Exploring non-attendance at colonoscopy among socioeconomically deprived and ethnically diverse populations taking part in FIT-based CRC screening

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The English BCSP: a brief history
The English BCSP: Switching to FIT

- Uptake ↑↑↑ (6 - 9%)

- Positivity ↑↑↑ (~1%)

- Acceptable kit rate ↑↑↑ (~98.4% → 99.6%)

- One thing which has not changed, is the diagnostic procedure rate (~80%)

Source: Northern Bowel Cancer Screening Hub
Why is this important?

- **1 in 10** with an abnormal result will have CRC

- CRC is only diagnosed if individuals attend a ‘diagnostic procedure’ (DP)

- Individuals who do not attend a diagnostic procedure tend to get diagnosed at a later stage and have poorer outcomes (Beshara et al., 2019; Kaalby et al., 2019)
What do we currently know?

- Studies have predominantly been epidemiological

- Of 38 identified in a recent review (Dalton et al., 2017), only one was conducted in England (Morris et al., 2012)

- In that study, DP rates were:
  - More socioeconomically deprived areas
  - More ethnically diverse areas
What else do we know?

For every 100 people who have an abnormal result…

- 95 Attend assessment
- 5 DNA / Decline assessment
- 15 Refuse procedure / not suitable
- <1 DNA procedure

80 Accept procedure offer

~80 Attend procedure

Source: Median values Manchester screening centres in 2018 – Data provided by Public Health England
A space for behavioural science

• While epidemiological studies can tell us *who* is less likely to attend a DP and *when* and *where* they drop-out of the pathway, behavioural science can tell us *why* some individuals do not attend a DP.

• Why is this important?

• By understanding *why* some individuals do not attend a DP, we can begin to understand *how* best to intervene.
The Behaviour Change Wheel

• One popular approach to developing behavioural interventions is the Behaviour Change Wheel (Michie et al., 2011; citations: 2,964)

• The BCW is a systematic approach to developing interventions (as opposed to ISLAGIATT), which begins with a ‘behavioural diagnosis’ and terminates with a theory-based intervention
How does the BCW enable a ‘behavioural diagnosis’ to be achieved?

• Encourages researchers to frame the problem in terms of: ‘who’, ‘what’, ‘where’, ‘how’ and ‘when’

• Provides a series of worksheets that help researchers achieve this

• Places the ‘COM-B’ model and ‘TDF’ at the centre of the behavioural diagnosis
COM-B and TDF

TDF Domains

- Knowledge, Skills
- Behavioural regulation
- Skills
- Social influences
- Environmental context and resources
- Beliefs, Identity
- Intentions, Optimism
- Emotion, Identity, Optimism

COM-B components

- Psychological
- Physical
- Social
- Reflective
- Automatic

Motivation → Opportunity → Capability → Behaviour
After the behavioural diagnosis

- After understanding *what* needs to be targeted (i.e., in COM-B and TDF terms) in *whom*, *when* and *where*, a matrix can be used to advise *how* to manipulate behavioural targets.
## Selecting relevant interventions / BCTs

### Table 1. Intervention function matrix

<table>
<thead>
<tr>
<th></th>
<th>Education</th>
<th>Persuasion</th>
<th>Incentivisation</th>
<th>Coercion</th>
<th>Training</th>
<th>Environmental restructuring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical capability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Psychological capability</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical opportunity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social opportunity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reflective motivation</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Background**
Objectives

1. Explore non-attendance at assessment and DP among low uptake groups

2. Test the effectiveness of interventions to address individual targets in online experiments, prior to formal development and testing in a pragmatic RCT
Study 1: Focus groups

For every 100 people who have a positive result…

- 5 DNA / Decline assessment
- 95 Attend assessment
- 15 Refuse procedure / not suitable
- 80 Accept procedure offer
- <1 DNA procedure
- ~80 Attend procedure

Study 2: Video observations
Study 1: Focus groups
Study 1: Focus groups

Objectives
1. Identify modifiable factors that are potentially important for attendance at assessment and DP

2. Map factors onto the TDF and COM-B
Study 1: Focus groups

Design

• Homogenous focus groups with White British, South Asian and Southern European and Eastern European men and women who:
  – Are eligible for FIT
  – Have previously completed FIT
  – Not had a +ive FIT result
Study 1: Focus groups

Why these ethnic minority groups?
• Recoding the data used by Morris et al in their 2012 paper, we found these ethnic groups specifically had lower attendance

Why include White British?
• By conducting focus groups with White British adults, it will be possible to disentangle ‘culturally-specific barriers’ from ‘general barriers’
## Study 1: Focus groups

### Table 2. Planned focus groups

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Total Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>South Asian</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladeshi</td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Indian</td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Pakistani</td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Southern and Eastern</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polish</td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>European</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portuguese and Spanish</td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>White British</strong></td>
<td>British</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>7</td>
<td>7</td>
<td>14</td>
</tr>
</tbody>
</table>
## Study 1: Focus groups

### Table 3. Target areas

<table>
<thead>
<tr>
<th>Ethnic subgroup</th>
<th>Region</th>
<th>Colonoscopy Attendance</th>
<th>Age-standardised CRC mortality compared with England</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Asian</td>
<td>Birmingham</td>
<td>61.3%</td>
<td>Worse</td>
</tr>
<tr>
<td></td>
<td>Coventry</td>
<td>57.9%</td>
<td>Similar</td>
</tr>
<tr>
<td>Eastern and Southern</td>
<td>Waltham Forest</td>
<td>73.7%</td>
<td>Worse</td>
</tr>
<tr>
<td>European</td>
<td>Haringey</td>
<td>74.3%</td>
<td>Similar</td>
</tr>
<tr>
<td>White British</td>
<td>Halton</td>
<td>75.0%</td>
<td>Similar</td>
</tr>
<tr>
<td></td>
<td>Hull</td>
<td>75.4%</td>
<td>Worse</td>
</tr>
</tbody>
</table>
Study 1: Focus groups

