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## 'OUT OF SYNC': A QUALITATIVE INVESTIGATION OF PATIENTS' EXPERIENCES OF ATRIAL FIBRILLATION AND PERCEPTIONS OF WEIGHT MANAGEMENT.

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3 **'OUT OF SYNC': A QUALITATIVE INVESTIGATION OF PATIENTS' EXPERIENCES**  
4 **OF ATRIAL FIBRILLATION AND PERCEPTIONS OF WEIGHT MANAGEMENT.**  
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## ABSTRACT

**Objectives:** To explore ways to enhance the design of risk factor management and weight-loss services for people with overweight/obesity and atrial fibrillation (AF).

**Background:** AF is the most common cardiac arrhythmia, with serious consequences for health and quality of life. Some evidence indicates weight reduction in people with AF and overweight/obesity may improve symptoms. This population may require additional support with weight management due to factors associated with aging and health.

**Design:** Qualitative investigation based on semi-structured interviews.

**Methods:** 12 adult participants (4 female, 8 male) with diagnosed AF and a current or previous BMI>27kg/m<sup>2</sup> were recruited at a large tertiary cardiac referral centre in southern England. Participants completed quality of life and AF symptom questionnaires using Think-Aloud technique and semi-structured interviews relating to their weight management experiences, needs and preferences. Interviews were audio recorded and analysed thematically using the COM-B behaviour change model as a theoretical framework.

**Results:** Three main themes were identified. *Being Out of Rhythm* explores the psychological and physical impact of AF on weight management; *Doing the Right Thing* discusses participants' weight management experiences; *Broaching the Subject* explores participants' perspectives on weight management conversations with clinicians.

**Conclusions:** There was dissatisfaction with the weight management advice received from health care professionals including cardiologists. Participants wanted open, non-judgemental discussion of cardiac health implications of overweight/obesity supported by referral to weight management services. Improved communication including research findings regarding the benefits of weight-loss as a factor in AF management might increase motivation to adhere to weight-loss advice in this population.

## ARTICLE SUMMARY

### Strengths and limitations of this study

- Explores views and experiences of patients with AF, illuminating barriers to weight management

- The COM-B behaviour change model facilitated application of findings to strategies to improve clinical practice
- Only included the views of people willing to discuss weight management
- Participants were recruited from an ethnically homogeneous population, further research is needed to fully reflect the perspectives of the wider population.

Competing Interests: The authors declare they have no competing interests

For peer review only

## INTRODUCTION

Mounting evidence demonstrates weight-loss improves symptoms and slows disease progression in people with atrial fibrillation (AF) and overweight[1]. Yet despite convincing evidence of the health benefits, few cardiac patients with overweight achieve healthy weight management in the long-term[2]. Weight-loss is a complex and sometimes onerous undertaking, subject to multifactorial biological, behavioural[3], socioeconomic, environmental and personal influences[4, 5]. Incidence of AF increases with age, meaning patients are likely to be older and experience more concurrent conditions than the populations in general weight management studies. Better understanding of the lived reality of these factors could improve the design of weight management services for this population.

A qualitative synthesis of studies examining weight management among myocardial infarction (MI) patients undertaking cardiac rehabilitation found the cardiac event served as a “wake-up call”, revealing the extent of damage to health[6-8]. Although motivated to lose weight, individuals often felt overwhelmed and lacked knowledge and strategies to enact lifestyle changes[6-8]. Referral to weight management services was valued and access to supervised exercise facilities allayed safety concerns[6, 8]. Personalisation of services increased acceptability and compliance[8].

The experiences of people with AF are different from those recovering from MI – AF is not acutely life-threatening, cardiac rehabilitation is not routinely provided, treatment success rates vary[9]. Growing evidence indicates advice to patients with AF should include proactive weight management[10, 11] but the guidance on how to tailor advice and services to meet patients’ needs is limited. No existing qualitative literature explores the experiences of people with overweight and AF, hence this study.

The study was carried out in accordance with the Declaration of Helsinki and the principles of Good Clinical Practice. Ethical approval was granted by London-Bromley Research Ethics Committee (20/LO/0356).

### Language and Definitions

Overweight and obesity are defined by the World Health Organisation as a body mass index (BMI) equal to or greater than 25 kg/m<sup>2</sup> or 30 kg/m<sup>2</sup> respectively[12]. The inclusion criteria for this study adopted a BMI of 27 kg/m<sup>2</sup> or greater, in line with other quantitative studies of

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3 overweight and AF[10, 11]. The term “overweight” is used in this report to describe a BMI of  
4 27 kg/m<sup>2</sup> or over, except when discussing other studies which specifically investigate  
5 obesity.  
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## 10 **METHODS**

### 11 **Patient and Public Involvement**

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16 Advice on study design, relevance and acceptability was obtained from two volunteers with  
17 AF (one volunteer also had BMI>27kg/m<sup>2</sup>) via a Patient and Public Involvement (PPI)  
18 bulletin. Minor alterations to the patient information sheet were made as advised. No  
19 changes to the study design were suggested.  
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### 23 **Design**

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27 A qualitative interview study design was used to explore patients’ perspectives and  
28 experiences[13] of living with AF and overweight. Because weight management involves  
29 behaviour change, the COM-B model[14] was used as the theoretical framework. COM-B  
30 identifies capability, opportunity and motivation as the three essential elements for behaviour  
31 change. These elements form the hub of the Behaviour Change Wheel that represents the  
32 complexity of the economic, social and political influences that interact with COM elements  
33 ultimately determining behavioural choices[15]. The model was embedded in study design,  
34 as a topic guide for interviews, and as a framework for data analysis to enhance theoretical  
35 coherence and consistency[16]. The study is reported following the COREQ guidelines[17]  
36 (appendix A) to ensure comprehension and transparency.  
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### 44 **Context and Sampling**

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47 Twelve participants were purposively recruited from outpatient services at a large tertiary  
48 referral centre in southern England. All participants had to have AF, have current or previous  
49 BMI of 27 kg/m<sup>2</sup> or over, and be able to converse in English in order to gain an  
50 understanding of the weight management issues they faced[13] (see Table 1 for selected  
51 participant characteristics). Recruitment continued until data saturation was reached.  
52 Potential participants were approached during hospital appointments by the direct care team  
53 and provided with a patient information sheet. Fourteen patients were approached in total;  
54 two declined, stating they did not wish to discuss weight management.  
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Age range	Employment	Education	BMI	Type of AF	Years since AF diagnosis	Symptomatic	Reported previous weight loss (kg)	Weight loss method
70-79	Retired teacher	Higher	30	Paroxysmal	>10	Yes	19 (regained)	Very low calorie (self directed)
70-79	Retired from food industry	Secondary	43	Paroxysmal	5	Yes	Not reported	Very low calorie (self directed)
60-69	Cook	Secondary	25	Paroxysmal	>10	Yes	19	Dietary, self-directed
60-69	Hospitality	Further	28	Persistent	9	Yes	22 (regained)	Slimming World
50-59	Tradesperson	Secondary	28	Persistent	<1	Yes	4	Diet and exercise, self-directed
60-69	Leisure industry (retired firefighter)	Further	41	Persistent	2.5	Yes	50 (partially regained)	Slimming World
50-59	Retired firefighter	Secondary	37	Persistent	1.5	Yes	19 (regained)	Previously Slimming World. Now on BHF diet (LOSE-AF study)
60-69	Nurse	Higher	41	Paroxysmal	9	Yes	Not reported	Various
60-69	Carer	Further	36	Paroxysmal	>10	Yes	11	Diet and exercise, self-directed
60-69	Tradesperson and business owner	Secondary	31	Persistent	>10	No	53 (partial regain)	Previously Aloe Vera diet. Now Cambridge 1:1 (LOSE-AF study)
50-59	Teacher	Higher	34	Persistent	3	Yes	28 (partial regain)	SlimFast
70-80	Retired electronics engineer	Further	37	Persistent	<1	Yes	7	Cambridge 1:1 (LOSE-AF study)

**Table 1. Selected participant demographics and characteristics**

## Data Collection

Interviews were conducted by an experienced female, M-level trained, research nurse (RB). This information was included in the patient information sheet. One participant was previously known to RB through participation in an unrelated clinical trial. All others were unknown. Interviews were conducted over the telephone due to the COVID-19 pandemic that restricted research and elective clinical activity. The participant known to RB chose to be interviewed face-to-face in a research facility clinic room after attending a hospital appointment. Two participants were interviewed with their partner in attendance. Interviews lasted between 31 and 100 minutes with an average duration of 55 minutes.

The interview process was carefully planned by RB, CB & AT to encourage participants to feel comfortable and able to speak openly about their weight management experiences with a focus on service improvement[18]. Participants' experiences were explored using semi-structured interviews[19]. To reduce any discomfort discussing weight and to focus on AF[20] participants began by completing two questionnaires: Atrial Fibrillation Symptom Severity Scale[21]; EQ-5D-5L[22] using a Think-Aloud[23] technique. RB encouraged participants to verbalise their thoughts whilst completing the questionnaires which enables deeper reflection, self-awareness and insight into the meanings behind their responses about behaviours and decisions[23]. The Think-Aloud technique facilitated identification of instances where questionnaire responses reflected adaptations in expectations to accommodate worsening health[24], and has been used previously to explore the support needs of patients with AF[25]. A topic guide based on the COM-B model helped frame the ongoing interview around physical and psychological capabilities, opportunities, and motivation for weight management with reference to the questionnaire responses[18]. For example, "In the category "Usual Activities" you answered "I have slight problems doing my usual activities" - can you tell me a bit about what your usual activities include? What do you consider the reasons for these problems? [Capability]".

