

ORIGINAL ARTICLE

A qualitative evaluation of the impact of a training programme on colorectal cancer risk reduction for Specialist Screening Practitioners on health promotion, knowledge and practice

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Abstract

Objective: Colorectal cancer (CRC) is the fourth most common cancer in the UK. It is estimated that around 50% of the disease burden is caused by lifestyle factors. This paper evaluates the impact of a training programme for Specialist Screening Practitioners (SSPs) on knowledge of CRC risk reduction and subsequent health promotion activities.

Method: Attendees ($n = 21$) were invited to participate in semi-structured qualitative telephone interviews developed in conjunction with programme organisers. An independent researcher undertook the interviews on the perceived impact of the training on knowledge about risk reduction, communicating health promotion messages and working practices.

Results: Ten interviews were conducted. The programme was perceived to be successful in increasing knowledge about CRC risk and methods to promote behavioural change. Participants questioned the suitability of the endoscopy setting to communicate health promotion messages given patient anxiety pre-investigation and post-investigation elation after negative results. Key barriers to health promotion activities were time, hesitancy over raising issues that could not be easily discussed and scepticism about the ability of older adults to change their lifestyle.

Conclusions: Training on CRC risk reduction increased knowledge and behaviour change skills among SSPs. Further work is needed to explore opportunities to optimise the screening environment for health promotion activities.

KEYWORDS

behaviour change, colorectal, endoscopy, health promotion, lifestyle, risk

1 | INTRODUCTION

Colorectal cancer (CRC) is the fourth most common cancer in the UK accounting for around 12% of all new cancer cases (Cancer Research UK (CRUK), 2019). It is estimated that around 50% of the disease

burden is caused by modifiable lifestyle factors (Brown et al., 2018). There is strong evidence that CRC risk is increased by being overweight or obese and the consumption of alcohol, processed and red meats, while risk is decreased by physical activity and consumption of dietary fibre, wholegrains and dairy products (World Cancer Research

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Fund (WCRF)/American Institute of Cancer Research (AICR), 2018). Recent reports (Jankovic et al., 2017; Romaguera et al., 2012; Turati et al., 1990) demonstrate that adherence to lifestyle guidelines (World Cancer Research Fund, 2019) for cancer prevention are associated with 5-17% reduction in CRC incidence and supports the rationale for developing and implementing effective and sustainable lifestyle programmes, including those related to colorectal cancer screening (Anderson, Mackison, et al., 2013; Senore et al., 2012).

In England, colorectal cancer screening is currently offered every two years to men and women aged 60–74 years using a home-based screening kit. An additional one-off flexible sigmoidoscopy is offered to men and women at the age of 55. For the latter, and where positive tests have been attained in the former, people are invited to attend an outpatient endoscopy clinic. Prior to the procedure, patients are offered painkillers and sedation. These procedures will enable identification of a) cancerous lesions, b) precancerous lesions (adenomas) and c) other pathology that may account for positive tests, for example haemorrhoids or no relevant abnormalities. After the procedure, patients who have taken sedation may experience drowsiness and impaired cognitive function (including possible amnesia) (Sonnenberg, 2016).

Cancer screening has been described as a potential 'teachable moment' for promoting lifestyle change (Caswell et al., 2009), and several studies have developed intervention programmes within screening settings resulting in relevant behaviour change (Anderson et al., 2014; Baker & Wardle, 2002; Knudsen et al., 2018; Robb et al., 2010). However, no interventions have yet been rolled out into routine practice. Patients report the importance of expert endorsement for cancer matters (Murchie et al., 2016), and there are now considerable efforts to 'make every contact count' (Health Education England, 2019) to promote lifestyle change, in keeping with international standards for health promotion in hospitals (World Health Organization (WHO), 2004). However, it is recognised that National Health Service (NHS) staff have limited training in raising issues and providing lifestyle guidance.

The current work aims to identify the reported impact of a training course on colorectal cancer risk reduction and promotion of health behaviour change for screening staff (SSPs), developed and delivered jointly by two UK charities (Bowel Cancer UK (BCUK) and the WCRF).

