Peer Review File

1) Overall, the lumping together of very different types of advanced degrees and very different types of leadership roles makes understanding the findings and usefulness of conclusions difficult. The PhD is a very commonly occurring degree in academic medicine and traditionally associated with leaders of academic affairs such as research and department/division leadership positions. In contrast the MPH, and especially the MBA, carry educational content more usually applied to health care delivery challenges. The authors provide data on distribution and roles and degrees by clinical specialty but not by leadership role category. For example, one might wonder what the results might be if they looked only at MPH and/or MBAs in only hospital leadership roles. Roles in research and education might be examined as to an association with a PhD degree.

Reply 1: We thank the reviewer for great insight into where MPH and MBA degrees may be seen within leadership positions. Our study was designed to split leadership positions into hospital leadership, medical education leadership, and department leadership. While limited sample sizes prevented us from achieving statistical power when separating hospital leadership away from other forms of leadership, this would be a fantastic question in future study of our lab when looking at more than just University of California hospitals. Regardless, we have touched on the motivations behind pursuing different dual degrees, helping to provide context into where one might find certain advanced degrees in leadership positions.
Changes in the text: We elaborated on the types of leadership roles different physicians with advanced degrees may obtain in lines 146-163.

2) The under-representation of females in leadership positions (lines 88-91) is a very important and disturbing finding, but well document in many sources. It is interesting that while advanced degrees were find among both males and females, there was not an association between advanced degrees and leadership roles for women.
Reply 2: We thank the reviewer for appreciating the impact of this finding. We agree that this is a disturbing finding, and changes are needed in healthcare systems as a whole to ensure a more equitable distribution among qualified individuals.
Changes in the text: We have elaborated on this finding in lines 164-172.

3) The association of MPH and MBA degree with leadership roles in healthcare delivery is a very complex relationship as to the experiences, motivation, interests, aspirations, career trajectories and success of leaders. Is a leadership aptitude or curiosity about delivery system challenges drive a physician to recognize early on the need for greater expertise to address these and enroll in an advanced degree

program? If that is the case, dual degree programs, is a good strategy. Or, if it driven by the discovery of skills deficiencies recognized after a physician is in one of these roles, then support of pursuing advanced degrees by current leaders is called for. The finding cited by the authors (ref 2-4) that "a clinical background is a crucial component of becoming an effective medical leader" (line 104) fits a drive arising later in a career after initial training. These perspectives are alluded to in the paragraph, lines 105-111. The finding of an association of advanced degrees and holding a leadership role, tells the reader little about how this came about. Yet, a better understanding of the sequence of influences on the physician at various stages of career development is essential in the design of leadership development strategy.

Reply 3: We thank the reviewer for his/her great comments on the differences between the PhD, MPH, and MBA. We agree that the motivations behind each of these degrees vary, and much has been studied regarding why and when trainees pursue this additional training. We have addressed these questions and elaborated on these curiosities in a new paragraph.

Changes in the text: We have addressed the varied motivations behind pursuing advanced degrees in lines 146-163.

4) The distribution of degrees and roles among clinical specialties is curious, but the authors offer no discussion of how this could be better understood or put to good use in applying the results to future leadership development.

Reply 4: We thank the reviewer for his/her comment. We have included in our discussion a new paragraph helping readers understand why certain specialties might be more likely to be reflected in medical leadership and how this can assist future leadership development programs.

Changes in the text: We offer a discussion to better understand why certain specialties are more likely to be reflected in medical leadership positions in lines 173-186.

Comment 5: Minor points: (1) Psychiatry is listed twice in the text about most common specialties in leadership roles (line 95 and again in line 96). (2) I don't know what "PROF OF CLIN-HCOMP" or "PROF_HCOMP" mean (line 70) or why these are relevant.

Reply 5: We thank the reviewer for catching this minor errors. We have deleted where Psychiatry was listed twice. We have also included the full meaning of the "PROF OF CLIN-HCOMP" and "PROF_HCOMP" acronyms. These are the designations on the UC database for employee that identify physicians, thus it was important to include in our study to allow for repeatability.

Changes in the text: We have deleted the word Psychiatry twice as suggested. We have explained the aforementioned acronyms in lines 83-85.

Comment 1: The paper is well written and concise. I would advise you to consider two minor changes: Title: the word "Diversity" entails much more than the variables you analysed. I would recommend replacing that with "Disparities"

Reply 1: We thank the reviewer for his/her very kind comments. We agree that Disparities would be a more appropriate word for our title.

Changes in the text: We have changed our title and replaced "Diversity" with "Disparities"

Comment 2: Introduction: The use of gender equity. With my limited understanding of gender research, I interpret your study more as gender equality. Whichever concept you use, kindly aid the reader by being explicit with the choice of concept.

Reply 2: We thank the reviewer for his/her point of clarification regarding gender equity vs gender equality. We agree that the concept referred to in our study was gender equality, as opposed to gender equity.

Changes in the text: We have changed the term gender equity to "gender equality" in line 73. Throughout the remainder of the paper, we stay consistent in using the word or modifications of the word "equality" rather than "equity" (ex: abstract)

Comment 3: In your future research, I can humbly recommend you to take a look at a publication by Savage et al 2018 Effective physician leaders: an appreciative inquiry into their qualities, capabilities and learning approaches where MD/PhD was overrepresented and where it is hypothesized that it is tied to the scientific approach to problem identification and solution development that can contribute to their effectiveness as leaders.

Reply 3: We thank the reviewer for his/her helpful reference. We agree this will be an extremely useful study for future publications. We are working on other projects that concern creating curricula for future medical leaders in which this publication will be apt to cite.

Changes in the text: This reference will be included in our future publications.

Comment 1: The paper is purely descriptive in nature. As a descriptive paper, the utility of it would be enhanced if it was more strongly connected to specific calls for additional empirical research. What are the implications for this study?

Reply 1: We agree with the reviewer that calls for additional empirical would be helpful to put the findings of our study in context. We have appropriately added calls for additional research at the end of our new paragraphs.

Changes in the text: We have added calls for additional research in lines 160-163, 170-172, 184-186, 189-191.

Comment 2: I would recommend doing a literature review on Top Management Team (TMT) diversity and diversity in executive healthcare leadership for support. What are the benefits of advanced degrees in academic institutions? Are they linked to improved performance, improved healthcare outcomes, improved organizational culture?

Reply 2: **We agree with the reviewer that these questions would be extremely helpful in delving into the possible benefits and outcomes of having advanced degrees at academic institutions. A discussion on these questions unfortunately are beyond the scope of this study, as this study was designed to simply identify differences in leadership position allocation. Nevertheless, we are working to design a study to answer these questions in an upcoming project in our lab.**

Changes in the text: **This comment brings up comments beyond the scope of our current study, but will be addressed in future studies by our Lab.**