Journal of Integrative Nursing and Palliative Care (JINPC)

Original Article

Volume 6 | Issue 2 | Page 322-333

Understanding Implementation Dynamics of IPOS in Heart Failure Care: A Qualitative Study Using the CFIR Framework

Claire Dupont[1]*, Julien Martin[1]

[1]*Department of Nursing and Palliative Research, University of Bordeaux, Bordeaux, France.*

Abstract

Screening individuals via patient-reported outcome tools helps uncover important palliative care issues. The Integrated Palliative Care Outcome Scale (IPOS) was originally designed in the United Kingdom to serve this function. However, measures created in one healthcare system often face challenges when applied in different local environments. Our team had earlier tested the validity and reliability of IPOS in our cardiology unit. Despite this, questions remain about the specific elements that would shape its successful integration into standard screening for patients with advanced heart failure in day-to-day clinical work. This study aimed to identify factors that could affect IPOS implementation in patients with advanced heart failure. The study employed a qualitative design and was conducted at the National Heart Centre Singapore. We deliberately invited patients with advanced heart failure who had joined our previous IPOS validation research to take part in semi-structured interviews. In addition, healthcare staff responsible for caring for these patients and who had helped test the IPOS instrument were also asked to participate. The collected interviews underwent thematic analysis and were aligned with the Consolidated Framework for Implementation Research (CFIR). The analysis uncovered six potential facilitators and six potential barriers influencing implementation. These were distributed across five key domains of the CFIR (intervention characteristics, inner setting, outer setting, individual characteristics, and process). Facilitators include: (i) perception of utility, (ii) perception of minimal complexity, (iii) perception of relatability, (iv) conducive culture, (v) dedicated resources, and (vi) advocates for implementation. Barriers include: (i) need for adaptation, (ii) mindsets/role strains, (iii) resource constraints, (iv) cultural concerns, (v) individual needs, and (vi) change process. Organizations should prioritize building favorable views of the tool, fostering supportive workplace cultures, ensuring sufficient dedicated resources, and recruiting strong champions to promote adoption. Modifying IPOS to better align with existing workflows and patient preferences, thoughtfully planning the transition process, and addressing broader organizational issues such as culture, staffing pressures, and resource limitations would markedly increase the likelihood of successful IPOS integration into routine clinical practice.

Keywords: Heart failure, Integrated palliative care outcome scale, Palliative care, Implementation science

Introduction

People with heart failure commonly deal with major physical as well as psychological and emotional difficulties [1, 2]. Unfortunately, these problems are regularly missed and rarely documented [3-5]. Palliative care focuses on boosting the quality of life for those facing serious medical conditions. Using structured patient- and staff-reported screening instruments is a practical way to identify individuals who could benefit from palliative care. Identified patients can then be referred quickly by their regular doctors, so they receive appropriate support without delay [6-11].

The Integrated Palliative Care Outcome Scale (IPOS) is a recognized patient- and staff-reported instrument used to identify unmet needs in people with serious illnesses [12, 13]. Created in the United Kingdom, this compact

Corresponding author: Claire Dupont
Address: Department of Nursing and Palliative Research, University of Bordeaux, Bordeaux, France.
E-mail: ✉ claire.dupont@gmail.com

Received: 14 September 2025; **Accepted:** 05 December 2025; **Published:** 20 December 2025

How to Cite This Article: Dupont C, Martin J. Understanding Implementation Dynamics of IPOS in Heart Failure Care: A Qualitative Study Using the CFIR Framework. J Integr Nurs Palliat Care. 2025;6(1):322-33. https://doi.org/10.51847/gqOWyFAXcU

scale has demonstrated strong clinical value and robust measurement properties in palliative care populations [14]. Even so, tools developed in one nation may not transfer smoothly to another setting because of variations in social, economic, and cultural backgrounds, as well as differences in how diseases affect patients [15]. It is also unclear whether an instrument designed for specialist palliative teams can be smoothly adopted in cardiology services, where heart specialists provide most care without palliative training (generalists) [16], and specialist palliative support is only provided upon request.

With this in mind, our group first examined how well the IPOS worked locally in terms of validity and reliability [17, 18], while also investigating the real-world factors that would determine its future routine use for screening advanced heart failure patients in Singapore's normal clinical practice. Our earlier publication [18] established that IPOS performed well as a valid and reliable screening tool in this group. The present paper examines the key influences on implementing IPOS to detect needs among advanced heart failure patients managed outside dedicated palliative care units. We gathered these insights directly from patients and healthcare staff who had first-hand experience with the tool throughout the validation stage.

Materials and Methods

Study design and setting

This qualitative work is embedded within a broader two-phase prospective project performed across both inpatient wards and outpatient clinics at the National Heart Centre Singapore (NHCS). NHCS functions as the country's main high-volume national referral hub for heart failure (HF) patients and operates solely with cardiac specialists [19]. Individuals with heart failure who require palliative support are directed to external palliative care teams at Singapore General Hospital [20] and the National Cancer Centre Singapore [21].

During the project's first phase, we established the validity of the IPOS scale (the complete methodology is reported in an earlier publication) [18]. Eligible participants were English-speaking heart failure patients aged [21] years or older who were fully aware of their diagnosis. They completed a printed paper version of the patient IPOS. To enable direct comparison, nurses and doctors from the heart failure and palliative care teams who were actively caring for these patients filled out the corresponding staff IPOS form. Staff involved were kept separate from the research team itself.

In the present phase, we selectively recruited patient participants who had already used the IPOS tool in the validation stage for in-depth semi-structured interviews. This approach ensured genuine first-hand familiarity with the instrument. We deliberately sampled for variety in age, gender, length of time living with heart failure, and care location (inpatient or outpatient). Recruitment proceeded in stages and concluded once data saturation was achieved. Data saturation was defined as the point at which no new insights emerged, patterns began to repeat, and additional interviews would add no new value, confirming an adequate sample [22]. All staff members who had previously completed the staff IPOS were also invited for interviews.