2 | METHODS

A one-day training programme was developed jointly by BCUK and the WCRF to SSPs and delivered on two occasions. The programme covered information on disease development, symptoms, risk factors, challenges to screening uptake, how to raise conversations on lifestyle, behaviour change techniques, practical sessions on introducing lifestyle topics, shared reflections, every day practice experience, resources and guidance for further support (Figure 1).

All 21 attendees were contacted via email by an independent researcher (KB), approximately three to four months following the one-day course, and invited to take part in an evaluation to assess the impact of the training course on knowledge about colorectal cancer prevention,

confidence in delivering prevention advice and how these have (or might) influence working practices and wider support. Participants were invited to participate in a short semi-structured telephone interview with an independent researcher to discuss their reflections on the course. A semi-structured topic guide was prepared in advance and discussed with the course organisers, to ensure that discussion points centred on the key aims/outcomes of the training course and would help to identify issues relevant for future training programmes (See Figure 2). The draft topic guide was tested for order of questions, overall timing and flow with other members of the research team. Adjustments were made to reduce time but also to allow examples related to practice to be described in more detail. Suitable dates and times for the telephone interviews were agreed via email; interviews lasted approximately 30 minutes and were recorded and transcribed verbatim (with permission). Participants were emailed an information sheet detailing the purpose of the study and a consent form and asked to sign and return the form to the researcher prior to interview. To encourage participants to talk freely, no personal data were collected for analysis. Interview transcripts were analysed using a thematic approach which involved five key steps: familiarisation of the data, coding the transcripts, generating and reviewing evolving themes as the interviews progressed and finally, defining and naming the themes as recommended by Vaismoradi et al., 2016. All interviews were conducted by the same researcher (KB), with prior experience in conducting qualitative research methodologies; transcriptions and coding were read by colleagues (MB,ASA) to ensure agreement with interpretation.

The research was approved by the School of Medicine Research Ethics Committee, University of Dundee (SMED REC 022/18).

3 | RESULTS

3.1 | Context

Twenty-one SSPs attended the one-day training course, of whom ten agreed to take part in the evaluation and participated in a telephone interview (eight women and two men). All participants had face-to-face patient contact in their daily role working as a SSP and had a very similar role that included patient care as illustrated in the following quote:

So, the patient starts the journey having had the stool testing kit come through the post, which is abnormal, so they then get invited into a clinic with us to do an assessment for a colonoscopy, so that's our first meeting with the patients. We then follow the patients through colonoscopy and give news of results so whether that's cancer or normal results or polyps.

(Participant Five)

Participants reported that each patient appointment was approximately 45 minutes long and that they had a lot of information to impart during that appointment. The key points included explaining to the patient the reasons for why they were there and why blood might have

	Topic	Contents	% of day
Understanding the disease	Pre training evaluation	Finding out about existing knowledge held by SSPs about bowel cancer prevention	4%
	Bowel cancer screening facts: UK and sub populations groups	Examining the differences between groups for screening uptake	6%
	Bowel cancer symptoms	All symptoms indicative of bowel cancer Implications of asymptomatic disease	6%
	Stages of bowel cancer	Understand how to spot bowel cancer early	6%
Challenges to promoting prevention	Risk Factors	Unmodifiable factors Modifiable factors	11%
	Lifestyle and prevention	Exploring how different dietary factors (including alcohol), body weight management and physical activity can reduce risk	11%
	Health inequalities	Understand how health inequalities affect bowel cancer incidence. Barriers faced by individuals and communities in relation to screening and lifestyle modification	11%
	Addressing challenges to screening uptake.	Discussion on stigma that surround bowel cancer Attitudes and beliefs about early detection	9%
	Addressing challenges around preventive behaviours.	Barriers faced by SSPs in raising lifestyle issues and providing advice Working with clients to identify plausible behaviour changes and goals	
Behaviour change in	Evidence based behaviour change	Understand behaviour change theories Principles of behaviour change Support people to make healthy lifestyle choices	15%
	Practical aspects of health promotion	Introducing behaviour change conversation Practical session	15%
Moving forward	Reflections by SSPs on the programme and everyday practice	Reflect on training and how health promotion messages can be incorporated into their work	6%
	Resources and follow up	Provide the trainees with materials that can help raise awareness of good bowel health, screening and prevention	2%

