ISRCTN15888934 https://doi.org/10.1186/ISRCTN15888934

A technology based intervention to nudge construction workers towards sun safe behaviours

Submission date
08/01/2018

Recruitment status
No longer recruiting

Registration date
15/01/2018

Overall study status
Completed

Last Edited
23/10/2020

Condition category
Injury, Occupational Diseases, Poisoning

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Exposure to sunlight can have both positive and negative health impacts. Excessive exposure to ultra-violet (UV) radiation from the sun can cause skin cancer, however insufficient exposure to sunlight has a detrimental effect on production of Vitamin D. In the construction industry there are onsite proactive behaviours for safety, but sun-safety remains a low priority. There is limited research on understanding the barriers to adopting sun-safe behaviours and the association this may have with Vitamin D production. One approach is using text messaging in combination with a supportive smartphone App. The intervention aims to both reduce UV exposure during months with higher UV levels (April-September) and promote appropriate dietary changes to boost Vitamin D levels during months with low UV levels (October-March).

Who can participate?
Adults aged 18 to 65 years old working within the construction industry.

What does the study involve?
Participants are construction workers recruited across 9 constructions sites in the UK. Workers took part in 3 rounds of data collection (winter-summer-winter), with each round lasting 21 days. Half of the group, at each location, are randomly allocated to the one of two groups. Those in the first group receive a daily text message and smartphone App that gave people more information about sun safety at work and ways of boosting Vitamin D. The other half of the groups do not receive text messages or the App support. In the second and third rounds they switched to the opposite condition. The text messages reflected the time of year, e.g. in summer they were aimed at sun safety and in winter they received messages about increasing Vitamin D and healthier food choices. In the winter participants are given Vitamin D tablets to help increase levels when there is not enough sunlight for the body to make Vitamin D. At the start and end of each 21 day study all participants meet with the researcher to complete a Vitamin D test and questionnaires about their attitudes and beliefs. This allows the researchers to understand any changes in Vitamin D level and beliefs between people that received the text messages and people that didn't. By visiting people at 3 times across the year also let the researchers look at the effect the seasons have on Vitamin D levels and beliefs.

What are the possible benefits and risks of participating?
Taking part in the study was not necessarily targeted to benefit people. However, we found that many of the people that took part had very low Vitamin D stores, specifically in the winter. This gave participants an insight into their own health with many self-reporting an uptake in boosting their Vitamin levels in the winter. People that took part were also given a £10 shopping voucher each time they provided a Vitamin D sample, so for each 21 day study they got £20 in vouchers. During the study we also spoke at industry events to increase awareness of sun safety at work and the importance of Vitamin D for general health. Finally, the study also provides important information about the effectiveness and feasibility of a technology-based intervention to promote sun-safety and healthy behaviours in outdoor construction workers that could be used in other occupational settings. There are no expected risks with participating.

Where is the study run from?
1. Heriot-Watt University (UK)
2. Institue of Occupational Medicine (UK)

When is the study starting and how long is it expected to run for?
January 2016 to May 2018

Who is funding the study?
Institute of Occupantional Safety and Health (UK)

Who is the main contact?
Professor John Cherrie (Scientific)

Contact information

Type(s)
Scientific

Contact name
Prof John Cherrie

ORCID ID
http://orcid.org/0000-0001-8901-6890

Contact details
Heriot-Watt University
Edinburgh
United Kingdom
EH14 4AS

Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
A14R10354

Study information

Scientific Title
Nudging construction workers towards safer behaviour

Study objectives
Short punchy appropriate messages or "rewards" sent to the smartphone of workers will, along with other supporting organisational measures, promote healthy behaviour.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Heriot-Watt University School of Life Sciences Ethics Committee, 28/06/2016, ref: 2016-164

Study design
Randomised controlled crossover trial

Primary study design
Interventional

Secondary study design
Randomised cross over trial

Study setting(s)
Other

Study type(s)
Other

Participant information sheet
Not available in web format, please use the contact details below to request a patient information sheet

Health condition(s) or problem(s) studied
Change in Vitamin D level

Interventions
Approximately 62 construction workers are recruited across 9 constructions sites in the UK (5 in Scotland and 4 in London). A randomised control crossover trial (RCCT) is used to test the intervention, with randomisation at site level – i.e. participants receive both the control (no text messages or supportive App support) and intervention (daily text messages and supportive App). Half of the group, at each location, were randomly allocated to the intervention. Workers take part in 3 rounds of data collection (winter-summer-winter), with each round lasting 21 days.