## Analysis

Interviews were audio recorded and transcribed by a researcher (RB). Field notes were written to record responses, reflections, assumptions and evolving interpretations following each interview and supplemented during transcription[20]. A summary of the interview was provided to each participant before analysis to confirm it captured an accurate representation of their views, meanings, and intentions. Participants had the opportunity to

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3 clarify any parts they did not agree with (no participants asked for changes to be made) and  
4 to confirm their continuing consent for their data to be used.  
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8 The transcribed data were imported to a spreadsheet and coded line-by-line to identify  
9 processes and phenomena by RB and checked by CB and AT. Codes were mapped onto  
10 the COM-B framework and organised into sub-themes. As working themes were identified, a  
11 re-coding process was carried out to maintain thematic coherence[26] (see Table 2 for  
12 examples of this process). As coding progressed, themes were identified reflecting the  
13 interplay between the elements of the COM-B model (see Figure 1). The resulting schema  
14 was checked against the original interviews to ensure participants' various perspectives  
15 were fairly represented[27] and agreed within the research team.  
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Quote	Initial codes (Initial framework theme)	Re-coded to	OM-B category	Theme
"It bothers me.. not the actual.. It bothers me that I can hear it in my ears more than anything" – male, age 70-79	Annoying symptoms (What it feels like for me)	Psychological impact of AF	Motivation	Being out of rhythm
"At the minute, touch wood.. it feels like it wants to start, like at work today it kind of skipped a beat and I thought oh no please don't start!" – female, age 60-69	Touching wood (Motivation); Dreading relapse (Capability – Psychological)	Psychological impact of AF	Motivation	Being out of rhythm
"I know if I lost half a stone I would feel that little bit quicker, a bit lighter, but I wouldn't want to lose any more than that because it would like take that bit of strength away" – male, age 50-59	Being big and strong (Motivation - reflective)	Desire to lose weight - confounding factors	Motivation	Doing the right thing
"But yeah that's what I'd like, to go through foods with me, to say well no you can't really have that – I'm only thinking I'll have that because it's got no sugar in it – do you know what I mean? But I don't think about maybe the fat content. I think about the sugar content, I think oh great I can have that – do you know what I mean? So.. It's someone to sit and educate me, more than anything." female, age 60-69	Nutritional knowledge (Capability - psychological); Desired help (Opportunity – physical); Wanting to talk about weight (Motivation – automatic); Changing diet (Behaviour Change)	Weight management knowledge; Desired help	Capability, Opportunity, Motivation; Behaviour Change	Doing the right thing
"I can't remember exactly what she said but I think it was around the weight issue. But none of them, none of them have said that the weight was an issue for any of the procedures that were going to be done, so I didn't make much of it other than to say you know that.. But it's usually that if you lose a bit of weight then.. I don't know I can't remember what they said but basically lose some weight – it wasn't an order, it was just advice." - male, age 50-59	Risks not explained (Motivation – reflective); Choosing what to hear (Motivation – automatic).	Patient education	Motivation	Broaching the subject
"Years ago when I lived in [city] um, they could, sounds silly I know but they could put the gym on prescription for so many months, which is what one doctor done for me and I used to go to the gym, um, oh two, three times a week then.." - female, age 60-69	Having weight loss prescription (Motivation – reflective); Doing exercise (Capability – physical).	Being referred	Motivation, Opportunity	Broaching the subject

**Table 2. Examples of coding and thematic analysis process**

## FINDINGS

### Participants

The sample included four women and eight men, a gender ratio which corresponds to the general AF population[28]. Ages ranged from 50 to 76. A range of socioeconomic, educational, and professional backgrounds were represented. All participants identified as White British, consistent with the demography of the AF population managed at the study site.

Time since AF diagnosis ranged from four months to fifteen years. Five participants had paroxysmal AF (occurring in self-limiting episodes lasting less than one week) and seven had persistent AF (lasting more than one week). Eleven participants reported comorbidities which impacted on their activities of daily living and quality of life.

BMI ranged from 25 (after sustained weight-loss) to 43 kg/m<sup>2</sup>. All participants reported having lost weight at some point in life, from 4kg to 53kg, but most, at least partially, had regained weight.

### Being out of rhythm

*Being out of rhythm* describes the physical and psychological disruption AF caused to participants' lives. Symptoms impeded day-to-day activities, corresponding with the capability component of COM-B. Participants characterised these limitations as a life having lost its rhythm: They could no longer live the life they wanted while experiencing AF and were left waiting to regain their rhythm, both cardiologically and metaphorically. Waiting for treatment, uncertainty of its effectiveness, and fear of relapse appeared to sap motivation to engage in healthy lifestyle behaviours.

"I just feel edgy when it's out of sync... I can't wait for it to drop back into rhythm"  
– female, age 70-79

The physical impacts of AF included fatigue, breathlessness, chest pain, palpitations, and faintness and ranged in severity from mild to debilitating. Nine of the twelve participants had been hospitalised with severe symptoms, and eleven had undergone cardioversion or ablation for symptom management. Although reassured by their cardiologists that AF is not life-threatening, the onset of symptoms could still induce significant anxiety and sometimes panic. This was typified by a healthcare professional participant, who struggled to reconcile her objective clinical understanding of AF with the subjective distress she felt when experiencing arrhythmias:

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3 “It is horrible, it is horrible... and it can come on at any time so if I’m at work or at  
4 a meeting... you haven’t even got a chance to be away from anyone noticing  
5 you’re not very well ... you don’t want people to know you’re in AF. Especially  
6 people my office who are nurses, they’re not going to take much notice really!”  
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8 – female, age 60-69  
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11 Symptoms impacted family activities, work, housekeeping, hobbies and sleep patterns. The  
12 sense of life being suspended was experienced as a *Life on hold*. Some participants felt  
13 unsafe and deliberately limited their activities for fear of precipitating an episode of AF or  
14 damaging their heart. Participants who had previously been active identified their symptoms  
15 as a cause of weight gain. Inability to exercise impacted energy expenditure, but could also  
16 affect motivation by disrupting social lives and removing pleasure. Physical limitations often  
17 had psychological ramifications, causing frustration and anxiety about deteriorating health  
18 and aging.  
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25 “It’s doing my head in to a point. I hate it. Frustration is a massive thing because  
26 I’m in my 50s and like I said I’m an ex-firefighter and all that stuff and I’m used to  
27 being healthy and active, I’m not someone for sitting around and watching TV all  
28 day.” – male, age 50-59  
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32 Returning to sinus rhythm was for some the only way to regain health and previous lifestyles.  
33 This resulted in postponing weight management attempts until such a time when, back in  
34 rhythm, they would regain the mental energy to focus on diet and the physical capability to  
35 exercise.  
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### 39 **Doing the right thing**

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41 All participants recognised overweight as unhealthy and undesirable, and articulated positive  
42 health behaviours as *Doing the right thing*. Inability to sustain weight-loss despite following  
43 advice to the best of their ability caused significant frustration.  
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47 “I try and eat healthily – we *do* eat healthily – we have fruit and veg more, far  
48 more than five portions a day, so I believe we eat healthily. I try and exercise, um,  
49 so at the moment I’m on this healthy diet that the British Heart Foundation  
50 recommend, and my wife’s good at measuring out portion sizes and this sort of  
51 thing... So we’ve been doing that for a couple of weeks now and it’s ok but I’ve  
52 only lost – for me – hardly anything, like a pound or two” – male, age 60-69  
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56 Many participants expressed a sense of unfairness and perceived social judgement toward  
57 people with overweight. For some, this created internal conflict as they sought to counter  
58 assumptions, while simultaneously berating themselves for a lack of self-discipline. Others  
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3 viewed their own ill-health as a cause of weight gain, not a consequence of long-term  
4 overweight. Four male participants with physically demanding jobs associated being big with  
5 being strong.  
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9 All participants reported having lost weight at some point in life, citing general health  
10 concerns or body image as motivating factors. Organised diet programmes and meal  
11 replacement products were identified as helpful in achieving significant weight-loss by six  
12 participants. Others preferred to self-manage, drawing on calorie reduction and exercise  
13 advice from a variety of sources. Repeat cycles of dieting and weight regain were common  
14 across the participants. Loss of motivation was frequently cited as precipitating weight  
15 regain, often associated with relaxing diet regimes around holidays or weddings. Only one  
16 participant maintained her weight-loss in the long term, which coincided with significant  
17 changes in her lifestyle and personal relationships.  
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24 *Body as victim, body as culprit* illustrates participants' experiences of managing weight in a  
25 body over which they did not feel fully in control. The body was seen as a victim of illness  
26 and aging, with AF conceptualised as an external aggressor to be kept at bay through  
27 medication and management of risk factors. Conversely, the body could play the role of  
28 culprit in the struggle to achieve a healthy weight, being pre-disposed to weight gain by  
29 "genetic" factors or childhood eating habits. Two participants described food as an addiction,  
30 experiencing bodily cravings which they lacked the psychological strength to overcome  
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### 36 **Broaching the subject**