FIGURE 1 Training programme schedule

been found in their sample, assessing the patient for a colonoscopy and explaining what the procedure would entail, and possible outcomes. It was noted that the information session needed a sensitive approach knowing that patients might be worried about a positive cancer result.

So they're being told it's a slight possibility that you might have cancer. So, they're coming quite anxious about that really, I think that's forefront in their minds, and we have about 45 minutes with them but

Theme	Key areas	Prompts
Attainments from training course	Ability to deliver prevention advice	Knowledge e.g. fibre Skills development Raising the issue
Perceived further training needs	Topic areas e.g. symptoms, diet	Suggestions for future course developments Style of training
Opportunities to implement/change practice	Examples of change attempts	Confidence in health promotion practice Enabling factors
Current settings	Opportunities Barriers	Maintaining practice Updating practice
Wider settings	Working collaboratively with others	External support for current practice

FIGURE 2 Topic guide themes for telephone interviews

most of that is about assessing their health, explaining why the blood might be there and preparing them for a colonoscopy with informed consent.

(Participant Nine)

3.2 | Impact of training on knowledge of colorectal cancer risk

Among the participants, most reported that their knowledge had increased or been re-enforced by attending the course and that they felt more confident and better prepared to raise preventative topics with their patients. Specific examples highlighted included dietary fibre (sources and practical guidance), recommended red and processed meat quantities, and specific ways to promote physical activity.

One participant reported that in their current practice they undertake a full health check which incorporates discussion around dietary habits and exercise and stated that the course had been useful for providing information about evidence updates, detailed information on wholegrains, alcohol and different behavioural techniques.

Participants also expressed the view that the content of the course was relevant and mostly appropriate to their role. It was however noted that additional practical guidance on promoting behaviour change might be useful including appropriate time and opportunities within busy clinical practice. However, they also reported that although they felt that they were better informed about lifestyle and colorectal cancer prevention, they perceived many challenges to putting their knowledge and skills into practice.

3.3 | Impact of training on current practice

Participants were asked whether they had made any changes to their current practice since attending the training course. Responses varied reflecting the differences in local practice. A participant who stated that they were already engaging in health promotion activities reported that they had included images of high fibre foods and examples of alcohol units to an online resource, which they can access and show to patients during their health check. Others were yet to have the opportunity to adjust practice but felt that they were more confident to broach preventative topics. Some participants reported

putting up posters and/or seeking out leaflets for the clinic, although the provision of resources and signposting varied. Most of the leaflets utilised were from charity sources (as opposed to the NHS). There were no examples given on structural changes that would enable health promotion to be embraced within routine clinic appointments.

3.4 | Barriers to health promotion in clinical practice

Several participants raised concerns that a colonoscopy appointment was not the appropriate place to give lifestyle advice. The main reasons for this view were time restrictions and patient responsiveness (too worried if waiting for procedures or exhilarated if given the all clear). Indeed, a lack of time for health promotion activities was mentioned by all participants.

I mean the actual content and what they (the tutors) were telling us was all very interesting and informative, I'm not sure how I can actually take that and transport it into what we do on a daily basis because the time availability isn't there. I think the patients are coming to talk about whether they might have cancer and what this test is going to be about and if you start talking to them too much about health issues it sort of got them there on false pretences.

(Participant Nine)

... "maybe you could just take 15 minutes in the appointment", but that's completely impossible, we're very limited by time.....because a patient comes in believing that they've got cancer or thinking that they've got cancer so, to talk about prevention at that point isn't relevant... ..sometimes they're more engaging then [after colonoscopy] but ...it is difficult because they're just so relieved they've had a normal result that you know, they're ...flying high on that and they're not probably taking the information in so much.