Recruitment was managed by a female research coordinator (JT) with formal training in qualitative methods. She had no existing relationship with participants and no preconceived biases. The interviews explored participants' opinions about their overall care and the feasibility of adopting and using IPOS within Singapore's healthcare context. Questions were structured around a guide informed by previous studies [23-25].

Conceptual framework

The study drew on the Consolidated Framework for Implementation Research (CFIR) [25], a widely recognized model for examining surrounding conditions and pinpointing barriers and enablers to the introduction of new practices. CFIR organizes its factors into five core domains: intervention characteristics, outer setting, inner setting, individual characteristics, and process.

Data collection and analysis

All interviews were held in quiet, private rooms within the clinic, audio-recorded in full, transcribed word-for-word, and supplemented by field notes as required. Sessions lasted no longer than 1 hour. Transcripts were carefully verified for accuracy before any coding began. Two researchers (SN and JT) independently coded the transcripts. Analysis followed the thematic approach of Braun and Clarke [26]. Both coders first read and familiarised themselves thoroughly with the material, created initial codes separately, and then organized these into broader categories and subthemes. Categories were repeatedly examined, adjusted, and refined. Final categories and subthemes were aligned with the appropriate CFIR domains [25]. Coding disagreements were settled via several rounds of joint discussion. All data were handled in Microsoft Excel, supported by a comprehensive audit trail. The entire process of data collection, coding, and theme development was iterative. Reporting conformed to the consolidated criteria for reporting qualitative research (COREQ) [27].

Results and Discussion

Participant characteristics

Semi-structured interviews were carried out with 10 patients. These patients had a mean age of 55.8 years and were equally divided between men and women. The large majority (80%) were of Chinese ethnicity. Over half (60%) had attained secondary school education or higher. On average, they had been living with heart failure for 5.1 years. Most patients (90%) belonged to New York Heart Association functional class 1 or 2. The group was evenly split between those receiving care in inpatient and outpatient settings.

Of the 12 healthcare staff who joined the validation phase, 9 (75%) took part in the interview phase. The other three were no longer available because the staff members had left the institution. Staff participants had a mean age of 32.5 years, with females forming the majority (77.8%). Four participants were nurses (44.4%), and the rest were physicians (55.5%). These staff members reported an average of 6.2 years of experience looking after heart failure patients. Most of them (77.8%) specialized primarily in heart failure rather than palliative care **(Table 1)**.

Table 1. Participant characteristics.

Variable	Mean (SD)/n (%)[a]
Patient participants (n = 10)	
Age, mean (SD)	55.8 (6.3)
Sex	
Male	5 (50.0)
Female	5 (50.0)
Ethnicity	
Chinese	8 (80.0)
Indian	2 (20.0)
Marital status	
Married	4 (40.0)
Single	4 (40.0)
Divorced/Widowed	2 (20.0)
Educational attainment	
Secondary level	4 (40.0)
Post-secondary level	6 (60.0)
Duration since diagnosis (years)	
Mean (SD)	5.1 (3.1)
NYHA functional class (at recruitment)	
Class 1	5 (50.0)
Class 2	4 (40.0)
Class 3	1 (10.0)
IPOS administration setting	
Inpatient	5 (50.0)
Outpatient	5 (50.0)
Healthcare staff participants (n = 9)	
Age	
Mean (SD)	32.5 (6.2)
Sex	
Male	2 (22.2)
Female	7 (77.8)
Professional Role	
Associate consultant/Consultant	2 (22.2)
Senior resident/Resident physician	3 (33.3)
Nursing staff	4 (44.4)
Years of experience managing heart failure patients	
Mean (SD)	6.2 (3.4)
Primary clinical specialty	
Palliative care	2 (22.2)
Heart failure	7 (77.8)

[a]: Mean and standard deviation (SD) for continuous variables, frequency (N), and percent for categorical variables.
Abbreviation: IPOS = Integrated Palliative Care Outcome Scale.

Themes

Two main themes emerged from the data. Theme 1, which covers facilitators to implementation, is detailed in **Table 2**. Theme 2, which addresses implementation barriers, appears in **Table 3**. **Table 4** maps these facilitators and barriers onto the domains of the Consolidated Framework for Implementation Research (CFIR), and the connections are also shown graphically in **Figure 1**. Short, representative quotes from patients (PT) and healthcare workers (HCW) are woven into the text. Differences in viewpoints between patients and staff, and between palliative care staff and heart failure staff, were examined where meaningful.

Table 2. Theme 1–facilitators to implementation of the integrated palliative care outcome scale (IPOS).

