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Leadership development for orthopaedic trauma surgeons in Latin America: opportunities for and barriers to skill acquisition

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Abstract

Introduction: There is growing interest in leadership courses for physicians. Few opportunities are available in global regions with limited resources. This study describes orthopaedic trauma surgeons' desired leadership skill acquisition, opportunities, and barriers to course participation in Latin America.

Methods: Latin American orthopaedic trauma surgeons from the Asociación de Cirujanos Traumatólogos de las Américas (ACTUAR) network were surveyed. This survey solicited and gauged the surgeons' level of interest in leadership topics and their relative importance utilizing a 5-point Likert-scale. Additionally, comparisons were calculated between middle-income countries (MICs) and high-income countries (HICs) to ascertain if needs were different between groups. The survey included demographic information, nationality, level of training, years in practice, leadership position, needs assessment, and perceived barriers for leadership educational opportunities.

Results: One hundred forty-four orthopaedic surgeons completed the survey, representing 18 countries across Latin America; 15 MICs and 3 HICs. Participants had more than 20 years in practice (49%) and held leadership positions (81%) in hospital settings (62%), national orthopaedic societies (45%), and/or clinical settings (40%). Sixty-three percent had never attended a leadership course due to lack of opportunities/invitations (69%), difficulty missing work (24%), and costs (21%). Ninety-seven percent expressed interest in attending a leadership course. No difference in needs was determined between respondents from MICs and HICs. Professional Ethics, Crisis Management/Organizational Change Management, and High Performing Team-Building were identified as the most important leadership topics.

Conclusion: Orthopaedic surgeons in Latin America demonstrate an interest in acquiring additional leadership skills but have few opportunities. Identifying interests, knowledge gaps, and core competencies can guide the development of such opportunities.

Keywords: barriers, Latin America, leadership development, needs assessment, orthopaedic surgery, trauma

Investigation performed at the University of California, San Francisco; Zuckerberg San Francisco General Hospital.

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1. Introduction

There is a recognized need for nonclinical leadership courses for surgeons.^[1-4] Such courses promote strong personal and professional values, including interprofessional networking, the development of organizational and communicative skills, and the ability to mentor; all of which are regarded as integral to ensuring organizational success and promoting the delivery of high-quality care.^[5-7] While these skills are commonly taught in modern leadership development programs for surgeons in high-income countries (HICs),^[8] there is a relative paucity of literature on leadership programs in low- and middle-income countries (LMICs), particularly in the case of surgeons in Latin America.

In a highly specialized field such as orthopaedic surgery, the need for surgeons to function as leaders in their various roles is becoming more widely recognized.^[9-11] Surgeons in modern-day practice must effectively communicate in the operating room and clinic, collaborate, teach, facilitate learning, manage teams, and lead advocacy efforts.^[7,12,13] Despite surgeons often being positioned to take an active leadership role within their practice, dedicated leadership education is rarely a part of their

training.^[14,15] Few studies have explored educational leadership needs specific to orthopaedic surgeons in Latin America, thereby limiting the development of effective curricula that adequately address the needs of this particular group. Understanding the challenges associated with participating in such programs and assessing areas of need can help to strengthen the capacity of organizations and improve the performance of surgeon-leaders. Characterizing the skills one would desire to obtain from such a program, and incorporating region-specific perspectives into the curricula, are key steps for guiding the delivery of future programs and helping create models for collaboration among orthopaedic surgeons.

This paper describes the leadership skills and expertise that orthopaedic surgeons in Latin America view as necessary to better serve as leaders in their field, as well as barriers to participating in leadership development activities. Identifying knowledge gaps in leadership development training and the core competencies considered to be the most important and interesting for such programs can guide the development of future curricula for orthopaedic surgeons in Latin America.

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2. Methods

This cross-sectional, multi-national survey was conducted between March and September 2019 to gauge Latin American orthopaedic surgeons' level of interest in various leadership topics and their relative importance. The Asociación de Cirujanos Traumatólogos de las Americas (ACTUAR) network was utilized for this study. ACTUAR is an international, collaborative consortium aimed at building research capacity among orthopaedic trauma surgeons in Latin America,^[16] and all practicing orthopaedic surgeon-members were invited to participate in the study. The survey was developed by author consensus and reviewed by 3 independent academic experts in clinical research (Supplemental Digital Content 1, Appendix A, <http://links.lww.com/OTAI/A21>).