(Participant Five)

However, there seemed to be other reasons why lifestyle topics might not be discussed. For example, avoiding talking about weight: -

Not due to lack of confidence but more to do with what happens next as you don't have time to really go into it with the patient other than a sentence or two.

(Participant Seven)

Additionally, participants highlighted that consultations were patient led and so dependent on what questions/concerns the patient

raised, which in turn determined what opportunities presented to discuss lifestyle topics and provide prevention advice. An example scenario given by the SSPs was when a patient presents with heightened anxiety about their (screening) test result, leaving limited opportunity to engage in health promotion.

I think sometimes we have to be careful because in our clinic, patients are so focused on thinking "oh goodness, does this stool test kit mean I've got cancer?" But, it really is very important that we focus on helping them with sort of bringing them down from that anxiety and then sort of helping them make, you know, an informed decision about going forward for the test because it does have risks associated with it.

(Participant Four)

It was recognised that discussing colorectal cancer prevention might be appropriate when someone has been given a negative or normal result. However, there were some concerns that patients, following a normal result, may not absorb all the information due to overwhelming feelings of relief.

Thinking about the prevention of bowel cancer is with these people who have got the healthy, the ones with the normal results. Those who have (positive) findings we tend to focus more on what tests they've got to have and things like that.

(Participant Seven)

Some participants reported that selected patients may be more open to receiving preventative advice and making behavioural changes but that generally, they found a lack of knowledge and awareness among patients about the benefits associated with lifestyle change. Misinformation in the media was also viewed as a challenge, or barrier, to engaging patients in screening and health promotion, often resulting in further time being taken up to address common misconceptions.

You might remember some years ago that the Daily Mail ran a thing about a blood test that could tell you about bowel cancer. I read it and I read the whole paper report and then somebody in clinic said, "I don't want that, I want the blood test". I said, "did you actually read the report?" and she said, "no that's what the headline says" and I said, "well if you had read it, what it said was.....". A lot of it is about making sure that you are aware of what is going on out there and you actually read the information because they will read the headline and they won't read the details.

(Participant One)

Participants also expressed some scepticism about the likelihood of achieving behaviour change in patients of colorectal screening age

(60–74 years) whom they thought might not want to, or be able to, change the *'habits of a lifetime'*.

Bear in mind that people we're talking to are in their 60's and 70's so their lifestyle has been such as it's been all their life, they're very reluctant - well some of them might be willing to make small changes - but some sort of think well I've been like this all my life, I'm not going to change now.

(Participant Nine)

Some noted that there may be better opportunities to deliver lifestyle advice at earlier time points, including the flexible sigmoidoscopy programme (patients are 55 years old).

We also run the bowel scope screening which is another programme that connects to bowel cancer screening where people come in at the age of 55 and have a one-off flexible sigmoidoscopy and depending on the findings, they might have polyps they can sometimes be found to have bowel cancer, we're discussing with all of those people the next steps and that often includes some health promotion, talking about diet. They're usually very receptive actually, there's a lot of those people I've had long chats with.

(Participant Seven)

Some mentioned that the patients put up their own barriers to receiving lifestyle advice and put the onus back onto the healthcare system to find ways to manage their problems.

I did have one that came in that was so overweight that they overflowed the chair in every direction and when I suggested that perhaps they might look at some lifestyle changes that would help to perhaps reduce that problem somewhat, their answer was that we should get a bigger scanner.

(Participant One)

It was also reported that there are people to whom it is difficult to give advice, for example those with mental health problems, drug and/or alcohol problems or those with multi-morbidities. It was noted that further support and training would be useful in addressing these more complex cases.