Subtheme	Category	Illustrative quotes
Perceived usefulness	IPOS as an instrument for symptom identification and comprehensive assessment	"It brings together the symptoms and the questions you want to ask the patient. Everything is on a single page, making it easier for me—it serves as a structured or consolidated guide for assessing symptoms." (HCW11, Heart failure) "We are conducting this survey to ensure that our patients are well both physically and mentally." (P25, 40s, Chinese, Male)
	IPOS enhances communication and enables early recognition of concerns	"If a patient is experiencing depression, this questionnaire would be helpful… we might not identify it during routine ward rounds." (HCW10, Heart failure) "So perhaps IPOS can help us establish better rapport with patients?" (HCW07, Heart failure)
	IPOS aids in prioritizing issues and initiating follow-up	"I think you could begin with a survey like IPOS, then follow up with an interview to determine exactly what patients need." (PT 25, 40s, Chinese, Male) "When the doctor comes, they have already reviewed everything from the IPOS, so they understand the situation and can focus on the key issues." (PT 26, 50s, Chinese, Female)
	IPOS as a means of tracking progress over time	"I can keep a copy in my folder to monitor my own progress—what I reported previously and compare it with now." (PT26, 50s, Chinese, Female)
Perceived simplicity	Clarity of instructions and ease of understanding	"It's not confusing…" (HCW 05, Heart failure) "Easy to understand, including the instructions." (PT32, 50s, Indian, Female)
	Efficient and quick to complete	"It doesn't take much time to complete this survey." (HCW07, Heart failure) "From what I remember, it was quite smooth." (PT14, 60s, Chinese, Female)
Supportive culture	Emphasis on patient-centered care	"I think it helps assess whether we are actually addressing what the patient wants… it supports delivering patient-centered care." (HCW01, Palliative care) "Patient-centered care should guide how we approach every patient, regardless of specialty." (HCW12, Palliative care) "Different people, ages, social backgrounds, and symptom types have different needs. We should understand these and provide something tailored for them, like a comprehensive package." (PT25, 40s, Chinese, Male) "For me, I want to be involved and see improvements… showing concern matters. Even if you're not specialized, you can always refer." (PT 26, 50s, Chinese, Female)
	Collaboration with palliative care services	"Supportive or palliative care is something everyone should learn, but collaboration with the palliative team is always valuable." (HCW09, Heart failure)
Availability of resources	Assigned personnel for administration	"I think coordinators would be the ones to administer this." (HCW09, Heart failure)
Perceived relevance	Symptoms are relatable to patients	"The symptoms were very relatable, at least in my case." (PT25, 40s, Chinese, Male)
Implementation advocacy	Influence of opinion leaders	"It's a good starting point for clinicians managing heart failure patients—cardiologists, internal medicine physicians, and advanced practice nurses—especially within a value-based palliative care context." (HCW12, Palliative care)
	Presence of champions promoting uptake	"If patients themselves understand it, they will share it with others." (PT34, 40s, Chinese, Male)

Table 3. Theme 2–barriers to implementation of the integrated palliative care outcome scale (IPOS).

Subtheme	Category	Illustrative quotes
Need for adaptation	Requirement for modifications to allow elaboration	"I wonder whether adding a free-text option would help, so we can at least explain what the issue is at that moment… I mean, I could justify why I selected a particular response." (HCW 01, Palliative care) "Even if I select an option, it doesn't fully capture whether it is moderate or mild—you still want to explain further." (PT26, 50s, Chinese, Female)
	Need for adjustment according to care settings	"There should be different versions—one for inpatient use and another for outpatient settings." (PT34, 40s, Chinese, Male)
	Necessity of integrating into existing workflows	"If it is incorporated into routine work… then you are essentially providing the IPOS as part of the assessment." (PT48, 50s, Chinese, Male) "It should be something easily accessible so that we can review and compare it with previous IPOS records." (HCW 12, Palliative care)
Cultural concerns	Issues related to the "peace" item in IPOS	"It can be difficult to determine whether a patient truly feels at peace, or whether that reflects their actual perception." (HCW01, Palliative Care) "How do you even ask someone, 'are you at peace?'" (HCW03, Heart failure) "In an Asian context, talking about 'peace' may be associated with death. When you say 'be at peace,' it can be interpreted as wanting to die… some patients respond with 'choy lah' (a dialect expression to ward off bad luck)." (HCW05, Heart failure)
	Concerns about psycho-emotional screening items	"Patients are generally more open to discussing physical symptoms. In Asian settings, expressing depression, worry, or anxiety may still carry stigma." (HCW 12, Palliative care). "Sometimes patients appear cheerful, yet we sense they are worried. It can be hard to determine if they are truly depressed or even experiencing suicidal thoughts." (HCW03, Heart failure)
	Language proficiency challenges	"I am unsure whether patients fully understand the content, and whether IPOS is mainly suitable for English-speaking individuals." (HCW01, Palliative care) "For those educated in English, it should not be a problem." (PT48, 50s, Chinese, Male) "Using pictorial aids may be helpful, especially for non-local patients with limited English proficiency." (HCW05, Heart failure)
	Digital literacy limitations	"We are in a digital era, so if the interface is user-friendly…" (HCW 12, Palliative care). "Those familiar with online platforms may manage better, but those who are not may not respond at all—they may not even attempt it." (PT 48, 50s, Chinese, Male)
Mindsets and role-related strain	Healthcare staff attitudes toward palliative care	"Referrals to palliative care services already exist for a reason, but the IPOS questionnaire may or may not address that gap." (HCW 10, Heart failure) "Within palliative medicine, I would recommend trying this tool. However, in other departments, it may be more difficult to implement." (HCW01, Palliative care)
	Patient perceptions of palliative care	"Patients may not fully understand the purpose. It might be better first to explain what palliative care aims to achieve; otherwise, it could be mistaken for a general service survey." (PT25, 40s, Chinese, Male)
	Role ambiguity among staff	"It can feel awkward asking these questions, as patients may wonder why they are being asked when they came for a heart check." (HCW09, Heart failure)
Resource constraints	Limited time availability	"Completing such questionnaires does not change the fact that we only have a limited number of minutes per patient." (HCW 10, Heart failure) "I am unsure if there is sufficient time for clinicians to review it, given tight consultations." (PT70, 30s, Chinese, Female) "It was easier to complete when I was at home and had more time to reflect." (PT14, 60s, Chinese, Female) "Nurses are already very busy, so asking them to complete IPOS adds an extra burden." (HCW01, Palliative care)
	Insufficient resources for follow-up	"I am not sure if the survey addresses this, but follow-up is crucial—if I have concerns and no one listens, I have nowhere to express them… that may be where the real solution lies." (PT25, 40s, Chinese, Male)
Individual needs	Preference for physical documents	"Reading a physical document helps with understanding. With phone conversations, you may forget what was discussed afterward." (PT85, 60s, Indian, Female)
	Need for guidance or assistance	"Some individuals need proper explanation; otherwise, if left alone, they may just guess and randomly answer ('hantam, hantam')." (PT 85, 60s, Indian, Female)

	Applicability is limited to certain patients	"It may only be suitable for selected patients where we feel it would genuinely be beneficial." (HCW04, Heart failure)
Change process	Variation in readiness for change among individuals	"Not everyone is willing to engage in this—it depends on how each person feels at a given moment." (PT14, 60s, Chinese, Female) "I would not mind using IPOS, but I already have to complete PCOC* (palliative care outcomes collaboration)." (HCW 12, palliative care) "We already have an established set of assessments that we follow." (HCW04, Heart failure)
	Need for a trial period before adoption	"I think the tool is useful, but I would need to try it again before deciding whether to adopt it." (HCW01, Palliative care) "With repeated use, you become more familiar with it, and it becomes easier to incorporate into patient conversations." (HCW11, Heart failure)

PCOC is an outcome assessment scale completed by palliative care staff during their reviews of palliative care patients.

