Effects of a family-based acceptance and commitment therapy on quality of life in heart failure patients

2024 ACBS WC presentation

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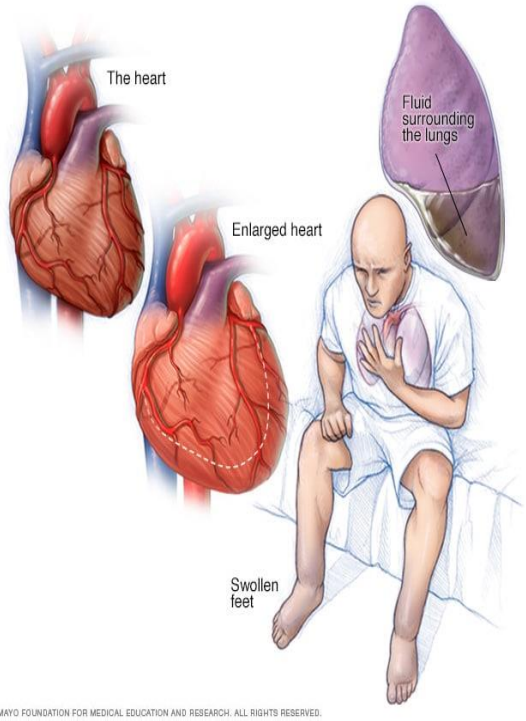
Introduction

Key facts of heart failure (HF)

- Terminal point of various cardiovascular diseases (CVDs) (Hunt et al., 2009)
- Incidence: **38 million**(worldwide) (Heidenreich et al., 2011; Reyes et al., 2016); **12.1 million** (China) (Wang et al., 2021)
- Age: 80% of heart failure patients over 65 years (western countries) (Ponikowski et al., 2014) ; Mean age: 63-65 years (China) (Jackson et al., 2018; Zhang et al., 2017)
- Mortality within first year post discharge: **17-45%** (worldwide) (Ponikowski et al., 2014);
- Readmission within one-year post-discharge: **53%** (worldwide) (Lan et al., 2021); **58.3%** (China) (Xue et al., 2009)



NYHA Class	Level of Clinical Impairment
I	No limitation of physical activity. Ordinary physical activity does not cause undue breathlessness, fatigue, or palpitations.
II	Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in undue breathlessness, fatigue, or palpitations.
III	Marked limitation of physical activity. Comfortable at rest, but less than ordinary physical activity results in undue breathlessness, fatigue, or palpitations.
IV	Unable to carry on any physical activity without discomfort. Symptoms at rest can be present. If any physical activity is undertaken, discomfort is increased.

Key facts of heart failure (HF)

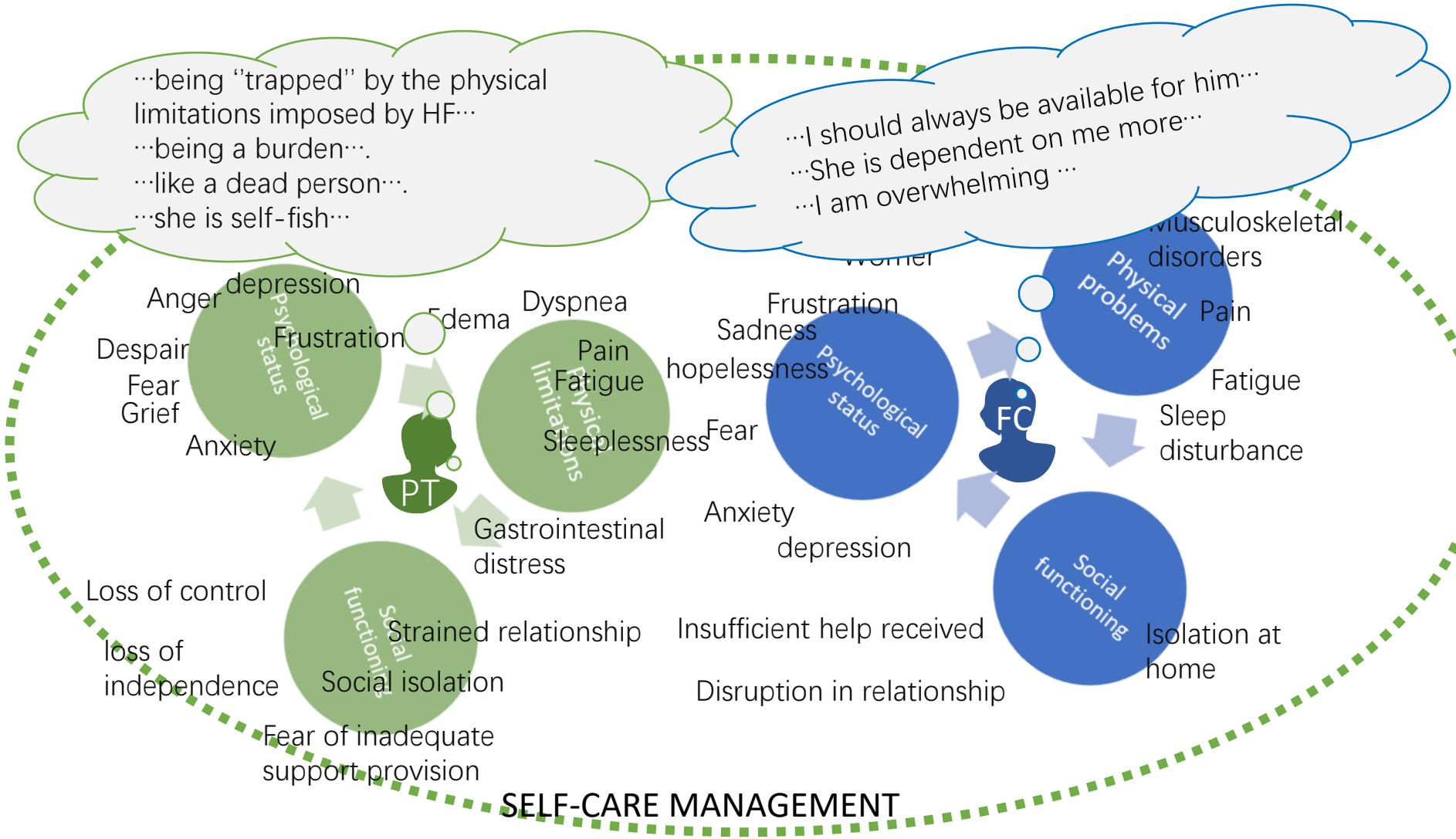
- Increased symptom burden over time (Alpert et al.,2017)
- Prevalence of activities of daily living impairment: **38.8%** (worldwide) (Liu et al.,2022); **50.3%** (Asian)(Liu et al.,2022);
- **75%** of patients rely on their family caregivers (Kitko et al., 2020)
- Effective **self-care management** significantly **improves patients' health-related quality of life a**nd **reduces 40% risk of heart failure-related hospitalization** (Zhao et al., 2021)

  Recommended **self-care behaviors** include medication adherence, weight control, fluid and sodium restriction, regular physical activity, alcohol restriction, smoking cessation, symptoms monitoring (HFGCSCCMA et al., 2018; Ponikowski et al., 2016).