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38 *Broaching the subject* explores participants' perceptions of consultations where weight  
39 management was discussed (or not). Participants indicated they would be open to  
40 discussing their weight within the context of a clinical consultation, but perceived health care  
41 professionals were reluctant to engage in frank discussion. Only one participant knew that  
42 overweight is a risk factor for developing AF, and none were aware of evidence for weight-  
43 loss improving AF symptoms[10, 11]. Many reported doctors "mentioning" their weight, which  
44 became repetitive and irritating when not accompanied by specific explanations of the health  
45 risks, or offers of help.  
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51 "The trouble is, it's all very well them saying "You should lose weight" but I  
52 couldn't. You know it's difficult to find proper sensible advice on how to do this.  
53 You know there are all these companies that set up but they're in there to make  
54 money." – male, age 70-79  
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58 Many appeared to deny that their health might be damaged by their overweight having never  
59 been unequivocally told. When healthcare professionals broached weight management but  
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3 omitted to refer patients to relevant services, patients sometimes interpreted that their weight  
4 was not yet a cause for concern and that behaviour change could be postponed. Some  
5 reported requesting help, but that the sort of help they wanted was not available.  
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7 Preferences varied widely, from very low calorie meal replacements, dietician review,  
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9 cognitive behavioural therapy, to bariatric surgery. The profusion of conflicting weight  
10 management advice in the media and suspicions about commercial motivations of providers  
11 discouraged some participants from committing.  
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15 Sova was the sole participant who reported having a meaningful conversation about weight  
16 with her cardiologist. She saw this conversation as positive and constructive, despite feeling  
17 confronted.  
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20 "That was a good conversation. Quite a scary one but a good one in that respect  
21 because no-one's actually said AF and weight – that's the first. And also that's  
22 the first time I've ever actually had that proper conversation about it" – female,  
23 age 60-69  
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27 On discussion with participants of evidence linking weight-loss with improvement in AF, all  
28 indicated this information would motivate them to persist with weight management.  
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## 33 **DISCUSSION**

### 34 **Summary of findings**

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36 This is the first qualitative study to explore the weight management experiences of people  
37 with AF and overweight. Interviews with twelve participants were analysed using a COM-B  
38 framework to illuminate factors affecting sustained weight management. The analysis  
39 identified three main themes: Being out of rhythm; doing the right thing; and broaching the  
40 subject. The interplay between the themes and the elements of COM-B (Fig 1.) highlights  
41 areas where improvements in service provision and communication could support patients to  
42 initiate and persist with healthy behaviour change.  
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50 Participants in this study appeared unaware of the potential benefits of weight-loss to  
51 manage AF. Further, while all participants recognised overweight as a general health risk,  
52 most failed to make the association to their own cardiac health. Those who recognised the  
53 general health risk of overweight expressed self-blame and anger at their perceived  
54 weakness and lack of self-control to sustain weight-loss.  
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### 59 **The role of COM-B**



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3 COM-B provided a guide for the interviews and analysis, creating a framework for better  
4 understanding behaviour change. In this study participants reported having changed  
5 behaviour and demonstrated capacity, opportunity and motivation to do so but changes were  
6 short-lived and not sustained or habituated  
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10 The focus on participants' capabilities, opportunities and motivations uncovered various  
11 barriers to weight management including reduced physical activity due to AF symptoms, fear  
12 of damaging the heart, inadequate communication and support from healthcare  
13 professionals, knowledge gaps, and lack of access to 'trusted' advice and weight  
14 management services. Identification of strategies to overcome these barriers could be  
15 guided by reference to the outer rings of the Behaviour Change Wheel[15], for example  
16 education and enablement of patients with AF through cardiac rehabilitation provision[29].  
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### 22 **Participants had all lost weight**

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24 Somewhat unexpectedly, participants universally reported successful weight-loss efforts—  
25 albeit rarely sustained in the longer term. This in contrast to the commonly held assumption  
26 of healthcare professionals that people with overweight are non-compliant with  
27 recommended health behaviours[30]. Indeed, research shows most people with overweight  
28 have tried or are trying to lose weight[31]. Participants were demoralised by health care  
29 professionals' failure to acknowledge weight-loss, a finding consistent with previous studies  
30 of weight management[32].  
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### 36 **AF symptoms interfered with weight management**

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38 The experience of AF symptoms impacted on participants' willingness to engage in regular  
39 exercise that might contribute to weight management. Concerns about damaging the heart  
40 are unfounded, indeed studies have shown physical exercise reduces AF burden and  
41 improves quality of life[33]. Food was seen as a source of comfort during times of anxiety  
42 caused by AF symptoms, provoking resistance to weight management through calory-  
43 restriction alone. Several participants spoke of postponing weight-loss attempts until an  
44 anticipated future time when treatment would restore sinus rhythm. Advances in AF  
45 treatment are successfully restoring sinus rhythm in a greater number of patients[34], but to  
46 rely solely on medical intervention as the solution would be misplaced. It would seem  
47 patients need to become true partners in their care, but that will require greater candour in  
48 consultations about lifestyle change as a recommended strategy to improve AF and overall  
49 health[35].  
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### 58 **Participants didn't associate AF with overweight**

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3 The findings indicate there were significant gaps in knowledge of AF risk factors. Reframing  
4 health communication to underscore the weight-loss and AF message might serve to better  
5 motivate healthy behaviour change.  
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9 People who have experienced MI report fear of dying motivated subsequent weight-loss  
10 attempts[6, 7, 8]. The participants who had experienced severe, sudden-onset AF described  
11 experiencing fear, vulnerability and disrupted self-image comparable with those who have  
12 had an MI. This fear did not translate into motivation to lose weight possibly because, unlike  
13 cardiovascular disease, AF is not widely associated with overweight in the public  
14 consciousness[36].  
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19 Lack of awareness of the overweight-AF connection suggests communication of research  
20 findings is limited in consultations with patients. A recent survey conducted at three hospitals  
21 in Belgium found nearly 70% (n=143) of participants were aware of the benefits of weight  
22 reduction for AF management[37]. It would be valuable to examine if health messaging and  
23 advice are different and offer learning to enhance the content of consultations and/or  
24 pathways of care.  
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### 29 **Getting the tone of weight conversations right is paramount**

30  
31 In common with the wider weight management literature [32, 38], participants in this study  
32 wanted frank, non-judgemental discussion focussed on the health impact of overweight,  
33 positive reinforcement of steps they were currently taking, and referral to weight-loss support  
34 services. Advice from health care professionals was seen as 'trustworthy' while commercial  
35 services were often viewed with suspicion.  
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41 Shame, vulnerability and stigma are widely reported by people with obesity[39]. Perceptions  
42 that healthcare professionals judge patients negatively on the basis of their body-size can be  
43 counterproductive to motivating engagement in weight management[32, 40, 41] and may  
44 lead to avoidance of healthcare encounters[42, 43]. This may be amplified for people with  
45 AF in response to feelings of vulnerability due to symptoms; a finding in this study echoing  
46 others that explored the experiences of people living with AF[25, 44].  
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51 Healthcare professionals are encouraged to discuss weight opportunistically[45] but many  
52 participants in this, and other weight management studies[32], have little recollection of the  
53 subject being raised. Some participants interpreted this omission to mean their weight was  
54 not a concern, again supported in the literature[32]. Patients expect healthcare professionals  
55 to discuss their weight when it is clinically relevant, and feel let down when they do not[38], a  
56 sentiment echoed by some participants in this study. Opportunistic "mentions" of weight and  
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3 what they perceived as poor quality information left participants feeling irritated and  
4 patronised, especially when not backed up by explanations of the impact of weight-loss on  
5 their health, congruent with other studies[32]. This dissonance between patient preferences  
6 and healthcare professionals' interactions may be due to lack of skills when discussing  
7 weight management or fear of engendering a negative reaction[46].  
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10  
11 Almost all participants in this study, similar to others[32], indicated a willingness to be  
12 referred to weight management services. Referral to cardiac rehabilitation has been shown  
13 to be motivational to patients with cardiovascular disease and overweight[6, 8]. Explaining  
14 the evidence-based benefits of weight-loss to improving AF symptoms, and providing a  
15 referral might go some way to addressing the absence of control described in this study.  
16 This may offer some agency over both the *out of rhythm* body and prognosis.  
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## 24 **Limitations**