Questions were directed at understanding perceived areas of need as well as preferred leadership topics in an effort to guide effective future leadership program curricula. The 10 leadership topics that were assessed in the survey were chosen based on major themes identified in a review of the literature and formal leadership programs from major business schools, including the Kellogg School of Management and the University of Southern California School of Business.^[17-21] The survey consisted of 43 questions that included demographic information, gender, nationality, level of training, years in practice, current leadership position, and a needs assessment on perceived barriers to leadership education opportunities. The survey was translated into Spanish using a back-translation method^[22] and distributed electronically to participants using Research Electronic Data Capture (REDCap), an established secure patient information database tool. This study was designated as exempt from review by the University of California, San Francisco Institutional Review Board.

2.1. Statistical analysis

Descriptive statistics were reported to summarize surgeons' needs and perceived level of interest and importance in nonclinical leadership topics utilizing a weighted mean from a 5-point Likert scale (1 = Strongly Agree, 2 = Agree, 3 = Undecided, 4 = Disagree, 5 = Strongly Disagree). In addition, comparisons between country income-levels determined by the World Bank 2019-2020 Country and Lending Groups data were calculated to ascertain if perceived importance and interests of leadership topics were different between surgeons in middle-income countries (MICs) and high-income countries (HICs).^[23] Analysis was performed using the 2-tailed Fisher exact test with $P < .05$ as the significance level and was conducted using STATA SE version 16.1 (STATA Corp, College Station, Texas).

3. Results

3.1. Demographics

The survey was completed by 144 orthopaedic surgeons out of 213 total who were invited to participate, demonstrating a 68% response rate. Respondents represented 18 countries, of which 15 are categorized as MICs, and 3 as HICs. No statistically significant differences in orthopaedic surgeons' needs were determined between income-level groups; however, 1 difference ($P = .04$) was identified between the perceived level of interest in the leadership topic on Management of Social Networking.

The greatest proportion of participants were male (89%), with more than 20 years in practice (49%) and had held a leadership position (81%) for more than 6 years (51%). The respondents

reported holding formal leadership roles, broadly defined as a position that manages people or makes decisions that influences others. Respondents reported holding leadership positions as presidents or board members of professional orthopaedic organizations, supervisors, professors, or self-identified mentors within their orthopaedic practice. These positions were reported in various capacities: hospital settings (62%), national orthopaedic societies (44%), and/or clinical settings (40%). Fewer participants indicated that they held a leadership role within a regional society (27%) or an international orthopaedic society (8%).

3.2. Needs assessment

The majority of participants reported never having attended a leadership course (63%), with only 19% of participants having attended 2 or more leadership programs throughout their careers as orthopaedic surgeons. Less than a sixth of participants (15%) reported having previously taken a leadership assessment personality test (e.g., Myers-Briggs Type Indicator or Gallup Strengths Finder) (Table 1). Ninety-seven percent of participants expressed interest in attending a leadership course and most were comfortable attending a course instructed in the English language (90%). The main barriers to attending such courses were lack of opportunities or invitations (69%), difficulty missing work (24%), cost (21%), and calendar conflicts (17%). Furthermore, interactive plenary sessions (68%), small group work (62%), and simulation exercises (58%) were reported as the 3 most desirable and engaging learning methods (Table 2).

The majority of respondents (96%) strongly agreed/agreed that they felt they had the essential qualities to be a leader, with only 3% of respondents' undecided, and only 1 respondent (1%) who disagreed with this statement. In response to the question on awareness of the qualities that make leadership successful, the respondents strongly agreed/agreed (87%) with this comment. Fewer respondents were undecided (12%), and only 2 respondents (2%) strongly disagreed.

