

End-of-study summary

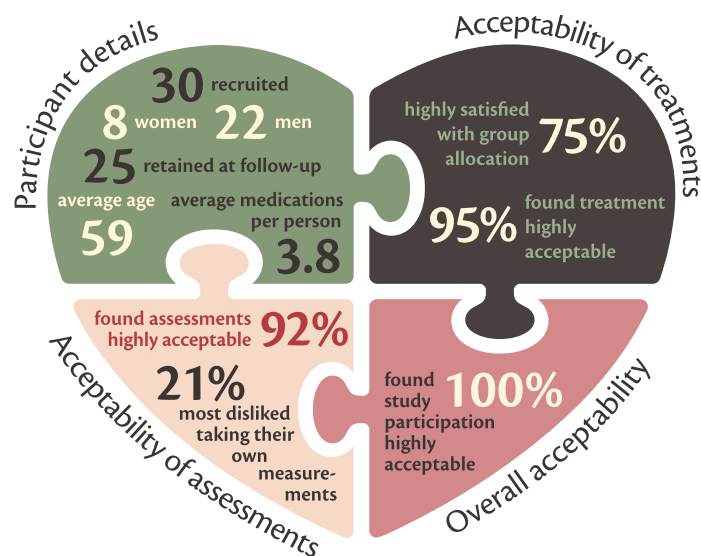
The Santé-AF feasibility study was a small randomised controlled trial of acupuncture and nutritional therapy for the world's most common cardiac arrhythmia, atrial fibrillation (AF). The trial tested the feasibility of a future large-scale trial, and this end-of-study summary describes the study and its main findings.

Summary of main results

The feasibility study aimed to test the feasibility of seven aspects of a future large-scale trial (the objectives). These objectives looked at things like recruitment rates, whether participants had dropped out at the follow-up point, and how acceptable the interventions and the study assessments were to the participants.

Because the study took place during the COVID-19 pandemic, we also investigated the effect of the pandemic on feasibility, and we found that the pandemic did not affect feasibility greatly. Also, because the two therapies are only available privately, the cooperation of the acupuncturists and nutritional therapists was an important aspect of feasibility for a future trial so we also investigated feasibility from the therapists' point of view. We found that it was feasible to recruit and retain the therapists, and that they delivered the treatments as required for the trial.

Main results at a glance



In summary: all the objectives except one were feasible. The study made recommendations for changes to improve the feasibility of the one infeasible objective; these changes can be incorporated easily in a future trial. One objective was abandoned because it was found to be inappropriate, but this did not affect feasibility.

Overall, it is feasible to carry out a future large-scale trial.

On the next pages, you can find more detail about each objective, including some of the things the participants said about each aspect of the study. You can also find a summary of how much the participants' AF changed after their therapy, and a look at the side-effects of the two treatments.

Santé-AF: the background

Sessions of Acupuncture and Nutritional Therapy Evaluation for Atrial Fibrillation (Santé-AF) was a small feasibility study designed to test whether it is possible to carry out a large-scale trial in the future. A future large-scale trial would aim to understand whether acupuncture and nutritional therapy (NT) are able to improve quality of life and reduce the symptoms of AF.

How was the study run?

30 participants were recruited from GP practices in the Vale of York area. They were randomly allocated to one of three arms. The first arm received up to eight acupuncture treatments plus their usual NHS care; the second arm received up to three nutritional therapy consultations plus their usual NHS care; and a third arm (the control group) received their usual NHS care only. Participants were assessed at baseline (before treatment) and three months (after treatment) using questionnaires, a symptom diary and body measurements. Sixteen participants gave interviews. Ten participants wore an ECG monitor for seven days after each assessment.

Who did the study, and when?

The study was run by Karen Charlesworth, a PhD candidate at the University of York, supervised by Professor David Torgerson and Dr Jude Watson of the York Trials Unit. A Patient and Public Involvement (PPI) panel (two people with AF and one lay person who did not have AF) advised on the study's design. The study delivered the treatments between November 2021 and July 2022.

Who funded the study?

The study was funded by the British Acupuncture Council, and supported by the Yorkshire & Humber branch of the National Institute of Health and Care Research's Clinical Research Network, and the Northern College of Acupuncture, York.

Who approved the study?

Ethics approval was given by the London Surrey NHS Research Ethics Committee on 3rd November 2020 (ref. 20/LO/0598).