25  
26 This study reflects only the views of people who were willing to discuss weight management  
27 as those who were unwilling declined the invitation to participate. The sample was  
28 homogeneous - all participants identified as white British. This represented the demographic  
29 profile of patients treated for AF at the study centre, and may limit transferability.  
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33  
34 The study was conducted during the COVID-19 pandemic. Some participants noted that  
35 their responses to questions were affected by temporary restrictions placed on access to  
36 opportunities to exercise and socialise. COVID-19 social distancing precautions necessitated  
37 the use of telephone interviews for data capture. Historically, telephone interviews were  
38 considered "second rate" but arguably they give control to the interviewee who is on their  
39 own territory[47]. Telephone interviews provide visual anonymity, minimising perceived  
40 judgement based on physical appearance to which people living with overweight may be  
41 sensitised[32], and reduce the temptation to follow "cultural scripts"[48] associated with  
42 healthcare encounters.  
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## 51 **RECOMMENDATIONS**

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53 The findings clearly identify the need to improve communication, particularly strengthening  
54 the signalling of important research based evidence to patients where weight management  
55 might improve AF symptoms and disease progression. This message could be incorporated  
56 in face-to-face discussions in out-patient clinic, in patient information leaflets, or posters  
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3 displayed in waiting areas accompanied by details of weight-loss services available through  
4 the hospital and in the community.  
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7 Locally and more widely, healthcare professionals may benefit from additional training to  
8 increase confidence and efficacy in discussing weight with patients. Future research could  
9 investigate health education behaviour change among healthcare professionals by applying  
10 COM-B to identify gaps in their capability, opportunity and motivation to intervene.  
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14 Weight management advice needs to be reinforced with a referral. Options available to  
15 clinicians are limited and tend to involve primary care referrals (e.g. NHS Digital Weight  
16 Management Programme, commercial weight management programmes). Extending access  
17 to these schemes to secondary care teams could provide another opportunity to support  
18 patients with weight management.  
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## 23 **CONCLUSIONS**

24  
25 This study highlights the importance of sensitive and thoughtful weight management  
26 discussion with AF patients and the importance of sharing research findings about weight-  
27 loss as a means of reducing symptom burden and reversing disease progression. Patients  
28 appeared open to difficult conversations about weight within health consultations and  
29 expected professionals to address this topic candidly with them. Offering positive feedback  
30 on weight management efforts, providing reassurance about the effect of exercise on AF,  
31 and offering a referral to appropriate services are all ways in which healthcare professionals  
32 can promote weight management behaviour change. Skills training to augment healthcare  
33 professionals' confidence when discussing weight management may contribute to person-  
34 centred care within this population.  
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## LEGEND

*Figure 1. Map of themes with relation to COM-B elements[15]*

## COMPETING INTERESTS

There are no competing interests for any author

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## STUDY REGISTRATION

The study is registered at <https://www.researchregistry.com/> ID researchregistry5142

## ETHICS STATEMENT

The study was carried out in accordance with the Declaration of Helsinki and the principles of Good Clinical Practice. Ethical approval was granted by London-Bromley Research Ethics Committee (20/LO/0356).

## CONTRIBUTORSHIP STATEMENT

Rachel Bates: Conceptualisation; Methodology; Investigation; Data curation; Writing, original draft; Project Administration; Funding acquisition.

Cara Bailey: Conceptualisation; Methodology; Writing, review and editing; Supervision

Annie Topping: Conceptualisation; Methodology; Writing, review and editing; Supervision

## DATA SHARING STATEMENT

Data are available University of Birmingham UBIRA eData repository with a CC-BY licence

DOI: <https://doi.org/10.25500/edata.bham.00000851>

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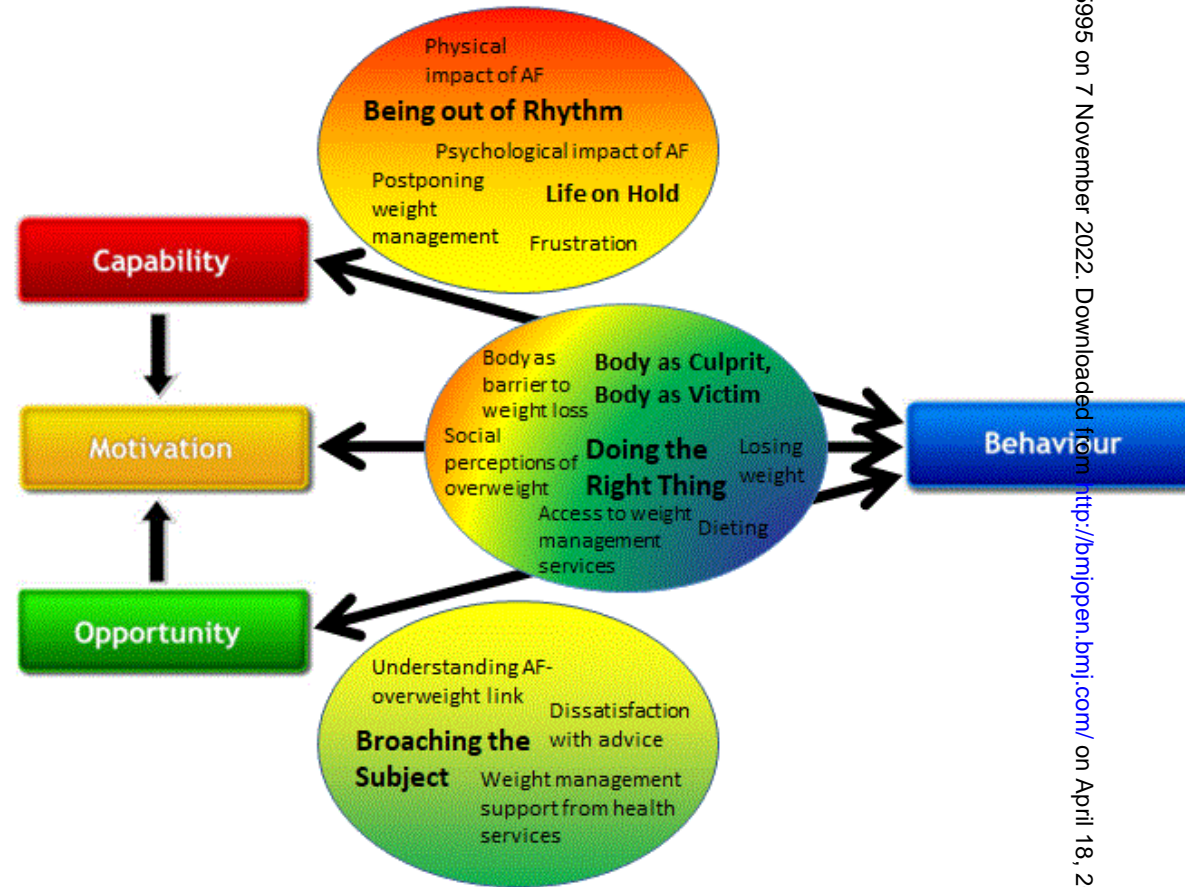


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## COREQ (CONsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
<b>Domain 1: Research team and reflexivity</b>			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	
Occupation	3	What was their occupation at the time of the study?	
Gender	4	Was the researcher male or female?	
Experience and training	5	What experience or training did the researcher have?	
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	
<b>Domain 2: Study design</b>			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	
Sample size	12	How many participants were in the study?	
Non-participation	13	How many people refused to participate or dropped out? Reasons?	
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	
Field notes	20	Were field notes made during and/or after the interview or focus group?	
Duration	21	What was the duration of the interviews or focus group?	
Data saturation	22	Was data saturation discussed?	
Transcripts returned	23	Were transcripts returned to participants for comment and/or	

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
<b>Domain 3: analysis and findings</b>			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	
Description of the coding tree	25	Did authors provide a description of the coding tree?	
Derivation of themes	26	Were themes identified in advance or derived from the data?	
Software	27	What software, if applicable, was used to manage the data?	
Participant checking	28	Did participants provide feedback on the findings?	
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	
Data and findings consistent	30	Was there consistency between the data presented and the findings?	
Clarity of major themes	31	Were major themes clearly presented in the findings?	
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

**Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.**

# BMJ Open

## 'OUT OF SYNC': A QUALITATIVE INVESTIGATION OF PATIENTS' EXPERIENCES OF ATRIAL FIBRILLATION AND PERCEPTIONS OF WEIGHT MANAGEMENT.

Journal:	<i>BMJ Open</i>
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3 **'OUT OF SYNC': A QUALITATIVE INVESTIGATION OF PATIENTS' EXPERIENCES**  
4 **OF ATRIAL FIBRILLATION AND PERCEPTIONS OF WEIGHT MANAGEMENT.**  
5

6  
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## ABSTRACT

**Objectives:** To explore ways to enhance the design of risk factor management and weight-loss services for people with overweight/obesity and atrial fibrillation (AF).

**Background:** AF is the most common cardiac arrhythmia, with serious consequences for health and quality of life. Some evidence indicates weight reduction in people with AF and overweight/obesity may improve symptoms. This population may require additional support with weight management due to factors associated with aging and health.

**Design:** Qualitative investigation based on semi-structured interviews.

**Methods:** 12 adult participants (4 female, 8 male) with diagnosed AF and a current or previous BMI>27kg/m<sup>2</sup> were recruited at a large tertiary cardiac referral centre in southern England between September 2020 and January 2021. Participants completed quality of life and AF symptom questionnaires using Think-Aloud technique and semi-structured interviews relating to their weight management experiences, needs and preferences. Interviews were audio recorded and analysed thematically using the COM-B behaviour change model as a theoretical framework.

