

Comparing physical therapist clinical specialists to experienced nonspecialists on physical activity education for patients with heart failure: A modified retrospective cohort study

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Abstract

Background and Aims: The purpose of this study was to compare the knowledge and practices of specialist and experienced nonspecialist physical therapists in performing patient education about physical activity with patients with heart failure (HF).

Methods: Responses on a nationwide anonymous online survey were used to compare specialist and experienced nonspecialist physical therapists on knowledge and frequency of providing physical activity related education to patients hospitalized with acutely decompensated HF. Responses to survey items were scored on 5-point scales ranging from “Strongly agree” to “Strongly disagree” or “Always” to “Never.” Mann–Whitney *U* statistics were used to compare specialist and experienced nonspecialist responses and Wilcoxon signed-ranks tests were used to examine the gap between knowledge and practice.

Results: Twenty-seven specialists and 43 experienced nonspecialists completed the survey. Both groups were similar in age, and experience treating patients hospitalized with acutely decompensated HF. Both groups “strongly agree” that they had the required knowledge and skills to educate patients with HF on the physical activity topics. However, specialists more often than experienced nonspecialists provided education on topics such as how to monitor vital signs during physical activity (“most of the time” vs. “about half of the time”) that promoted patient confidence and safety during exercise. Specialists demonstrated a smaller gap between knowledge and frequency of providing patient education than experienced nonspecialists on three of the four patient education topics.

Conclusion: Specialist physical therapists treating patients with HF in the inpatient hospital setting provided patient education on physical activity at a level more closely matching their skills and the clinical practice guideline than did experienced nonspecialists. Physical therapy clinical specialists practicing in the inpatient hospital

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setting may improve patient outcomes and lower costs to the health care system by improving physical activity adherence and thereby may reduce avoidable hospital readmissions.

KEYWORDS

heart failure, patient education, physical activity, specialization

1 | INTRODUCTION

Heart failure (HF) is a condition which occurs when the heart is no longer able to efficiently pump blood throughout the body due to structural or functional abnormalities.¹ Globally, HF affects more than 64 million people.² Prevalence in the United States (US) was approximately 6.5 million people in 2014 and is projected to rise to more than 8 million people by 2030.^{3,4} In 2018, HF was the primary reason for more than one million hospitalizations in the US.⁵ HF costs in the US approached 31 billion US dollars in 2012 and are projected to increase to almost 70 billion US dollars by 2030, an increase of 127%.⁵ One of the greatest challenges to the health care system is the rate of hospital readmission for patients with HF. In the United States, it is estimated that 20–25% of HF patients are readmitted within 30 days of discharge after a HF hospitalization.^{4,6–10}

Regular physical activity is recommended in worldwide guidelines for HF management of stable patients.^{11–15} Although physical activity is recommended, poor adherence is noted in patients with HF.^{16,17} For the patient with HF, adherence to physical activity recommendations may be even more challenging than in other chronic conditions because even in stable HF, exercise intolerance is present.^{18,19} Multiple physiologic mechanisms lead to exercise intolerance and prevent the peripheral skeletal muscles from performing as needed to facilitate physical activity.^{18–21} Exercise, particularly prolonged aerobic training, has been shown to reverse some of the cellular and molecular pathology that contribute to exercise intolerance, and therefore improves quality of life.^{22,23} Ability to walk greater than 300 m on the 6-min walk test is associated with greater survival of HF patients at 6 months.²⁴ A distance of greater than 390 m on the test is associated with an almost three times lower risk of readmission in the HF population than those who ambulate less than 390 m.²⁵ The clinical practice guideline published by the American Physical Therapy Association (APTA) provides detailed recommendations and dosages on various modalities of exercise for patients with stable HF.²⁶

HF patients may lack the skills to embark on a program of increased physical activity without guidance. Emphasis on education regarding the importance of physical activity, and training on a personalized home exercise program stressing self-monitoring of vital signs are crucial to improving adherence and optimal results. Education on these topics can be provided in all settings along the continuum of care and is recommended in medical and physical therapy clinical practice guidelines.^{12,26,27}