I suppose the challenges for some people who have chronic health problems, they don't get out, they have morbid obesity, maybe the people who are depressed it's very hard to motivate people..... I think there's a population out there, a very large population of people who are stuck in that and financially they feel that they can't afford to eat a wide range of fruit and vegFor some people, yeah that's a challenge and I think

people with alcohol problems, a lot of people with type two diabetes, obviously people with language barriers, there's yeah there's quite a few people out there who maybe you're going to find it very difficult in a very short space of time to get relevant information to.

(Participant Seven)

Participants reported that prevention was not viewed as a priority within the clinic setting and often seen as something 'quite new' in terms of their role as healthcare providers. Participants gave a range of suggestions for improving health promotion more generally, including involvement of local communities. One example was community engagement activities aimed at promoting screening where participants reported that already, they would sometimes discuss lifestyle and preventative topics.

I think sometimes our opportunities of talking to patients about health promotion isn't necessarily in clinic but it's when the health centres are actively going off and doing health promotion, so if we are going out into the community you know to shopping centres or you know, local shows or we go to the health promotion event roadshows that's when we can do health promotion advice and give information and talk to people when they aren't side-tracked by their health issues at the same time.

(Participant Ten)

When asked about support networks and other external resources that could help to support health promotion practices, one participant suggested a dedicated health promotion clinic be set up either in the hospital or out in the community to help deliver prevention advice. Others flagged potential opportunities working with GPs, nurses and practice managers to help promote lifestyle advice, while some suggested working with community groups in poorer areas, for example minority ethnic groups to increase colorectal screening uptake and lifestyle advice. A further range of professionals within the NHS were highlighted including dietitians, specialist diabetes nurses, colorectal nurse specialists, stoma nurses and other teams as well as charities like Age Concern. One participant mentioned that they use articles in newspapers or TV shows to help engage with patients and another mentioned that they work closely with some of the GP Practices PPG's (Patient Participation Groups).

So, April's our Bowel Cancer Awareness month so I'm down there with any number of poo related questions that I can lay my hands on to try and catch people as they're going in and out of the hospital and provide an opportunity for discussion. They have all the bowel cancer screening information there as standard so it's kind of a little drop in centre where people can get information.

(Participant Eight)

4 | DISCUSSION

The training programme was perceived to be successful in increasing knowledge about modifiable risk factors for colorectal cancer and ways to promote behavioural change. Participants reported increased confidence in raising lifestyle issues with their patients.

A small number of attendees participated in the interviews. Thus, the findings should be considered illustrative rather than representative of all actual or potential attendees, or any particular characteristics (e.g. gender, experience, location). No data are available on why some attendees did not respond to the request for interviews and it is possible that the participants were SSPs who had reflected on practical issues related to the course programme. However, despite these limitations, the findings are relevant for highlighting several challenges in moving evidence-based knowledge into practice.

Following course attendance, participants preparedness for introducing, discussing and advising on modifiable risk factors and the impact on everyday practice may have been less than anticipated by the course providers. The use of posters and written materials seemed relatively straightforward but two major challenges were identified in the provision of verbal advice. Firstly, participants questioned the endoscopy clinic as the best setting to provide appropriate guidance given patient anxiety pre-investigation and post-investigation elation following negative results. Additionally, it is plausible that some patients may be less receptive to advice due to sedation. The opportunities provided by community settings were often considered more appropriate for prevention communications. Secondly, finding time within a 45-minute appointment to discuss lifestyle issues was reported to be challenging. In addition, there was some hesitancy expressed over raising lifestyle topics (e.g. obesity) and not being able to fully engage with the issues that arise, as well as some concerns over the ability of older adults to change health behaviours. It is notable however that exemplar behaviour (provision of a health check with interactive resources) was also reported, indicating that some NHS clinics (or certainly individual staff) can accommodate and support health promotion activities within the limitations of a screening setting.

This study is the first to report the impact of health promotion training on everyday practice in endoscopy settings and provides a unique window into some of the challenges experienced by screening staff across different NHS centres in England. The numbers participating are small and less than half of attendees agreed to an interview, but the data provide a rich insight into the everyday realities of SSPs involved in trying to maximise opportunities (teachable moments) for meaningful health promotion.