In addition, on a Likert-scale questionnaire, the 3 topics rated as the most important leadership topics were Professional Ethics, Crisis Management/Organizational Change Management, and High Performing Team-Building. The most interesting leadership topics were Professional Ethics, High Performing Team-Building, and Organizational Structure and Ability to Lead (Fig. 1). A comparison analysis illustrates the difference in ratings between participants in MICs and HICs (Table 3). No significant differences were identified in leadership topics when stratified by surgeons' experience.

4. Discussion

Leadership education for surgeons has proven effective in promoting organizational success and facilitating the development of skills integral to surgeons' overall clinical expertise.^[7,24,25] Despite this recognition, there is a dearth of publications describing studies of leadership programs for surgeons in Latin America. Therefore, LMICs in Latin America often rely on literature largely derived from HICs in North America and Europe. Identifying the perceived needs for leadership courses specific to Latin American orthopaedic surgeons can help to promote the development of leadership opportunities and effective curricula which adequately address the needs of this particular group.

In this study, one statistically significant difference was observed between income groups regarding orthopaedic

Table 1
Demographic data of survey respondents

Characteristic	N (%)	Middle-income country (MIC) [‡]	High-income country (HIC) [‡]
Total	144 (100)		
Gender			
Male	127 (89)		
Female	17 (11)		
Country of practice			
Argentina		9 (6)	
Bolivia		1 (1)	
Brazil		12 (8)	
Chile			1 (1)
Colombia		28 (19)	
Cuba		25 (17)	
Dominican Republic		1 (1)	
Ecuador		1 (1)	
El Salvador		3 (2)	
Guatemala		4 (3)	
Honduras		4 (3)	
Mexico		38 (27)	
Nicaragua		3 (2)	
Panama			2 (1)
Paraguay		1 (1)	
Peru		2 (1)	
Uruguay			6 (4)
Venezuela		3 (2)	
Years in practice			
0–5	11 (8)		
6–10	17 (12)		
11–15	18 (12)		
16–20	28 (19)		
More than 20	70 (49)		
Currently hold a leadership position			
Yes	117 (81)		
No	27 (19)		
Years in a leadership position			
0–2	28 (24)		
3–5	29 (25)		
More than 6	60 (51)		
Leadership role [†]			
Hospital setting	89 (62)		
National orthopaedic society	64 (44)		
Clinical setting	58 (40)		
Regional orthopaedic society	39 (27)		
International orthopaedic society	11 (8)		

*Various demographic data not reported for all respondents.

† Multiple responses selected.

‡ 2021 World Bank Country and Lending Groups.

surgeons' perceived level of interest in leadership topics. Consistent with this finding, prior research has shown that leadership programs from HICs are often unlikely to apply well to LMICs. A study from the oncology field compared 217 Latin American oncology surgeon-leaders' perceptions on leadership competencies to those from North America and Europe.^[26] Notably, the most valued leadership skills identified among the Latin American respondents were significantly different from those identified by North American and European respondents. Additionally, another study noted important differences in the value of leadership education competencies between physicians and other healthcare professional groups.^[27] Factors such as culture, language, resources, training, and surgical subspecialty may influence the perception of desired leadership topics. This illustrates the importance of developing and tailoring leadership curricula to specific professions and regions.

Table 2
Leadership course needs assessment

Questions	N (%)
Total	144 (100)
How many leadership courses have you attended previously?	
None	91 (63)
1	26 (18)
2 or more	27 (19)
Are you interested in attending a leadership course for surgeons?	
Yes	139 (97)
No	5 (3)
Are you comfortable taking a leadership course in English?	
Yes	129 (90)
No	15 (10)
Have you ever taken a personality test?	
No	122 (85)
Yes	22 (15)
Main obstacles to attending a leadership course [‡]	
No opportunities or invitations	99 (69)
Difficulty missing work	35 (24)
Cost	30 (21)
Calendar conflicts	25 (17)
Other	11 (8)
Early in career	4 (3)
Teaching methods that are the most engaging [†]	
Interactive plenary session	98 (68)
Small group work	90 (62)
Simulation exercises	83 (58)
Lectures	76 (53)
Other	2 (1)

*Various demographic data not reported for all respondents.

† Multiple responses selected.