**Results:** Three main themes were identified. *Being Out of Rhythm* explores the psychological and physical impact of AF on weight management; *Doing the Right Thing* discusses participants' weight management experiences; *Broaching the Subject* explores participants' perspectives on weight management conversations with clinicians.

**Conclusions:** There was dissatisfaction with the weight management advice received from health care professionals including cardiologists. Participants wanted open, non-judgemental discussion of cardiac health implications of overweight/obesity supported by referral to weight management services. Improved communication including research findings regarding the benefits of weight-loss as a factor in AF management might increase motivation to adhere to weight-loss advice in this population.

## ARTICLE SUMMARY

### Strengths and limitations of this study

- Explores views and experiences of patients with AF and overweight, illuminating barriers to weight management



- The COM-B behaviour change model facilitated application of findings to strategies to improve clinical practice
- Only included the views of people willing to discuss weight management
- Participants were recruited from an ethnically homogeneous population; further research is needed to reflect the perspectives of the wider population.

Competing Interests: The authors declare they have no competing interests

For peer review only

## INTRODUCTION

Mounting evidence demonstrates weight-loss improves symptoms and slows disease progression in people with atrial fibrillation (AF) and overweight[1]. Yet despite convincing evidence of the health benefits, few cardiac patients with overweight achieve healthy weight management in the long-term[2]. Weight-loss is a complex and sometimes onerous undertaking, subject to multifactorial biological, behavioural[3], socioeconomic, environmental and personal influences[4, 5]. Incidence of AF increases with age, meaning patients are likely to be older and experience more concurrent conditions than the populations in general weight management studies. Better understanding of patients' lived reality of these factors could improve the design of weight management services for this population.

A qualitative synthesis of studies examining weight management among myocardial infarction (MI) patients undertaking cardiac rehabilitation found the cardiac event served as a "wake-up call", revealing the extent of damage to health[6-8]. Although motivated to lose weight, individuals often felt overwhelmed and lacked knowledge and strategies to enact lifestyle changes[6-8]. Referral to weight management services was valued and access to supervised exercise facilities allayed safety concerns[6, 8]. Personalisation of services increased acceptability and compliance[8].

The experiences of people with AF are different from those recovering from MI – AF is not acutely life-threatening, cardiac rehabilitation is not routinely provided, treatment success rates vary[9]. Growing evidence indicates advice to patients with AF should include proactive weight management[10, 11] but guidance on tailoring advice and services to meet patients' needs is limited. No existing qualitative literature explores the experiences of people with overweight and AF. The objective of this study is to identify practical ways to address perceived barriers to weight reduction through better understanding of patients' experiences and perspectives.

## METHODS

### Ethics

The study was carried out in accordance with the Declaration of Helsinki and the principles of Good Clinical Practice. Ethical approval was granted by London-Bromley Research Ethics Committee (20/LO/0356).

### Language and Definitions

Overweight and obesity are defined by the World Health Organisation as a body mass index (BMI) equal to or greater than 25 kg/m<sup>2</sup> or 30 kg/m<sup>2</sup> respectively[12]. The inclusion criteria for this study adopted a BMI of 27 kg/m<sup>2</sup> or greater, in line with previous quantitative studies of overweight and AF[10, 11]. The term “overweight” is used in this report to describe a BMI of 27 kg/m<sup>2</sup> or over, except when discussing other studies which specifically investigate obesity.

### Patient and Public Involvement

Advice on design, relevance and acceptability was obtained from two volunteers with AF (one also had BMI>27kg/m<sup>2</sup>) and previous research experience via a Patient and Public Involvement (PPI) bulletin. Minor alterations to the patient information sheet were made as advised. No design changes were suggested.

### Design

A qualitative interview study design was used to explore patients' perspectives and experiences[13] of living with AF and overweight. Because weight management involves behaviour change, the COM-B model[14] - which identifies capability, opportunity and motivation as the three essential elements for behaviour change - was used as the theoretical framework. These elements form the hub of the Behaviour Change Wheel that represents the complexity of the economic, social and political influences that interact with COM elements ultimately determining behavioural choices[15]. The model was embedded in study design, as a topic guide for interviews, and as a framework for data analysis to enhance theoretical coherence and consistency[16]. Using an interpretive description approach[17] we sought clinically usable explanations for weight management behaviours by exploring complex patient experiences through the conceptual COM-B model.

## Context and Sampling

Twelve participants were purposively recruited from outpatient services at a large tertiary referral centre in southern England between September 2020 and January 2021. All participants had to have AF, have current or previous BMI of 27 kg/m<sup>2</sup> or over, and be able to converse in English (see Table 1 for selected participant characteristics). Written informed consent was obtained from all participants. Potential participants were approached during hospital appointments by the direct care team and provided with a patient information sheet. Fourteen patients were approached in total; two declined, stating they did not wish to discuss weight management. Recruitment continued until data saturation was reached.

Age range	Employment	Education	BMI	Type of AF	Years since AF diagnosis	Symptomatic	Reported previous weight loss (kg)	Weight loss method
70-79	Retired teacher	Higher	30	Paroxysmal	>10	Yes	19 (regained)	Very low calorie (self directed)
70-79	Retired from food industry	Secondary	43	Paroxysmal	5	Yes	Not reported	Very low calorie (self directed)
60-69	Cook	Secondary	25	Paroxysmal	>10	Yes	19	Dietary, self-directed
60-69	Hospitality	Further	28	Persistent	9	Yes	22 (regained)	Slimming World
50-59	Tradesperson	Secondary	28	Persistent	<1	Yes	4	Diet and exercise, self-directed
60-69	Leisure industry (retired firefighter)	Further	41	Persistent	2.5	Yes	50 (partially regained)	Slimming World
50-59	Retired firefighter	Secondary	37	Persistent	1.5	Yes	19 (regained)	Previously Slimming World. Now on BHF diet (LOSE-AF study)
60-69	Nurse	Higher	41	Paroxysmal	9	Yes	Not reported	Various
60-69	Carer	Further	36	Paroxysmal	>10	Yes	11	Diet and exercise, self-directed
60-69	Tradesperson and business owner	Secondary	31	Persistent	>10	No	53 (partial regain)	Previously Aloe Vera diet. Now Cambridge 1:1 (LOSE-AF study)
50-59	Teacher	Higher	34	Persistent	3	Yes	28 (partial regain)	SlimFast
70-80	Retired electronics engineer	Further	37	Persistent	<1	Yes	7	Cambridge 1:1 (LOSE-AF study)

**Table 1. Selected participant demographics and characteristics**

## Data Collection

Interviews were conducted by an experienced female, M-level trained, research nurse (RB). This information was included in the patient information sheet. One participant was previously known to RB through participation in an unrelated clinical trial. All others were unknown. Interviews were conducted by telephone due to the COVID-19 pandemic that restricted research and elective clinical activity. The participant known to RB chose to be interviewed face-to-face in a research facility clinic room after attending a hospital appointment. Two participants were interviewed with their partners in attendance, who occasionally commented in the background. Interviews lasted between 31 and 100 minutes with a mean of 55 minutes. Interviews were audio recorded and transcribed verbatim by RB.

The interview process was carefully planned by RB, CB & AT to encourage participants to feel comfortable and able to speak openly about their weight management experiences with a focus on service improvement[18]. Participants' experiences were explored using semi-structured interviews[19]. To reduce any discomfort discussing weight and to focus on AF[20] participants began by completing two questionnaires frequently used in quantitative studies of AF and hence well validated: Atrial Fibrillation Symptom Severity Scale[21]; EQ-5D-5L[22] using Think-Aloud[23], a technique previously explored in nursing research by CB[24] who provided training and oversight to RB. Participants were encouraged to verbalise their thoughts whilst completing the questionnaires which enables deeper reflection, self-awareness and insight into the meanings behind their responses about behaviours and decisions[23]. The Think-Aloud technique facilitated identification of instances where questionnaire responses reflected adaptations in expectations to accommodate worsening health[24], and has been used previously to explore the support needs of patients with AF[25].

A topic guide (Appendix A) based on the COM-B model helped frame the ongoing interview around physical and psychological capabilities, opportunities, and motivation for weight management with reference to the questionnaire responses[18]. For example, "In the category "Usual Activities" you answered "I have slight problems doing my usual activities" - can you tell me a bit about what your usual activities include? What do you consider the reasons for these problems? [Capability]". No pilot test was performed but the topic guide was allowed to develop as the interviews progressed to follow new lines of enquiry.

## Rigour

Several strategies were used to address rigour. Triangulation[26] was carried out by providing a summary of the interview to each participant before analysis to confirm it reflected their views, meanings, and intentions, and to allow for clarification (no participants asked for changes to be made). Reflexivity was facilitated by writing field notes to record responses, reflections, and assumptions following each interview and during transcription. The researchers' subjectivity was examined using the Peshkin [27, 28] model of reflection to sharpen awareness of the effect of assumptions, values and biases in shaping the study findings.

The study is reported following the COREQ guidelines[29] (Appendix B) to ensure comprehension and transparency.