Most patients with HF will have at least one hospitalization in their lifetime.⁵ Therefore physical therapists practicing in the inpatient hospital setting are often the first and sometimes the only point of access to education related to physical activity for patients with HF. Physical therapists may influence their patients' attitudes and actions regarding physical activity by providing education on heart failure, addressing the importance of regular physical activity and teaching patients how to monitor their vital signs at rest and with activity. The therapist can also suggest referral to cardiac rehabilitation after discharge, or to outpatient physical therapy services to address comorbidities, a service the patient may not have considered otherwise. While there is much anecdotal evidence about what is done, unfortunately, there is no research evidence describing how physical therapists address physical activity in patients with acutely decompensated or compensated HF during inpatient hospital admissions.

There are currently more than 35,000 board-certified clinical specialists in the nation.²⁸ Despite the assumption that board-certified clinical specialists provide a higher level of patient care, there has been minimal research to support this belief. Most of the research on the impact of board-certified clinical specialization on patient outcomes has been conducted in outpatient settings. The findings have been mixed. In a 2017 study, orthopedic specialists demonstrated better adherence to clinical practice guidelines in the management of low back pain than nonspecialists.²⁹ However, a 2003 study found no relationship between advanced certification and patient outcomes in managing low back pain,³⁰ and another study showed better patient outcomes for patients with low back pain when treated by nonspecialists rather than specialists.³¹ A study comparing the performance of vital sign assessment in patients with neurological problems by board-certified neurologic clinical specialists versus nonspecialists in all practice settings found that specialists deemed vital sign assessment more important and performed it more frequently than the nonspecialists.³² There have been no studies conducted to specifically address inpatient physical therapy practice. Given that the prevalence of HF is highest in older adults, it is likely that board-certified geriatric clinical specialists as well as cardiovascular & pulmonary clinical specialists will have the advanced knowledge and skills to best serve this population.⁵

In view of the above, the purpose of this study was to examine the possible advantage of having physical therapist clinical specialists treat hospitalized patients with HF by comparing the physical activity related knowledge and actions of board-certified clinical specialist physical therapists to those of experienced nonspecialists.

2 | METHODS

2.1 | Study design

This study used a modified retrospective cohort study design. Traditional cohort studies compare participants who were either exposed or unexposed to a risk factor, to determine its effect on disease outcomes. In this study, we compared participants based on exposure to board certification as a physical therapy clinical specialist, to determine its effect on knowledge and clinical practice related to patient education of patients with HF. The study was approved by the University of Miami Institutional Review Board (IRB #20201455).

2.2 | Subjects

Participants were physical therapists practicing in the inpatient setting, licensed, and working in the United States, who treated patients hospitalized with acutely decompensated HF, and who were working in that clinical setting before the onset of the COVID-19 pandemic.

Nonprobability sampling methods were used. Nationwide recruitment was conducted via access to member listservs and/or discussion boards for the APTA's Acute Care, Geriatric and Cardiovascular and Pulmonary academies. We also used in-person contacts and social media posts, and snowball sampling. Links to the survey were reposted twice to the various social media platforms and discussion boards during the data collection period. In the introduction to the online survey, a description of the study was provided and participants who selected, "I consent to participate" option were permitted to continue with the data collection instrument. Participants completed the anonymous online survey tool (Qualtrics™). They were allowed to skip questions and could leave the survey at any point.

2.3 | Procedure

We designed a survey instrument to identify the knowledge and actions of physical therapists managing patients with acutely decompensated HF in the inpatient hospital setting. Using clinical experience and reviews of clinical practice guidelines, survey questions were developed to address various topics of patient management that would help to test the hypotheses that we generated. The survey was pilot tested by five physical therapists, all board-certified cardiovascular & pulmonary clinical specialists who were familiar with the clinical setting and patient population. Feedback was obtained from these specialists about (1) the content validity of the questions, (2) the ease of understanding and, (3) the user-friendliness of the survey platform. Revisions to the survey were made based on the feedback and after IRB approval, the survey instrument was distributed nationwide.

