Peer Review File

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Reviewer A

Hard to draw conclusions from such limited data. I would consider:
1- including that your survey data (which shows resident perception of palliative care comfort in single program which seems to have limited curriculum in the field) is very similar to other papers (you include them in your citations) discussing programs similar situation pre palliative training. I think this is interesting that despite time differences and changes in medical school training, these numbers are fairly stable.

Reply 1: We appreciate this comment and agree that the similarity and stability in the survey results over time and across different institutions/settings is interesting and worth discussing. We have added further discussion about this in the text (see Page 7, lines 207-210 and Page 10, lines 275-276).

Changes in the text:
Page 7, lines 207-210: "Notably these data, including the results of our survey, have been remarkably stable over time and similar across different institutional settings despite changes in medical school training. The stability in the data suggests that further improvement to medical school and residency training in palliative care is still required."

Page 10, lines 275-276: "Similarly, residents at OHSU reported that they received minimal palliative care training in didactics and the vast majority desired formal training"

2- To really make a point about training in rural palliative care, it would be much more useful to find out quality of training and appreciation of primary palliative care perceptions and training. This approach would be vital to addressing surgical palliative care in a rural setting. Comments about perceptions of palliative care in your data enlightening (and troublesome) about level of understanding at this single center/program. However, not clear how this is specifically a rural problem or specifically how your data encourages next steps to support better training.

Reply 2: Thank you for this comment. We believe that while palliative care is universally important, there are unique challenges in rural palliative care delivery and education, which we have expanded upon in the text (see Page 8, lines 219-221and Page 10, lines 268-271). We also agree that it is important to highlight how our data are informing next steps in improving training, which we have also further specified (see Page 10, lines 276-277 and Page 11, lines 302-303).

Changes in the text:
Page 8, lines 219-221: "The majority of residents felt that living in a rural setting limits the resources that patients have available for palliative care, which further complicates the question of "what comes next" when difficult news is given."

Page 10, lines 268-271: "And while it is certainly necessary for surgeons everywhere to be comfortable with primary palliative care, it is particularly important for the rural general surgeon, as the already limited availability of palliative care physicians is even scarcer in rural areas"

Page 10, lines 276-277: “In response to these data,...”

Page 11, lines 302-303: Added “which could be a unique method to improve and increase palliative care education for rural trainees.” after “Most respondents to the follow-up survey (61.5%) responded either “yes” or “maybe” regarding their interest in such an elective, which could be a unique method to improve and increase palliative care education for rural trainees.”

Reviewer B

Waring and colleagues present an interesting topic in regard to surgery and palliative care. As noted there are limitations in providing palliative care in a rural setting and they explore this within a rural surgery residency. Many of the findings highlight the need for more in-depth training on this aspect of patient care for surgery residents and they offer some potential educational opportunities.

Comments
While the population they are evaluating – surgery residents in a rural surgery program – is unique they ultimately demonstrate many of the known findings we have seen in many other studies – that surgery residents are under prepared and uncomfortable with many aspects of providing palliative care. Thus, we are not learning anything new other than adding additional commentary on a known problem regardless of program type, location or size.

Reply: We appreciate this comment and agree that our findings are similar to other studies that have been conducted. We believe that our findings are additive to the current literature and show that this problem also exists in a rural residency program, where there are unique challenges. It is also interesting that these data have been stable over time and similar across different institutional settings, which we have further highlighted in the discussion section (see Page 7, lines 207-210).

Changes in the text:
Page 7, lines 207-210: “Notably these data, including the results of our survey, have been remarkably stable over time and similar across different institutional settings despite changes in medical school training. The stability in the data suggests that further improvement to medical school and residency training in palliative care is still required.”

