Management of Patients with Heart Failure with Preserved Ejection Fraction: What do Patients and Providers Need and Want?
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Study Title	Management of Patients with Heart Failure with Preserved Ejection Fraction: What do Patients and Providers Need and Want? IRAS 222689 REC NE-York 17/NE/0199
Internal ref. no. (or short title)	HFpEF (Qualitative) Patients & Providers
Study Design	Qualitative study using semi-structured interviews and framework analysis.
Study Participants	Patients with Heart Failure with Preserved Ejection Fraction (HFpEF), health care providers (HCP) from primary care and specialist services, and commissioners.
Planned Sample Size	20-25 patients, and 20-25 providers and commissioners
Follow up duration	No follow up required
Planned Study Period	9 months
Objectives	We hypothesise that outcomes of patients with HFpEF can be improved through optimising their management and self-management, and increasing coordination between primary care and specialist services. We believe that patients and providers will have useful ideas and perspectives on management and self-management of HFpEF, and how it can be supported. Objectives: 1) Explore patients' understanding of and perspectives on HFpEF and comorbidities; 2) Describe patient strategies for monitoring and managing symptoms, medications, exercise and diet; 3) Determine patient preferences related to care and support needed; 4) Explore providers' (GPs, practice nurses and Heart Failure (HF) Specialists) and commissioners' understanding of and perspectives on managing HFpEF and comorbidities, organisation of care, the type of support feasible to provide in primary care, and collaboration between primary and specialist services.
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Sponsor	Cambridge University Hospital NHS FT and the University of Cambridge Research & Development Department Cambridge University Hospitals NHS Foundation Trust Box 277 Addenbrooke's Hospital, Hills Road Cambridge CB2 0QQ
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Plain English Summary Heart failure (HF) is *a* condition in which the heart does not work well to pump blood around the body. About half of patients with HF have a type of HF in which the heart is very stiff, which is more common in older people with a history of high blood pressure, obesity and diabetes. It is harder to diagnose and is less well recognised and understood. No specific drugs have been found to help this type of HF, except for diuretics or 'water pills'. Controlling blood pressure and blood sugar, and being active are recommended for patients with this HF. Most patients are managed in primary care sometimes in collaboration with specialists. In this study we want to ask patients with this type of HF about their challenges, how they manage HF and their other conditions, and ask patients, primary care providers, HF nurses and doctors, and commissioners about what they think will improve management and how to organise care. We will recruit and obtain consent from 20-25 patients, 20-25 providers from primary care and HF specialist services to talk to us. Interviews can be by telephone or in a place of the person's choosing, and will be audio-recorded and transcribed. It is confidential: no identifying information will be on the interviews or written transcripts so no one will know who it is. We will use what people tell us to improve the management of this type of HF: to help patients manage symptoms and have better quality of life, and to make sure that patients get the right care. We will talk to patient groups and providers about what people have told us, and use the information as part of a programme of research to improve management.

Abstract: Approximately half of patients with heart failure (HF) have heart failure with preserved ejection fraction (HFpEF), and are usually older with multiple comorbid conditions. HF-specific medications used in HF with reduced EF have not been found to reduce mortality and morbidity in HFpEF, but management of comorbidities is essential as these contribute to development and progression of HFpEF. Providers and patients may be uncertain about what can be done to manage HFpEF. The purpose of this study is to explore patients' and providers' perspectives on management, self-management, support needed and its feasibility. **Objectives**: 1) Explore patients' understanding of and perspectives on HFpEF and comorbidities; 2) Describe patient strategies for monitoring and managing symptoms, medications, exercise and diet; 3) Determine patient preferences for care; 4) Explore providers' understanding of and perspectives on managing HFpEF and comorbidities, organisation of care and type of support feasible. **Methods**: Qualitative study using semi-structured interviews. Sample: Patients: 20-25 patients identified with HFpEF in East of England. Adult patients with i) diagnosis of diastolic dysfunction or HFpEF; or ii) diagnosed with HF and a reported 'normal' EF or EF $\geq$ 50%. Exclusion criteria: cognitive impairment, non-English speaking, receiving end of life care or other life-threatening

condition. Providers: 20-25 GPs, practice nurses and HF nurses from EoE. Data collection: Patients and providers recruited through practices and networks, and invited for interview. Interviews will be conducted via telephone or at a place of person's choosing, audio-recorded with permission and transcribed verbatim. Analysis: Transcripts analysed using framework analysis, and emerging themes and ideas coded, discussed and summarised.

Outcomes/Outputs: Greater understanding of patients' and providers' perspectives of HFpEF, comorbidities and management to be incorporated into a peer-reviewed paper, and the development and testing of optimised management for patients with HFpEF in a collaborative application.