## Analysis

The transcribed data were imported to a spreadsheet and manually coded line-by-line using the Eclectic Coding process[30] to identify processes and phenomena. Process Codes, which capture action[30], were widely used to emphasise the active nature of behaviour change within the COM-B model. Descriptive Codes were used to summarise topics, and Values Codes to label participants' perspectives[30].

RB carried out the initial coding. Coding and subsequent thematic development were reviewed and discussed between RB, CB and AT to reach consensus.

Codes were mapped onto the COM-B framework and organised into sub-themes. As working themes were identified, a re-coding process was carried out to maintain thematic coherence[30] (see Table 2 for examples of this process). As coding progressed, themes were identified which transcended the COM-B divisions or reflected the interplay between them (see Figure 1). The colour-coded COM-B framework was therefore dismantled, and the individual codes reorganised within the overarching themes. The resulting schema was checked against the original interviews to enrich the authenticity of the description by returning to the participants' voices and ensure participants' various perspectives were fairly represented[26].

Quote	Initial codes (Initial framework theme)	Re-coded to	OM-B category	Theme
"It bothers me.. not the actual.. It bothers me that I can hear it in my ears more than anything" – male, age 70-79	Annoying symptoms (What it feels like for me)	Psychological impact of AF	Motivation	Being out of rhythm
"At the minute, touch wood.. it feels like it wants to start, like at work today it kind of skipped a beat and I thought oh no please don't start!" – female, age 60-69	Touching wood (Motivation); Dreading relapse (Capability – Psychological)	Psychological impact of AF	Motivation	Being out of rhythm
"I know if I lost half a stone I would feel that little bit quicker, a bit lighter, but I wouldn't want to lose any more than that because it would like take that bit of strength away" – male, age 50-59	Being big and strong (Motivation - reflective)	Desire to lose weight - confounding factors	Motivation	Doing the right thing
"But yeah that's what I'd like, to go through foods with me, to say well no you can't really have that – I'm only thinking I'll have that because it's got no sugar in it – do you know what I mean? But I don't think about maybe the fat content. I think about the sugar content, I think oh great I can have that – do you know what I mean? So.. It's someone to sit and educate me, more than anything." female, age 60-69	Nutritional knowledge (Capability - psychological); Desired help (Opportunity – physical); Wanting to talk about weight (Motivation – automatic); Changing diet (Behaviour Change)	Weight management knowledge; Desired help	Capability, Opportunity, Motivation; Behaviour Change	Doing the right thing
"I can't remember exactly what she said but I think it was around the weight issue. But none of them, none of them have said that the weight was an issue for any of the procedures that were going to be done, so I didn't make much of it other than to say you know that.. But it's usually that if you lose a bit of weight then.. I don't know I can't remember what they said but basically lose some weight – it wasn't an order, it was just advice." - male, age 50-59	Risks not explained (Motivation – reflective); Choosing what to hear (Motivation – automatic).	Patient education	Motivation	Broaching the subject
"Years ago when I lived in [city] um, they could, sounds silly I know but they could put the gym on prescription for so many months, which is what one doctor done for me and I used to go to the gym, um, oh two, three times a week then.." - female, age 60-69	Having weight loss prescription (Motivation – reflective); Doing exercise (Capability – physical).	Being referred	Motivation, Opportunity	Broaching the subject

**Table 2. Examples of coding and thematic analysis process**



## FINDINGS

### Participants

The sample included four women and eight men, a gender ratio which corresponds to the general AF population[31]. Ages ranged from 50 to 76. A range of socioeconomic, educational, and professional backgrounds were represented. All participants identified as White British, consistent with the demography of the AF population managed at the study site [Table 1].

Time since AF diagnosis ranged from four months to fifteen years. Five participants had paroxysmal AF (occurring in self-limiting episodes lasting less than one week) and seven had persistent AF (lasting more than one week). Eleven participants reported comorbidities and five reported two or more, which impacted on their activities of daily living and quality of life, the most common being ischaemic heart disease, type 2 diabetes mellitus, and joint pain.

BMI ranged from 25 (after sustained weight-loss) to 43 kg/m<sup>2</sup>. All participants reported having lost weight at some point in life, from 4kg to 53kg, but most, at least partially, had regained weight.

### Being out of rhythm

*Being out of rhythm* describes the physical and psychological disruption AF caused to participants' lives. Symptoms impeded day-to-day activities, corresponding with the capability component of COM-B. Participants characterised these limitations as a life having lost its rhythm: They could no longer live the life they wanted while experiencing AF and were left waiting to regain their rhythm, both cardiologically and metaphorically. Waiting for treatment, uncertainty of its effectiveness, and fear of relapse appeared to sap motivation to engage in healthy lifestyle behaviours. A female participant who experienced infrequent, random onset AF episodes reflected on how a sense of suspense affected her psychologically:

“I just feel edgy when it's out of sync... I can't wait for it to drop back into rhythm”  
– female, age 70-79

The physical impacts of AF included fatigue, breathlessness, chest pain, palpitations, and faintness and ranged in severity from mild to debilitating. Nine of the twelve participants had been hospitalised with severe symptoms, and eleven had undergone cardioversion or ablation for symptom management. Although reassured by their cardiologists that AF is not life-threatening, the onset of symptoms could still induce significant anxiety and sometimes

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3 panic. This was typified by a healthcare professional participant, who struggled to reconcile  
4 her objective clinical understanding of AF with the subjective distress she felt when  
5 experiencing arrhythmias:  
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9 “It is horrible, it is horrible... and it can come on at any time so if I’m at work or at  
10 a meeting... you haven’t even got a chance to be away from anyone noticing  
11 you’re not very well ... you don’t want people to know you’re in AF. Especially  
12 people my office who are nurses, they’re not going to take much notice really!”  
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15 – female, age 60-69  
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17 Symptoms impacted family activities, work, housekeeping, hobbies and sleep patterns. The  
18 sense of life being suspended was experienced as a *Life on hold*. Some participants felt  
19 unsafe and deliberately limited their activities for fear of precipitating an episode of AF or  
20 damaging their heart. Participants who had previously been active identified their symptoms  
21 as a cause of weight gain. Inability to exercise impacted energy expenditure, but could also  
22 affect motivation by disrupting social lives and removing pleasure. Physical limitations often  
23 had psychological ramifications, causing frustration and anxiety about deteriorating health  
24 and aging as expressed by a male participant whose career in the fire service had been  
25 truncated by AF:  
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32 “It’s doing my head in to a point. I hate it. Frustration is a massive thing because  
33 I’m in my 50s and like I said I’m an ex-firefighter and all that stuff and I’m used to  
34 being healthy and active, I’m not someone for sitting around and watching TV all  
35 day.” – male, age 50-59  
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39 None of the participants attributed weight gain solely to AF although some cited reduced  
40 physical capacity due to AF symptoms as a contributing factor. Returning to sinus rhythm  
41 was for some the only way to regain health and previous lifestyles. This resulted in  
42 postponing weight management attempts until such a time when, back in rhythm, they would  
43 regain the mental energy to focus on diet and the physical capability to exercise.  
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### 47 **Doing the right thing**

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49 All participants considered overweight unhealthy and undesirable, and articulated positive  
50 health behaviours as *Doing the right thing*. All four elements of the COM-B model are  
51 reflected within this theme – participants reported motivation to lose weight and intentional  
52 behaviour change but felt their health or bodily constitution hindered their capability, or  
53 lacked the opportunity to access appropriate services. Inability to sustain weight-loss despite  
54 following advice to the best of their ability caused significant frustration. A male participant  
55 who had previously lost but then regained weight following a high-protein commercial  
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3 weight-loss programme reflected on the slower measurable effects of his current low-fat,  
4 calorie controlled approach:  
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7 “I try and eat healthily – we *do* eat healthily – we have fruit and veg more, far  
8 more than five portions a day, so I believe we eat healthily. I try and exercise, um,  
9 so at the moment I’m on this healthy diet that the British Heart Foundation  
10 recommend, and my wife’s good at measuring out portion sizes and this sort of  
11 thing... So we’ve been doing that for a couple of weeks now and it’s ok but I’ve  
12 only lost – for me – hardly anything, like a pound or two” – male, age 60-69  
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16 Many participants expressed a sense of unfairness and perceived social judgement toward  
17 people with overweight. For some, this created internal conflict as they sought to counter  
18 assumptions, while simultaneously berating themselves for a lack of self-discipline. Others  
19 viewed their own ill-health as a cause of weight gain, not a consequence of long-term  
20 overweight. Four male participants with physically demanding jobs associated being big with  
21 being strong.  
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26 All participants reported having lost weight at some point in life, citing general health  
27 concerns or body image as motivating factors. Organised diet programmes and meal  
28 replacement products were identified as helpful in achieving significant weight-loss by six  
29 participants. Others preferred to self-manage, drawing on calorie reduction and exercise  
30 advice from a variety of sources. Repeat cycles of dieting and weight regain were common  
31 across the participants. Loss of motivation was frequently cited as precipitating weight  
32 regain, often associated with relaxing diet regimes around holidays or weddings. Only one  
33 participant maintained her weight-loss in the long term, which coincided with significant  
34 changes in her lifestyle and personal relationships.  
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42 *Body as victim, body as culprit* illustrates participants’ experiences of managing weight in a  
43 body over which they did not feel fully in control. The body was seen as a victim of illness  
44 and aging, with AF conceptualised as an external aggressor to be kept at bay through  
45 medication and management of risk factors. Conversely, the body could play the role of  
46 culprit in the struggle to achieve a healthy weight, being pre-disposed to weight gain by  
47 “genetic” factors or childhood eating habits. Two participants described food as an addiction,  
48 experiencing bodily cravings which they lacked the psychological strength to overcome  
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### 54 **Broaching the subject**

