

Peer Review File

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Review comments

Reviewer A

Thank you so much for the opportunity to review this paper. It is a very thorough review of best practices for clinicians caring for patients with advanced cardiac disease and palliative care needs. Your description of the needs of patients with advanced cardiac disease, the intersection with frailty, and barriers to integration are well written and well received. I feel there are a few minor edits that need to be made in order for this paper to be ready for publication:

1. Some of the statements in the introduction, particularly in the first paragraph, do not include citations. Please cite your sources.

Thank you for this important comment. We have revised our introduction and added citations as follows:

“Heart disease is the number one cause of death in the United States (1). The burden of advanced cardiac conditions, like heart failure, is highest in older adults; heart failure is the leading cause of hospital admissions for those 65 and older, and 80% of all heart failure occurs in those 65 years or older (2). Many cardiovascular diseases are characterized by severe symptoms (including chest pain, palpitations, dyspnea, fatigue, and anorexia), recurrent hospitalizations, limited/uncertain prognosis, decreased quality of life, and high levels of caregiver burden (3,4). For older adults, these symptoms are layered on existing age-related problems, including geriatric syndromes, polypharmacy, depression, frailty, inadequate social support, decreased representation in clinical trials, and aging caregivers (5,6).

Older adults with heart disease therefore have nuanced and unique care considerations at the intersections of geriatrics and palliative care. Despite 2022 AHA/ACC/HFSA Guidelines providing a Class 1 recommendation for the provision of palliative care to patients with heart failure, palliative care integration into heart failure and cardiology care remains low, and cardiologists often do not initiate end-of-life care discussions with their patients (4,7–9). Palliative care is consulted less than half the time in those who die of cardiopulmonary failure, and only one-third of patients with heart failure receive hospice care at the time of their death (10). This is due to several barriers, including uncertain cardiovascular prognosis, misinformation about palliative care, and suboptimal implementation and delivery of palliative care within cardiology (11–13).”

The only other sentences we have not cited are those that were conclusions we drew from sources previously cited such as “Older adults with heart disease therefore have nuanced and unique care considerations at the intersections of geriatrics and palliative care... Symptom management, a cornerstone of palliative care, is therefore not only complementary to life-prolonging cardiology treatments, but also *integral* to optimized daily cardiovascular care.”

2. Your statement "palliative care integration into heart failure and cardiology care remains low" is vague - do you have more specifics? What percentage of heart failure patients receive palliative care? Why is this number so low? Provide as much detail as possible as this will set up the rest of the paper for why it is important to improve palliative care integration and how that can be achieved.

Thank you for this insight and we appreciate your point about providing some more specifics early in the paper to frame the conversation so have included key highlights in the introduction as follows:

“Despite 2022 AHA/ACC/HFSA Guidelines providing a Class 1 recommendation for the provision of palliative care to patients with heart failure, palliative care integration into heart failure and cardiology care remains low, and cardiologists often do not initiate end-of-life care discussions with their patients (4,7–9). Palliative care is consulted less than half the time in those who die of cardiopulmonary failure, and only one-third of patients with heart failure receive hospice care at the time of their death (10). This is due to several barriers, including uncertain cardiovascular prognosis, misinformation about palliative care, and suboptimal implementation and delivery of palliative care within cardiology (11–13).

We have provided more detailed statistics in the “Special considerations for heart failure” section of the paper on the underutilization of palliative care and hospice for those with heart failure. We also have a section “Barriers to implementing palliative care for geriatric patients with cardiovascular disease” where we discuss detailed etiologies of the underutilization of palliative care. Given the detailed discussion of underutilization of palliative care for those with heart failure in these sections, we do not think further expansion (beyond what we just revised above) is needed for the introduction.

3. My understanding of primary palliative care vs. secondary palliative care does not align with what you've described in lines 100 - 108. I distinguish between the two based on who is providing the care, not the type of care provided. Primary palliative care is provided by generalists/intensivists/the patient's primary team. Secondary palliative care is provided by palliative care specialists outside of the primary care team when the patient/family's needs are more complex.

Thank you for your comment. We have revised the section as follows:

“One method of palliative care delivery is “primary palliative care”, provided by primary care physicians or non-palliative care specialists. “Secondary palliative care” refers to the care provided by palliative care specialists, often for refractory symptoms, complex psychosocial issues, or conflict resolution regarding GOC (14).”

4. Table 1 focuses heavily on medical/pharmacological management of physical and psychological symptoms. I encourage you to consider non-pharmacological options that encourage patient self-efficacy and self-management. Palliative care is holistic in nature, so I also encourage you to consider social, emotional, and spiritual needs along side the physical and psychological symptoms you've listed.