Background and Rationale: Approximately half of patients with HF will have a preserved ejection fraction (HFpEF) rather than a reduced ejection fraction (HFrEF), especially among older patients (1,2). HFpEF is less well understood and less easily diagnosed than HFrEF, and often not identified in primary care (3). Patients are usually older with multiple comorbid conditions such as obesity, hypertension and diabetes, and more likely to be women (4). HFpEF has been labelled a 'stealth syndrome', and better understanding and treatment called an urgent priority (5).

HFpEF greatly affects patient well-being: patients with HFpEF reported greater consequences of HF on their lives, more symptoms and the same or worse quality of life than those with HFrEF (6,7). Epidemiological trends in the US has shown hospitalisations for HFpEF increasing, while those for HFrEF were decreasing; however both groups experienced readmission rates of 29% in 60-90 days (8). In-hospital mortality for HFpEF in studies was 2.5-6.5%, with 6 month mortality rates of 14-16%, similar to HFrEF (9).

Unlike HFrEF, HF specific pharmacological therapy (ACE inhibitors, beta blockers) has not been shown to improve morbidity and mortality in HFpEF (10). Thus age, comorbidity and lack of evidence-based treatment in an under-recognised type of HF pose a challenge for improving outcomes. However, others argue that management of comorbidities is key to managing HFpEF given that these conditions are thought to drive the development of HFpEF through promotion of inflammation (11,12). Class I recommendations in the latest European guidelines are to manage comorbidities and use diuretics to manage fluid status as needed (10).

Providers and patients may be uncertain about what can be done to manage HFpEF, or to better organise care. Previous studies in HF have shown challenges in diagnosis, provider knowledge, and in organisation of services with fragmentation and discontinuity being common (3,13). Self-management in HFpEF is little explored. Similar to HFrEF patients with HFpEF will need to monitor fluid retention, blood pressure and potentially blood glucose, whilst managing symptoms, medications, diet and physical activity. Most studies of self-management in HF have focused on patients with HFrEF and the HF alone rather than

HFpEF plus comorbidities. Studies of HF self-management that have reported including both HFrEF and HFpEF did not provide specific information regarding patients with HFpEF, or proportion in the sample (14), and in one study the mean age (57 ± 13) and mean ejection fraction (28.4 ± 12) made it unlikely that there were many patients with HFpEF (15). Patients with either HFpEF or HFrEF are likely to face similar challenges in self-management, and need pro-active support and timely communication with familiar providers (14).

Given the uncertainty and lack of evidence for management and self-management of this patient group, it is important to determine what patients and providers are currently doing and what they wish for in terms of management and support. The purpose of this study is to explore primary care providers', HFSNs' and patients' perspectives on management and self-management of HFpEF and comorbid conditions, the type of support needed and what is feasible to provide optimal management.

Hypothesis and Aims: We hypothesise that outcomes of patients with HFpEF can be improved through optimising their management and self-management, and increasing coordination between primary care and specialist services. We believe that patients and providers will have useful ideas and perspectives on management and self-management of HFpEF, and how it can be supported. Objectives: 1) Explore patients' understanding of and perspectives on HFpEF and comorbidities; 2) Describe patient strategies for monitoring and managing symptoms, medications, exercise and diet; 3) Determine patient preferences related to care and support needed; 4) Explore providers' (GPs, practice nurses and HF Specialists) understanding of and perspectives on managing HFpEF and comorbidities, organisation of care, the type of support feasible to provide in primary care, and collaboration between primary and specialist services.Research Plan

Methods: Qualitative study using semi-structured interviews. Sample: Patients: 20-25 patients identified with HFpEF or probable HFpEF from records from practices in the East of England, and referred to specialist services. This number may increase if there are new themes arising from interviews as the intent will be to reach data saturation. We will recruit patients from practices both rural and urban, and will work to include fairly equal numbers of women and men, and a variety of comorbid conditions.

Our current investigation indicates that 40% of patients on HF registers can be identified as HFpEF or probable HFpEF. Adult patients will be included if they have i) diagnosis of diastolic dysfunction or HFpEF in their records; or ii) have been diagnosed with heart failure and have a reported 'normal' EF or EF $\geq$ 50%. Exclusion criteria: cognitive impairment as identified by the practice, non-English speaking, receiving end of life care or other life-threatening condition. Providers: 20-25 GPs and practice nurses from practices in East of England, HF specialist nurses, cardiologists, commissioners and others involved in care. We will recruit from urban and rural practices.

Patients will be recruited through practices in East of England, including those referred to specialist services in Cambridgeshire and Peterborough. Estimating a 50% recruitment rate, we would need 3-4 practices with HF registers of 50-100 patients to recruit our needed sample.