Table 4. Relationship of CFIR domains to factors–'facilitators' and 'barriers' that potentially influence IPOS implementation.

CFIR domain	Domain description	Enablers (facilitators)	Challenges (barriers)
Intervention characteristics	Features and attributes of the intervention itself	Perceived usefulness Perceived simplicity (low complexity)	Requirement for adaptation
Outer setting	The broader economic and social environment in which the organization operates	Supportive culture – emphasis on patient-centered care	Cultural-related concerns
Inner setting	Organizational structure and cultural environment where implementation occurs	Supportive culture – presence of collaborative networks, Availability of dedicated resources	Staff attitudes and role-related strain, Limitations in available resources
Individuals	Attributes of individuals involved, including knowledge, beliefs, confidence, and role perception	Perceived relevance (relatability)	Individual-specific needs
Process	Activities related to planning and carrying out the implementation	Presence of implementation advocates (champions)	Issues related to the change process

Abbreviations: CFIR = Consolidated Framework for Implementation Research; IPOS = Integrated Palliative Care Outcome Scale.

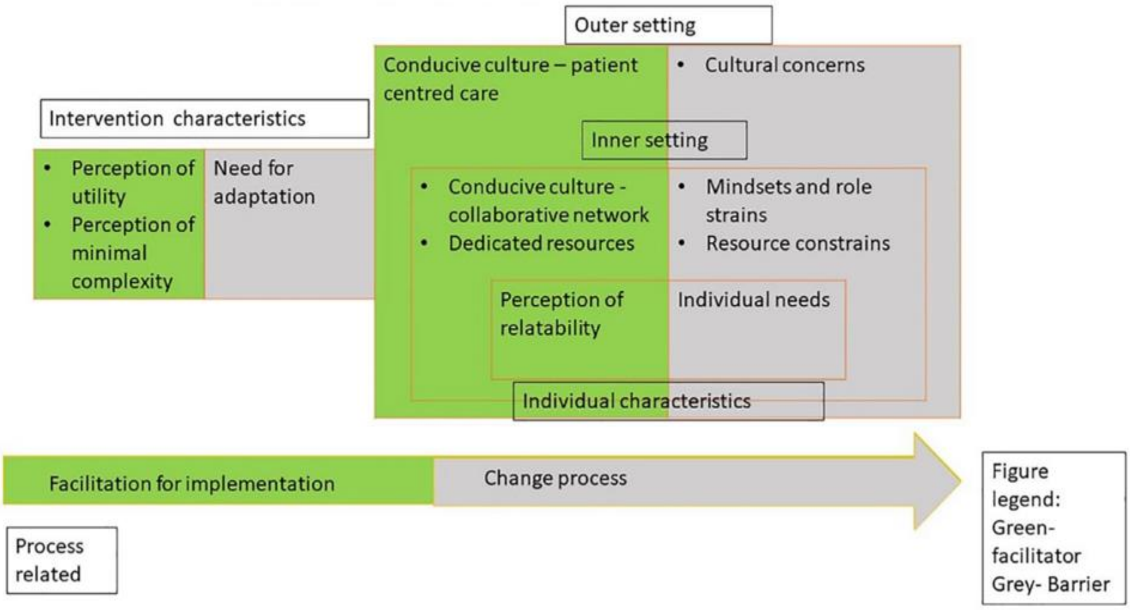

Figure 1. Relationships between barriers and facilitators and the domains of the consolidated framework for implementation research.

Theme 1: Facilitators for implementation

Subtheme 1a and 1b: Perceptions of utility and minimal complexity (intervention characteristics)

Participants widely acknowledged the usefulness of IPOS. Both patients and healthcare staff provided numerous examples of how the tool could be applied effectively in the local context. Staff members viewed IPOS as a helpful structured guide for symptom assessment in cardiology ('it serves as a compact checklist or summary guide for evaluating the patient's symptoms'–HCW11) and for comprehensive care ('it ensures our patients are doing well both physically and emotionally'–PT25). They also saw it as a way to strengthen communication ('IPOS could help us develop stronger connections with patients'–HCW07) and to identify concerns earlier ('we might miss these issues during routine ward rounds'–HCW10). In addition, IPOS was seen as valuable for prioritizing issues and prompting further steps ('begin with the IPOS survey and follow up with a discussion'–PT25). Patients appreciated its role in tracking personal progress ('this allows me to monitor my own improvement as well'–PT26).

Overall, both healthcare staff and patients found the wording of the IPOS items clear and straightforward ('The questions are not confusing at all'–HCW05; 'The instructions are easy to follow'–PT32). Completing the tool was also regarded as quick and undemanding ('It doesn't take much time to finish this questionnaire'–HCW07).

Subtheme 1c: Conducive culture (outer setting)

Regarding organizational culture and values, both patients and staff appreciated IPOS as a practical way to deliver patient-centered care ('it helps us check whether we are truly meeting what the patient actually wants…'–HCW01). Patient-centered care was understood as first identifying and then responding to each patient's individual needs, making a patient-reported tool like IPOS particularly valuable ('it helps us understand their needs and then provide care that fits them'–PT25). One staff member emphasized that patient-centered care should be fundamental across all healthcare roles ('Patient-centered care should guide how we treat every patient, no matter our specialty'–HCW12).