Thank you for the comment. We think part of the framing error and lack of emphasis on non-pharmacologic strategies comes from listing table 1 out of context of the holistic treatment strategies identified later in the paper under the section “What we can do to improve palliative care for older adults with heart disease”. In this section we have a paragraph titled “Social, spiritual, and psychologic care” and a table that details tools to quantify symptom burden.

To better align Table 1 as medical therapies that should be used as a tool in conjunction with other holistic therapies, we have moved Table 1 to the section “What we can do to improve palliative care for older adults with heart disease” (now Table 3) and included the following line “Social, spiritual, and psychologic care: The pharmacologic therapies discussed above must be used in conjunction with multi-modal holistic palliative care tools. Among outpatients with heart failure, greater spiritual well-being is associated with lower rates of depression (98)...”

We have avoided language around self-efficacy and self-management to describe such tools, as we agree with your point below about avoiding placing the onus/burden on patients to direct their own palliative care. We agree that health systems and providers should provide patients with holistic resources and tools, so have tried to phrase the section “What we can do to improve palliative care for older adults with heart disease” as such.

5. The phrase "lack of knowledge" in the Barriers section and Table 2 puts the onus on patients to know more about palliative care - it may be more appropriate to discuss a lack of resources from healthcare institutions that teach patients and clinicians about what palliative care entails and how to access it. From line 177, you go on to describe misconceptions about palliative care - this is really important and should be its own point separate from the lack of resources.

Thank you for the thoughtful comment. We agree that when discussing strategies to improve palliative care for older adults, the onus and burden should not be placed on the patients themselves.

While it is a flaw of the system itself, there is data to show that patients do not have a complete understanding of what palliative care is and this does lead to barriers in their accepting palliative care tools and strategies. We therefore think it is appropriate to discuss the incomplete knowledge of palliative care as an existing barrier, while being careful to not blame patients for this lack of knowledge.

We have therefore changed “lack of knowledge” to “incomplete knowledge”. We have also revised the section headline and content to highlight the systemic nature of the misconceptions as follows:

“There are misconceptions, or incomplete knowledge, about palliative care

There is data that older adults and their health care teams have incomplete knowledge about palliative care, and this leads to fewer requests for, and fulfillment of, primary and secondary palliative care (12). This may stem from systemic flaws in perpetuating misconceptions that life-prolonging cardiovascular care and palliative care are mutually exclusive, and that palliative care is reserved for those who are near death (39). Some patients may also feel that a referral to palliative care represents their doctor losing hope, and this in turn may further dissuade clinicians from utilizing palliative care services (40). Other patients may believe their doctors do not want to discuss death and dying (41). Patients and clinicians may also have incomplete understanding of treatment efficacy, such as overestimating the efficacy of implantable cardioverter-defibrillators (ICDs) or cardiopulmonary resuscitation (3).”

We have also added the following sentences to the “Systemic Changes” section:

“There is also a need for concerted systemic efforts to increase palliative care education for primary care physicians and non-palliative care specialists. This includes clarifying the role of palliative care to patients and providers as a specialty that focuses on symptom management, rather than a specialty limited to providing end-of-life care. This may help improve early integration of palliative care into routine patient care for those with significant cardiovascular disease, independent of prognosis at the time.”

6. The section on cardiac device management focuses heavily on deactivation and end-of-life concerns. This is very well written, but it would be helpful to also discuss the palliative care needs for these patients even when they are not expected to imminently die - i.e. integrating palliative care before they are implanted/part of the work up to see if they should be implanted, what additional symptoms/quality of life concerns might they expect as a result of their device (life style changes, new anticoagulation, etc), advance directives, caregiver education, etc.

Thank you for raising this point. We have added the following sentences to the section on mood symptoms:

“Mood symptoms and disorders

Depressive symptoms are some of the strongest predictors of short-term decline in those with heart failure (59), and depression is independently associated with increased 1-year mortality and hospitalization among those with heart failure (60). Comorbid depression also increases the annualized cost of heart failure care by 26–29% (61). Higher levels of depression independently predict subsequent arrhythmias in patients with implantable cardioverter-defibrillators (ICDs) (62). It is also striking that 20-30% of patients with heart failure have clinically significant depression (63), and treating this depression might significantly improve quality of life (26).

Multiple studies have also shown a high prevalence of depression and anxiety in those with ICDs and ventricular assist devices (VADs), further discussed below (64,65). PTSD is also higher in those with ICDs, and worsens after ICD shocks (64).