I struggle with the fact that the authors continue to comment on how “patients in rural settings have a greater need for palliative care competency, that due to the scarcity of palliative care specialist in rural settings the responsibility of palliative care delivery falls more on the primary providers and delaying goals of care discussions out of a desire to defer to the expert can be detrimental in settings where the availability of palliative care specialists is limited, such as rural settings” – one would argue that yes training in palliative care is important but they are missing the main point that many palliative care providers make that all physicians should be able to perform primary palliative care to their patients. Basics of delivering bad news and goals of care conversations should not be left to just palliative care providers but that physicians need to take this responsibility themselves and include palliative care specialists when there are difficulties in communication, challenging pain management etc. I would reframe these statements.

Reply: Thank you for this comment. We are specifically referring to the palliative care competency of residents and not the palliative care needs of patients. We also agree that all physicians should be competent in the basics of primary palliative care regardless of setting. We have amended the text and reframed these statements to better reflect this (see Key findings, lines 2-3; Page 7, line 200; Page 10, lines 268-271; Page 11, line 318).

Changes in the text:
Key findings, lines 2-3: changed "a greater need for" to "the importance of"
Page 7, line 200: Changed "a greater need for" to "the importance of"
Page 10, lines 268-271: "And while it is certainly necessary for surgeons everywhere to be comfortable with primary palliative care, it is particularly important for the rural general surgeon, as the already limited availability of palliative care physicians is even scarcer in rural areas"
Page 11, line 318: Changed "suggesting an even greater need for" to "further highlighting the importance of"

This study and its findings are basic and lack the granularity to make more in depth conclusions. Examples include:
Rural surgery program is not defined.
What did the volunteer experiences entail?
The survey questions are basic with often only three choices: agree, neutral or disagree. This does not tell us much more than that.
Would recommend expanding the questions for more detail and potentially more options for responses. Additionally, would consider a larger survey that includes other "rural" residency programs to see if there are aspects of providing palliative care to surgery patients that is unique to rural surgery programs compared to other surgery programs.

Reply: We appreciate these suggestions. We agree that it is important to define rural surgery programs, and we are using the American College of Surgery list of rural surgery training programs, which we have specified in the methods (see Page 5, lines 141-143). The volunteer experiences were defined as volunteering in either a hospice or palliative care setting, which we have also specified in the methods section (see Page 5, lines 144-145). We agree that the three-point Likert scale that we used to optimize the response rate and data analysis is a limitation to the study; as such, we have added this to the limitations section (see Page 11, lines 307-308). We agree that a larger survey would be informative, but we unfortunately are not able to complete a larger survey given the time constraints of the revisions.

Changes to the text:
Page 5, lines 141-143: "We are defining rural general surgery residency programs as any program on the American College of Surgeons list of Rural Surgery Programs in which all residents train in a rural environment"
Page 5, lines 144-145: "defined as volunteering in either a hospice or palliative care setting"
Page 11, lines 307-308: "The three-point Likert scale that we used to optimize response rate and data analysis given the small sample of residents is also a limitation"

The authors highlight that more residents felt comfortable with goals of care conversations vs delivering bad news when the difference was only by one response 7 vs 8. I don't think one response can make such a strong conclusion, especially when you look at the responses and many residents responded with neutral (6 for bad news and 4 for goals of care which means only 3 total

responses for disagree). Would explore why residents feel comfortable or uncomfortable in these situations and even evaluate the differences between the results of junior vs senior residents.

Reply: Thank you for this comment. We agree that the overall difference between 7 and 8 is insignificant. We are primarily trying to say that residents appear to show more improvement with goals of care discussions than they do with delivering bad news based on the analysis stratified by training level (improving from 0/4 interns to 8/10 junior/senior residents for comfort with goals of care versus 1/4 interns to 6/10 junior/senior residents for comfort with delivering bad news), which we have clarified in the text (see Page 7, line 212; Page 8, line 214; Page 8, line 217).

We also agree that grouping neutral with disagree in the analysis is a limitation, which we have added to the limitations section (see Page 11, lines 308-309).