The issues raised are similar to those highlighted by Anderson, Caswell, et al., 2013 in a survey of lifestyle advice by colorectal consultants which noted patient sensitivity, time available, role constraints and lack of skills in weight management as factors which mitigated against provision of advice. Within the oncology setting,

studies of lifestyle advice to cancer survivors have demonstrated that health professionals often report that they were not the 'right person' to provide advice and lack of time and resources hinder optimal communications (Koutoukidis et al., 2018). However, it is worth noting that clinicians who are aware of lifestyle guidelines are significantly more likely to give lifestyle advice (Williams et al., 2015). Concerns about whether screening is the right setting for lifestyle interventions need to be balanced by reports demonstrating that patients can and do undertake health behaviour change after colorectal screening (Miles et al., 2003).

The rationale for offering guidance and support for lifestyle change to adults attending colorectal screening is sound. In patients with adenomas, diabetes risk is increased and weight loss in those with excess body weight has been associated with decreased adenoma recurrence (Yu et al., 2016). Thus, weight management may decrease both CRC risk, diabetes and other obesity-related conditions. In addition, individuals who have had a positive screening test result compared to those with a negative result are at higher risk of premature death from all non-CRC causes (as well as CRC) suggesting that a positive test may be indicative of a generalised inflammatory state associated with a wide range of chronic disease states which are amenable to preventative and therapeutic interventions (Libby et al., 2018). These results indicate the potential for health promotion given in the CRC screening setting to contribute to the reduction in multiple morbidities in older adults.

No specific recommendations for achieving successful health promotion activities can be made from the current work but it is clear that training per se is unlikely to achieve the full potential of the 'teachable moment', and several complementary approaches deserve further exploration. Previous successful lifestyle intervention trials in this population have utilised non-NHS staff (lifestyle coaches) to deliver interventions, but have liaised closely with clinical staff to gain NHS expert endorsement (Stead et al., 2012). Opportunities for exploration in this area include assessing the impact of NHS screening practitioners offering referrals to weight management and other lifestyle services that have been shown to be successful for weight loss in primary care settings (Aveyard et al., 2016). In addition, web-based learning could be offered within screening settings (to initiate lifestyle engagement) and lifestyle advice could be offered to patients, notably with high-risk adenomas, at follow-up clinics. However, such approaches need to be tailored to the client group and informed by patient views, experiences and needs.

In conclusion, training on lifestyle modification for colorectal cancer risk reduction for SSPs can impact on skills required to promote behaviour change. However, further work is needed to explore how the screening environment can better support staff to deliver effective health promoting interventions.

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CONFLICT OF INTEREST

There are no conflicts of interest.