We have also added the following to the section on devices:

“In accordance with the HRS guidelines discussed above, it is essential to improve early integration of palliative care for patients who may undergo device placement independent of prognosis. Such integration can also improve symptom management of devices independent of end-of-life planning, by helping support lifestyle changes required after device placement. This includes alleviating caregiver burden for patients with VADs, improving quality of life for those with durable MCS, and managing mood symptoms such as depression, anxiety, and PTSD in those with ICDs and VADs (64,73).”

7. You offer no solutions in the disparities section - is there anything that can be done about the lower rates of palliative care in non-white patients? Why is this? Are there strategies to mitigate the effects?

Thank you for the important comment. We have expanded on this section as follows:

“Fewer Black and Hispanic patients with cardiovascular disease die in hospice than White patients (21). Among patients with heart failure, those who are White have higher utilization of palliative care and hospice services (88). Families of Black or African American descent report less satisfaction with care around death (89), are less likely to have formal written ACP documents (89), and are more likely to experience financial hardship due to savings depletion or difficulty paying for end-of-life care (89). These disparities persist even after palliative care consultation (90). Unfortunately, racial disparities in palliative care for older adults are magnified by age and race-related disparities present in accessing and affording cardiovascular medications (91). Eliminating such disparities is essential, and will require targeted approaches to develop culturally appropriate models of palliative care, reduce language barriers when providing palliative care, improve community-based partnerships, and increase access to secondary palliative care in underserved communities (92). ”

We think further elaboration is likely outside the scope of this paper, but agree that citing this excellent paper by Johnson et al and highlighting key possible solutions is an important addition to our review.

8. The "What we can do to improve palliative care for older adults with heart disease" is well written and makes a lot of excellent points. I encourage you to think about what to do once symptoms have been identified, how to improve patient self-management/self-efficacy, and how caregiver support can be improved.

Thank you for this comment. We have discussed systemic strategies in detail to explore how to integrate palliative care (and by extension caregiver support) into cardiology practice, and have discussed multiple strategies for optimizing direct routine clinical care in this section. Since there is little data on how to best support caregivers of those with cardiovascular disease, we have included this to our conclusion: "Future areas of research include exploring how to optimize models of integrating palliative care in areas with limited access to specialty care, how to improve palliative care education for cardiologists and primary care physicians, how to best support caregivers of those with cardiovascular disease, and how to eliminate racial and ethnic disparities in the delivery of palliative care for older adults with cardiovascular disease."

We have avoided language around self-efficacy and self-management, as we agree with your point above about avoiding placing the onus/burden on patients to direct their own symptom care. We agree that health systems and providers should provide patients with holistic resources and tools, so have tried to phrase the section "What we can do to improve palliative care for older adults with heart disease" as such.

9. Are there any future research needs that you have identified as you were collating all of this information?

Thank you for this comment. We have added the following to our concluding paragraph: "Future areas of research include exploring how to optimize models of integrating palliative care in areas with limited access to specialty care, how to improve palliative care education for cardiologists and primary care physicians, how to best support caregivers of those with cardiovascular disease, and how to eliminate racial and ethnic disparities in the delivery of palliative care for older adults with cardiovascular disease."

Reviewer B

It provides a broad review for clinician on what to expect and look for when providing palliative care to older adults with advanced cardiac disease.

Following are some changes that I agree needs to be addressed:

1. Citations need to be appropriately numbered in sequence (line 102 citation 6 than citation 2 in line 104)

Thank you for this comment, We have refreshed our citations.

2. I also agree with Reviewer A, authors need to redefine primary verses secondary palliative care or change to “primary verses specialist palliative care”. Article cited by authors mentions “a care model that distinguishes primary palliative care (skills that all clinicians should have) from specialist palliative care (skills for managing more complex and difficult cases), so that they can coexist and support each other”.

Thank you for this insight. We have revised the section as above, under response to Reviewer A.

3. Minor edit in line 185 add “of” after “efficacy”.

Thank you for these detailed revisions. We have revised the sentence as follows: “Patients and clinicians may also have incomplete understanding of treatment efficacy, such as overestimating the efficacy of implantable cardioverter-defibrillators (ICDs) or cardiopulmonary resuscitation (3).”

4. I agree with Reviewer comment on adding non-pharmacologic options

Thank you for this insight. We have made the revisions as discussed above, under response to Reviewer A.

5. Since this is a review on palliative care of older adults with cardiac disease, I do not see need to address in detail what can be done about disparities besides providing education and allocating appropriate resources.

Thank you for this insight. We have made revisions as discussed above, under response to Reviewer A.