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56 *Broaching the subject* explores participants’ perceptions of consultations where weight  
57 management was discussed (or not) and relates to opportunity and motivation within COM-  
58 B. Participants indicated they would be open to discussing their weight within the context of  
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3 a clinical consultation, but perceived health care professionals were reluctant to engage in  
4 frank discussion. Only one participant knew that overweight is a risk factor for developing  
5 AF, and none were aware of evidence for weight-loss improving AF symptoms[10, 11]. Many  
6 reported doctors “mentioning” their weight, which became repetitive and irritating when not  
7 accompanied by specific explanations of the health risks, or offers of help. A male participant  
8 whose weight had increased since retirement expressed frustration at a perceived lack of  
9 practical advice and support from health care professionals:  
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15 “The trouble is, it’s all very well them saying “You should lose weight” but I  
16 couldn’t. You know it’s difficult to find proper sensible advice on how to do this.  
17 You know there are all these companies that set up but they’re in there to make  
18 money.” – male, age 70-79  
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21 Many appeared to deny that their health might be damaged by their overweight having never  
22 been unequivocally told. When healthcare professionals broached weight management but  
23 omitted to refer patients to relevant services, patients sometimes interpreted that their weight  
24 was not yet a cause for concern and that behaviour change could be postponed. Some  
25 reported requesting help, but that the sort of help they wanted was not available.  
26 Preferences varied widely, from very low calorie meal replacements, dietician review,  
27 cognitive behavioural therapy, to bariatric surgery. The profusion of conflicting weight  
28 management advice in the media and suspicions about commercial motivations of providers  
29 discouraged some participants from committing.  
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36 Only one participant reported having a meaningful conversation about weight with her  
37 cardiologist. As a health care professional who described her lifelong overweight as a source  
38 of shame and anxiety, she saw this conversation as positive and constructive, despite  
39 feeling confronted.  
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44 “That was a good conversation. Quite a scary one but a good one in that respect  
45 because no-one’s actually said AF and weight – that’s the first. And also that’s  
46 the first time I’ve ever actually had that proper conversation about it” – female,  
47 age 60-69  
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50 On discussion with participants of evidence linking weight-loss with improvement in AF, all  
51 indicated this information would motivate them to persist with weight management.  
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## DISCUSSION

### Summary of findings

This is the first qualitative study to explore the weight management experiences of people with AF and overweight. Interviews with twelve participants were analysed using a COM-B framework to illuminate factors affecting sustained weight management. The analysis identified three main themes: Being out of rhythm; doing the right thing; and broaching the subject. The interplay between the themes and the elements of COM-B (Fig 1.) highlights areas where improvements in service provision and communication could support patients to initiate and persist with healthy behaviour change.

Participants in this study appeared unaware of the potential benefits of weight-loss to manage AF. Further, while all participants recognised overweight as a general health risk, most failed to make the association to their own cardiac health. Those who recognised the general health risk of overweight expressed self-blame and anger at their perceived weakness and lack of self-control to sustain weight-loss.

### The role of COM-B

COM-B provided a guide for the interviews and analysis, creating a framework for better understanding behaviour change. In this study participants reported having previously lost weight by changing their behaviour, thus demonstrating their capacity, opportunity and motivation to do so. The complexity of sustaining changes is reflected in their subsequent weight regain.

The focus on participants' capabilities, opportunities and motivations uncovered various barriers to weight management including reduced physical activity due to AF symptoms, fear of damaging the heart, inadequate communication and support from healthcare professionals, knowledge gaps, and lack of access to 'trusted' advice and weight management services. Identification of strategies to overcome these barriers could be guided by reference to the outer rings of the Behaviour Change Wheel[15], for example education and enablement of patients with AF through cardiac rehabilitation provision[32].

### Participants had all lost weight

Somewhat unexpectedly, participants universally reported successful weight-loss efforts—albeit rarely sustained in the longer term. This in contrast to the commonly held assumption of healthcare professionals that people with overweight are non-compliant with recommended health behaviours[33]. Indeed, research shows most people with overweight

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3 have tried or are trying to lose weight[34]. Participants were demoralised by health care  
4 professionals' failure to acknowledge weight-loss, a finding consistent with previous studies  
5 of weight management[35].  
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### 8 **AF symptoms interfered with weight management**

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11 The experience of AF symptoms impacted on participants' willingness to engage in regular  
12 exercise that might contribute to weight management. Concerns about damaging the heart  
13 are unfounded, indeed studies have shown physical exercise reduces AF burden and  
14 improves quality of life[36]. Food was seen as a source of comfort during times of anxiety  
15 caused by AF symptoms, provoking resistance to weight management through calory-  
16 restriction alone. Several participants spoke of postponing weight-loss attempts until an  
17 anticipated future time when treatment would restore sinus rhythm. Advances in AF  
18 treatment are successfully restoring sinus rhythm in a greater number of patients[37], but to  
19 rely solely on medical intervention as the solution would be misplaced. It would seem  
20 patients need to become true partners in their care, but that will require greater candour in  
21 consultations about lifestyle change as a recommended strategy to improve AF and overall  
22 health[38].  
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### 31 **Participants didn't associate AF with overweight**

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33 The findings indicate there were significant gaps in knowledge of AF risk factors. Reframing  
34 health communication to underscore the weight-loss and AF message might serve to better  
35 motivate healthy behaviour change.  
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39 People who have experienced MI report fear of dying motivated subsequent weight-loss  
40 attempts[6-8]. The participants who had experienced severe, sudden-onset AF described  
41 experiencing fear, vulnerability and disrupted self-image comparable with those who have  
42 had an MI. This fear did not translate into motivation to lose weight possibly because, unlike  
43 cardiovascular disease, AF is not widely associated with overweight in the public  
44 consciousness[39].  
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50 Lack of awareness of the overweight-AF connection suggests communication of research  
51 findings is limited in consultations with patients. By comparison, a recent survey conducted  
52 at three hospitals in Belgium found nearly 70% (n=143) of participants were aware of the  
53 benefits of weight reduction for AF management[40]. It would be valuable to examine if  
54 health messaging and advice are different and offer learning to enhance the content of  
55 consultations and/or pathways of care.  
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## Getting the tone of weight conversations right is paramount

In common with the wider weight management literature [35, 41], participants in this study wanted frank, non-judgemental discussion focussed on the health impact of overweight, positive reinforcement of steps they were currently taking, and referral to weight-loss support services. Advice from health care professionals was seen as 'trustworthy' while commercial services were often viewed with suspicion.

Shame, vulnerability and stigma are widely reported by people with obesity[42]. Perceptions that healthcare professionals judge patients negatively on the basis of their body-size can be counterproductive to motivating engagement in weight management[35, 43, 44] and may lead to avoidance of healthcare encounters[45, 46]. This may be amplified for people with AF in response to feelings of vulnerability due to symptoms; a finding in this study echoing others that explored the experiences of people living with AF[25, 47].

Healthcare professionals are encouraged to discuss weight opportunistically[48] but many participants in this, and other weight management studies[35], have little recollection of the subject being raised. Some participants interpreted this omission to mean their weight was not a concern, again supported in the literature[35]. Patients expect healthcare professionals to discuss their weight when it is clinically relevant, and feel let down when they do not[41], a sentiment echoed by some participants in this study. Opportunistic "mentions" of weight and what they perceived as poor quality information left participants feeling irritated and patronised, especially when not backed up by explanations of the impact of weight-loss on their health, congruent with other studies[35]. This dissonance between patient preferences and healthcare professionals' interactions may be due to clinicians' lack of skills when discussing weight management or fear of engendering a negative reaction[49].

Almost all participants in this study, similar to others[35], indicated a willingness to be referred to weight management services. Referral to cardiac rehabilitation has been shown to be motivational to patients with cardiovascular disease and overweight[6, 8]. Explaining the evidence-based benefits of weight-loss to improving AF symptoms, and providing a referral might go some way to addressing the absence of control described in this study. This may offer some agency over both the *out of rhythm* body and prognosis.