Items on the survey addressed frequency of patient education on activity-related topics such as self-monitoring of vital signs at rest

and with activity, the importance of physical activity and the role of cardiac rehabilitation. These were scored on a 5-point scale, "Always = 1" to "Never = 5." The belief that they had the knowledge and skill required to educate patients on the above topics scored on a 5-point scale, "Strongly agree = 1" to "Strongly disagree = 5." Since this study sought to examine the effect of specialization on clinical practice, possible confounders would include having the knowledge required to provide patient education, the years of experience in the hospital setting and the years of experience treating patients with HF. All respondents were asked to report on these variables in the survey.

Responses were collected between March 8, 2021, and August 15, 2021. Data collection was terminated when no new responses were received for 2 weeks despite recruitment efforts. Because the COVID-19 pandemic changed the operations of hospitals and the patient populations served, participants were asked to reflect on and consider their practice before the onset of the pandemic.

Exposure status to board certification as a physical therapy clinical specialist was based on respondent report of specialist certification. Respondents were classified as board-certified clinical specialists (exposed) if they answered "yes" to the question, "Are you an APTA Board-certified Clinical Specialist?." In contrast, respondents were classified as experienced nonspecialists (unexposed) if they answered "No" to the above question and reported at least 5 years of experience in treating patients with acutely decompensated HF. The cut-point for the number of years of experience required for classification as an experienced nonspecialist was based on the eligibility criteria to sit for the specialist certification examination. Based on the reported average caseload of acutely decompensated HF patients seen by our participants (see Table 1), 5 years of experience would be approximately equivalent to 2000 h of clinical practice in the specialty area required to take the specialist certification examination. Therefore 5 years of experience with the patient population was defined as the cut-point for experienced nonspecialists.

2.4 | Data analysis

SAS OnDemand for Academics statistical software (SAS™) was used for the data analysis. We calculated frequencies for nominal data and means, ranges and standard deviations for ratio data related to subject demographics. We performed chi square analysis for group comparisons of nominal data and student's *t*-tests for group comparisons of the ratio data. We calculated Mann-Whitney *U* statistics to compare specialists and experienced nonspecialists' responses on each of the patient education items. A secondary analysis was performed to evaluate the gap between knowledge and performance. This was done by calculating the difference between the median reported on the belief in the knowledge of an education topic and the median reported for the frequency that the physical therapist performed that task with their patients. We analyzed the gap between knowledge and practice for both groups using Wilcoxon signed-ranks tests.

TABLE 1 Participant demographics.

	Total	Specialists	Experienced nonspecialists	p Value
Number of respondents (N, %)	70	27 (38.6%)	43 (61.4%)	
Gender (N, % Female)	59 (84.3%)	24 (88.9%)	35 (81.4%)	0.40
Age (mean, SD)	43.5 (9.38)	42.8 (9.2)	44.0 (9.6)	0.62
Race/Ethnicity (N, %)				0.39
White	55 (78.6%)	20 (74.1%)	35 (81.4%)	
Black	1 (1.4%)	1 (3.7%)	0	
Hispanic	8 (11.4%)	3 (11.1%)	5 (11.6%)	
Other	5 (7.1%)	2 (7.4%)	3 (7.0%)	
Years of hospital experience (mean, SD)	15.76 (9.5)	15.78 (8.98)	15.76 (9.92)	>0.99
Years treating acutely decompensated HF (mean, SD)	12.91 (7.9)	13.52 (7.75)	12.52 (8.06)	0.61
Caseload of acutely decompensated HF (mean %, SD)	26.9 (20.28)	28.77 (20.8)	25.74 (20.12)	0.55
Works at academic medical center (N, %)	40 (63.5%)	16 (69.6%)	24 (60.0%)	0.45
Patient race/ethnicities (mean %, SD)				
White	49.7 (23.13)	45.2 (24.14)	52.6 (22.28)	0.20
Black	27.9 (19.29)	27.6 (20.05)	28.0 (19.04)	0.93
Hispanic	11.3 (11.92)	12.6 (13.85)	10.5 (10.63)	0.47
Board-certified clinical specialist (N, %) ^a				
Cardiovascular and pulmonary		15 (55.6%)		
Geriatrics		10 (37.0%)		
Other		4 (14.8%)		

^aSome specialist respondents held dual specializations.

