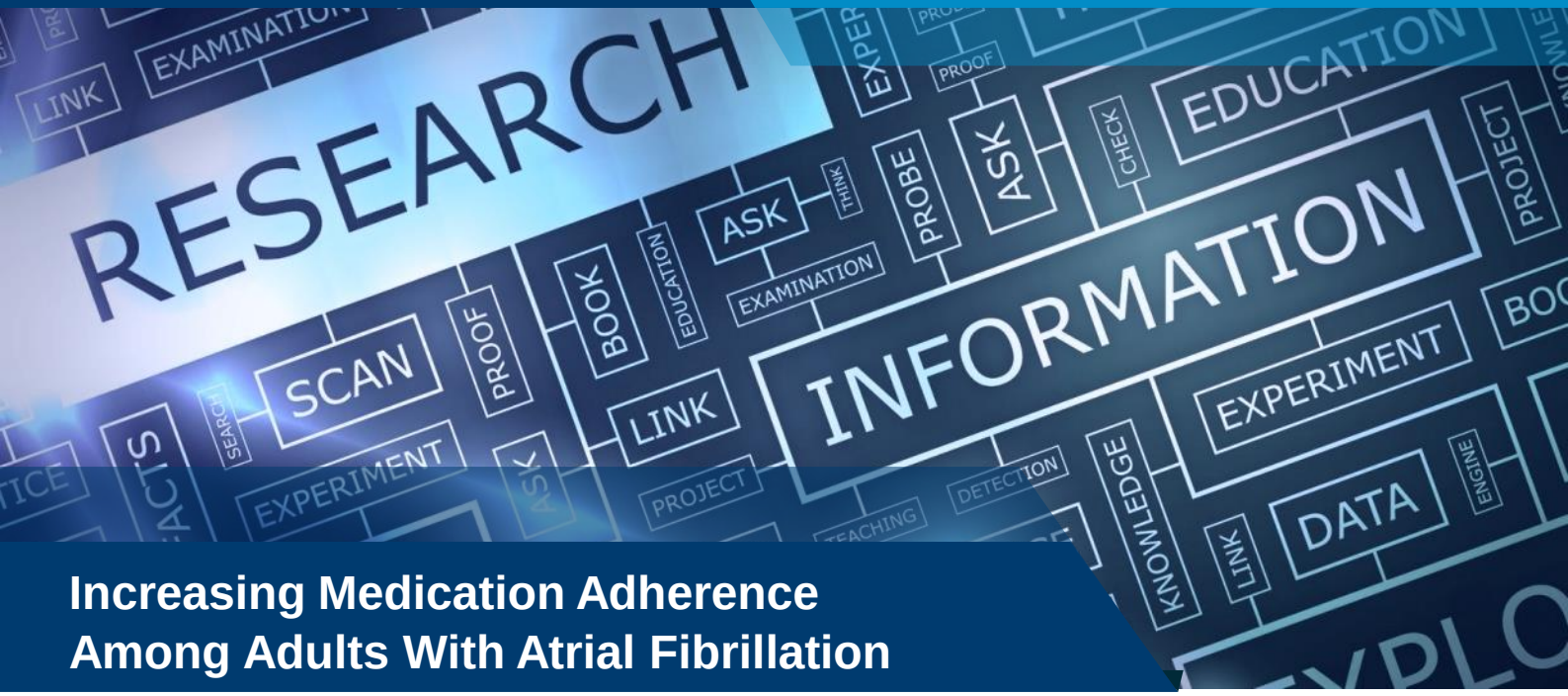
CHIEF SCIENTIST OFFICE

CODE: HIPS/18/39

RESEARCH PROJECT BRIEFING



Increasing Medication Adherence Among Adults With Atrial Fibrillation

AIMS

This study co-designed a mobile health app aimed at increasing medication adherence in an atrial fibrillation (AF) population. AF, a common abnormal heart rhythm, increases individual risk of having a stroke. Oral anticoagulation is a known treatment used to reduce AF related stroke risk. However, to work properly this medication needs to be taken daily at roughly the same time. A recognised challenge is non-adherence to this medication.

This study aimed to test the mobile intervention after it had been created and to identify the most valid, reliable and practical measure of medication adherence in this population. The study was a designed as a randomised controlled feasibility trial to test whether the app intervention was acceptable or not. The trial focussed on evaluating whether it is practical and possible to recruit, keep AF participants in the study and identify patient barriers and facilitators to engaging with an app-based intervention.

KEY FINDINGS

- AF patient co-design resulted in the development of an avatar-based medication adherence mobile health app. An avatar is a personalised graphical illustration that represents a character, in this case an AF nurse.
- Recruitment was significantly impacted by COVID-19, particularly in primary care who did not have capacity to act as recruitment sites.
- The 2 questionnaires used to assess medication adherence (the Medication Adherence Rating Scale and Beliefs about Medications Questionnaire) were practical and acceptable measures for this population. Patients were unwilling to take part when blood tests were requested, but this coincided with the pandemic and difficulties accessing healthcare services.
- A mobile health app intervention was acceptable to patients, but they perceived greater benefit for those with newly diagnosed AF who have yet to establish medication adherence routines and behaviour patterns.

WHAT DID THE STUDY INVOLVE?

This study consisted of three main phases.