  Health-related quality of life (HRQOL) is an individual's perception of their physical health and mental wellbeing over time (Centers for Disease Control and Prevention, 2000) , including physical functioning, social and role functioning, psychological wellbeing, health perceptions (Hennessy et al., 1994).

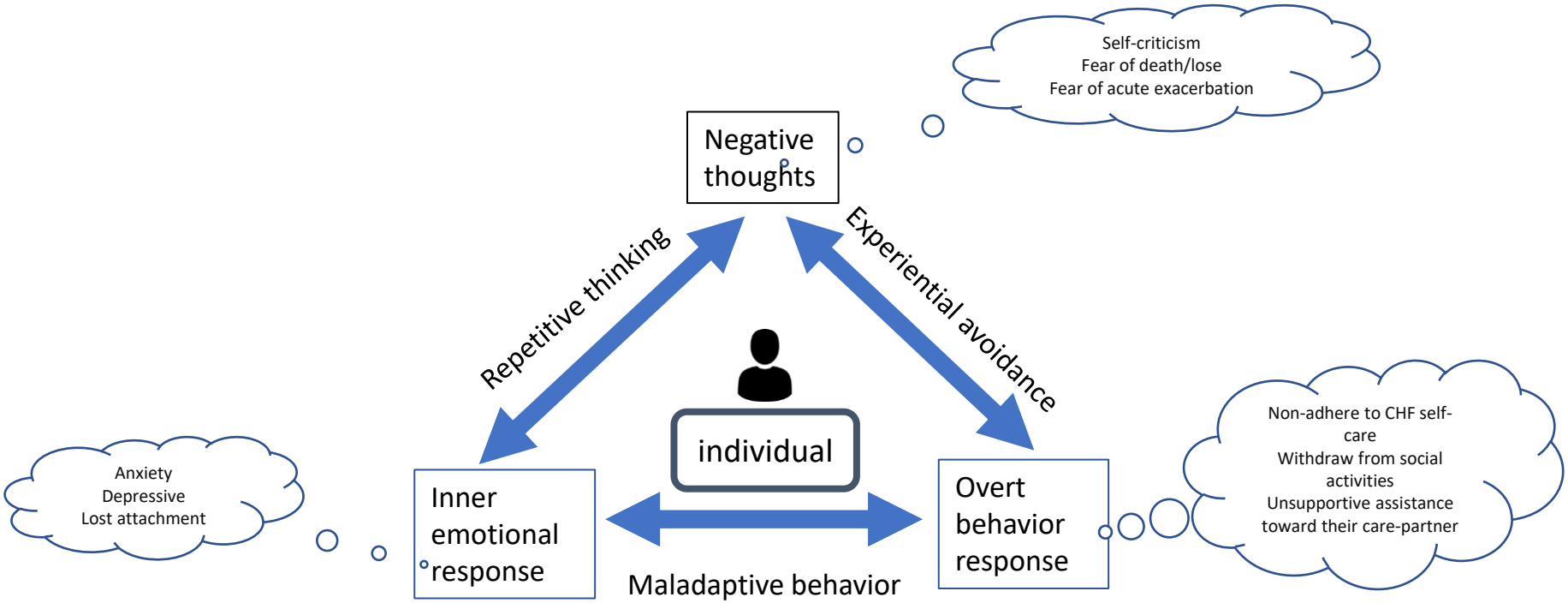
- Heart failure clinical practice **guidelines emphasise the importance of self-care management** and recommend providing psychological support and heart failure educational information to patients with heart failure and family caregivers (HFGCSCCMA et al., 2018; Heidenreich et al., 2022; McDonagh et al., 2021) Readmission

Challenges in managing heart failure for patients and family caregivers



(Chiaranai et al., 2014; Choi et al., 2021; Jeon et al., 2010; Kang et al., 2011; Klindtworth et al., 2015; Kim et al., 2020; Malhotra e al., 2016; Min et al., 2023; Nwosu et al., 2021; Olano-Lizarraga et al., 2021;Olano-Lizarraga et al., 2022; Shamali et al., 2020; Sullivan et al., 2016; Surikova et al., 2020; Wang et al., 2023; Wingham et al., 2015; Zippel-Schultz et al., 2021)

Individual experience during heart failure management



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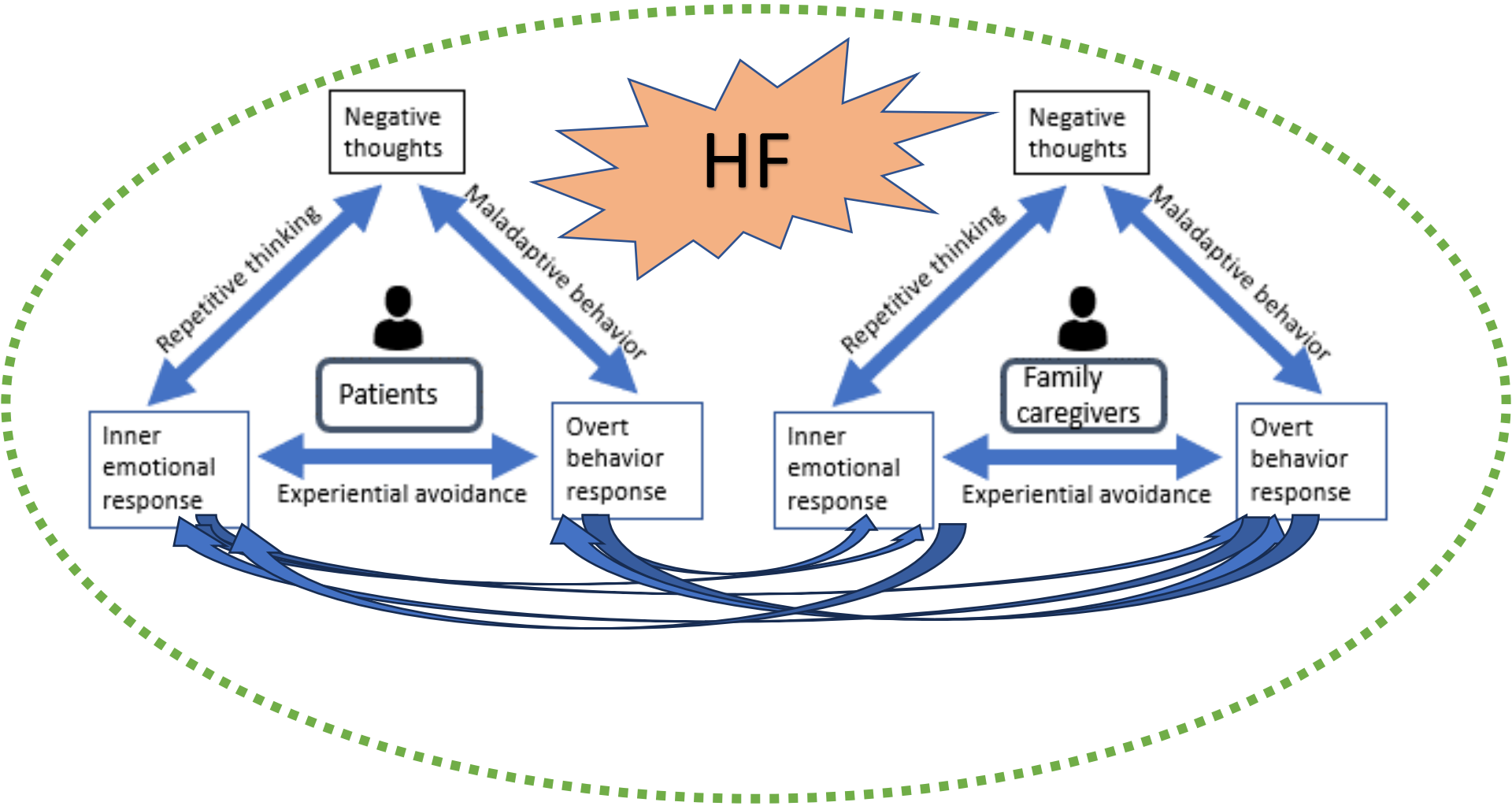
Interdependence relationship of emotion and behavior between patients and their family caregivers



