Can Genome Cancer Risk Estimates Change Behaviour? - A Systematic Review

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INTRODUCTION

Cancer is abnormal cell growth which causes ~10 million deaths in 2020

Cancer screening potentially reduces the burden of cancer in population significantly

Genomic cancer risk estimates provide personalised approach in estimating the risk of cancer

A genomic cancer risk estimate could encourage behaviour change to reduce risk

However, these evidences are conflicting.

AIMS AND OBJECTIVES

To determine the **effect** of genomic cancer risk estimate on:

1. Lifestyle changes
2. Screening uptake
3. Psychological experiences

METHODS

P	Adults > 18 years old
I	Genomic cancer risk estimate
C	Non-genetic risk estimate or none
O	Lifestyle behaviour changes and screening uptake

Data extraction

- Study design
- Interventions
- Comparator
- Duration
- Outcomes
- Results
- Additional information

Search strategy

Keywords: Cancer or Neoplasm, Genomic risk estimate, diet or physical activity or smoking or alcohol or lifestyle behaviour

Limited to English and published after 1 January 2013

Risk of bias assessment

Risk of Bias 2.0 (RoB 2.0)
The Risk Of Bias In Non-randomized Studies of Interventions (ROBINS-I)

PRISMA flowchart

Database Search
Medline (n = 1557)
Embase (n = 3746)
PsycINFO (n = 176)
Cochrane Central Register of Controlled Trials (n = 166)
(+) Experts' recommendation (n = 5)

↓

Duplicate removed
(n = 4720)

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Full-Text Screening
(n = 61)

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Studies included in narrative synthesis
(n = 9)

RESULTS

Sun protection (n=2)

- No quantitative sun exposure reduction (highest reduction in average risk group)
- Reduced intentional tanning, time in sun, and stayed in the shade (for the average risk group)
- Motivated participants to adopt sun protection behaviours

Screening uptake (n=6)

- No changes to colorectal screening
- Participants on a routine screening more likely to screen
- Risk group affects likeliness to screen and adherence
- Positive attitudes towards cancer screening increased

Smoking cessation (n=2)

- From 64 active smokers, 14 quit smoking, 6 reduced smoking, and 2 increased smoking
- Intention to quit smoking

Diet (n=3)

- Intention of dietary changes, some proceed with expert consultation and actualisation of behaviour change
- No significant changes in motivation and actualisation of dietary changes
- Increased vitamins and supplements uptake in elevated risk for prostate cancer.

Physical activity (n=3)

- Intention of improved physical activity, some proceed with expert consultation and actualisation of behaviour change
- No significant changes in motivation and actualisation of physical activity

Psychological impact (n=5)

- No association of risk estimate result towards psychological components
- No increase in cancer worry, distress, or anxiety
- No association to perceived cancer risk

CONCLUSION

There are **mixed effects** of communicating genomic cancer risk estimates on behaviour changes in adults. However, there is an **increase in intention and motivation** to improve their lifestyle and to undergo cancer screening. Future research should consider a more robust study design with standardised assessment of behaviour changes and screening uptake.

REFERENCES