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Trial of a digital asthma management application: juli

Submission date 26/05/2021	**Recruitment status** No longer recruiting	[X] Prospectively registered [X] Protocol [X] Statistical analysis plan [X] Results [_] Individual participant data
Registration date 08/06/2021	**Overall study status** Completed	
Last Edited 12/07/2024	**Condition category** Respiratory	

Plain English summary of protocol
Background and study aims
Each year, millions of people are diagnosed with asthma and seek additional support via digital applications. It can be overwhelming learning how to manage and unclear what can make symptoms better or worse. The digital health application juli, aims to support people with asthma via a number of evidence based approaches including symptom tracking, medication reminders, journaling, data visualisation of sleep, activity, exercise, oxygen saturation, external data including weather, pollen count and air quality, and heuristic behavioural change technique recommendations about how to improve these parameters.

However, we are still not certain how useful juli is compared to what people may do for themselves to help their asthma. So we are carrying out an eight week, randomised controlled trial of juli to understand if juli is effective in improving asthma control. The primary objective is to investigate whether the juli app is effective in reducing the severity of asthma symptoms, compared to treatment as usual.

Who can participate?
Participants will be aged 18 - 65 years, are an English speaker, have an iPhone and are suffering from asthma.

What does the study involve?
Participants will be randomly allocated to receive juli or a dummy version of juli.

The participant will use the app juli for eight weeks, and complete an asthma questionnaire every two weeks (four in total). Participants will also be asked to complete a well-being questionnaire at four and eight weeks and a user satisfaction questionnaire at eight weeks. These are all standardised questionnaires, commonly used for research (the Asthma Control Test, the 12-item Short Form survey of health-related quality of life and the Mobile Health App Usability Questionnaire).

The full version of the app presents the participant with graphical displays of some data automatically generated from their phone and smartwatch. The types of data are: sleep – time in bed and time asleep, activity – steps and flights of stairs climbed, heart rate variability – the

variation in the time interval between heartbeats, workouts – periods of exercise, oxygen saturation and menstrual cycle. It also presents them with external data: weather, pollen count and air quality (provided via geolocation). It asks the participant to rate how they are feeling and answer questions about their asthma control on a daily basis. It allows them to set a medication reminder, and add notes to a journal. It presents them with correlations between these different types of data and helps them to identify things that make their asthma better or worse.

Participants allocated to the dummy version of the app will be asked to rate how they are feeling on a daily basis, but will not have access to the rest of the app.

What are the possible benefits and risks of participating?
Some people find it rewarding to take part in medical research and appreciate the additional monitoring. Using juli may improve participants' symptoms of asthma, however, this cannot be guaranteed.

We also hope that by carrying out this study we will help future guidance about when someone is likely to benefit from juli and how we can improve it. There may not be direct benefits of taking part for you. However, the study is designed to improve treatment and increase understanding of asthma.

Where is the study run from?
Division of Psychiatry, University College London (UK)

When is the study starting and how long is it expected to run for?
December 2020 to June 2023

Who is funding the study?
Juli Health (UK)

Who is the main contact?
Joseph Hayes, joseph.hayes@ucl.ac.uk

Contact information

Type(s)
Scientific

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Additional identifiers

Study information

Scientific Title
Randomised controlled trial of a digital asthma management application: juli

Study objectives
Use of the juli app reduces asthma symptoms at 8 weeks compared to attention placebo control.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 07/06/2021, UCL Research Ethics (Office of the Vice-Provost (Research), University College London, 2 Taviton St, London, WC1E 6BT, UK; +44 (0)20 7679 8717; ethics@ucl.ac.uk), ref: 19413/001

Primary study design
Interventional

Study design
Interventional placebo-controlled randomized controlled trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Reduction of asthma symptoms in adults with asthma

Interventions
Use of juli app vs treatment as usual (plus attention placebo control app).

juli app: Participants will be prompted to open the app each day via an automated alert. They will be asked to rate how they are feeling on a scale using 5 emojis and track number of shortness of breath episodes, rescue inhaler usage and night time waking with shortness of breath. The app will gather information via Apple HealthKit; sleep, activity, workouts, oxygen saturation. It will present this data to the participant and show associations with asthma symptoms. It will make recommendations about these parameters to guide healthy behaviours and will use external data sources (weather, air quality, pollen count) to guide these recommendations. The app has a medication reminder function that can be set by the participants to improve medication adherence. Participants are also encouraged to engage in journaling via the app, especially in relation to exacerbating or reliving factors for asthma symptoms.

Attention placebo control app: Participants will be prompted to open the app each day via an automated alert and rate how they are feeling on a scale using 5 emojis.

The participant will use the app for eight weeks and complete an asthma questionnaire every two weeks (four in total). Participants will also be asked to complete a well-being questionnaire at four and eight weeks and a user satisfaction questionnaire at eight weeks.