We answered this question in several different ways. First, we looked at the number of people who were enrolled in the trial, compared with the number who were actually eligible to take part. We

Objective

1 Were participants willing to take part?

FEASIBLE

"There's an interest that I'd be doing something good to help other people that have got this"
(Participant 1/557)

"Would love to come off some of my medication if at all possible"
(Participant 3/684)

found that 96.8% of people who were eligible went on to be enrolled. The threshold for feasibility was to enrol 90% or more of people who were eligible, so this objective was judged to be feasible in a future trial without needing any changes.

We also looked at the things that people said about why they wanted or didn't want to take part. When asked which was the most important reason in wanting to take part, people singled out curiosity about acupuncture (21%) and wanting to help others with AF (21%). The most frequent reasons for not wanting to take part were not having internet or computer skills (3 people) and not willing to have acupuncture (2 people). Four people felt they could not give the time needed. Of course not every potential participant got in touch to tell us why they didn't want to take part, so this part of our analysis can't be certain.

Finally, we looked at whether people's preferences for and against acupuncture or nutritional therapy affected willingness to take part, and found that preferences had very little effect.

Objective

2 Were the eligibility criteria (conditions of entering the study) appropriate?

NOT FEASIBLE

The study's eligibility criteria were not feasible for a future trial because they excluded a large number of people (93% of the people identified by the GP practices), meaning that a future trial using these criteria may not be able to recruit enough participants. In addition, the exclusions meant that

the study's participants may not have been representative of people with AF in general, and this would mean that a future trial's results may not have applied to other people with AF. The eligibility criterion that affected the greatest number of people was the age range (45–70) – this excluded 74% of the people identified by GP practices.

The study recommended changes to the eligibility criteria for a future trial. These included removing the age restriction, removing the restrictions on the type of AF and its severity, and removing the COVID-19 vulnerability criteria (unless a future trial happened under pandemic conditions). These changes are easy to incorporate in a future trial; they would increase the likelihood of the trial being able to recruit enough people, and they would make it more representative of a general population of people with AF.

"I think it's just good to get involved with stuff like this, because this is what changes things"
(Participant 2/163)

"I'm not a quitter – if you stand up to do something, you do it"
(Participant 1/661)

Of the 30 people recruited, five dropped out (three in the Nutritional Therapy arm, and two in the Usual Care arm). All people in the Acupuncture arm stayed in the study. The threshold for feasibility was set at 80% of people staying in the study; 83% of the participants stayed, so this objective was judged to be feasible without changes.

Objective

3 Did participants stay in the study or did they drop out?

FEASIBLE

We analysed the reasons why the five people left the study. One left due to illness; another had unexpected caring responsibilities and wasn't able to complete the follow-up assessment. Two didn't give a reason for dropping out, and one dropped out because they were randomly allocated to the Usual Care group and were disappointed that they wouldn't be having either acupuncture or nutritional therapy. People stayed for a range of reasons, including "not being a quitter" and doing the study "for the general good".

The study made some recommendations to increase the number of people who would remain in a future trial. These included making sure the therapists' premises were closer to participants' homes; and offering people in the Nutritional Therapy group a choice about whether their appointments were online or in person.

Objective

4 Were the two therapies acceptable to participants?

FEASIBLE

People who were randomly allocated to the Acupuncture or Nutritional Therapy arms found the two therapies highly acceptable (95% of people in the treatment arms). This

objective had a feasibility threshold of 75% or more of participants finding their treatments acceptable, so it was judged to be feasible without changes. Attendance across both therapies was high, at 92%. People gave various reasons for finding the therapies acceptable, including the positive effects of the treatments and enjoying the relationship with the practitioner. Downsides of the two therapies included travelling time and stress in the Acupuncture arm; and in the Nutritional Therapy arm, one person discussed the costs and effort involved in making dietary changes, especially when cooking for a household.

The study recommended changes to increase the therapies' acceptability further, including making sure that therapists' premises are closer to participants' homes, and making sure that nutritional therapists adjust diet plans to consider the needs of households.

"Powerful"
(Participant 2/163)

"Relaxing"
(Participant 4/910)

"Very interesting"
(Participant 4/272)

"Beneficial"
(Participant 3/641)

"Inspiring"
(Participant 2/256)

"Exhilarating"
(Participant 2/761)

Objective

5 Were the study assessments acceptable to participants?

FEASIBLE

All participants did an assessment twice during the study. Each assessment involved people filling in a questionnaire, taking

"I can see for some people there's a lot there and they may say 'this is too much for me'"
(Participant 1/884)

measurements of their waist and hips, weighing themselves, taking a blood pressure reading, and giving details of medications. Sixteen people took part in interviews in addition, and 10 people were guided to fit themselves with a seven-day ECG monitor. The assessments were done online to minimise the risk of COVID-19 infection.