3 | RESULTS

3.1 | Participant characteristics

The responses of 70 physical therapist respondents were included in this analysis. Of these 70 respondents, 27 were board-certified clinical specialists (exposed), some with dual certifications, and 43 were experienced nonspecialists (unexposed). See Figure 1 for the derivation of the cohort. Only two specialists reported completing a residency program. The specialists and nonspecialists were similar in age (42.8 vs. 44.0 years), years of hospital clinical experience (15.8 vs. 15.8 years) and years treating patients with acutely decompensated HF (13.5 vs. 12.5 years). Refer to Table 1 to review participant characteristics.

3.2 | Knowledge and skills for patient education

Both specialists and experienced nonspecialists “strongly agree” that they had the required knowledge and skills to educate patients with HF on all activity-related topics including how to self-monitor vital signs at rest and with activity, and on the role of cardiac rehabilitation. See Table 2 for details.

3.3 | Frequency of patient education

Both specialists and experienced nonspecialists reported “Always” (median = 1) educating their patients on the importance of physical activity. However, specialists provided more frequent education on the topics that would allow patients with HF to exercise safely. Specialists reported educating all their patients on the role of cardiac rehabilitation while experienced nonspecialists only did so with “Most of the patients” (median = 1 vs. 2, $p = 0.006$). Specialists reported educating most of the patients on how to self-monitor vital signs at rest while experienced nonspecialists did so only sometimes (median = 2 vs. 4, $p = 0.05$). Specialists reported educating most of the patients on how to self-monitor vital signs during activity while experienced nonspecialists did so with only half their patients (median = 2 vs. 3, $p = 0.11$). See Table 3.

3.4 | Gap between knowledge and frequency of patient education

Neither specialists nor nonspecialists reported a gap between knowledge and education frequency for “the importance of physical

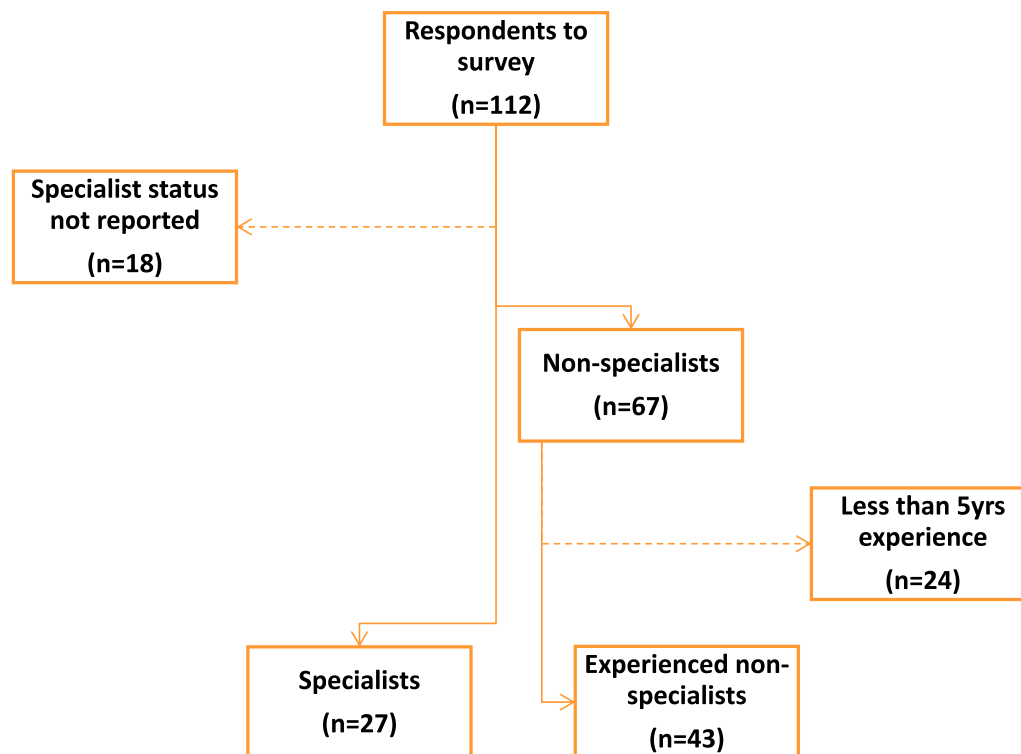


FIGURE 1 Derivation of the study cohort.

