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Does hydration have effects on competence in doctors?

Submission date
05/02/2021

Recruitment status
No longer recruiting

Registration date
10/02/2021

Overall study status
Completed

Last Edited
11/10/2022

Condition category
Other

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
Research has found that doctors in the United Kingdom were clinically dehydrated at the start (36%) and end (45%) of shifts. As little as 2% dehydration as a percentage of total body weight can cause impaired physical, psychomotor, cognitive, psychiatric and visuomotor performance, in addition to greater fatigue, and reduced alertness. The addition of PPE as standard workplace practice (beyond what was previously expected) is likely to have magnified the speed at which doctors dehydrate (due to elevated temperature), and due to the functional infection-control barriers of fluid intake. Given the fundamental importance of hydration for psychophysiological functioning, exploring doctor's hydration levels and impact on measures of competence is a valuable area of research. Therefore, the aim of this research is to explore the association between hydration and competence in doctors.

Who can participate?
This study invites adults currently in employment as a doctor by the National Health Service in the United Kingdom. Due to their specific health needs, we can't include people who are pregnant or breastfeeding. Nor can we include doctors with current renal, cardiac, pulmonary, hepatic, digestive, thyroid, neurological or haematological disease, in addition to anyone taking medications (either prescribed or over-the-counter) that influence weight, fluid, or electrolyte balance.

What does the study involve?
Those who are eligible and decide to participate will be emailed a participant ID code, and a link to an online survey platform including the consent form. Participants will receive a testing pack in the post including sample pots, urinalysis reagent strips and comprehensive self-testing and online reporting instructions. They will be asked to complete online surveys on three occasions that they may access in private via a home laptop or PC. The first can be completed at any time convenient for the participant, the second and third must be completed when they return home following a working shift. In addition to the surveys, participants will be asked to undertake self-assessed urinalysis using reagent Labstick's. The self-administered urinalysis method is quick, non-invasive and participants will be able to dispose of the sample immediately following input

of their results. They will be required to provide a fluid record based over the duration of their working shift. On completion of the study you they will be provided with a written debriefing and offered a telephone debriefing (on request).

What are the possible benefits and risks of participating?
The aim of this study is to capture professional experiences. Results from this study may be published to inform future research and support professional and public awareness of any identified needs. Publication of the results from this study may allow dissemination of valuable information that may prompt support and understanding for the needs of medical staff. This study invites participants to think reflectively about their personal and professional experiences, this may have positive and negative emotional responses. Participants urinalysis results are non-diagnostic but may indicate health needs (e.g. dehydration), they will be given details of the healthy-range scores and advised to seek medical guidance if they need further support to meet their health needs.

Where is the study run from?
University of Reading (UK)

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

Who is funding the study?
Investigator initiated and funded

Who is the main contact?
Kirsty Hodgson, k.l.hodgson@pgr.reading.ac.uk
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Additional identifiers

Protocol serial number
P2S1

Study information

Scientific Title
Exploration of the association between hydration status and competence in doctors

Study objectives
Through psychophysiological effects, this research hypothesises that there will be a positive association between hydration status and competency.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 14/01/2021, The University of Reading School of Psychology Research Ethics Committee (Whiteknights, University of Reading, Reading, Berkshire, RG6 6AH, UK; +44 (0)118 3788523; pclsethics@reading.ac.uk), ref: 2020-193-AL

Primary study design
Observational

Study design
Observational cohort study

Study type(s)
Other

Health condition(s) or problem(s) studied
Measures of competence, hydration and psychophysiological status in doctors in the United Kingdom

Interventions
Those who are eligible and decide to participate will be emailed a participant ID code, and a link to an online survey platform including the consent form. Participants will receive a testing pack in the post including sample pots, urinalysis reagent strips and comprehensive self-testing and online reporting instructions. They will be asked to complete online surveys on three occasions that they may access in private via a home laptop or PC. The first can be completed at any time convenient for the participant, the second and third must be completed when they return home following a working shift. In addition to the surveys, participants will be asked to undertake self-assessed urinalysis using reagent Labstick's. The self-administered urinalysis method is quick, non-invasive and participants will be able to dispose of the sample immediately following input of their results. They will be required to provide a fluid record based over the duration of their working shift. On completion of the study they will be provided with a written debriefing and offered a telephone debriefing (on request).