According to the survey respondents in this study, the 3 leadership topics considered to be most important were Professional Ethics, Crisis Management/Organizational Change Management, and High Performing Team-Building. Additionally, the 3 highest rated leadership topics considered to be most interesting were Professional Ethics, High Performing Team-Building, and Organizational Structure and Ability to Lead. These topics embody the multifaceted aspects of surgeons' roles as leaders, from managing teams to collaborating and leading quality improvement or advocacy efforts, and may be used as core concepts in the development of future leadership curricula. Though nonmedical, another study demonstrated similar desirable leadership traits in Latin American managers, including decisiveness, diplomacy, collaboration, and altruism.^[28] Overall, the majority of Likert-scale results were positively scored by the survey respondents, with a disproportionately small percentage of leadership topics perceived as not important or interesting. While this could highlight a shared appreciation for leadership-related content for orthopaedic surgeons, the overwhelming positive Likert-scale responses could also reflect a degree of unfamiliarity with the specificity of these topics.

Further, the majority of survey respondents served in a leadership position within the field of orthopaedic surgery, many with over 20 years of experience; yet, relatively few had taken a leadership course. While there is clearly a need for leadership programs for these surgeons, prior studies show that experiential learning over time can still lead to effective faculty development.^[29] However, further investigation on the relationship between experience and course work is important. One systematic review that identified key leadership competencies