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REFERENCES

- Anderson, A. S., Caswell, S., Wells, M., & Steele, R. J. C. (2013). Obesity and lifestyle advice in colorectal cancer survivors - how well are clinicians prepared? *Colorectal Disease*, 15(8), 949-957. <https://doi.org/10.1111/codi.12203>
- Anderson, A. S., Craigie, A. M., Caswell, S., Treweek, S., Stead, M., Macleod, M., Daly, F., Belch, J., Rodger, J., Kirk, A., Ludbrook, A., Rauchhaus, P., Norwood, P., Thompson, J., Wardle, J., & Steele, R. J. C. (2014). The impact of a bodyweight and physical activity intervention (BeWEL) initiated through a national colorectal cancer screening programme: Randomised controlled trial. *BMJ (Online)*, 348, 1-13. <https://doi.org/10.1136/bmj.g1823>
- Anderson, A. S., Mackison, D., Boath, C., & Steele, R. (2013). Promoting changes in diet and physical activity in breast and colorectal cancer screening settings: An unexplored opportunity for endorsing healthy behaviors. *Cancer Prevention Research*, 6(3), 165-172. <https://doi.org/10.1158/1940-6207.CAPR-12-0385>
- Aveyard, P., Lewis, A., Tearne, S., Hood, K., Christian-Brown, A., Adab, P., Begh, R., Jolly, K., Daley, A., Farley, A., Lycett, D., Nickless, A., Yu, L.-M., Retat, L., Webber, L., Pimpin, L., & Jebb, S. A. (2016). Screening and brief intervention for obesity in primary care: a parallel, two-arm, randomised trial. *The Lancet*, 388(10059), 2492-2500. [https://doi.org/10.1016/S0140-6736\(16\)31893-1](https://doi.org/10.1016/S0140-6736(16)31893-1)
- Baker, A. H., & Wardle, J. (2002). Increasing fruit and vegetable intake among adults attending colorectal cancer screening: The efficacy of a brief tailored intervention. *Cancer Epidemiology Biomarkers and Prevention*, 11(2), 203-206.
- Brown, K. F., Rungay, H., Dunlop, C., Ryan, M., Quartly, F., Cox, A., Deas, A., Elliss-Brookes, L., Gavin, A., Hounsome, L., Huws, D., Ormiston-Smith, N., Shelton, J., White, C., & Parkin, D. M. (2018). The fraction of cancer attributable to modifiable risk factors in England, Wales, Scotland, Northern Ireland, and the United Kingdom in 2015. *British Journal of Cancer*, 118(8), 1130-1141. <https://doi.org/10.1038/s41416-018-0029-6>
- Cancer Research UK (2019). Retrieved August 29, 2019 from <https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/bowel-cancer>.
- Caswell, S., Anderson, A. S., & Steele, R. J. C. (2009). Bowel health to better health: A minimal contact lifestyle intervention for people at increased risk of colorectal cancer. *British Journal of Nutrition*, 102(11), 1541-1546. <https://doi.org/10.1017/S0007114509990808>
- Health Education England (2019). *Making Every Contact Count*. Retrieved from <https://www.makeeverycontactcount.co.uk/>.
- Jankovic, N., Geelen, A., Winkels, R. M., Mwangura, B., Fedirko, V., Jenab, M., Illner, A. K., Brenner, H., Ordóñez-Mena, J. M., Kieft de Jong, J. C., Franco, O. H., Orfanos, P., Trichopoulou, A., Boffetta, P., Agudo, A., Peeters, P. H., Tjønneland, A., Hallmans, G., Bueno-de-Mesquita, H. B., ... Kampman, E. (2017). Adherence to the WCRF/AICR dietary recommendations for cancer prevention and risk of cancer in elderly from Europe and the United States: A meta-Analysis within the CHANCES Project. *Cancer Epidemiology Biomarkers and Prevention*, 26(1), 136-144. <https://doi.org/10.1158/1055-9965.EPI-16-0428>
- Knudsen, M. D., Hjartåker, A., Robb, K. A., De Lange, T., Hoff, G., & Berstad, P. (2018). Improving cancer preventive behaviors: A randomized trial of tailored lifestyle feedback in colorectal cancer screening. *Cancer Epidemiology Biomarkers and Prevention*, 27(12), 1442-1449. <https://doi.org/10.1158/1055-9965.EPI-18-0268>
- Koutoukidis, D. A., Lopes, S., Fisher, A., Williams, K., Croker, H., & Beeken, R. J. (2018). Lifestyle advice to cancer survivors: A qualitative study on the perspectives of health professionals. *British Medical Journal Open*, 8(3), e020313. <https://doi.org/10.1136/bmjopen-2017-020313>