Patients felt that completing such surveys gave them a voice and could drive improvements ('I want to take part because I hope to see positive changes'–PT26). One patient also noted that doctors should screen for and address concerns even outside their main expertise ('Please show some concern. Even if you're not a specialist in this area, you can always refer me'–PT26, 50s, Chinese, Female).

Another cultural strength was the existing good collaboration between teams. A heart failure staff member highlighted the positive working relationship with the palliative care team as a major advantage ('it's always good to work together with the palliative team'–HCW09).

Subtheme 1d: Dedicated resources (inner setting)

For smooth administration, having dedicated personnel, such as coordinators, to handle the IPOS was viewed as essential ('I believe coordinators should be the ones administering this'–HCW09).

Subtheme 1e: Perception of relatability (individual characteristics)

Patients also found the IPOS items highly relevant to their experiences. One participant remarked, (The symptoms listed felt very familiar and applicable to me–PT25.

Subtheme 1f: Advocates for implementation (process)

Participants stressed the need to involve staff at different levels of the organization, particularly opinion leaders within the multidisciplinary team. These leaders could effectively promote the advantages of IPOS ('this seems like a promising step for those caring for heart failure patients… especially in the context of value-based care'–HCW12).

Patients themselves were also seen as potential advocates who could encourage other patients to participate ('If patients find it helpful, they will naturally tell others about this tool…'–PT34).

Theme 2: Barriers to the implementation of IPOS

Subtheme 2a: Need for adaptation (intervention characteristics)

Both patients and staff agreed that the IPOS would require further modifications and customization before being rolled out on a large scale in routine clinical practice. Staff suggested adding space for open comments ('Allowing some free-text responses would be more helpful'–HCW01). Patients similarly wanted the opportunity to explain their answers ('Even if I select an option, it doesn't fully explain whether it's moderate or mild. It would be better to allow elaboration'–PT26).

One patient highlighted the importance of creating setting-specific versions ('There should be a separate survey for inpatients and another one for outpatients'–PT34).

Both groups stressed the necessity of fitting IPOS smoothly into existing workflows ('If you integrate it into their daily work, it means providing them with the assessment form directly'–PT48). From the staff viewpoint, easy access to previous results and trends was considered essential ('We need something quick to retrieve so we can review and compare with earlier IPOS scores'–HCW12).

Subtheme 2b: Cultural concerns (outer setting)

Staff expressed cultural reservations about using IPOS to screen for spiritual issues. For instance, the item on 'peace' was viewed as highly subjective ('It's quite difficult to determine whether someone is truly at peace'–HCW01). Asking patients directly about peace felt uncomfortable ('How do you even phrase the question, "Are you at peace?"'–HCW03). In an Asian context, some worried that mentioning 'peace' might be misinterpreted as referring to death and could cause offense ('In our Asian culture, talking about peace often makes people think about dying'–HCW05).

A palliative care staff member noted that discussing psycho-emotional matters is often seen as a sign of weakness ('People are generally more open about physical symptoms because they don't feel it makes them look weak'–HCW12). Heart failure staff observed that patients frequently mask their emotions, making emotional screening difficult ('They may appear cheerful on the surface, but you can sense they are actually quite worried'–HCW03).

Language literacy was another shared concern. Staff felt the current IPOS would work best for English-speaking patients only ('Is this tool mainly intended for English-speaking patients?'–HCW01; 'Those who are English-educated should have no problem'–PT48). One staff member proposed using pictures to make it more accessible ('Pictorial versions would help, especially for non-local patients with limited English'–HCW05).

Technological literacy was also highlighted as a potential obstacle. Many staff preferred an electronic format for easier documentation and review rather than paper copies ('We live in the digital age so that a user-friendly interface would be ideal'–HCW12). However, patients had mixed views. Some pointed out that not everyone is comfortable with technology ('Patients who know how to use the internet might manage well, but those who don't may respond at all'–PT48).

Subtheme 2c: Mindsets and role strains (inner setting)

While collaboration between heart failure and palliative care teams was seen as helpful, this perception was not universal. One heart failure staff member felt that the existing referral pathway to palliative care might actually lessen the need for IPOS ('We already have referrals to the National Cancer Centre palliative team for this purpose. The questionnaire may or may not be the solution'–HCW10).

Acceptance of IPOS varied across disciplines. Some staff believed it would be easier to introduce in palliative care than in other departments ('If it's from the Palliative Medicine department, I would recommend trying it. But for other departments, it might be harder'–HCW01).

From the patient side, proper education about palliative care was considered crucial before introducing IPOS ('Many people may not fully understand the goal. It would be best first to explain the concept of palliative care and what we aim to achieve'–PT25).

Finally, heart failure staff described feeling role strain when addressing issues beyond cardiology. One staff member found it awkward to raise non-cardiac topics ('It feels uncomfortable asking those questions because patients come expecting only heart-related checks'–HCW09).

Subtheme 2d: Resource constraints (inner setting)

Although most participants had earlier found the time needed to complete the IPOS acceptable, significant time pressures still existed in busy clinic settings, both staff and patients worried whether there would be adequate time to administer the IPOS or for doctors to address the results ('This kind of questionnaire won't change the fact that we only have a limited number of minutes per patient' – HCW10; 'The question is whether they even have time to read it, because consultations are extremely packed'–PT70). One patient recommended giving patients enough time to complete the form thoughtfully ('It was easier for me when I could do it at home with more time to reflect'–PT14).

Staff also raised concerns about the workload on nurses, who would need to complete the staff version of the IPOS ('Nurses are already very busy with their regular duties, so asking them to do this extra task would be quite difficult'–HCW01).

Finally, one participant pointed out the lack of dedicated follow-up support for issues identified by the IPOS as a major obstacle ('I'm not sure if this survey can include it, but follow-up is a crucial part of palliative care. If I raise a concern and have no one to talk to at home, I have nowhere to turn'–PT25).

