Socioeconomic inequalities in colorectal cancer screening uptake: does time perspective play a role?


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Background: Inequalities

- Socioeconomic inequalities in health (Marmot et al, 2008).
- Socioeconomic gradients in cancer screening, across both opportunistic and organised programmes.
- In the UK, there are inequalities in the current colorectal cancer screening programme (e.g. von Wagner et al, 2011).
- There is also evidence for inequality in flexible sigmoidoscopy screening (e.g. Robb et al, 2010).
Background: Explanations?


- Although attitudes have been linked to screening behaviour and SES separately, there are very few studies looking at the whole pathway.
NON-PARTICIPATION IN CANCER SCREENING

Information processing
- Lack of information seeking and engagement
- Poor comprehension of information
- Message rejection

Educational opportunities
- Experience of reward & achievement
- Perseverance and goal setting
- Life-long-learning and skill attainment

Illness experiences
- Vicarious experience of cancer
- Life expectancy
- Experience of the medical system

Stressors and resources for change
- Levels of unemployment, crime
- Quality of housing, medical, educational, occupational & recreational facilities

ATTITUDINAL MEDIATORS (THREAT AND EFFICACY BELIEFS)

Perceived threat of unpleasant/invasive medical procedures and cancer diagnosis
- Negative expectations: negative beliefs about screening procedures and consequences of a cancer diagnosis
- Lack of knowledge: screening procedures and consequences of diagnosis
- Cancer fatalism

Self-efficacy for participating in cancer screening
- Reactive responding
- Learned helplessness: lack of personal control
- Prohibitive social influences: social support
- Lack of confidence in ability to understand, persevere & succeed
- Lack of confidence in dealing with the medical system

Response-efficacy for screening to detect cancer early, prolong life or minimize treatment
- Learned helplessness: belief in chance
- Prohibitive social influences: social norms
- Low consideration of future consequences
- Lack of knowledge: benefits of cancer screening and early detection
- Negative beliefs about benefits of medical intervention
- Low personal value of screening given lower life expectancy

Goal-setting and behavioral translation
- Prioritization of alternative activities
- Forgetting appointments and ignoring reminders
- Patient errors (e.g. failure to prepare for screening/administer tests)

COROLLARIES OF SES

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Background: Time perspective

• Time perspective associated with:
  ➢ SES (Nurmi, 1991; Guthrie et al 2009).
  ➢ Screening participation (Crockett et al 2009)

• Influences preference for how benefits and barriers are presented (Orbell et al, 2004).

• BUT no mediational research looking at influence of time perspective in cancer screening.

• Assessed using Consideration of Future Consequences scale (CFC; Strathman et al, 1994).
Hypotheses

We predicted that:

1. Higher SES would be associated with higher screening uptake.
2. Higher SES would be associated with higher CFC and more perceived benefits and fewer perceived barriers to screening.
3. CFC would mediate the association between SES and perceived benefits and barriers, and
4. Perceived benefits and barriers would mediate the association between CFC and screening uptake.

Proposed model:
Methodology: Participants & Procedure

- Participants recruited from UK Flexible Sigmoidoscopy Trial (Atkin et al, 2010).
- Adults aged 55-64 years (N=809; n=343 men, n=466 women) were sent a questionnaire assessing psychosocial variables as part of an embedded study.
- Sent a screening invitation 4-6 weeks later.
- Screening attendance was later recorded.
Methodology: Measures

- **SES**
  - Individual-level marker, based on education, housing tenure, and car ownership.

- **CFC**
  - e.g. 'I think about the future and this influences my behaviour today.' Strathman et al (1994)

- **Benefits**
  - e.g. 'The test would be reassuring.'

- **Barriers**
  - e.g. 'The test would be embarrassing.'

- **Screening uptake**
Results: SES gradient

• Uptake was 67% overall

• We found a linear gradient; 56%, 68% and 71% of people attended FS screening according to increasing tertiles of SES.
## Results: Univariate analyses

Correlation matrix for observed variables (n=709)

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Age</td>
<td></td>
<td>-0.12**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Sex</td>
<td></td>
<td>0.04</td>
<td>-0.06*</td>
<td></td>
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</tr>
<tr>
<td>4. Consideration of Future Consequences</td>
<td>0.20***</td>
<td>-0.01</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Perceived benefits</td>
<td>0.08*</td>
<td>0.01</td>
<td>-0.03</td>
<td>0.45***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Perceived barriers</td>
<td>-0.09*</td>
<td>0.05</td>
<td>-0.16***</td>
<td>-0.15*</td>
<td>-0.18***</td>
<td></td>
</tr>
<tr>
<td>7. Screening uptake</td>
<td>0.12**</td>
<td>-0.02</td>
<td>0.08*</td>
<td>0.15**</td>
<td>0.20***</td>
<td>-0.16***</td>
</tr>
</tbody>
</table>
Results: Multivariate (Path Modelling)

Fit indices: $CFI=0.95$, $NFI=0.92$, $RMSEA=0.05$ (CI, 0.03-0.08)

Explained variance: 11% of the variance in screening uptake, 5% of the variance in perceived barriers and 20% of the variance in perceived benefits
Conclusions

• SES differences in CFC help explain differences in perceived barriers and benefits which in turn contribute to inequalities in screening uptake.

• Consistent with previous research (e.g. Wardle et al, 2004) and our framework (von Wagner et al, 2011).

• Implications for interventions aimed at increasing screening uptake (e.g. by emphasising short-term benefits).
Limitations & future research

- Sample (limited age range, mainly White British)
- Other attitudinal mediators?
- Other types of screening?
Acknowledgements

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• Cancer Research UK
Key references