Within 3-days following the baseline testing session, participants will also be asked to complete Day 1 of the working day assessment. B0 - T2 is designed to be completed within a 7-day period according to each doctor's shift pattern.

Intervention Type
Other

Primary outcome(s)
1. Competence is measured using a Self-Assessment Questionnaire (M-SQ) following two working shifts (T1 - T2)
2. Hydration status is measured using self-assessed urinalysis reagent Labstick's reporting urine specific gravity (Uspecific gravity) at T1 and T2

Key secondary outcome(s)

Current secondary outcome measures as of 01/03/2021:

Measured at B0:
1. The Professional Quality of Life – Version 5 (ProQOL-5) to assess coping competence, burnout, secondary traumatic stress and compassion satisfaction (Stamm, 2009)
2. The Profile of Emotional Competence (PEC) as a self-reported measure of intra- and inter-personal emotional competence and global emotional intelligence (Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013)
3. The Almost Perfect Scale-Revised Short Form (APS-R SF) to assess attitudes towards others, themselves and their performance, orthogonally measuring the maladaptive and adaptive aspects of perfectionism (Slaney et al., 2001)
4. The Diagnostic Thinking Inventory (DTI) which is a widely applied self-assessment tool used to determine clinical diagnostic reasoning in doctors at all stages of their career. The DTI assesses two clinical reasoning domains: knowledge structure in memory and flexibility in thinking (Bordage, Grant & Marsden, 1990)5. The Lifestyle Appraisal Questionnaire (LAQ) as a comprehensive assessment of lifestyle (Craig, Hancock & Craig, 1996)

Measured at T1 and T2:
5. The Daily Stress Inventory (DSI) items measure a 24-hour period and three daily scores are derived on the number of events, the sum of the impact of the events, and the average impact rating of the events (Brantley, Waggoner, Jones & Rappaport, 1987)
6. N-back Letters Tasks (level 2 and 3), tasks will be used as a cognitive assessment to measure performance of a part of working memory and working memory capacity
7. Reagent Labstick's: urinary pH (UpH) as a measure of physiologic and psychological stress
8. Urine colour (Ucolour) will be analysed using an NHS 8-level colour chart
9. Fluid record based on the volume and type of fluid consumed over the duration of their working shift
10. Professional context questions (questions relating to their occupational role, working conditions, shift duration, amount of patient contact and the impact of COVID-19 on their ability to maintain healthy fluid intake at work)

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Previous secondary outcome measures:

Measured at T1 and T2:
1. The Professional Quality of Life – Version 5 (ProQOL-5) to assess coping competence, burnout, secondary traumatic stress and compassion satisfaction (Stamm, 2009)
2. The Profile of Emotional Competence (PEC) as a self-reported measure of intra- and inter-personal emotional competence and global emotional intelligence (Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013)
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12. Professional context questions (questions relating to their occupational role, working conditions, shift duration, amount of patient contact and the impact of COVID-19 on their ability to maintain healthy fluid intake at work)

Completion date
15/03/2023

Eligibility

Key inclusion criteria
Healthy adult volunteers currently in employment as a doctor by the National Health Service in the United Kingdom, and have access to a private home laptop or PC to complete the online testing.

Participant type(s)
Health professional

Healthy volunteers allowed
No

Age group
Adult

Sex
All

Total final enrolment
61

Key exclusion criteria
1. Pregnant, or breastfeeding
2. Current renal, cardiac, pulmonary, hepatic, digestive, thyroid, neurological or haematological disease, in addition to anyone taking medications (either prescribed or over-the-counter) that influence weight, fluid, or electrolyte balance

Date of first enrolment
15/02/2021

Date of final enrolment
01/09/2022

Locations

Countries of recruitment
United Kingdom

England

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Sponsor information

Organisation
University of Reading

ROR
https://ror.org/05v62cm79

Funder(s)

Funder type
Other

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol file			01/03/2021	No	No