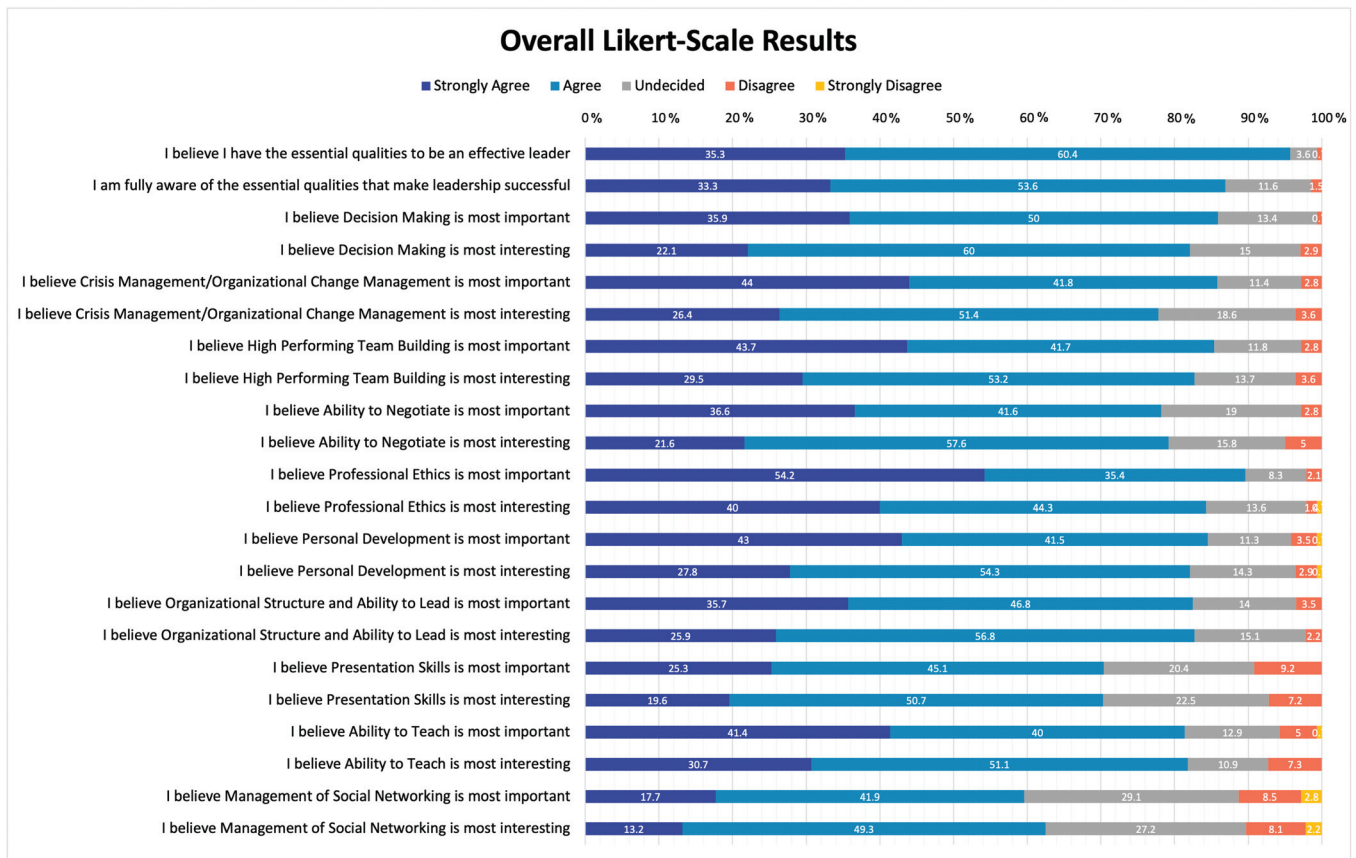


Figure 1. Orthopaedic surgeons’ perceived level of importance and interest in leadership topics utilizing Likert-scale survey questions based on percentage of responses.

Table 3
Comparison analysis between middle-income countries (MICs) and high-income countries (HICs)

	MIC mean	SD	HIC mean	SD	P value
The most <i>important</i> leadership topic is:					
Decision making	1.78	0.70	1.75	0.46	.43
Crisis management/organizational change management	1.75	0.78	1.5	0.53	.82
High performing team-building	1.74	0.79	1.67	0.71	>1.0
Ability to negotiate	1.88	0.84	1.78	0.44	.13
Professional ethics	1.57	0.75	1.67	0.50	>1.0
Personal development	1.78	0.84	1.75	0.89	.28
Organizational structure and ability to lead	1.85	0.80	1.63	0.52	.77
Presentation skills	2.11	0.90	2.38	0.92	.71
Ability to teach	1.83	0.87	1.75	1.20	.25
Management of social networking	2.34	0.94	2.62	1.40	.28
The most <i>interesting</i> leadership topic is:					
Decision making	2.0	0.72	1.89	0.33	.52
Crisis management/organizational change management	1.98	0.79	2.0	0.50	.62
High performing team-building	1.88	0.77	2.25	0.46	.13
Ability to negotiate	2.03	0.78	2.12	0.35	.41
Professional ethics	1.78	0.80	1.87	0.64	.68
Personal development	1.93	0.79	2.12	0.64	.61
Organizational structure and ability to lead	1.91	0.72	2.12	0.35	.27
Presentation skills	2.13	0.83	2.62	0.74	.29
Ability to teach	1.94	0.84	2.0	0.93	.65
Management of social networking	2.34	0.89	2.56	1.10	.04

*All tests of significance are completed with Fisher exact test ($P < .05$).
Weighted mean using a 5-point Likert-scale; 1 = strongly agree, 2 = agree, 3 = undecided, 4 = disagree, 5 = strongly disagree.

for medical professionals determined that these skills could best be acquired through formal, systematic education, such as graduate studies; although there are many barriers to this type of training.^[30]

An overwhelming 97% of Latin American respondents expressed interest in attending a leadership course designed for orthopaedic surgeons; however, multiple barriers to participating in such programs were identified. This included lack of opportunities/invitations, time constraints, and cost. Due to an orthopaedic surgeon's demanding schedule, with an average of 70 hours per week,^[31] the ease of having time to attend courses outside of work is low. One pilot study proposed a solution by building a mandatory leadership training program into the curriculum for medical specialists.^[15] The idea of mandatory leadership training for all surgeons was positive, with 81% of the participants stating that participation in a leadership course led them to feel better prepared to tackle and learn from challenges. These personal development skills are important characteristics for highly successful orthopaedic surgeons,^[31] and promoting mandatory, standardized leadership programs in conjunction with orthopaedic surgeons' institutional training could help equip surgeons with skill sets that can improve performances and reinforce best practices. Additional leadership course resources such as personality assessment tests, though more embraced in the business field, can also be an effective tool in improving physician leadership and mentorship skills for orthopaedic programs.^[32] This evidence suggests that orthopaedic surgery leadership development programs have the potential to be extremely beneficial not only to surgeons but also to their patients and health systems.