(Chiaranai et al., 2014; Choi et al., 2021; Jeon et al., 2010; Kang et al., 2011; Klindtworth et al., 2015; Kim et al., 2020; Malhotra e al., 2016; Min et al., 2023; Nwosu et al., 2021; Olano-Lizarraga et al., 2021;Olano-Lizarraga et al., 2022; Shamali et al., 2020; Sullivan et al., 2016; Surikova et al., 2020; Wang et al., 2023; Wingham et al., 2015; Zippel-Schultz et al., 2021) (**Hartmann et al., 2010**)

Current experimental studies using ACT for patient and their family caregiver

◆ Limited experimental studies employed ACT for dyads of patients and family caregivers

- Two pilot studies with sample sizes ranged from 40 to 50 (Mosher et al., 2019; Mosher et al., 2022)
- Delivered via telephone for advanced cancer
- Feasible, and acceptable, potential effective (within-group improvements on HRQOL, depression of patients, as well as HRQOL, anxiety, depression and caregving burden of caregivers)
- Dyad ACT interentions acknowledge relationhsip dynamic by (1) Enhancing self-awareness in the context of family; (2) Leveraging emotional connection/ relational bond supporting the other's value-based action

◆ No previous studies used ACT for dyads of PTs with HF and their FCs

(Han, Yuen, & Jenkins, 2020)

Aim of this study

To examine the effectiveness of **a family-based ACT intervention (Intervention group),** delivered via smartphone videoconferencing, in comparison with **HF education (Control group),** on the **QOL and other health outcomes** for **PTs with chronic HF and their FCs,** immediately after the intervention (T1) and at three-month post-intervention (T2)

Primary objectives

- To test the effects of the dyad ACT-based intervention on the **health-related quality of life** in **PTs and their FCs** immediately after the intervention and at three-month follow-up

Secondary objectives

- To test the effects of the dyad ACT-based intervention on the following outcomes immediately after the intervention and at three-month follow-up

Patient outcomes	Family caregiver outcomes
Psychological flexibility	Psychological flexibility
Psychological symptoms	Psychological symptoms
Self-compassion	Self-compassion
Relationship quality	Relationship quality
HF self-care behaviours	Caregiving burden
Use of healthcare services	

Methods

Study design

- Single center, assessor-blinded, parallel-group, RCT

Study setting

- Cardiology department, Taihe hospital, Hubei, China

Participants

- Both patients and their family caregivers

	Inclusion criteria	Exclusion criteria
Patients	1) 18 years or older 2) clinically diagnosed with chronic HF (HFGCSCCMA et al., 2018) as documented in the medical records 3) with a NYHA Classification of I to III, confirmed by the research team 4) hospitalized within the past one year 5) reside in a household with family members 6) able to nominate a primary FC 7) able to speak or read Mandarin	1) have cognitive impairment as screened by a clinical nurse (Borson et al., 2003) 2) have (a) terminal life-threatening disease(s) other than CHF (i.e., cancer, end-stage renal failure, severe pulmonary disease) 3) have (a) psychiatric illness(es) as indicated in the medical records
Family caregivers	1) 18 years or older 2) provide the most assistance* to the PTs 3) able to speak or read Mandarin	1) paid caregiver 2) have a terminal disease (i.e., cancer, end-stage renal failure, severe pulmonary disease) 3) have (a) psychiatric illness(es) 4) provide care for multiple family members with chronic illness