Intervention Type
Behavioural

Primary outcome(s)
Asthma symptoms measured using the Asthma Control Test at 8 weeks

Key secondary outcome(s)
1. Asthma symptoms measured using the Asthma Control Test at 2, 4, and 6 weeks
2. Short Form 12 Item health-related quality of life at 4 and 8 weeks

Completion date
01/08/2023

Eligibility

Key inclusion criteria
1. Asthma with Asthma Control Test score <20 at baseline
2. Age 18 to 65 years (inclusive)
3. English speaker
4. Have an iPhone

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit

18 Years

Upper age limit
65 Years

Sex
All

Total final enrolment
152

Key exclusion criteria
1. Asthma Control Test >19 at baseline
2. Children
3. Non-English speakers

Date of first enrolment
21/06/2021

Date of final enrolment
01/06/2023

Locations

Countries of recruitment
United Kingdom

England

Afghanistan

Åland Islands

Albania

Algeria

American Samoa

Andorra

Angola

Anguilla

Antarctica

Antigua and Barbuda

Argentina

Armenia

Aruba

Australia

Austria

Azerbaijan

Bahamas

Bahrain

Bangladesh

Barbados

Belarus

Belgium

Belize

Benin

Bermuda

Bhutan

Bolivia

Bonaire Saint Eustatius and Saba

Bosnia and Herzegovina

Botswana

Bouvet Island

Brazil

British Indian Ocean Territory

Brunei Darussalam

Bulgaria

Burkina Faso

Burundi

Cabo Verde

Cambodia

Cameroon

Canada

Cayman Islands

Central African Republic

Chad

Chile

China

Christmas Island

Cocos (Keeling) Islands

Colombia

Comoros

Congo

Congo, Democratic Republic

Cook Islands

Costa Rica

Croatia

Cuba

Curaçao

Cyprus

Czech Republic

Côte d'Ivoire

Denmark

Djibouti

Dominica

Dominican Republic

Ecuador

Egypt

El Salvador

Equatorial Guinea

Eritrea

Estonia

Eswatini

Ethiopia

Falkland Islands

Faroe Islands

Fiji

Finland

France

French Guiana

French Polynesia

French Southern Territories

Gabon

Gambia

Georgia

Germany

Ghana

Gibraltar

Greece

Greenland

Grenada

Guadeloupe

Guam

Guatemala

Guernsey

Guinea

Guinea-Bissau

Guyana

Haiti

Heard Island and McDonald Islands

Holy See (Vatican City State)

Honduras

Hong Kong

Hungary

Iceland

India

Indonesia

Iran

Iraq

Ireland

Isle of Man

Israel

Italy

Jamaica

Japan

Jersey

Jordan

Kazakhstan

Kenya

Kiribati

Korea, North

Korea, South

Kosovo

Kuwait

Kyrgyzstan

Lao People's Democratic Republic

Latvia

Lebanon

Lesotho

Liberia

Libya

Liechtenstein

Lithuania

Luxembourg

Macao

Madagascar

Malawi

Malaysia

Maldives

Mali

Malta

Marshall Islands

Martinique

Mauritania

Mauritius

Mayotte

Mexico

Micronesia, Federated States of

Moldova

Monaco

Mongolia

Montenegro

Montserrat

Morocco

Mozambique

Myanmar

Namibia

Nauru

Nepal

Netherlands

New Caledonia

New Zealand

Nicaragua

Niger

Nigeria

Niue

Norfolk Island

North Macedonia

Northern Mariana Islands

Norway

Oman

Pakistan

Palau

Palestine, State of

Panama

Papua New Guinea

Paraguay

Peru

Philippines

Pitcairn

Poland

Portugal

Puerto Rico

Qatar

Romania

Russian Federation

Rwanda

Réunion

Saint Barthélemy

Saint Helena, Ascension and Tristan da Cunha

Saint Kitts and Nevis

Saint Lucia

Saint Martin (French part)

Saint Pierre and Miquelon

Saint Vincent and the Grenadines

Samoa

San Marino

Sao Tome and Principe

Saudi Arabia

Senegal

Serbia

Seychelles

Sierra Leone

Singapore

Sint Maarten (Dutch part)

Slovakia

Slovenia

Solomon Islands

Somalia

South Africa

South Georgia and the South Sandwich Islands

South Sudan

Spain

Sri Lanka

Sudan

Suriname

Svalbard and Jan Mayen

Sweden

Switzerland

Syria

Taiwan

Tajikistan

Tanzania

Thailand

Timor-Leste

Togo

Tokelau

Tonga

Trinidad and Tobago

Tunisia

Turkmenistan

Turks and Caicos Islands

Tuvalu

Türkiye

Uganda

Ukraine

United Arab Emirates

United States Minor Outlying Islands

United States of America

Uruguay

Uzbekistan

Vanuatu

Venezuela

Viet Nam

Virgin Islands, British

Virgin Islands, U.S.

Wallis and Futuna

Western Sahara

Yemen

Zambia

Zimbabwe

Study participating centre
University College London
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Sponsor information

Organisation
University College London

ROR
https://ror.org/02jx3x895

Funder(s)

Funder type
Industry

Funder Name
juli Health

Results and Publications

Individual participant data (IPD) sharing plan
Data will only be available to approved University College London researchers. The data will be available from Joseph Hayes (joseph.hayes@ucl.ac.uk). The data will be available following the publication of the trial and will include outcome measures and baseline characteristics. Participants have consented to: “I understand that other UCL authenticated researchers will have access to my anonymised data.” They may endorse: “If you would like your contact details

to be retained so that you can be contacted in the future by UCL researchers who would like to invite you to participate in follow-up studies to this project, or in future studies of a similar nature, please tick the appropriate box below."

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		29/04/2024	12/07/2024	Yes	No
Participant information sheet	version V4		08/07/2021	No	Yes
Preprint results		23/07/2023	09/08/2023	No	No
Protocol file	version v2.0		08/07/2021	No	No
Statistical Analysis Plan		08/07/2021	09/08/2023	No	No