TABLE 2 Comparison of knowledge to educate patients.

State whether you agree or disagree that physical therapists have the knowledge and skills to educate on the following topics safely and effectively with hospitalized patients with acutely decompensated heart failure?	Specialist median (min-max)	Experienced nonspecialist median (min-max)	Mann-Whitney <i>U</i> <i>p</i> Value
How to monitor vital signs at rest	1 (1-4)	1 (1-5)	0.88
How to monitor vital signs during physical activity	1 (1-4)	1 (1-5)	0.88
Importance of physical activity	1 (1-3)	1 (1-5)	0.58
The role of cardiac rehabilitation	1 (1-3)	1 (1-5)	0.97

Note: All scores are based on scale: 1 = Strongly Agree, 2 = Somewhat Agree, 3 = Neutral, 4 = Somewhat Disagree, 5 = Strongly Disagree.

TABLE 3 Comparison of frequency of patient education.

For your patients hospitalized with acutely decompensated heart failure, how often did you personally address the following patient education topics as part of your treatment:	Specialist median (min-max)	Experienced nonspecialist median (min-max)	Mann-Whitney <i>U</i> <i>p</i> Value
How to monitor vital signs at rest	2 (1-5)	4 (1-5)	0.05
How to monitor vital signs during physical activity	2 (1-5)	3 (1-5)	0.11
Importance of physical activity	1 (1-2)	1 (1-3)	0.02
The role of cardiac rehabilitation	1 (1-4)	2 (1-4)	0.006

Note: All scores are based on scale: 1 = Always, 2 = Most of the time, 3 = About half of the time, 4 = Sometimes, 5 = Never.

TABLE 4 The gap between knowledge and patient education frequency.

Difference between knowledge–frequency for	Specialist median (min–max)	Specialist <i>p</i> Value	Experienced nonspecialist median (min–max)	Experienced nonspecialist <i>p</i> Value
How to monitor vital signs at rest	-1 (-4 to 2)	0.003	-2 (-4 to 1)	<0.001
How to monitor vital signs during physical activity	-1 (-4 to 3)	0.003	-2 (-4 to 1)	<0.001
Importance of physical activity	0 (-1 to 2)	0.50	0 (-2 to 2)	0.08
The role of cardiac rehabilitation	0 (-2 to 2)	>0.99	-1 (-3 to 1)	<0.001

Note: Negative values indicate greater knowledge than frequency performing activity.

activity.” Specialists did not report a gap for “the role of cardiac rehabilitation” while the nonspecialists did. Both groups reported a gap between knowledge and education frequency for “how to monitor vital signs at rest” and “how to monitor vital signs during physical activity.” The gap was smaller for specialists (-1) than for nonspecialists (-2). See Table 4 for details.

4 | DISCUSSION

This study utilized a modified retrospective cohort study design where the exposure of interest was board certification as a physical therapy clinical specialist. The exposed and unexposed groups were very similar except for their specialist status. Therefore, confounding factors were unlikely to account for differences between the groups, and past practice behaviors regarding patient education on physical activity in patients with HF could be attributed to exposure to specialization.

The results of this study may be the first to demonstrate differences in the practices of board-certified clinical specialists versus experienced nonspecialist physical therapists in the inpatient hospital setting. The board-certified clinical specialists and the nonspecialists that participated in this study displayed similar demographic characteristics. Age, years of hospital experience, number of years treating patients with HF, and size of acutely decompensated HF caseloads were almost identical between the groups. Both groups had a great deal of experience treating patients hospitalized with HF. This may explain why both groups felt that physical therapists had the knowledge and skills to educate patients on topics related to physical activity and why both groups always educated their patients on the importance of physical activity. Despite these similarities, the groups did differ on the proportion of patients they educated on the skills required to safely engage in physical activity and on the importance of cardiac rehabilitation. The board-certified clinical specialists educated patients more frequently on these topics. The gap between perceived knowledge and the frequency of performance of patient education on how to self-monitor vital signs at rest and with activity, and on the role of cardiac rehabilitation was smaller for specialists than for nonspecialists. This finding suggests that specialists practice at a level closer to their perceived ability than do nonspecialists.

