patient-physician non-English language concordance on quality of care and outcomes. J Gen Intern Med. 2019;34(8):1591–606. https://doi.org/10.1007/s11606-019-04847-5.
76. García ME, Bindman AB, Coffman J. Language-concordant primary care physicians for a diverse population: the view from California. Health Equity. 2019;3(1):343–9. https://doi.org/10.1089/heq.2019.0035.