Using the Theory of Planned Behaviour (TPB) the intervention focuses on supporting sun-safety and healthy dietary decisions in relation to Vitamin D intake. The intervention emphasises

cultivating the perception of normative support in the workplace, increasing awareness of control and self-efficacy in taking sun-protective behaviours, making healthier eating choices to boost Vitamin D, and tackling stigmas attached to image and group norms. Participants are invited to take part in three waves of data collection:
Visit 1: Low UV period (between October-March)
Visit 2: High UV period (April-September)
Visit 3: Low UV period (between October-March

Each study epoch lasts 21 days with intervention text messages delivered on workdays only. The supportive App provides supplementary information about sun protective behaviours and healthy dietary choices. The primary outcome measure is 25-hydroxy-Vitamin D [25(OH)D] level (obtained using blood spot sampling), which are taken pre and post control and intervention periods.

Secondary outcome measures are two-fold, using the TPB to detect changes in behaviour, and quantifying UV exposure during the UK peak radiation season (April-September) using body-mounted UV sensors.

Intervention Type
Behavioural

Primary outcome measure
Vitamin D levels are measured using blood spot sampling at the start and end of each 21 day epoch. The extent and direction of the change will be compared between groups in each of the high UV and low UV seasons using standard statistical methods, including comparison of mean levels of 25(OH)D change, comparison of proportion in each group whose levels increase or decrease; and within individual comparisons for intervention and control periods, which will control for differences between individuals in response to UV exposure. Secondary analyses will include additional comparisons of the level and direction of change in high and low UV periods in relation to geographic area of study (Scotland or England), different types of targeted intervention, and directly to the responses to the behavioural (i.e. TPB) and risk knowledge questionnaires

Secondary outcome measures
Behavioural change is measured using the Theory of Planned Behaviour at the start and end of each 21 day epoch. During the summer periods, we additionally measured personal exposure to UV radiation.

Overall study start date
03/01/2016

Completion date
31/05/2018

Eligibility

Key inclusion criteria
1. Health adults working in the construction industry and outdoors for long periods of time during the day.
2. Must have use of a smartphone to receive text messages and download an App.
3. Range of ethnic backgrounds

4. Range of ages
5. Range of professions within the industry (manual laborers and desk based office workers)
6. 18 to 62 years old

Participant type(s)
Healthy volunteer

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
60

Total final enrolment
112

Key exclusion criteria
There is no participant exclusion criteria.

Date of first enrolment
28/06/2016

Date of final enrolment
31/01/2017

Locations

Countries of recruitment
Scotland

United Kingdom

Study participating centre
Heriot-Watt University
Edinburgh
United Kingdom
EH14 4AS

Study participating centre
Institue of Occupational Medicine
Edinburgh

United Kingdom
EH14 4AP

Sponsor information

Organisation
Institute of Occupational Safety and Health

Sponsor details
IOSH
The Grange
Highfield Drive
Wigston
Leicestershire
United Kingdom
LE18 1NN

Sponsor type
Industry

ROR
https://ror.org/05yadcm11

Funder(s)

Funder type
Research organisation

Funder Name
Institue of Occupantional Safety and Health

Results and Publications

Publication and dissemination plan
The results will be published in a final report to our funder and high impact, peer reviewed occupational health journals and an abridged report to our participating construction companies. We have intent to publish during 2018. The findings will also be disseminated to the wider public via annual conferences (e.g. Occupational Health 2018), to other organization members of our industry funder and through a series of engagement opportunities, which will be offered to participating construction companies. We do not have additional information at this time. This registration is intended to progress the submission of our protocol paper under review.

Intention to publish date
31/05/2018

Individual participant data (IPD) sharing plan
The current data sharing plans for the current study are unknown and will be made available at a later date.

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Abstract results	conference abstract	03/03/2021	23/10/2020	No	No
Protocol article	protocol	01/12/2018	23/10/2020	Yes	No
Results article	results	18/08/2020	23/10/2020	Yes	No