### Limitations

This study reflects only the views of people who were willing to discuss weight management as those who were unwilling declined the invitation to participate. The sample was

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3 homogeneous - all participants identified as white British. This represented the demographic  
4 profile of patients treated for AF at the study centre, and may limit generalisability.  
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7 The study was conducted during the COVID-19 pandemic. Some participants noted that  
8 their responses to questions were affected by temporary restrictions placed on access to  
9 opportunities to exercise and socialise. COVID-19 social distancing precautions necessitated  
10 the use of telephone interviews for data capture. Historically, telephone interviews were  
11 considered inferior, but arguably they give control to the interviewee who is on their own  
12 territory[50]. Telephone interviews provide visual anonymity, minimising perceived  
13 judgement based on physical appearance to which people living with overweight may be  
14 sensitised[35].  
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## 23 **RECOMMENDATIONS**

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25 The findings clearly identify the need to improve communication, particularly strengthening  
26 the signalling of important research-based evidence to patients where weight management  
27 might improve AF symptoms and disease progression. This message could be incorporated  
28 in face-to-face discussions in out-patient clinic, patient information leaflets, or posters  
29 displayed in waiting areas accompanied by details of weight-loss services available through  
30 the hospital and in the community.  
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35 Locally and more widely, healthcare professionals may benefit from additional training to  
36 increase confidence and efficacy in discussing weight with patients. Future research could  
37 investigate health education behaviour change among healthcare professionals by applying  
38 COM-B to identify gaps in their capability, opportunity and motivation to intervene.  
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43 Weight management advice needs to be reinforced with a referral. Options available to  
44 clinicians are limited and tend to involve primary care referrals (e.g. NHS Digital Weight  
45 Management Programme, commercial weight management programmes). Extending access  
46 to these schemes to secondary care teams, along with greater involvement of the  
47 multidisciplinary team, could provide another opportunity to support patients with weight  
48 management.  
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## 55 **CONCLUSIONS**

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58 This study highlights the importance of sensitive and thoughtful weight management  
59 discussion with AF patients and the importance of sharing research findings about weight-  
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3 loss as a means of reducing symptom burden and reversing disease progression. Patients  
4 appeared open to difficult conversations about weight within health consultations and  
5 expected professionals to address this topic candidly with them. Offering positive feedback  
6 on weight management efforts, providing reassurance about the effect of exercise on AF,  
7 and offering a referral to appropriate services are all ways in which healthcare professionals  
8 can promote weight management behaviour change. Skills training to augment healthcare  
9 professionals' confidence when discussing weight management may contribute to person-  
10 centred care within this population.  
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Dr Maria Clark for advice on use of the COM-B model.

Crad Allerton and Tony Elliott for providing PPI advice

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## LEGEND

*Figure 1. Map of themes with relation to COM-B elements[15]*

## COMPETING INTERESTS

There are no competing interests for any author

## FUNDING STATEMENT

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## STUDY REGISTRATION

The study is registered at <https://www.researchregistry.com/> ID researchregistry5142

## ETHICS STATEMENT

The study was carried out in accordance with the Declaration of Helsinki and the principles of Good Clinical Practice. Ethical approval was granted by London-Bromley Research Ethics Committee (20/LO/0356).

## CONTRIBUTORSHIP STATEMENT

Rachel Bates: Conceptualisation; Methodology; Investigation; Data curation; Writing, original draft; Project Administration; Funding acquisition.

Cara Bailey: Conceptualisation; Methodology; Writing, review and editing; Supervision

Annie Topping: Conceptualisation; Methodology; Writing, review and editing; Supervision

## DATA SHARING STATEMENT

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4 Data are available University of Birmingham UBIRA eData repository with a CC-BY licence  
5 DOI: <https://doi.org/10.25500/edata.bham.00000851>  
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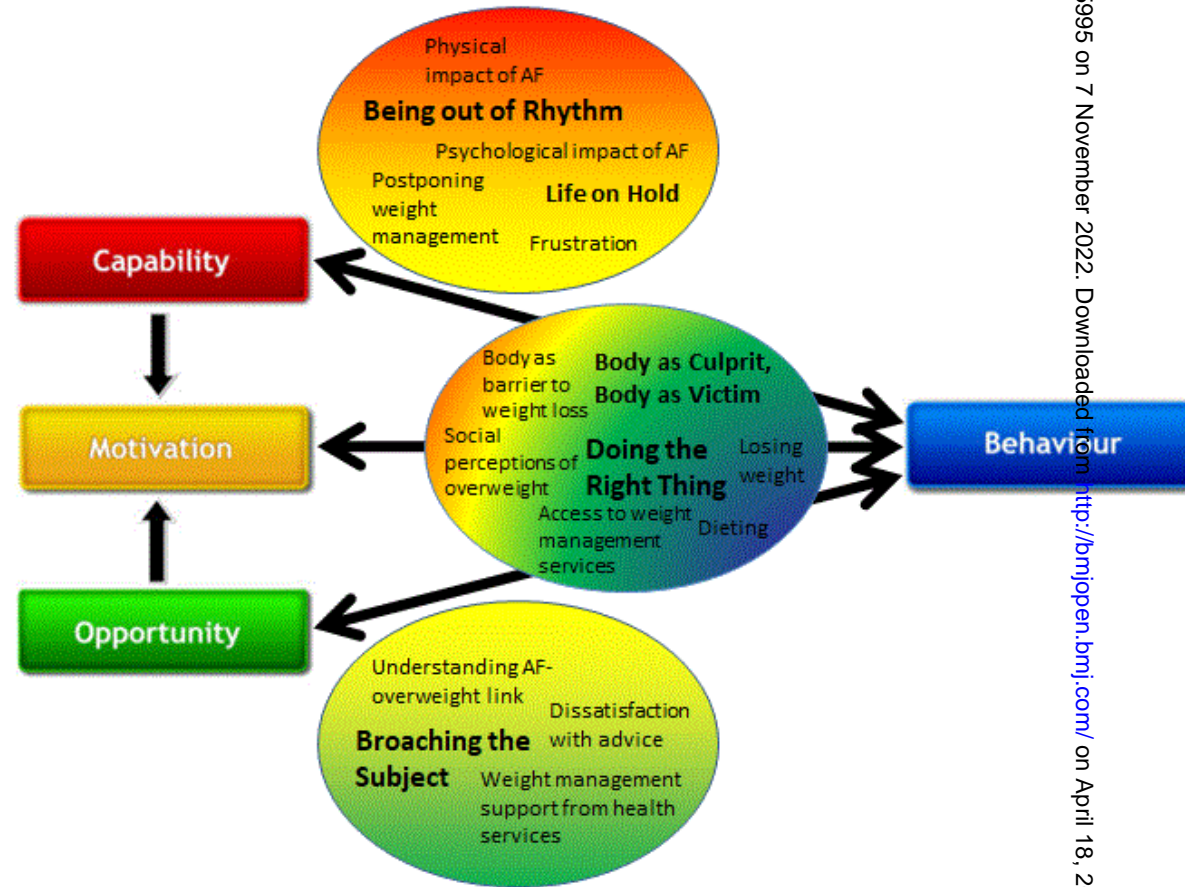
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### HIWeiMan-AF Example questions for semi-structured interviews

#### Example questions

##### Capability:

"I see that in the category "Usual Activities" you have answered "I have slight problems doing my usual activities" - can you tell me a bit about what your usual activities include? What do you consider the reasons for these problems?"

"In the Self Care category, you have responded that you have no problems in washing and dressing yourself. Are there any other areas of your self-care that you feel have been affected by your health problems e.g. cooking for yourself, doing exercise"

"In the Pain/Discomfort category you have responded that you have no pain or discomfort. I'm interested to know whether your AF symptoms such as breathlessness affect your ability to do physical exercise." If affirmative response, follow up with "How does that feel to you?"

##### Opportunity

"Thinking about your Usual Activities, are there things that you used to do or would like to do if you had the chance?"

"If you were to try to increase your physical exercise levels, how would you do that?" If no suggestions forthcoming prompt with "Are there any exercise classes at your local community centre?" or "Are there any parks or nice places to go for a walk around where you live?" or "Do you and your partner/family/friends do any activities together"?

##### Motivation

"In Anxiety/Depression you have responded that you feel moderately anxious or depressed. Is there anything in particular causing this?" If response includes diagnosis of AF or related symptoms, explore further with "Can you explain to me your understanding of your heart condition? How does that affect you?"

"What sort of information and advice have you been given by health care professionals about managing your AF symptoms? How did you feel about this?"

## COREQ (CONsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
<b>Domain 1: Research team and reflexivity</b>			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	
Occupation	3	What was their occupation at the time of the study?	
Gender	4	Was the researcher male or female?	
Experience and training	5	What experience or training did the researcher have?	
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	
<b>Domain 2: Study design</b>			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	
Sample size	12	How many participants were in the study?	
Non-participation	13	How many people refused to participate or dropped out? Reasons?	
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	
Field notes	20	Were field notes made during and/or after the interview or focus group?	
Duration	21	What was the duration of the interviews or focus group?	
Data saturation	22	Was data saturation discussed?	
Transcripts returned	23	Were transcripts returned to participants for comment and/or	

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
<b>Domain 3: analysis and findings</b>			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	
Description of the coding tree	25	Did authors provide a description of the coding tree?	
Derivation of themes	26	Were themes identified in advance or derived from the data?	
Software	27	What software, if applicable, was used to manage the data?	
Participant checking	28	Did participants provide feedback on the findings?	
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	
Data and findings consistent	30	Was there consistency between the data presented and the findings?	
Clarity of major themes	31	Were major themes clearly presented in the findings?	
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

**Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.**