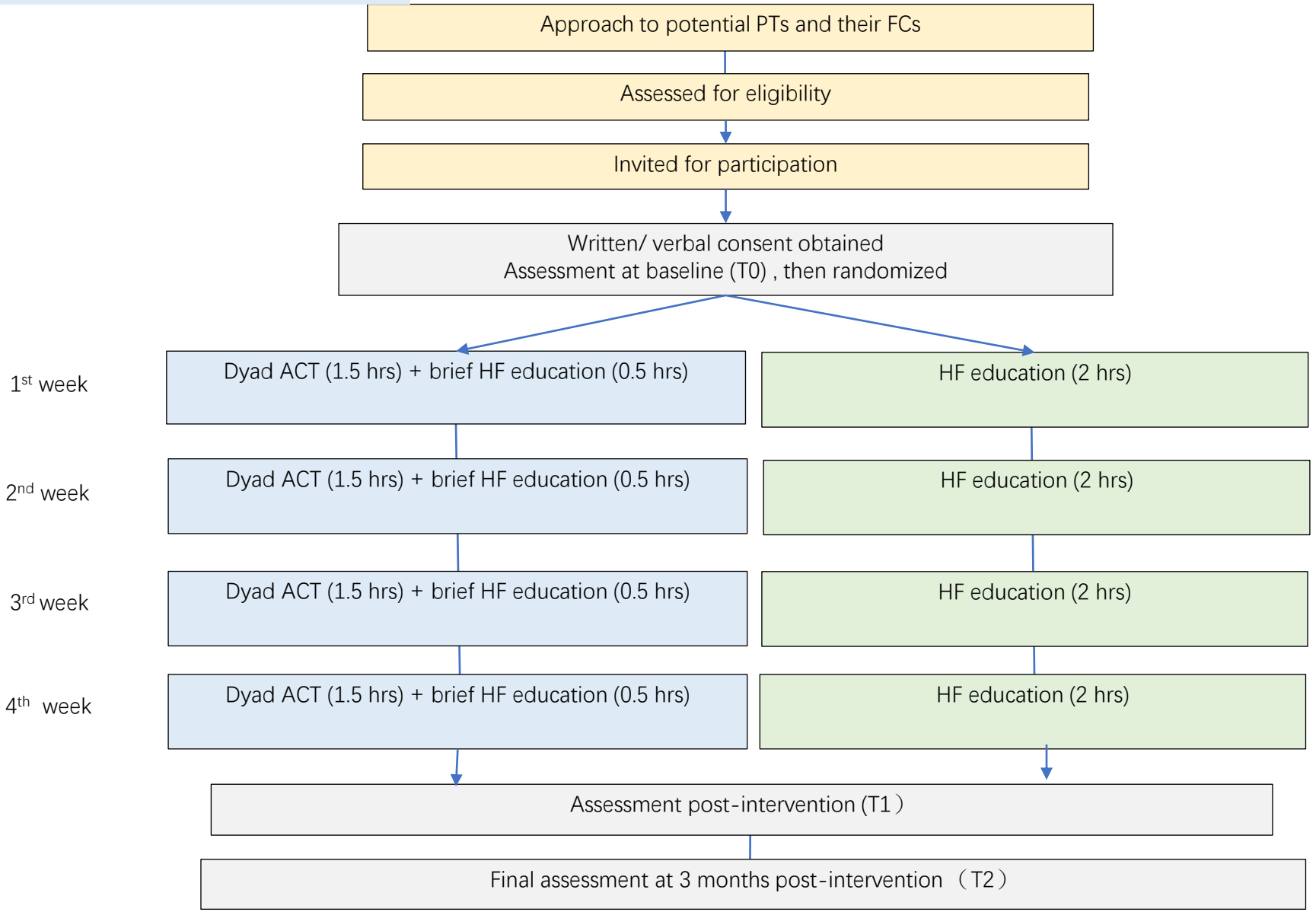
For PT-FC dyads to participate

At least one member of the dyad has a smartphone installed with the WeChat app and an active data plan, and should be able to use Tencent VooV Meeting over the smartphone to attend online intervention sessions

Sample size estimation

160 dyads (80 dyads per group)

Study procedure



Two intervention conditions

	ACT-based intervention group	Control group	Being similar	With difference
Group size	4-8 PT-FC dyads	4-8 PT-FC dyads	√	
Duration of session	2 hours	2 hours	√	
Frequency of session	Weekly	Weekly	√	
Length of program	4 weeks	4 weeks	√	
Outcome assessors	Trained student nurses	Trained student nurses	√	
Content	• 0.5 hours (brief HF self-care knowledge) • 1.5 hours (psychological support using ACT)	• 0.5 hours (brief HF self-care knowledge) • 1.5 hours (additional HF educational information)		√
Facilitator	• Two registered nurse (XZ &CX) received ACT training	• One registered nurse (QJ)		√
Material	• HF education handouts • HF self-care material • ACT handouts and homework assignment • ACT practice material	• HF education handouts • HF self-care material		√

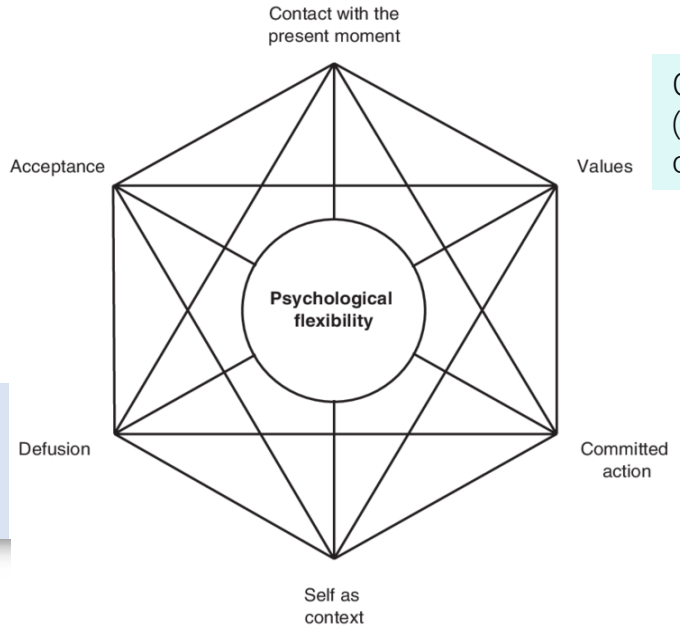
Session-by-session overview of the dyad ACT-based intervention

Theme	Objective	Key ACT exercises	ACT Processes	HF education
Session 1 Orientation and foster the present moment awareness	To discover the long-term cost of struggling with psychological difficulties in HF care and introduce acceptance as an alternative	• **Revisit challenging experiences and identify their coping strategies** • **Quicksand Metaphor** • Homework: be mindful towards their inner experiences in HF care	• Contact the present moment • Acceptance	HF education: overview of HF self-care
Session 2 Explore the personal values by accepting their psychological struggles	To explore personal held values associated with psychological challenges and cultivate the willingness to engage in alternative behaviors that align with their values	• Homework review • **Value in the trash** • **Passengers on the bus metaphor** • Homework: be mindful towards their inner experiences in HF care and identify alternative behaviors	• Contact the present moment • Values • Acceptance	HF education: physical activity, cigarette smoking, and alcohol drinking
Session 3 Overcome cognitive and emotional barriers	To develop acceptance of psychological difficulties and a sense of self as observer	• Homework review • **Tug-of-War** • **An unwelcomed guest at a birthday party metaphor** • Homework: implement identified alternative behaviors related to HF care that aligns with their clarified value	• Acceptance • Defusion • Self-as-context	HF education: salt and fluid restriction
Session 4 Take perspective and commit value-based action	To extend self-understanding and self-compassion by building perspective-taking and facilitate PT-FC dyads to move towards identified value directions	• **Revisit past events** • Homework review	• Values • Committed Action	HF education: medication adherence

ACT model of psychological flexibility (Hayes, S. C., et al. ,1999)

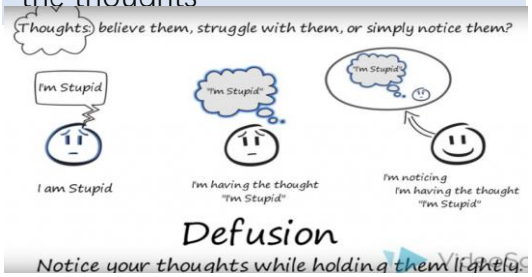
Being present in here and now, free from past or future worries

Openness to inner experience non-judgmentally



Chosen life direction (what matters most to oneself)

Observing thoughts and feelings as they are, but no longer control one's behaviors (i.e: '' I am having the thoughts



Moving towards one's values even in the face of barriers

Adopting a flexible perspective-taking, including observing oneself as separate from one's inner experience and developing a flexible and compassionate view of the other as a whole, separate from the other's inner experience