The HF population experiences a high rate of hospital readmissions.⁵ Patient self-management is an important component of

the management of this chronic condition. Physical activity is one aspect of self-management that is recommended in medical and physical therapy HF guidelines and has been shown to reduce hospitalizations.²⁶ Education on how to safely engage in physical activity should be provided to all patients with HF throughout the continuum of care, and unlike other physical therapy interventions, its delivery is not as strongly influenced by the patient's medical acuity, clinical setting or medical history. Effective patient education to promote self-monitoring and physical activity behaviors in the long-term can decrease rehospitalization and improve survival and quality of life.²⁶

Effective patient education can improve health literacy and self-efficacy by providing information on the disease and disease process. A meta-analysis of the effect of patient education on physical activity in chronically ill adults revealed that although intervention effects were highly variable, education interventions resulted in improved physical activity behavior scores on average.³³ Patient education can give guidance on activity type, duration, frequency, intensity, and monitoring for signs and symptoms of worsening HF. It can be expected that the patients who receive education on all these physical activity-related topics will have greater confidence in their ability to exercise safely or may request a referral to cardiac rehabilitation from their physician. Ultimately these patients should demonstrate improved physical activity behavior. Unfortunately, people with HF do not always receive adequate patient education about safe physical activity.¹⁷ A qualitative study of patients with HF identified a lack of knowledge about how to exercise safely.¹⁷ It is therefore important to understand the barriers and facilitators to patient education on physical activity.

The results of this study suggest that patients who are treated by specialists will receive this needed patient education more frequently than those treated by nonspecialists. Why would board-certified clinical specialists educate a larger proportion of their patients on the skills required to exercise safely than highly experienced nonspecialists? While the requirements to achieve specialist status have evolved over the decades since specialization was introduced, patient education and health promotion have long been components of the description of specialty practice.^{34,35} Both these topics are included in the content of the specialist certification exam for Cardiovascular and Pulmonary Physical Therapy and Geriatric Physical Therapy.^{34,35} Therefore, specialist clinicians, especially those that are residency-trained, may have greater knowledge and skill in this area since education is one of the core competencies for post-professional

residency education.³⁶ Specialists may also have a heightened awareness of the importance of patient education for this patient population in the inpatient hospital setting. It is important to recognize that these study findings cannot be attributed to residency education, as only two of the specialists completed a residency program. The majority of the specialists in this study qualified for the specialist exam by achieving the required hours in the specialty area, likely over several years.

As previously mentioned, patients with HF are likely to experience hospitalization during their medical course. The Centers for Medicare and Medicaid Services instituted an initiative, "The Hospital Readmission Reduction Program," the goal of which is to reduce avoidable hospital readmissions for specific medical diagnoses, HF being one of them.³⁷ This initiative incentivizes hospitals to enhance discharge planning, communication, and coordination to prevent a hospital readmission within 30 days. Poor physical functional status has been linked to higher risk of hospitalization in patients with HF.³⁸ Therefore, hospitals are likely to consult physical therapy often to treat patients with a HF-related diagnosis while admitted. Physical therapists in the inpatient hospital setting can provide the needed patient education and interventions to promote better health outcomes. While cardiac rehabilitation may be considered the optimal setting for patient education on physical activity for patients with HF, only 10% of eligible patients receive a cardiac rehabilitation referral from their physician.⁵ This study reveals that physical therapists practicing in the hospital setting feel confident in their ability to educate on physical activity topics, and should be providing this education, even though the patient may not be stable enough to engage in aggressive exercise training or physical activity during the hospital stay.

Hospital-based care is fraught with competing demands that the clinician must navigate. Although board-certified clinical specialists perform patient education on physical activity more frequently than nonspecialists, they do not educate all of their patients. Some patients may be too medically unstable to receive education or may have cognitive deficits that would make education ineffective. Perhaps patient education is omitted because the physical therapist is limited by time constraints or staffing issues, and thus prioritizes functional mobility training to facilitate discharge rather than patient education. Perhaps the physical therapist believes that patients will get necessary education from another health care provider. A lack of readily available resources to facilitate patient education, like printed handouts available on the wards, may also limit the provision of this vital service. While these extrinsic factors would likely lead to a reduction in the frequency of patient education, they likely influence both specialists and experienced nonspecialist clinicians similarly.

