International Journal of Clinical Pharmacy (2019) 41:1359–1364
https://doi.org/10.1007/s11096-019-00899-z

RESEARCH ARTICLE

Experience with a colorectal cancer campaign in Swiss pharmacies

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Received: 31 October 2018 / Accepted: 24 August 2019 / Published online: 28 September 2019

Abstract
Background Colorectal cancer is the third most common cancer worldwide. Screening with several methods can accurately detect early-stage cancer and polyps and reduce colorectal cancer mortality in adults aged 50 to 75 years. *Objective* Test the feasibility, interest and potential impact of a colorectal cancer screening in Swiss community pharmacies. *Setting* 771 community pharmacies of Switzerland participated in a 6-week campaign. *Method* The pharmacists evaluated the risk factors through a questionnaire among individuals aged between 50 to 75 years old who did not have had a colonoscopy over the previous 10 years. Pharmacists delivered a Faecal Immunochemical Test (FIT) to those without risk. Patients with identified risk factors or with a positive result were referred to a physician. Patients with a negative result were given lifestyle advice and invited for a new screening in two years. *Main outcome measure* The impact was measured through the number of persons screened, of tests delivered and of referrals to a physician performed. *Results* Within 6 weeks, 23,024 persons were screened in pharmacies. In total, 760 patients (3%) had risk factors and were directly referred to physicians. The remaining 22,264 received a FIT, and 97% of these individuals performed and sent the FIT to the laboratory. Of the 21,701 tests analysed, 93% were negative. All individuals with positive results (7%) were referred to a physician. *Conclusion* Having the opportunity to take colorectal cancer prevention measures with a low threshold, like in a community pharmacy encourages the population to perform the screening.

Keywords Colorectal cancer · Community pharmacy · Faecal immunochemical testing (FIT) · Screening · Switzerland

Impacts of finding on pharmacy practice

- Faecal immunochemical testing (FIT), which is an accepted strategy for colon cancer screening, can be integrated in a comprehensive programme provided in (Swiss) community pharmacies.
- Patients have shown interest in a community pharmacy-based programme enabling early detection of colon cancer.
- The inclusion of community pharmacies in colon cancer screening strategy has the potential for earlier detection of colon cancer and consequently decreasing morbidity and mortality.

Introduction

Colorectal cancer is the third most common cancer worldwide and the second leading cause of cancer-related deaths [1]. In Switzerland (8.5 million inhabitants), the incidence of colorectal cancer ranks third in males and second in females, with approximately 4100 new patients (2300 men, 1800 women) diagnosed each year, leading to 1600 deaths yearly (900 men, 700 women). In total, 1/3 of these deaths occur in patients younger than 70 years [2]. Most colorectal cancer tumours appear to arise from colonic polyps that develop slowly and occasionally transform into cancerous cells. If these polyps or cancerous cells are detected early, colorectal cancer might be prevented, or chances for successful treatment are high. This is the rationale for screening programmes [3]. Several studies have shown that colorectal cancer screening is effective

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and cost-effective in the average-risk population [4]. Recommended strategies are classified into two categories: stool tests (occult blood and exfoliated DNA tests) and structural examinations of the colon (flexible sigmoidoscopy, colonoscopy, and computed tomographic colonography) [5]. Multiple randomised clinical trials have demonstrated that screening with the guaiac-based faecal occult blood test (gFOBT) reduces colorectal cancer deaths [4]. Faecal immunochemical tests (FITs), which identify intact human haemoglobin in the stool, exhibit improved sensitivity compared with gFOBT for detecting colorectal cancer [6]. FIT testing appears to be superior to gFOBT concerning the detection rate and positive predictive value for adenomas and cancer; the test interval should not exceed 3 years [7]. Estimates derived from modelling conducted by the Cancer Intervention and Surveillance Modelling Network (CISNET) to inform the US Preventive Services Task Force (USPSTF) demonstrate that FIT every year can lead to 244 life years gained and 22 colorectal cancer deaths averted per 1000 individuals screened compared with 270 life years and 24 colorectal cancer deaths for colonoscopy every 10 years [8].

The Swiss authorities support colorectal cancer screening [9], but organised programmes exist in only two Swiss cantons (Uri and Vaud) with other cantons are planning similar programmes. Swiss health insurance companies cover the costs of colorectal prevention screening tests (stool test every two years or a colonoscopy every 10 years for individuals between 50 and 69 years old) if prescribed or performed by a physician [10]. However, participation in colorectal cancer screening in Switzerland is low. In the 2007 health survey, only 13% of people aged over 50 years stated that they had undergone a stool test or a colonoscopy for colorectal cancer screening over the last five years [11]. Pharmacies in Switzerland serve 300,000 customers a day on average and offer a low threshold opportunity for health-related advice and prevention measures, a role the Swiss Government wants to strengthen [12]. This is why the Swiss Association of Pharmacists (pharmaSuisse) decided to develop and launch a screening campaign from March 1 to April 16, 2016.

Aim of the study

The study aimed to evaluate the feasibility, interest and potential impact of a colorectal cancer screening in Swiss community pharmacies, measured by the number of persons screened, of tests delivered and of referrals.

Ethics approval

All participants provided written informed consent to the test, as well as processing and use of the anonymised data for study purposes. According to Swiss national regulations, no ethical approval was required for this type of study.