- Libby, G., Fraser, C. G., Carey, F. A., Brewster, D. H., & Steele, R. J. C. (2018). Occult blood in faeces is associated with all-cause and non-colorectal cancer mortality. *Gut*, 67(12), 2116-2123. <https://doi.org/10.1136/gutjnl-2018-316483>
- Miles, A., Wardle, J., McCaffery, K., Williamson, S., & Atkin, W. (2003). The effects of colorectal cancer screening on health attitudes and practices. *Cancer Epidemiology Biomarkers and Prevention*, 12(7), 651-655.
- Murchie, P., Norwood, P. F., Pietrucin-Materek, M., Porteous, T., Hannaford, P. C., & Ryan, M. (2016). Determining cancer survivors' preferences to inform new models of follow-up care. *British Journal of Cancer*, 115(12), 1495-1503. <https://doi.org/10.1038/bjc.2016.352>
- Robb, K. A., Power, E., Kralj-Hans, I., Atkin, W. S., & Wardle, J. (2010). The impact of individually-tailored lifestyle advice in the colorectal cancer screening context: A randomised pilot study in North-West London. *Preventive Medicine*, 51(6), 505-508. <https://doi.org/10.1016/j.ypmed.2010.10.002>
- Romaguera, D., Vergnaud, A.-C., Peeters, P. H., van Gils, C. H., Chan, D. S. M., Ferrari, P., Romieu, I., Jenab, M., Slimani, N., Clavel-Chapelon, F., Fagherazzi, G., Perquier, F., Kaaks, R., Teucher, B., Boeing, H., von Ruesten, A., Tjønneland, A., Olsen, A., Dahm, C. C., ... Norat, T. (2012). Is concordance with World Cancer Research Fund/American Institute for Cancer Research guidelines for cancer prevention related to subsequent risk of cancer? Results from the EPIC study. *American Journal of Clinical Nutrition*, 96(1), 150-163. <https://doi.org/10.3945/ajcn.111.031674>
- Senore, C., Giordano, L., Bellisario, C., Di Stefano, F., & Segnan, N. (2012). Population based cancer screening programmes as a teachable moment for primary prevention interventions. A review of the literature. *Frontiers in Oncology*, 2, 1-10. <https://doi.org/10.3389/fonc.2012.00045>
- Sonnenberg, A. (2016). Sedation in colonoscopy. *Gastroenterology and Hepatology*, 12(5), 327-329.
- Stead, M., Caswell, S., Craigie, A. M., Eadie, D., Anderson, A. S., Belch, J. J. F., & Wardle, J. (2012). Understanding the potential and challenges of adenoma treatment as a prevention opportunity: Insights from the BeWEL formative study. *Preventive Medicine*, 54(1), 97-103. <https://doi.org/10.1016/j.ypmed.2011.10.017>
- Turati, F., Bravi, F., Di Maso, M., Bosetti, C., Polesel, J., & Serraino, D. (1990). Adherence to the World Cancer Research Fund/American Institute for Cancer Research recommendations and colorectal cancer risk. *European Journal of Cancer*. Oxford, England. 12(3), 607-622.
- Vaismoradi, M., Jones, J., Turunen, H., & Snelgrove, S. (2016). Theme development in qualitative content analysis and thematic analysis. *J Nurs Educ Pract*, 6(5), 100-110. <https://doi.org/10.5430/jnep.v6n5p100>
- Williams, K., Beeken, R. J., Fisher, A., & Wardle, J. (2015). Health professionals' provision of lifestyle advice in the oncology context in the United Kingdom. *European Journal of Cancer Care*, 24(4), 522-530. <https://doi.org/10.1111/ecc.12305>
- World Cancer Research Fund (2019). Retrieved August 30, 2019, from <https://www.wcrf-uk.org/uk/preventing-cancer/cancer-prevention-recommendations>.

- World Cancer Research Fund/American Institute of Cancer Research (2018). *Diet, Nutrition, Physical Activity and Colorectal Cancer*. Continuous Update Project Expert Rep. Retrieved from dietandcancerreport.org.
- World Health Organization (2004). *Standards for Health Promotion in Hospitals*. Retrieved from http://www.euro.who.int/__data/assets/pdf_file/0006/99762/e82490.pdf.
- Yu, F., Guo, Y., Wang, H., Feng, J., Jin, Z., Chen, Q. I., Liu, Y. U., & He, J. (2016). Type 2 diabetes mellitus and risk of colorectal adenoma: A meta-analysis of observational studies. *BMC Cancer*, 16(1), 1-9. <https://doi.org/10.1186/s12885-016-2685-3>

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