The assessments were found to be highly acceptable by 92% of participants. The feasibility threshold for this objective was 90% or more finding the assessments highly acceptable, so this objective was feasible without the need for changes. We thought there might have been a link between the length of an assessment and its acceptability, but this was not true: in fact, some people doing the longest assessments found them to be the most acceptable.

But participants did find the assessments difficult in various ways, including disliking taking their own measurements (21%), and disliking the online format (16%); the follow-up questionnaire was particularly disliked (20%). The study recommended some changes to reduce these difficulties, including holding assessments in person at a study centre where participants could be weighed and have their measurements taken by a healthcare professional, and reducing the length of questionnaires.

"I'm talking to you, you're giving me attention, you're giving me care... and you know, it all adds up"
(Participant 2/761)

The CardioSTAT® ECG monitor was a small device that 10 people in the study fitted to their own chest to measure their symptoms over a seven-day period. We looked at whether participants' symptom diaries were similar to the ECG monitor readings – in other words, when these 10 people felt their AF, was it actually AF according to the monitor? We found that there was very little similarity between the two. Sometimes people had AF but didn't record it in the diary (perhaps because they weren't feeling it); and we also found the opposite, where people felt AF although no AF was actually happening. This was a useful finding for a future trial because it showed that people's perceptions of AF are not necessarily accurate. So in a future trial there are good reasons to use the monitor, to get a more objective reading of actual symptoms. We also found it was important to ask people to keep a symptom diary in a future trial, because in this study they were clearly experiencing something that could affect their quality of life (whether it was actual AF or not) – so in a future trial it will be important to record people's own perceptions as well as actual AF.

Objective

6 Was the ECG monitor used in the study useful?

ABANDONED

We also asked people about their experience of fitting the monitor, wearing it, and returning it. They said it was generally easy to fit, comfortable to wear, and easy to return. This means a future trial should not have difficulty in asking people to use the monitor. However, most people were not very confident that the monitor was working well and detecting their symptoms. This may be because people had self-fitted the monitor, rather than a healthcare professional fitting it for them.

Finally, we asked people whether the monitor had been an incentive to take part in the study. Three people said it was the most important reason to take part; only one person said it was their most important reason for staying in the study.

Although these findings are very useful for a future trial, none of them affected feasibility. The study originally set two feasibility thresholds for this objective, but during analysis it became clear that setting thresholds for the monitor's usefulness wasn't appropriate. So this objective became exploratory, and no feasibility threshold was applied.

Objective

7 How did participants find the overall experience of study participation?

FEASIBLE

We asked participants how they had found the overall experience of participating in the study. We found that 100% of participants

"All new and interesting"
(Participant 1/856)

thought it was highly acceptable, with 84% finding it extremely or very acceptable (the highest two ratings).

"Very enjoyable!"
(Participant 4/385)

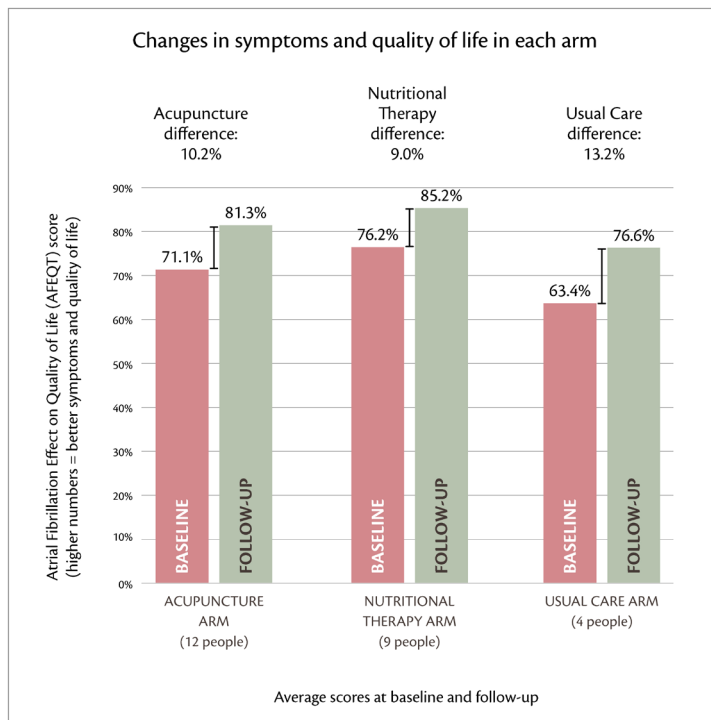
We also asked participants about the parts of the study they had most disliked. The two most disliked aspects were reading the participant information pack (17% felt this was too long, and gave too much information that wasn't necessary), and hearing about their group placement (17% had a preference to be in another arm of the study, and were disappointed not to be in that arm). The study recommended changes to reduce the length of the participant information pack. However, we did not make a recommendation that participants should be given the treatment of their preference in a future trial. This is because preferences, although evident and sometimes strong, didn't affect the overall feasibility of the study; and because allowing preferences would introduce bias in the results of a future trial, meaning the results would not be reliable.