The results of this needs assessment survey can be used to develop leadership training curricula, ideally accessible to all orthopaedic surgeons in Latin America. In an effort to alleviate barriers identified in the survey, the leadership development opportunities could be offered free of cost through an online platform to allow for accessible and self-paced training. This online offering could be supplemented by local courses delivered by surgeon-leaders with an interest and expertise in identified areas for leadership development.

The findings of this study can help foster awareness and encourage the development of leadership opportunities in this region, as well as contribute to the literature on orthopaedic trauma care in Latin America, which has historically been underrepresented.^[33,34] The surgeon-respondents represented all Spanish-speaking countries in Latin America, allowing for a more uniform view of the region's needs. Almost 70% of respondents completed the survey, representing a strong response rate. Given its success, this type of survey-based study can be used as a model for future needs assessments, targeting surgeons with other subspecialties or geographical areas.

The study has several limitations. The needs assessment survey was restricted to self-reported measures. However, this study represents an important first step in gauging appropriate topics for leadership curricula, as a needs assessment approach is an effective way to understand knowledge gaps that ultimately create programs that meet those needs. Additionally, the orthopaedic surgeon participants were from the ACTUAR network, which includes a substantial number of members who are experienced orthopaedic trauma surgeons who have held leadership positions within their national societies and have an interest in conducting research. Therefore, these participants represent only 1 small segment of the diverse population of orthopaedic surgeons in Latin America and may not fully

represent the views of the general population, potentially creating a selection bias. While not all ACTUAR members have experience in research or have engaged in significant leadership roles, the organization does attract individuals with an interest in developing these areas professionally and regionally. Given this interest, members of the ACTUAR network represent a group of orthopaedic surgeons familiar with academic society offerings and existing leadership development activities and are, therefore, an appropriate group to gauge perceived needs in these areas. Finally, in this study, females only represent 11% of the orthopaedic surgeon-participants. Few published reports address the overall representation of female orthopaedic trauma surgeons in Latin America. One study cited that females represented 4.8% of all orthopaedic traumatologists in Peru and 6% of the national orthopaedic and traumatology society in Chile.^[35] Therefore, the current study likely does not underrepresent female respondents.

In summary, orthopaedic surgeons in Latin America demonstrate an interest in acquiring additional leadership skills but have few opportunities. This study can help to elucidate knowledge gaps in leadership training and guide the development of curricula tailored to address the needs of this particular group. Further work is needed to better understand perceived leadership skill needs in different regions and cultures and evaluate the effectiveness of leadership programs to improve long-term leadership skills.

References

1. Reinertsen JL. Physicians as leaders in the improvement of health care systems. *Ann Intern Med.* 1998;128:833–838.
2. Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet.* 2010;376:1923–1958.
3. Schwartz RW, Pogge C. Physician leadership is essential to the survival of teaching hospitals. *Am J Surg.* 2000;179:462–468.
4. Jaffe GA, Pradarelli JC, Lemak CH, et al. Designing a leadership development program for surgeons. *J Surg Res.* 2016;200:53–58.
5. Levine WN, Braman JP, Gelberman RH, et al. Mentorship in orthopaedic surgery – road map to success for the mentor and the mentee. *J Bone Jt Surg.* 2013;95:1–5.
6. Collins J. Level 5 Leadership. The triumph of humility and fierce resolve. *Harv Bus Rev.* 2001;79:66–76.
7. McKimm J and Lief SJ. Medical Education Leadership. In: *A Practical Guide for Medical Teachers. Chapter 42.* London: Churchill Livingstone-Elsevier; 2013:343–351.
8. Frich JC, Brewster AL, Cherlin EJ, et al. Leadership development programs for physicians: a systematic review. *J Gen Intern Med.* 2015; 30:656–674.
9. Chen TY. Medical leadership: an important and required competency for medical students. *Tzu Chi Med J.* 2018;30:66–70.
10. Peters W, Picchioni A, Fleshman JW. Surgical leadership. *Clin Colon Rectal Surg.* 2020;33:233–237.
11. Angood P, Birk S. The value of physician leadership. *Physician Exec.* 2014;40:6–20.
12. Kuo CC, Robb W. Critical roles of orthopaedic surgeon leadership in healthcare systems to improve orthopaedic surgical patient safety. *Clin Orthop Relat.* 2013;471:1792–1800.
13. Williams N, Chen M, Curtis Lee A, et al. What are the perceptions of orthopaedic surgeons regarding leadership and leadership training? *ANZ J Surg.* 2020;90:12–14.
14. Fry H. Equipping surgeons as educators. *ANZ J Surg.* 2009;79: 186–191.
15. Ramani S, Leinster S. AMEE Guide No. 34: teaching in the clinical environment. *Med Teach.* 2008;30:347–364.
16. Miclau T, MacKechnie MC, Shearer DW, et al. Asociacion de Cirujanos Traumatologos de las Americas: development of a Latin American Research Consortium. *J Orthop Trauma.* 2018;32 (suppl 7):S8–S11.
17. Sadowski B, Cantrell S, Barelski A, et al. Leadership training in graduate medical education: a systematic review. *J Grad Med Educ.* 2018;10: 134–148.