Subtheme 2e: Individual needs (individual characteristics)

From the patients' viewpoint, some felt it was helpful to have a physical copy to refer to while answering the IPOS, along with ready support if they had questions ('Some people really need a clear understanding. Otherwise, they might just guess and pick random answers'–PT85, 60s, Indian, Female).

Views on how well IPOS suited individual patients differed. While one patient earlier described the items as 'relatable', healthcare staff felt it might only be appropriate for certain patients ('I think it would work best with a selected group of patients'–HCW04).

Subtheme 2f: Change process (process-related)

Patients noted that individuals would be at varying levels of readiness to accept IPOS ('Not everyone will be comfortable going through this'–PT14). Both palliative care and heart failure staff felt that IPOS might not be a high priority since other assessment tools were already in use ('I wouldn't mind using IPOS, but I already have to complete the PCOC'–HCW12).

Staff from both teams suggested that a trial period would be preferable before full implementation ('I would like to try it out myself first before deciding to adopt it'–HCW01).

Relationship to key domains of CFIR

Our analysis showed that both facilitators and barriers to IPOS implementation spanned all five CFIR domains **(Table 4)**. For instance, in the 'outer setting', a 'conducive culture' acted as a facilitator, while 'cultural concerns' served as a barrier. This pattern was seen across the other four domains–'intervention characteristics', 'inner setting', 'individual characteristics', and 'process'. Notably, there were more facilitators than barriers within 'intervention characteristics', which could support local advocacy for adopting the IPOS screening tool. These relationships are illustrated visually in **Figure 1**.

Main findings

This study identified multiple factors that could influence the implementation of IPOS. Facilitators include: (i) perception of utility, (ii) perception of minimal complexity, (iii) perception of relatability, (iv) conducive culture, (v) dedicated resources, and (vi) advocates for implementation. Barriers include: (i) need for adaptation, (ii) mindsets/role strains, (iii) resource constraints, (iv) cultural concerns, (v) individual needs, and (vi) change process. These factors spanned all five major domains of the CFIR.

Concerning facilitators, a systematic review in palliative care highlighted the value of having a coordinator involved throughout the process and the importance of pre-implementation education [28]. Another systematic review by Foster *et al*. [29] examined factors supporting the use of patient-reported outcome measures in broader settings. It emphasized separating implementation into 'designing' and 'preparation' phases, with steps such as preparing the organization and staff, and appointing a dedicated implementation lead. These align with our findings in a cardiology (non-palliative) setting, where viewing IPOS as a valuable tool and providing dedicated resources for its administration emerged as key facilitators.

Regarding barriers, our results on mindsets, role strains, resource constraints, individual factors, and change process mirror those described in a recent editorial on challenges to implementing cardiology-specific outcome measures [30]. That editorial highlighted staff reluctance, system-level issues, difficulties with patient completion, and challenges in clinician interpretation.

When considering potential improvements to facilitators and possible modifications to barriers, changing elements of the IPOS tool itself — such as adding open-text options or rewording items — may be difficult. Although one patient proposed creating separate 'inpatient' and 'outpatient' versions of the IPOS, we believe this perceived difference is mainly linked to the severity of palliative care needs rather than fundamental differences in the types of concerns identified. The interpretation that differences between inpatient and outpatient settings are mainly related to the severity of palliative care needs is supported by our validity study results [18], which showed higher patient and staff IPOS scores in the inpatient setting, reflecting more severe palliative care needs. Therefore, instead of developing separate surveys for each setting, greater emphasis should be placed on planning appropriate palliative care responses that match the severity levels observed across different care environments.

Additionally, addressing factors within the inner culture, 'inner setting', or 'mindsets' is likely to lead to more successful local implementation of IPOS. For example, strengthening the 'pre-existing collaborative culture' between the palliative care team and the heart failure team would help embed palliative care principles into routine cardiac care. A strong collaborative network could also create a 'tension for change' and foster a 'collaborative sharing climate', which, in turn, encourages shared learning and training in screening for palliative care needs [31, 32].

With respect to the inner setting and 'resource constraints', 'time' has long been a major challenge in Singapore [33] and has been further intensified by the COVID-19 pandemic [34]. Given rising demands on healthcare staff, securing buy-in for IPOS will likely require substantial systemic changes to 'workflows' as well as the adoption of suitable 'technological' solutions and innovations [35].

Both patients and staff highlighted issues related to cultural sensitivities and 'literacy' concerns. Local studies have documented poor technological literacy in certain groups [36, 37]. Cultural attitudes toward palliative care and the stigma associated with discussing psycho-emotional issues were also reported in our earlier work [38, 39]. Hence, additional efforts are required to enhance patient engagement on the value of patient-reported tools and to provide appropriate support for individuals who face difficulties with palliative care questionnaires before a wide-scale rollout of IPOS in the cardiology setting.

Finally, process factors such as 'stage of change' align with findings from our previous staff validity study [18]. We observed that many staff assessments were incomplete or marked as 'unable to assess', particularly for psychosocial issues such as anxiety or practical problems. A trial period would allow targeted support for staff who struggle with screening subjective psycho-emotional symptoms. Differences between patient and staff ratings on outcome measures have also been noted in other settings [40]. Future research could explore optimal ways to combine patient and staff assessments and clarify which palliative care screening tasks can be handled by ‘generalists’ versus ‘specialists’ [16]. Additional studies on building palliative care capacity among generalists would also be valuable [41].

Strengths and limitations

This study has several strengths. First, including both patients and staff enabled a thorough evaluation of factors affecting IPOS implementation in a multidisciplinary environment. Second, in addition to validating the tool, we examined real-world barriers and facilitators that would influence its adoption. Third, the study was conducted in a non-palliative care setting, unlike most previous research that primarily recruited patients from specialist palliative services [12, 13]. We have highlighted the specific challenges of introducing a palliative care screening tool in a cardiology environment. This issue is particularly relevant given the evolving demographics of doctors and the increasing number of patients requiring palliative support. There is a clear need to identify which patients would benefit most from specialist palliative care and which could be supported by generalist palliative skills, such as those possessed by cardiologists [16, 41].