"Fine – not onerous at all"
(Participant 2/964)

"I said to my wife, I do feel like I've got a little bit more va va voom"
(Participant 2/256)

"Very interesting and helpful"
(Participant 2/163)

Were acupuncture and nutritional therapy effective for AF symptoms and quality of life?



Because only 30 people took part in the Santé-AF feasibility study, there weren't enough people to show whether acupuncture and nutritional therapy were effective or not. A future large-scale trial will be able to answer this question fully. But the feasibility study did explore the amount of change experienced by the participants for both symptoms and quality of life, and the results of this can be seen in the diagram on the left. We used a scale called the Atrial Fibrillation Effect on Quality of Life (AFEQT). We calculated the amount of change in each group by measuring participants once at baseline (before treatment) and a follow-up point at three months (after treatment) and comparing the two measurements, then averaging these "change scores" across each group.

Previous research has found that a "clinically important difference" for the AFEQT scale is 5.4 points (5.4%). In other words, people who experience an improvement of 5.4% on the AFEQT scale should notice an improvement in their AF symptoms and quality of life. The diagram shows that the two treatment groups in Santé-AF both experienced an improvement of around double this amount. This means that both treatments show promise.

What the diagram also shows is that the people in the Usual Care group (who didn't have acupuncture or

nutritional therapy) also improved; in fact, they improved more than the people in the Acupuncture or Nutritional Therapy groups. This is mainly because there were only four people remaining in the Usual Care group at the follow-up measurement point and most of them happened to record unusually large changes that skew the results. With more people in the group, which would happen in a large-scale trial, these measurements are likely to average out.

Were acupuncture and nutritional therapy safe?

In the feasibility study, we looked at the safety of the two treatments (again with the caveat that 30 people isn't enough to properly answer the question). We found that five people in the Acupuncture group experienced a range of mildly adverse side-effects, and one person in the Nutritional Therapy group experienced a moderately adverse side-effect. This compares well with the side-effects and safety of conventional medicine for AF.

Acupuncture side-effects

- **Passing nerve sensation** (1 person)
- **Slight headache for 20 minutes** (1 person)
- **Tiredness after treatments** (1 person)
- **Mild bruising** (2 people)

Nutritional Therapy side-effects

- **Muscle fatigue and tiredness** (1 person). This person chose to continue in the study with a revised diet plan helping them to maintain the positive effects they had experienced whilst decreasing these side-effects.

Final conclusion

The Santé-AF feasibility study found that it is feasible to carry out a future large-scale trial. Feasibility can also be improved by changing the eligibility criteria, moving assessments to a study centre rather than online, and shortening the assessments. These adjustments would also improve the applicability of a future trial's results to the general population of people with AF.

The study has helped patients by opening an investigation into different treatments for AF that may help to decrease symptoms and increase quality of life without the risks and side-effects of conventional medical treatments. The study also helped researchers by decreasing the uncertainty of a future large-scale trial, making it more efficient to conduct, and making its results more applicable to the general AF population.

For more information...

Thank you for reading this summary of results. If you have any questions, or you'd like to know more, please contact the Principal Investigator, Karen Charlesworth, on kc1206@york.ac.uk, or call 07544 665882.

If you would like to read a technical summary of Santé-AF's results, please visit the ISRCTN trials registry at <https://doi.org/10.1186/ISRCTN13671984>.