Training and supervision for the facilitators

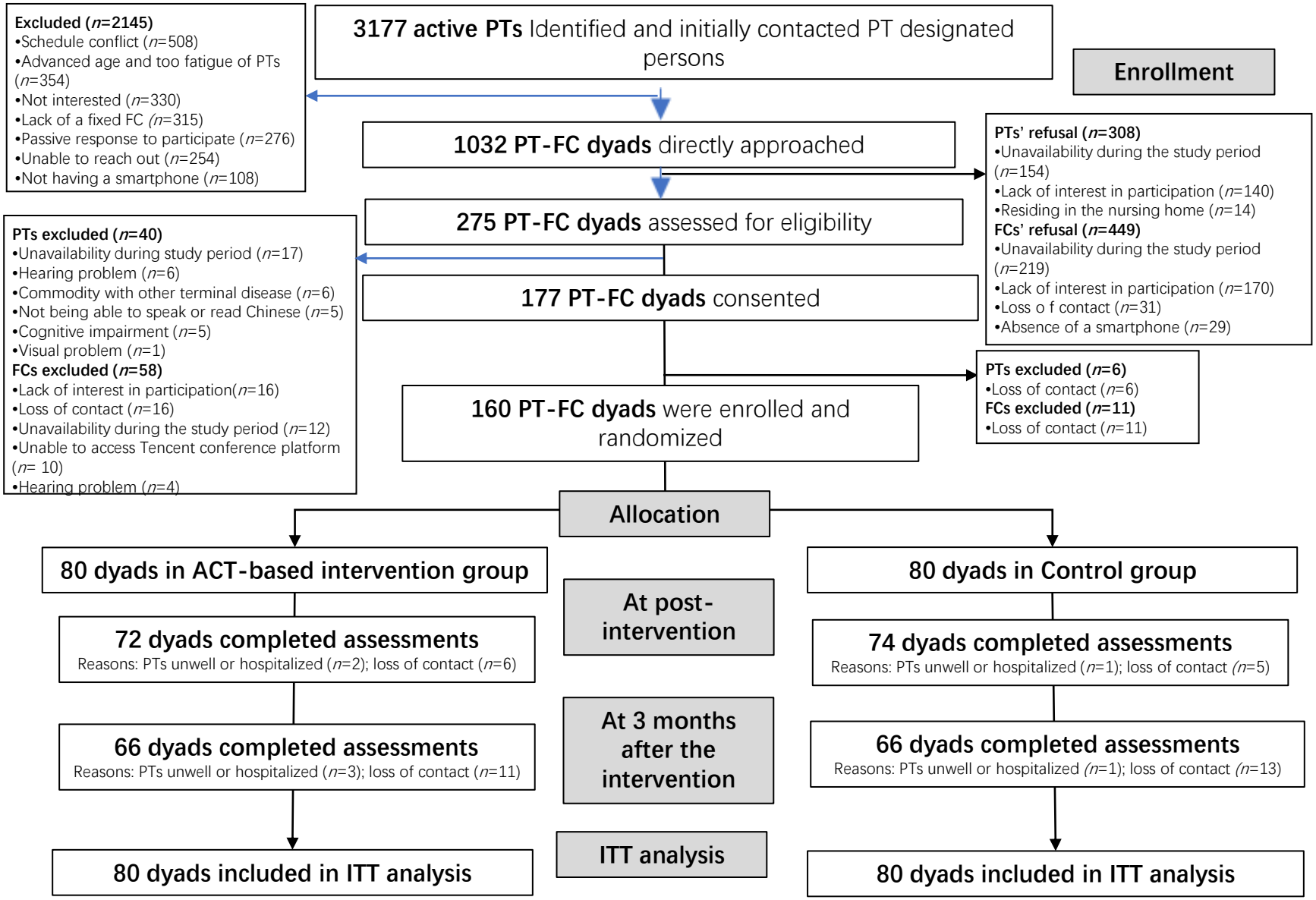
- **Facilitators:** XZ (primary facilitator, Ph.D. candidate, RN) & CX (co-facilitator, BSN, RN)
- Both XZ and CX have over three years of **clinical experience in working with cardiac inpatients**
- XZ completed 37 days of ACT training, and CX completed 2 days of **ACT training** led by ACT experts
- **All sessions were video recorded** with participants' consent for the purpose of quality assurance and fidelity checking
- XZ rated all the videotaped sessions using **a standardized checklist** (Luoma et al., 2007)
- **Bi-weekly supervision** provided by the chief supervisor throughout the trial period
- Therapeutic stance (*M* range = 4.6-5.4 out of 7)
  Competence in delivering ACT (*M* range = 4.5-5.5 out of 7)

Ethical considerations

- Ethical approvals:
  - Study hospital's ethics review board (2022KS013)
  - University (HSEARS20210225006)
- Clinicaltrials.gov: NCT04917159
- Written/ verbal recorded informed consent
- In case of participants encountered emotional difficulties during the sessions, referrals to cardiac medical team or psychological clinic for further support from the study hospital