We evaluated the comparison between junior and senior residents, and we found that an equivalent number of junior and senior residents feel comfortable with both goals of care discussions and delivering bad news, suggesting that most of the residents' improvement occurs early on in training. We can speculate that this may be due to the dedicated ICU rotations that residents complete during their first two years, and we have added this to the discussion (see Page 8, lines 224-229).

Changes in the text:
Page 7, line 212: "(8/10 compared to 0/4)"
Page 8, line 214: "(6/10 compared to 1/4)"
Page 8, line 217: "and the overall difference between these two skills across all residents was minimal"

Page 8, lines 224-229: "We may speculate that this is to some extent a result of the dedicated ICU rotations that our residents complete in the first two years of training, which naturally involve more palliative care conversations with patients and their families. Most residents at OHSU stated that the most common setting for palliative care conversations was in the ICU. Formal education would help contextualize these early palliative care experiences and may result in even further improvement in communication skills later in training, where it appears that improvement stagnates."

Page 11, lines 308-309: "along with the grouping of disagree and neutral together in our analysis"

The authors note a thematic analysis in the results but no further mention of the themes is appreciated in the discussion. Additional evaluation of the themes such as resident perceptions regarding palliative care (many comments mention having goals of care conversations, helping in decision making etc – which should be initially explored by the primary provider and only a few commented on how palliative care can help in more complex situations which is an appropriate reason for a consult) should be explored including resident understanding of the role of palliative care and how education may change these views. Also, would explore how the comments relate to other studies or not would be beneficial to discuss.

Reply: We appreciate your suggestion regarding the free response questions and thematic analysis and have added more discussion on this to the text (see Page 8, lines 233-235). Per another reviewer's suggestion we are now more accurately referring to this analysis as a content analysis instead of a thematic analysis. We have also added more discussion on how education may change

these views (see Page 8, lines 239-240) and found similarity to the Bonanno et al. study in the free response with regards to lack of palliative care training in didactics (see Page 10, lines 275-276).

Changes in the text:
Page 8, lines 233-235: "Only one of the free-text responses specifically mentioned appropriately ordering a palliative care consult after an initial discussion with the patient. One response mentioned being directed by the attending to consult palliative care due to discomfort with discussing goals of care"
Page 8, lines 239-240: "Formal education would ideally empower residents to initiate discussions before appropriately consulting palliative care in more complex situations."
Page 10, lines 275-276: "Similarly, residents at OHSU reported that they received minimal palliative care training in didactics and the vast majority desired formal training."

The educational changes the authors note could make for an interesting study to evaluate how these changes have improved (or not) the resident's competency in delivering palliative care principles to their patients. And how they have worked within the limitations they have as a "rural" program with limited resources to improve this aspect of training.

Thank you for this suggestion. It would certainly be interesting to complete a follow-up study in a couple years to assess the impact of these curriculum changes.

Reviewer C

The article addresses an important issue to PC training among surgery residents in the rural areas. I believe this is an important area to consider given the lack of resources in rural areas. I would like to suggest a major change in the method section. To me this is not a mixed method rather a descriptive survey where the authors used both objective and subjective data. Hence this change should be done in the paper. Also, the authors used content analysis and not the thematic analysis. This needs to be change. The content looks fine. Discussion section is written well with recommendation.

Reply: Thank you for the encouraging comments. We appreciate the suggestion for more appropriately classifying the type of study and analysis, and we have amended this in the text (see Page 2, line 64; Page 5, line 140; Page 5, line 151; Page 6, line 178; Page 8, line 230; Page 12, line 330; Table 3).

Changes in the text:
Page 2, line 64: changed "thematic" to "content"
Page 5, line 140: changed "mixed-methods study" to "descriptive survey study"
Page 5, line 151: changed "A thematic analysis" to "Content analysis"
Page 6, line 178: changed "thematic" to content"
Page 8, line 230: changed "thematic" to content"
Page 12, line 330: changed "thematic" to content"
Table 3: changed "Thematic" to "content"