A minor limitation was that the IPOS was validated only in English due to funding restrictions. As a result, we were unable to include Chinese-speaking participants. The exclusion of Chinese-speaking participants due to the English-only validation may account for staff concerns about the tool’s suitability for ‘non-English-speaking’ patients. However, Singapore’s literacy profile has improved significantly over time, with English now being the most commonly spoken language at home. Thus, the IPOS should still be suitable for the majority of patients [42]. Since IPOS had not yet been implemented clinically, we did not ask participants to rate how strongly each factor would influence actual implementation.

Another potential limitation concerns the patient sample size. Although data saturation was achieved with 10 patients, and a prior systematic review noted that saturation can occur with 9–17 participants [22], we did not recruit bereaved caregivers because the caregiver version of IPOS was not tested. Future studies could include Chinese-speaking patients and caregivers to enhance the generalisability of the findings.

Third, although the CFIR is widely accepted, our mapping of findings may have missed factors relevant to other healthcare systems. Consequently, the results may not fully apply to settings with different structures. Finally, the study relied mainly on interviews with staff and patients. Incorporating observations or input from healthcare leaders could offer a more complete picture of the implementation process.

Conclusion

This study offers valuable insights into the facilitators and barriers to implementing IPOS for patients with heart failure in Singapore. We have also outlined practical strategies for the smooth integration of IPOS in settings where care is primarily delivered by generalists, with specialist palliative services available only on a consult basis.

Future research could include non-English-speaking participants to confirm our findings. The short-, medium-, and long-term fidelity, reach, and adoption of IPOS should be evaluated following formal implementation in cardiology services. Further studies are also needed to build generalist palliative care capacity and to engage patients in palliative care discussions in a culturally sensitive and appropriate way.

Acknowledgments: None

Conflict of interest: None

Financial support: The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This project was funded by the SingHealth Duke-NUS Academic Medicine Research Grant Call 2018: Special Category (HSR-Health Outcomes); Grant number: AM/HHO001/2018(SRDUKAMR18H1).

Ethics statement: This study was reviewed and approved by the SingHealth Centralized Institutional Review Board (Ref. No. 2019/2344). All participants provided written consent before participation.

References

1. Ambrosy AP, Fonarow GC, Butler J, Chioncel O, Greene SJ, Vaduganathan M, et al. The global health and economic burden of hospitalizations for heart failure: lessons learned from hospitalized heart failure registries. J Am Coll Cardiol. 2014;63(12):1123–33.

2. Ko DT, Alter DA, Austin PC, You JJ, Lee DS, Tu JV. Life expectancy after an index hospitalization for patients with heart failure: a population-based study. Am Heart J. 2008;155(2):324–31.
3. Solano JP, Gomes B, Higginson IJ. A comparison of symptom prevalence in far advanced cancer, AIDS, heart disease, chronic obstructive pulmonary disease and renal disease. J Pain Symptom Manage. 2006;31(1):58–69.
4. Ekman I, Cleland J, Andersson B. Exploring symptoms in chronic heart failure. Eur J Heart Fail. 2005;7(7):699–703.
5. Malhotra C, Wong G, Tan BC, Thirumoorthy T, Cheng L, Lau Y, et al. Living with heart failure: perspectives of patients from Singapore. Proc Singap Healthc. 2016;25(2):92–7.
6. World Health Organization. Palliative care [Internet]. 2020 [cited 2018 Sep 26]. Available from: http://www.who.int/cancer/palliative/definition/en/
7. Kernick LA, Hogg KJ, Millerick Y, McIntosh J, Ewing G, Barclay S, et al. Does advance care planning in addition to usual care reduce hospitalization for patients with advanced heart failure: a systematic review and narrative synthesis. Palliat Med. 2018;32(10):1539–51.
8. Mentz RJ, O'Connor CM, Granger BB, Hill JA, Adams KF, Patel MR, et al. Palliative care and hospital readmissions in patients with advanced heart failure: insights from the Pal-HF trial. Am Heart J. 2018;204:202–4.
9. Rogers JG, Patel CB, Mentz RJ, Kleinman SH, Perumalswami CR, Choudhry NK, et al. Palliative care in heart failure: the Pal-HF randomized, controlled clinical trial. J Am Coll Cardiol. 2017;70(3):331–41.
10. Whellan DJ, Goodlin SJ, Dickinson MG, Curtis LH, O'Connor CM, Granger BB, et al. End-of-life care in patients with heart failure. J Card Fail. 2014;20(2):121–34.
11. Jaarsma T, Beattie JM, Ryder M, Rutten FH, McDonagh T, Starling R, et al. Palliative care in heart failure: a position statement from the palliative care workshop of the Heart Failure Association of the European Society of Cardiology. Eur J Heart Fail. 2009;11(5):433–43.
12. Bausewein C, Le Grice C, Simon ST, Higginson IJ. The use of two common palliative outcome measures in clinical care and research: a systematic review of POS and STAS. Palliat Med. 2011;25(3):304–13.
13. Murtagh FEM, Ramsenthaler C, Firth A, Groeneveld EI, Lovell N, Simon ST, et al. A brief, patient and proxy reported outcome measurement in advanced illness: validity, reliability and responsiveness of the Integrated Palliative Care Outcome Scale (IPOS). Palliat Med. 2019;33(8):1045–57.
14. Ament SM, Couwenberg IM, Boyne JJ, Holman MS, Schoon Y, de Groot JR, et al. Tools to help healthcare professionals recognize palliative care needs in patients with advanced heart failure: a systematic review. Palliat Med. 2021;35(1):45–58.
15. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. BMJ. 2008;337:a1655.
16. Periyakoil VS, von Gunten CF, Fischer SM, Meier DE, Pantilat SZ, Arnold RM, et al. Generalist versus specialist palliative medicine. J Palliat Med. 2022;25(2):193–9.
17. Long VJE, Cheung YB, Qu D, Thumboo J, Goh C, Choo SP, et al. Validity and reliability of the English and translated Chinese versions of the Integrated Palliative Care Outcome Scale (IPOS) in Singapore. BMC Palliat Care. 2021;20:40.
18. Neo SH, Tan JYT, Sim DKL, Lim RS, Ong DL, Lee VY, et al. Validity and reliability Integrated Palliative Care Outcome Scale in Asian heart failure patients. Palliat Med Rep. 2022;3(1):287–95.
19. National Heart Centre Singapore. Overview [Internet]. 2023 [cited 2021 Dec 12]. Available from: https://www.nhcs.com.sg/about-us
20. Singapore General Hospital. Hospital overview [Internet]. 2023 [cited 2022 Sep 28]. Available from: https://www.sgh.com.sg/about-us/corporate-profile
21. National Cancer Centre Singapore. Annual report [Internet]. 2023 [cited 2022 Sep 28]. Available from: https://www.nccs.com.sg/about-us/corporate-profile/Documents/SingHealth%20Duke-NUS%20AR%202022-23.pdf
22. Hennink M, Kaiser BM. Sample sizes for saturation in qualitative research: a systematic review of empirical tests. Soc Sci Med. 2022;292:114523.
23. Kane PM, Daveson BA, Ryan K, McQuillan R, Higginson IJ, Murtagh FEM, et al. Feasibility and acceptability of a patient-reported outcome intervention in chronic heart failure. BMJ Support Palliat Care. 2017;7(4):470–9.
24. Kane PM, Ellis-Smith CI, Daveson BA, Ryan K, McQuillan R, Higginson IJ, et al. Understanding how a palliative-specific patient-reported outcome intervention works to facilitate patient-centred care in advanced heart failure: a qualitative study. Palliat Med. 2018;32(2):143–55.
25. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC, et al. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement Sci. 2009;4:50.
26. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77–101.

27. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007;19(6):349–57.
28. Antunes B, Harding R, Higginson IJ, Booth S, Booth S, Kaasa S, et al. Implementing patient-reported outcome measures in palliative care clinical practice: a systematic review of facilitators and barriers. Palliat Med. 2014;28(2):158–75.
29. Foster A, Croot L, Brazier J, Thokala P, Donaldson C, Petrova M, et al. The facilitators and barriers to implementing patient reported outcome measures in organizations delivering health related services: a systematic review of reviews. J Patient Rep Outcomes. 2018;2:46.
30. Heidenreich PA. The growing case for routine collection of patient-reported outcomes. JAMA Cardiol. 2021;6(4):497–8.
31. Paiva EC, Bonilla-Sierra P, Tripodoro VA, Danel G, Bruera E, de Lima L, et al. How to advance palliative care research in South America? Findings from a Delphi study. J Pain Symptom Manage. 2022;65(1):193–202.
32. Hojjat-Assari S, Rassouli M, Kaveh V, Farahani MA, Hosseini M, Sadeghi M, et al. Explaining healthcare providers' perceptions about the integration of palliative care with primary health care: a qualitative study. BMC Prim Care. 2022;23:226.
33. Ministry of Health Singapore. Waiting times in specialist outpatient clinics of restructured hospitals and specialty centres [Internet]. 2001 [cited 2022 Dec 30]. Available from: https://www.moh.gov.sg/news-highlights/details/waiting-times-in-specialist-outpatient-clinics-of-restructured-hospitals-and-specialty-centres
34. Channel NewsAsia. Longer waiting times at hospitals with some patients told to wait up to 50 hours for a bed [Internet]. 2022 [cited 2022 Dec 30]. Available from: https://www.channelnewsasia.com/singapore/hospitals-beds-waiting-time-50-hours-admission-ng-teng-fong-sengkang-3014596
35. Evans JM, Glazer A, Lum R, Cottrell R, Greenwood S, Tan SY, et al. Implementing a patient-reported outcome measure for hemodialysis patients in routine clinical care: perspectives of patients and providers on ESAS-r: Renal. Clin J Am Soc Nephrol. 2020;15(9):1299–309.
36. The Straits Times. IPS study finds low digital literacy levels in S'pore; 6 in 10 respondents believed false info [Internet]. 2020 [cited 2023 Jan 20]. Available from: https://www.straitstimes.com/singapore/politics/ips-study-finds-nearly-6-in-10-people-believed-false-information-generally-low
37. The Straits Times. 4 in 5 Singaporean confident in spotting fake news but 90 percent wrong when put to the test [Internet]. 2018 [cited 2023 Jan 20]. Available from: https://www.straitstimes.com/singapore/4-in-5-singaporeans-confident-in-spotting-fake-news-but-90-per-cent-wrong-when-put-to-the
38. Neo SH, Ku JS, Wong GC, Lim YW, Tan JY, Ong DL, et al. Life beyond heart failure – what are the long-term challenges, supportive care needs, and views towards supportive care of multiethnic Asian patients with left ventricular assist device and their caregivers? J Pain Symptom Manage. 2020;60(3):577–87.
39. Neo SH, Ku JS, Tan JY, Lim RS, Ong DL, Lee VY, et al. Lived experiences and long-term challenges and needs of Asian left ventricular assist device caregivers. Palliat Med Rep. 2021;2(1):84–92.
40. Nakajima N. Palliative Care Outcome Scale assessment for cancer patients eligible for palliative care: perspectives on the relationship between patient-reported outcome and objective assessments. Curr Oncol. 2022;29(12):7140–7.
41. Seow H, Bainbridge D, Stajduhar KI, Marshall D, Ritchie J, Sinnarajah A, et al. Building palliative care capacity for generalist providers in the community: results from the CAPACITI pilot education program. Am J Hosp Palliat Care. 2023;40(4):737–46.
42. Singapore Census of Population 2020, Statistical Release [Internet]. Available from: https://www.singstat.gov.sg/publications/reference/cop2020/cop2020-sr1