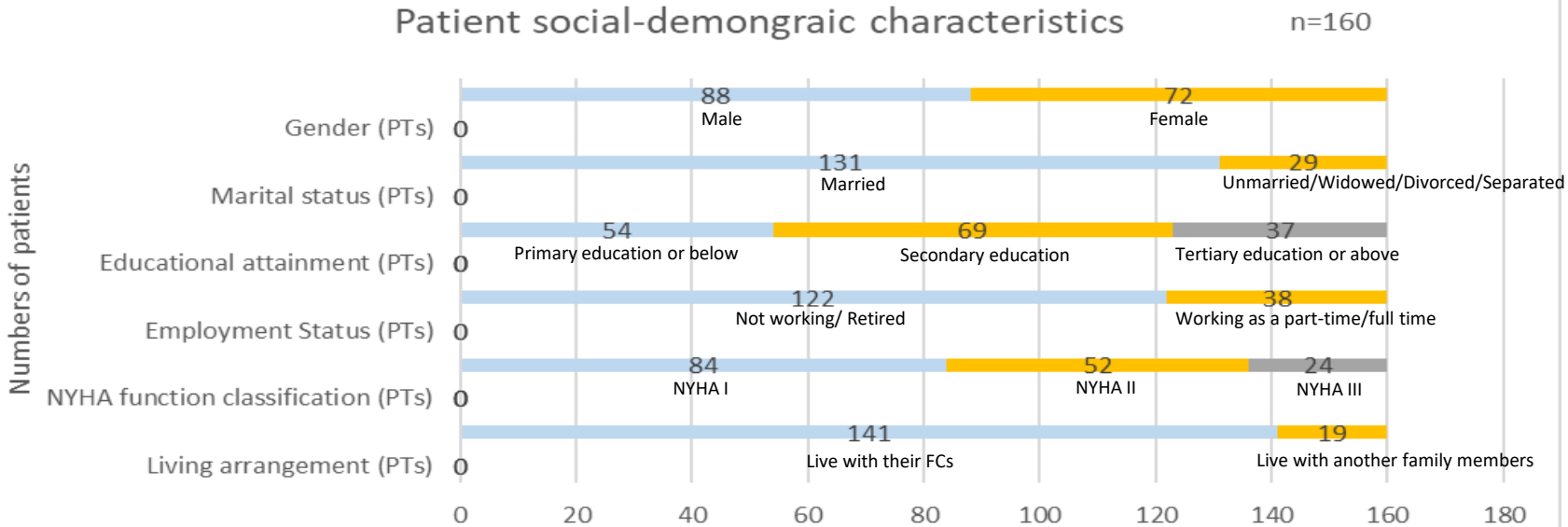
Results, Discussion and Conclusion

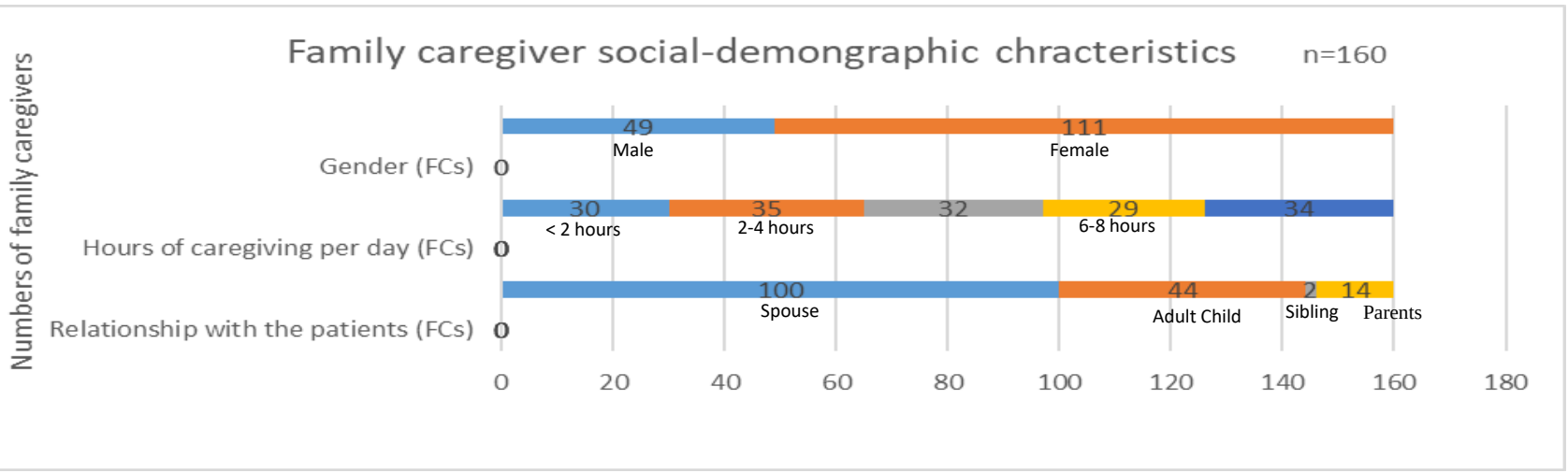
Flow of participants



Note. *n* = number of subjects, ITT = intention-to-treat

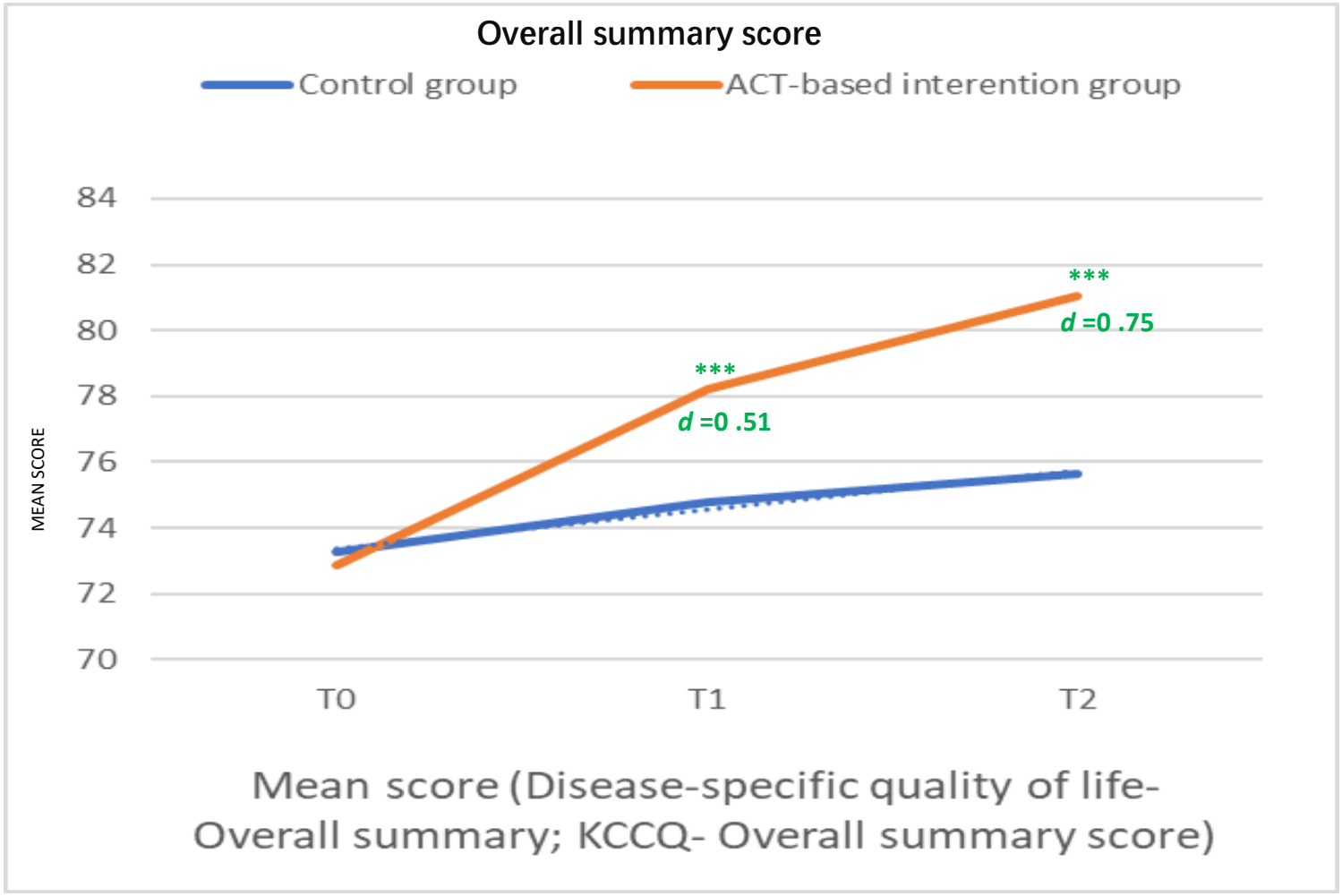
Participant characteristics





Estimated effects on between groups across time

Patient quality of life measured by Short form Kansas City Cardiomyopathy Questionnaire (KCCQ) (Spertus & Jones, 2015)