Data collection: Practices will review patients on the HF register using the inclusion and exclusion criteria and send eligible patients a cover letter, patient information sheet, informed consent and expression of interest. Patients will be able to return the expression of interest by pre-paid post, or ring the study administrator or research nurse. In a previous qualitative study of patients with HFrEF, we found that this was a reasonable approach for recruiting patients. We will also ask the practices to talk to eligible patients attending clinic visits, and determine if they are willing to be approached about the study. Patients will have at least 24 hours to consider participating.

Interested patients will be contacted by the SRF or research nurse to explain the study, answer questions and go through the informed consent form. Consent may be taken at time of face-to-face interview or mailed via pre-paid post if the interview is by telephone. Verbal consent will also be confirmed at time of interview.

Interviews will be conducted at a place of the patient’s choosing or via telephone. Interviews will be semi-structured to allow for additional questions (arising from earlier interviews), probing of answers and a relaxed conversational style. We will audio-record the interviews with permission and transcribe them verbatim. Patient identifying information will not be recorded or appear on the transcripts. At the end of the interview, the patient will be given a £10 gift voucher to thank them for participation.

Sample: Providers: 20-25 GPs and practice nurses (PN) will be recruited from urban and rural practices in the East of England. We will invite participants from a randomly selected sample of practices through the Cambridgeshire and Peterborough clinical commissioning group (CCG), and the primary care clinical research network East of England. Letters of invitation, participant information sheets, informed consent and expression of interest forms will be sent to practices and through GP and PN forums. Heart failure specialist nurses and cardiologists will be invited through the CCG and specialist services providing outpatient or community management of patients with HF, plus the Eastern Region Heart Failure Specialist Nurses Forum (Norfolk, Suffolk & Cambridgeshire).

Interested GPs, practice nurses and HFSN can return the expression of interest form in pre-paid postage or can ring the study administrator or research nurse. The SRF or research nurse will discuss the study, answer questions, and go through the informed consent forms.

Signed informed consent forms can be scanned and emailed or posted using pre-paid postage envelopes, or received at a face-to-face interview.

Interviews will be conducted via telephone or at a place of the provider's choosing. Interviews will be semi-structured to allow for additional questions (arising from earlier interviews), probing of answers and a relaxed conversational style. We will audio-record the interviews with permission and transcribe them verbatim. Identifying information will not be recorded or appear on the transcripts. In previous research with GPs and practice nurses, we have interviewed 2-3 GPs and staff together (for example at lunch), and the strategy may be used in this study. We found that this stimulated discussion, and was time-efficient. We will also attend a meeting of the Eastern Region Heart Failure Specialist Nurses Forum for general discussion as well as recruitment of participants.

Analysis: Framework Analysis will be used to analyse the data, as its matrix-based format will facilitate sharing of data as a team. Transcripts will be read as they are completed, first to become familiar with the data (stage 1), then to develop an initial thematic framework (stage 2) and begin indexing data (stage 3). Thematic charts (stage 4) will allow patterns to be explored and reviewed; and in stage 5 data will be mapped and interpreted. Analysis will be data driven, and initial themes and key ideas will be shared across sites. Data will be managed using NVIVO software. Ideas and themes will be discussed with investigators and patient advisory group (see PPI section), and reviewed to ensure that all ideas are included, and that findings are credible and confirmable. HCPs' and patients' interviews will initially be analysed separately, but we will also conduct a secondary analysis across the data sets for similarities and differences related to management, self-management, burden of treatment and desired achievements (eg patient goals compared to providers'). The results of the analysis will be used to increase our understanding of unmet needs, preferences and perspectives of this patient group as well as HCPs' knowledge and recommendations for optimising management. The findings will help inform the development of a coordinated programme of management for patients with HFpEF.

Project timetable:

April - May 2017 HRA process for ethical approval and research governance in the CCGs (pre-funding and study start) May 2017: Research nurse seconded, receives training on study and qualitative interviewing. Attendance at Eastern Region HF Specialist Nurses Forum to discuss study.

June - August 2017: Recruitment of practices with support of PCRN, beginning with practices involved in Tip of the Iceberg Study. Letters and information sheets mailed to eligible patients. First interviews with providers and patients conducted by SRF and research nurse together to ensure quality.

June – November 2017: Conduct of interviews, concurrent analysis of interview transcripts. Patients invited to join Advisory group. Emerging themes and categories discussed with investigators and patient advisory group.

November 2017 – January 2018: Final analysis of interviews, abstract and first draft of paper completed. Findings discussed with patient and provider groups. Post study: Paper submitted to journal. Findings discussed with collaborative research group.

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