**Recruitment**
- Participants will be recruited by community centres located within target areas

**Procedure**
- Focus groups will be conducted in the first language spoken by participants (where required), by bilingual Bowel Cancer Screening staff
Study 1: Focus groups

Analysis

- Audio recordings will be translated and transcribed verbatim

- Transcripts will then be analysed using thematic analysis

- Themes will subsequently be mapped onto the TDF and ‘plugged into’ the BCW to identify possible interventions
Study 1:
Focus groups

For every 100 people who have a positive result...

- 5 DNA / Decline assessment
- 95 Attend assessment
- 15 Refuse procedure / not suitable
- 80 Accept procedure offer
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Study 2:
Video observations
Study 2: Video observations
Study 2: Video observations

Objectives

1. Examine how verbal and non-verbal communication between SSPs and patients varies between centres with the highest (91%) and lowest (68%) attendance at DP.

2. Capture reasons for declining DP offer

3. Map factors onto the TDF and COM-B
Study 2: Video observations

Participants

- Participants will be SSPs who conduct the assessment and the patients who are being assessed

Recruitment

- Screening centres that meet the eligibility criteria will be approached by the research team.
- Patients attending the appointment will be consented by the practitioner performing the assessment
Study 2: Video observations

Procedure

- Two cameras will be placed in the room, one focussing on the patient and another on the practitioner

Analysis

- Verbal data from the video recordings will be translated and transcribed verbatim
Study 2: Video observations

Analysis (ii)

- Transcripts will be supplemented with non-verbal data, using previous literature on non-verbal communication to develop a coding framework for this.

- Where possible, themes will be mapped onto the TDF and COM-B and ‘plugged into’ the BCW.
Study 3: Online experiments
Study 3: Online experiments

**Objectives:**

1. Test the effectiveness of candidate interventions BCTs to modify psychological targets
Study 3: Online experiments

**Design:**
- Two arm, randomised (controlled), online experiments

**Participants**
- Men and women
- Completed FIT, but not had an abnormal result
- Report they would **not** go to colonoscopy if abnormal
Study 3: Online experiments

Recruitment:
- Participants will be recruited through *Ethnos*, an online research company that specialises in recruiting from ethnic minority groups.

Measures
- Demographics
- Psychological factors
- Intentions (primary outcome)
**Analysis:**

- Between group differences in intentions, after exposure to the intervention (e.g. demonstration of behaviour), will be assessed using multivariate binary logistic regression

- Between group differences in psychological factors, before and after exposure to the intervention, will be assessed using multivariate linear regression (most likely)
Started the survey (N=1,926)

- Not eligible e.g. age (N=481)
  - Eligible for FIT (N=1,445)
    - Have never been invited or done FIT (N=372)
      - Have done FIT (N=1,073)
        - Have had an abnormal test result (N=46)
          - Colonoscopy (N=305)
          - Colon Capsule (N=346)
          - CT Colonography (N=302)

- Completed survey (N=305)
  - Completed survey (N=346)
  - Completed survey (N=302)
**Table 4. Multivariate logistic regression of probably or definitely not wanting the test**

<table>
<thead>
<tr>
<th>Condition</th>
<th>N (%)</th>
<th>aOR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonoscopy</td>
<td>280 (91.8)</td>
<td>Ref.</td>
</tr>
<tr>
<td>Capsule endoscopy</td>
<td>292 (93.4)</td>
<td>1.276 (0.69, 2.35)</td>
</tr>
<tr>
<td><strong>CT colonography</strong></td>
<td>323 (96.7)</td>
<td><strong>2.642 (1.22 - 5.73)</strong>*</td>
</tr>
</tbody>
</table>

*P < 0.05

Adjusted for Age, gender, ethnicity, deprivation, employment status and numeracy skill

**Table 5. Multivariate logistic regression of emotional barriers**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Off-putting</th>
<th>Uncomfortable</th>
<th>Embarrassing</th>
<th>Worry about risks of test</th>
<th>Afraid of results</th>
<th>Worry about cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonoscopy</td>
<td>aOR (95% CI)</td>
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<td>aOR (95% CI)</td>
<td>aOR (95% CI)</td>
<td>aOR (95% CI)</td>
</tr>
<tr>
<td>Capsule endoscopy</td>
<td>0.75 (0.53, 1.05)</td>
<td>0.11 (0.07, 0.16)**</td>
<td>0.33 (0.23, 0.48)**</td>
<td>0.70 (0.51, 0.967)*</td>
<td>0.75 (0.54, 1.03)</td>
<td>0.82 (0.59, 1.13)</td>
</tr>
<tr>
<td><strong>CT colonography</strong></td>
<td><strong>0.66 (0.46, 0.94)</strong>*</td>
<td><strong>0.51 (0.34, 0.77)</strong>**</td>
<td>0.72 (0.51, 1.02)</td>
<td>0.73 (0.52, 1.02)</td>
<td>0.92 (0.66, 1.28)</td>
<td>1.15 (0.83, 1.59)</td>
</tr>
</tbody>
</table>

*P < 0.05

Adjusted for Age, gender, ethnicity, deprivation, employment status and numeracy skill
Watch This Space...
(Something Great is coming)
Thank you for listening!

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References