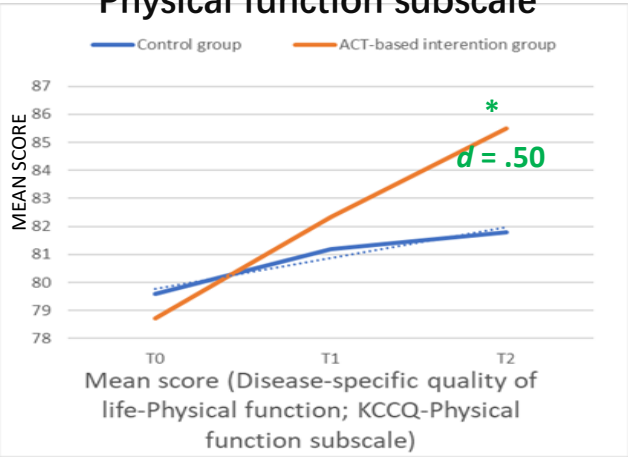


Note. *p < .05; **p < .01, ***p <.001

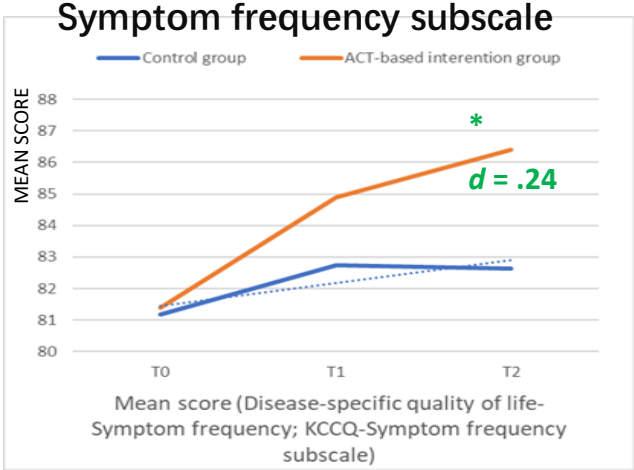
Patient quality of life measured by Short form Kansas City Cardiomyopathy Questionnaire (KCCQ) (Spertus & Jones, 2015)