18. Guo KL. Core competencies of the entrepreneurial leader in health care organizations. *Health Care Manag (Frederick)*. 2009;28:19–29.
19. Stoller JK. Developing physician-leaders: key competencies and available programs. *J Health Adm Educ*. 2008;254:307–328.
20. Kirkpatrick SA, Locke EA. Leadership: do traits matter? *Acad Manage Exec*. 1991;5: 48–60.
21. Pidgeon K. The keys for success: leadership core competencies. *J Trauma Nurse*. 2017;24:338–341.
22. Brislin RW. Back-translation for cross-cultural research. *J Cross-Cult Psychol*. 1970;1:185–216.
23. The World Bank. Data: Country and Lending Groups 2020. Available at: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>. Accessed December 20, 2019
24. Shubeck SP, Kanters AE, Dimick JB. Surgeon leadership style and risk-adjusted patient outcomes. *Surg Endosc*. 2019;33:471–474.
25. Lee TC, Reyna C, Shah SA, et al. The road to academic surgical leadership: characteristics and experiences of surgical chairpersons. *Surgery*. 2020;168:707–713.
26. Mano MS, Gomes R, Werutsky G, et al. Cross-cultural validity study of a medical education leadership competencies instrument in Latin American physicians: a multinational study. *J Glob Oncol*. 2019;5:1–9.
27. Citaku F, Violato C, Beran T, et al. Leadership competencies for medical education and healthcare professions: population-based study. *BMJ Open*. 2012;2:1–9.
28. Ogliastri E, McMillen C, Altschul C, et al. Culture and organizational leadership in 10 Latin American countries: the globe study. *Acad Rev Latinoam Adm*. 2006;22:29–57.
29. Steinert Y, Mann K, Centeno A, et al. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. *Med Teach*. 2006;28: 497–526.
30. Violato C, Cawthorpe D. Core Research Competencies for Scholars and Researchers in Medical Education: an MSc and PhD Program. In: *Research in Medical Education - Chances and Challenges*. Heidelberg Vol 20. German Medical Science GMS Publishing House; 2009.
31. Klein G, Hussain N, Sprague S, et al. Characteristics of highly successful orthopedic surgeons: a survey of orthopedic chairs and editors. *Can J Surg*. 2013;56:192–198.
32. Tornetta P, Jacobs JJ, Sterling RS, et al. Personality assessment in orthopaedic surgery: AOA critical issues. *J Bone Joint Surg Am*. 2019; 101:e13–e113.
33. Urrutia J, Zamora T, Prada C. The fifty most cited Latin American articles in the orthopaedic literature. *Int Orthop*. 2014;38:1723–1729.
34. Challa S, Wu H-H, Cunningham BP, et al. Orthopaedic trauma in the developing world: where are the gaps in research and what can be done? *J Orthop Trauma*. 2018;32:S43.
35. Arias C, Bytyqui D, Chokocho L, et al. Diversity in orthopaedics and traumatology: a global perspective. *EFORT Open Rev*. 2020;5:743–752.