The difference in the proportion of patients who receive physical activity education may be because specialists better recognize the importance of providing this education in the hospital setting and thus perform it more frequently with patients. In contrast, the nonspecialist clinician may believe that education on physical activity promotion will be more effective if provided when the patient's condition is stable, and when they are believed to be safe to engage

in physical activity. However, we do not have the data to support these assumptions. Future research should be done to further investigate the practitioners' beliefs that most influence their behaviors.

It is important to note that this study evaluates practice behaviors only in the inpatient hospital setting and it is not clear that the gap between knowledge and performance is setting specific. Whether or not physical therapists who are board-certified clinical specialists provide more patient education to patients with HF than experienced nonspecialists in outpatient or other settings is unknown and is an area that requires further research.

Although this study identified differences in the patient education practices between board-certified specialists and nonspecialists, it did not investigate whether there was a difference in patient outcomes. This is another avenue for future research that would further address the value of specialization over experience alone.

4.1 | Limitations

There are several limitations to this study. First, data was collected during the COVID-19 pandemic. The accuracy of activity frequency information may be impaired because it was self-reported based on practice pre-COVID. The pandemic also likely influenced recruitment for this study. Clinician burnout during the COVID-19 pandemic has been well reported and many clinicians may have found completing a survey too burdensome and declined to participate.

Recruitment occurred primarily via anonymous methods like e-mail and social media postings. Because of these recruitment strategies, we could not examine possible nonresponse bias nor the response rate. Also, the convenience sample that was analyzed for this study may not be representative of all physical therapists working with HF patients in hospital settings.

Because of the modest sample size of clinical specialists, we were unable to perform comparisons based on the area of specialization, geographic region of practice or type of area served.

We did not ask any questions to determine at what point in the career the physical therapy specialization was obtained. The specialist group may therefore contain highly experienced physical therapists who are only very recent specialists and therefore the strength of the influence of the specialty in these individual cases may not be the differentiating factor in their performance. However, in the group comparison, there were significant differences in the frequency of performance suggesting that something about the specialization process made them more likely to do patient education, despite similar age, years of practice and years treating patients with HF in the two groups.

The survey gathered information only on the most recent practice setting of each participant, making previous professional/medical experience of the respondents and unknown which may have provided them with a greater level of expertise in providing physical activity education.

5 | CLINICAL IMPLICATIONS ON PHYSIOTHERAPY PRACTICE

Patient education about physical activity can make a substantial favorable impact on the HF population. Board-certified physical therapist specialists treating patients with HF in the inpatient hospital setting practice at a level more closely matching their skills and the clinical practice guideline recommendations for patient education on physical activity than do experienced nonspecialists. Employing board certified clinical specialists in the hospital setting could potentially improve patient outcomes and lower costs to the health care system by improving physical activity adherence, thereby reducing avoidable hospital readmissions. More research is needed to demonstrate the value of physical therapy specialization in different practice settings and with different patient populations.

AUTHOR CONTRIBUTIONS

Tamira Prince: Conceptualization (lead), data curation (lead), formal analysis (lead), investigation (lead), methodology (lead), project administration (equal), visualization (equal), writing—original draft preparation (lead), writing—review and editing (supporting). **Lawrence P. Cahalin:** Conceptualization (supporting), investigation (supporting), methodology (supporting), writing—review and editing (supporting). **Meryl Cohen:** Conceptualization (supporting), methodology (supporting), writing—review and editing (supporting). **Gregory W. Hartley:** Conceptualization (supporting), methodology (supporting), writing—review and editing (supporting). **Neva Kirk-Sanchez:** Resources (lead), writing—review and editing (supporting). **Kathryn E. Roach:** Conceptualization (supporting), formal analysis (supporting), methodology (supporting), project administration (equal), visualization (equal), writing—original draft preparation (supporting), writing—review and editing (lead). All authors have read and approved the final version of the manuscript. Tamira Prince had full access to all the data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

TRANSPARENCY STATEMENT

The lead author Tamira Prince affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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