Phase 1: A content analysis of existing AF medication adherence apps

- This stage was used to identify what mobile apps were available for helping those with AF self-manage their condition.
- This was published in the European Journal of Cardiovascular Nursing, Pearsons et al (2020) Atrial fibrillation self-management: a mobile telephone app scoping review and content analysis; https://doi.org/10.1093/eurjcn/zvaa014

Phase 2: Researcher and patient co-design of a mobile app to increase medication adherence

- Co-design is a creative process working with patients in true partnership, recognising that lived experiences are valuable for helping to identify and solve healthcare problems. The co-design involved 11 patients across 3 workshops:

  Workshop 1: Initial Focus Group

  Open discussion exploring the lived experiences of individuals with AF. Topics included 1) individual journeys to getting diagnosed with AF, 2) current knowledge about AF and sources used to learn about their condition, 3) how AF (if at all) impacted on everyday life, 4) medication burden and patterns of medication adherence and, 5) experiencing AF alongside other comorbidities.

  Workshop 2: Targeted Focus Group

  Using the apps identified from the background content analysis (phase 1), participants interacted with currently available apps within AF self-management. Opinions were sought on a) immediate usability, b) educational content, c) incorporated features d) aesthetic and engagement quality, e) use of multi-media and f) initial impression (e.g., likes/dislikes, could they see themselves using the app). As with workshop 1, free flowing dialogue was encouraged.

  Workshop 3: Online Discussion

  Adapted to an online setting to overcome COVID-19 social distancing, workshop 3 asked participants to engage with the newly developed mobile app and offer personal user experience feedback.

Phase 3: A pilot randomised controlled feasibility trial

- A pilot randomised controlled feasibility trial is a type of study where people are randomly split into different groups to test an intervention. For this study, participants were randomised to normal care or used the newly created mobile app for 12 weeks.
- The aim of this trial was to assess recruitment processes, suitability of outcome measures, data completeness and acceptability and usability of the app.

WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?

- 5 apps were included in content analysis. These contained limited behaviour change techniques (recognised strategies used to promote long lasting change in individuals, e.g., goal setting), lacked intuitive functions and were difficult to use. Privacy policies were difficult to read. App quality rated from poor to acceptable and no app had been evaluated in a clinical trial.
- An avatar mobile health app was developed which included behaviour change techniques to address intentional and non-intentional medication adherence.
- We were unable to recruit clinicians to take part, largely due to the pandemic. This was overcome by using SHARE- The Scottish Health Research Register and Biobank as an alternate recruitment method.
- We recruited 68 participants (planned 76) and 57 completed (83.8% retention rate).
- Participants were able to complete Medication Adherence Rating Scale (MARS) and Beliefs about Medications Questionnaire (BMQ). Data completeness was 99%, therefore valid and reliable measures. It was not feasible to use blood tests to assess medication adherence and therefore blood test collection should not be included in any future larger scale trials.
- Patients liked the avatar and how realistic, warm and genuine it was as a source of information delivery. Participants felt those newly diagnosed with AF would receive most benefit from the included AF education as they were most likely to have unestablished routines for taking medication.

'My AF Nurse' MOBILE APP

A screen capture of My AF nurse. The co-design process led to the development of an avatar-based mHealth app that incorporates behaviour change techniques to increase medication adherence

The app was divided into 3 sections 1) AF Knowledge, 2) Emergency Action and 3) a Medication Tracker. The app also included an AF quiz to test knowledge and promote long lasting change.

AF Knowledge

Incorporated written, spoken and video to provide information about AF. All information was based on published evidence-based material with significant emphasis on the use of British Heart Foundation materials (including the use of BHF videos on AF and stroke).

Emergency Action Plan

An integral part of the app based on the feedback that participants were often unsure when to seek help for their AF or any medication related queries. This section took a Q & A format with nurse Ali answering frequently asked questions around when and where to seek help.

Medication Tracker

Allowed users to input their medications (both AF and non-AF specific) and personalise medication prompts and reminders with a function to check off medications when taken.

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WHAT IMPACT COULD THE FINDINGS HAVE?

- **Patients:** An avatar based mobile health app could be beneficial to encourage medication adherence in patients newly diagnosed with AF.
- **Policy:** This aligns with the Heart Disease Action Plan (priority 1) which sets out the priorities and actions the Scottish government will take to minimise preventable heart disease and ensure equitable and timely access to diagnosis, treatment and care for people with suspected heart disease in Scotland. The mobile app creates a potential mechanism to reduce medication non-adherence in a high-risk cardiovascular group as identified by the Scottish government.
- **Practice:** The study indicates that a full randomised controlled trial is feasible and has identified which measures should and should not be included to ensure that a full-scale trial is successful.

HOW WILL THE OUTCOMES BE DISSEMINATED?

- The AF mobile app content analysis review was published in the European Journal of Cardiovascular Nursing: https://academic.oup.com/eurjcn/article/20/4/305/6031440
- The co-design process is being presented as a poster at the Association of Cardiovascular Nursing and Allied Health Professionals conference in Edinburgh, June 2023. We aim to publish a paper of this process in a peer review journal
- The feasibility RCT will be published in peer review journal and lay summaries produced and distributed to participants who joined the study.
- The mobile app is publicly available in Google and Apple app stores for people to continue to use and benefit from.

CONCLUSION

Despite challenges in recruitment due to the COVID-19 pandemic, a mobile health app was co-designed with an AF population and the measures used in the study are feasibly acceptable for a full trial. The trial should target people with a new diagnosis of AF.

RESEARCH TEAM & CONTACT

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Additional Information

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