Subscale analysis

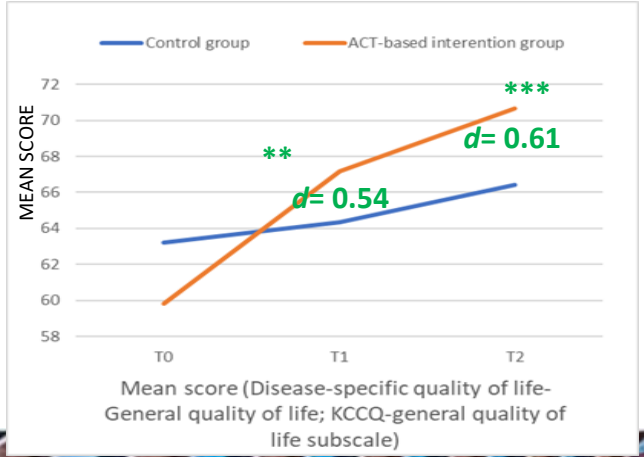
Physical function subscale



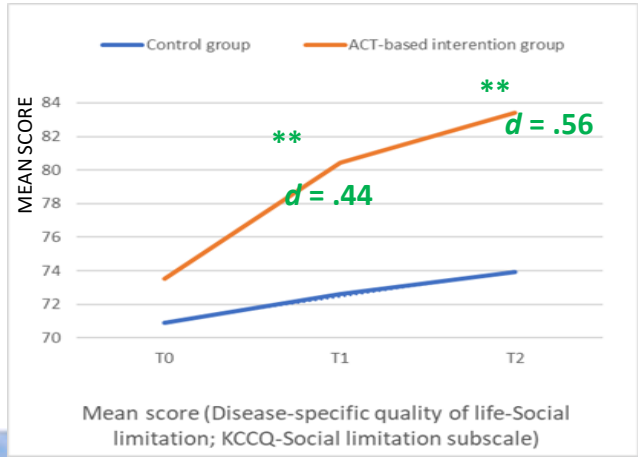
Symptom frequency subscale



General QOL subscale

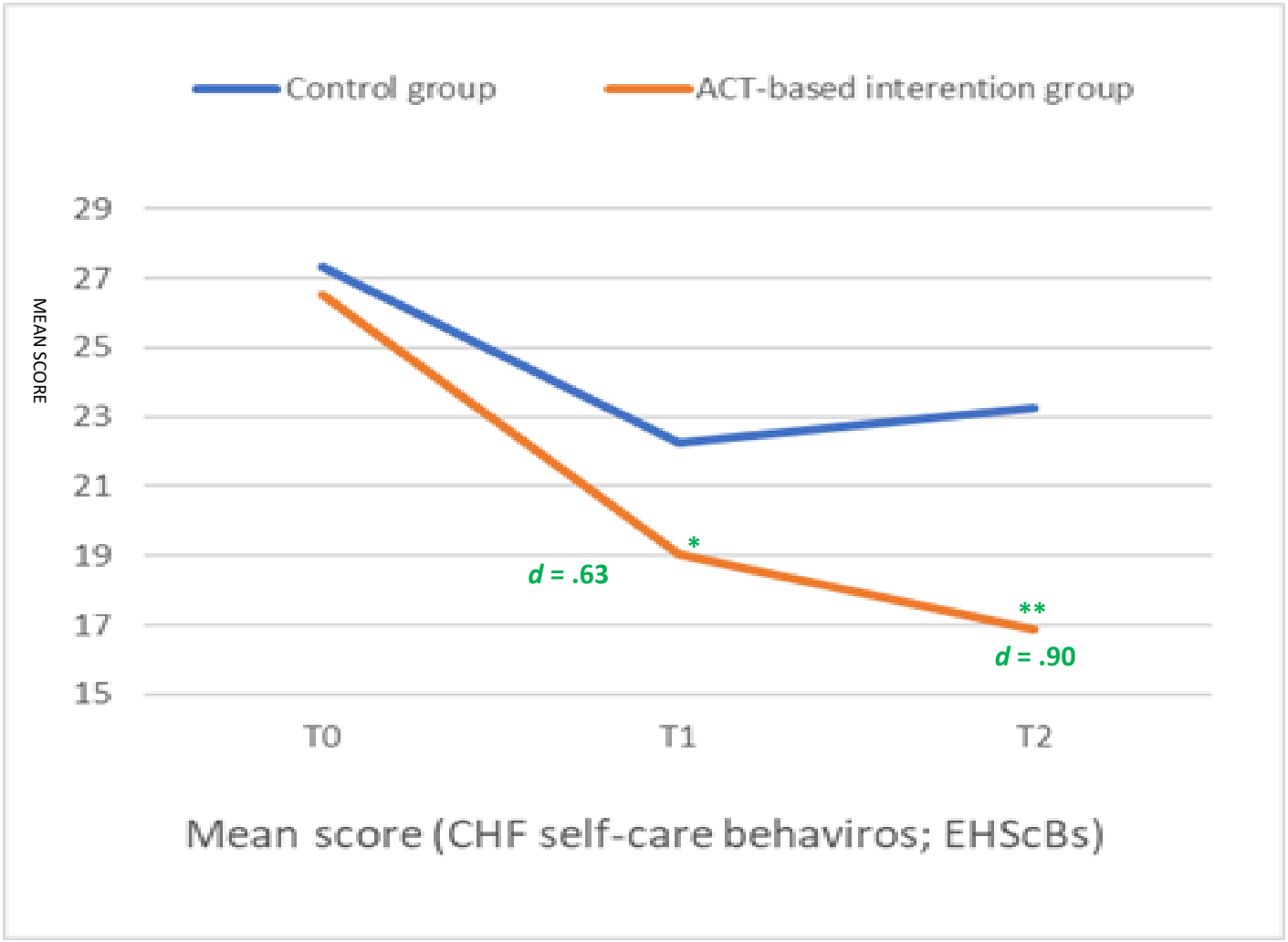


Social limitation subscale



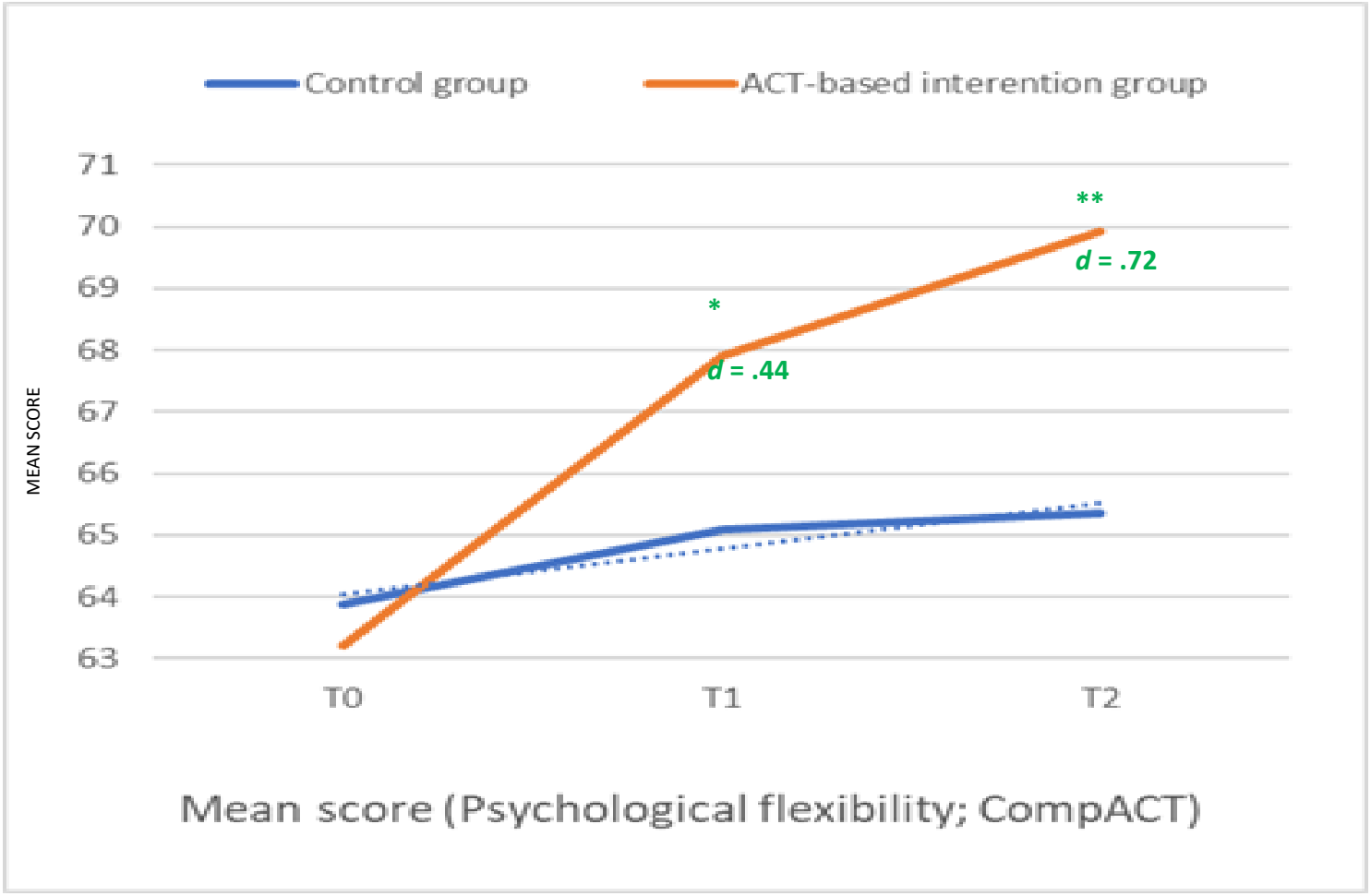
Note. $*p < .05$; $**p < .01$, $***p < .001$

Patient HF self-care behaviors by European Heart Failure Self-care Behavior Scale (EHFScBS) (Jaarsma et al., 2003; Yu et al., 2011)



Note. *$p < .05$; **$p < .01$, ***$p < .001$

Patient psychological flexibility by Comprehensive Assessment of Acceptance and Commitment Therapy Processes (CompACT) (Y. Chen, et al., 2023; Francis et al., 2016)



Note. *p < .05; **p < .01, ***p <.001

Quantitative process evaluation

- 58.2% (160/275) of dyad assessed for eligibility participated the study, excluded (*n*=115)
  - Loss of contact (*n*=33)
  - Unavailability during study period (*n*=29)
  - Lack of interest in participation(*n*=16)

Non-eligible: *n*= 36	• Unable to access Tencent conference platform (*n*= 10) • Hearing/ visual problem (*n*=11) • Commodity with other terminal disease (*n*=6) • Unable to speak or read Chinese (*n*=5) • Cognitive impairment (n=5)

- 70% of dyads completed all four ACT-based intervention sessions
- 74% of PTs and 70.1% of FCs completed all ACT homework
- 17.5% of dyads were lost to follow-up

Study limitations

- Sample selection bias (85% of patients were NYHA classification of I to II)
- Reliance on self-reported measures

Conclusion

- This is the **first study** to adopt a family-based ACT intervention for patients and their FCs for HF condition, the intervention consisted of four-week sessions was delivered via smartphone videoconferencing to help both PT and their FCs to adapt to the psychological challenges of managing HF in China.

- The results suggest that dyad ACT-based intervention could help patients **improve HRQOL,HF self-care behaviours, when compared with health education alone.**

- There were also significant positive **improvements in psychological flexibility** in PTs, the improvement was sustained at the three-month follow-up.

- Four 2-hour session family-based ACT delivered via smartphone videoconferencing was effective in enhancing HRQOL, and HF self-care in patients with HF, compared to heart failure education alone.

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Thank you!