Method

The campaign addressed all men and women between 50 and 75 years of age who did not have had a colonoscopy over the last 10 years. This age range has been selected considering the most effective screening. Other inclusion criteria for a stool test screening included an evaluation of the risk of the patient, through a web-based questionnaire. This patient questionnaire was developed by pharmaSuisse, with the support of an extensive scientific board (gastroenterologists, GPs (general practitioners), representatives and experts from the Swiss cancer league, the Department of Health of the Swiss government and other organisations involved in prevention and treatment of colorectal cancer). The questionnaire addressed epidemiologic data and criteria of eligibility to participate in the screening. Based on the questionnaire, the pharmacists identified patients with risk factors, who were then excluded from the screening and referred to a GP or gastroenterologist. All other participants received a stool test, the instructions on how to perform the test and an appointment was planned so that the pharmacist would share and discuss the results.

The chosen stool test was the OC Sensor Test (OC Sensor®, Eiken Chemical Ltd), a well evaluated and widely used FIT without specific restrictions on diet or medication use [5]. Cut-off values between 50 and 200 ng were compared, revealing a better cancer detection rate compared with the gFOBT; the higher the rate, the smaller the cut-off value is [13]. Even if some studies have been made with a cut-off of 75 ng haemoglobin level per millilitre of buffer [5], we chose the lowest recommended value of 50 ng/ml. The patient took the sample at home and sent it in a prepaid envelope per mail to the accredited laboratory. This lab was able to complete the patient's questionnaire with the result on the test on the dedicated web platform, allowing the pharmacist to access the result and communicate it to the patient. In the case of a positive test, the patient was referred to the GP or gastroenterologist for further investigation via a colonoscopy. If the test was negative, the patient was given lifestyle advice and could register to receive a reminder in 2 years to run another test.

Pharmacies had to complete a six-hour online training on the disease, the test and its outcome as well as the design of the campaign prior to offering the service. Several promotional materials such as flyers, advertising posters, quizzes and even a contest for the population were developed by pharmaSuisse and sent free of charge to pharmacies. GPs and gastroenterologists of Switzerland were informed about

the campaign via their professional associations to ensure their collaboration. The campaign was also promoted by substantial advertising activities in the newspapers, on the radios and television, all paid by pharmaSuisse.

The costs of the screening were borne by all patients except for those covered by the supplementary insurance of one of the main health insurance providers in Switzerland. PharmaSuisse suggested pharmacies to charge 26 euros for this service, to cover the evaluation performed by the pharmacist, the cost of the OC Sensor Test, and its analysis by the lab. However, pharmacies were free to set a different price.

Results

In total, 771 pharmacies, representing 52% of pharmaSuisse-affiliated pharmacies and covering all Switzerland, began to offer the service as of March 1, 2016. Within 6 weeks, 23,024 individuals provided consent for the study and were screened in the pharmacy through the questionnaire. 52% of the participants stated that they were informed of the opportunity to perform a colorectal cancer screening through the campaign and 47% of the participants mentioned that without the campaign, they would not have had taken a screening. In total, 97% of participants were in the focused age group, and 61% were women. Compared with the average population of Switzerland, the screened population was slightly healthier as it included fewer smokers (13% compared with 28%) and fewer overweight individuals (11% with a BMI > 30 compared with 15%). 7537 persons who underwent a stool test (1/3 of the tested persons) were insured by the health insurance which covered the costs.

In 3% of the screened population (760 patients), at least one risk factor was identified, and individuals were referred to a physician (83% to their GPs and 17% directly to a gastroenterologist). The remaining 22,264 participants were given a stool test; 97% of those performed and sent their test to the laboratory. Of the 21,701 tests analysed, 93% were negative. All of the 7% of participants with positive stool tests (1510 patients) were referred, for colonoscopy: 83% to their GPs and 16% chose to go directly to a gastroenterologist. No data were reported for the remaining 1%.

For patients with a positive FIT, the expected number of positive findings (carcinoma or advanced adenoma) can be calculated directly from the positive predictive value. Unfortunately, we lack such data for patients with a positive risk evaluation. We, therefore, fall back onto prevalence data of colon cancer and advanced carcinomas in the total population to assess the effectiveness of the screening [14]. This rather leads to an underestimation of the actual positive rate in a high-risk population. Given all these considerations, we estimate that among the 1510 patients who had a positive stool test, about 5% (according to the reported values in the different cited studies, this number could vary between 3 and11%) effectively have colorectal cancer, and 31% (24–38) suffer from advanced adenoma (greater than 10 mm). With the assumption that 2/3 of patients complied with recommendations and received a colonoscopy, about 58 (33–114) cases of colon cancer would have been diagnosed and 364 (283–429) advanced adenoma cases detected thanks to this campaign.

Although physicians were asked to submit their follow-up actions and results to the study group using an anonymised reporting form, this was only performed in a minority of cases (Fig. 1). GPs documented follow ups in 274 cases with positive stool tests, from which only 75% were referred to a gastroenterologist for colonoscopy leaving 68 patients with a positive result without any further medical investigation. 188 colonoscopy results were documented by gastroenterologists: 15 suspected carcinoma cases, 26 with an advanced adenoma, 48 with a small adenoma (less than 10 mm), 19 with another bleeding source and 48 inconspicuous.

Discussion

Out of 24,000 patients whose personal risk for colon cancer was assessed over a period of 6 weeks, almost 22,000 faecal tests for occult blood were performed. 7% of the tests were positive. All 1510 patients with positive tests as well as all 760 patients with a high-risk profile during the pretest screening (based on the personal risk assessment) were referred to medical doctors. These results highlight the fact that a colon cancer screening programme in pharmacy is feasible, accepted by the population and efficient.

Our analysis shows that the population who took the test had a below-average risk of developing colorectal cancer given its above-average proportion of women, non-smokers and individuals with a BMI under 30. Data are missing on whether other colon cancer screening programmes offered in Switzerland (e.g. by GPs) are able to reach individuals with above-average risk. It is not possible to determine if this is a common challenge in all colon cancer screening programmes or if it is related to the design of this programme and the promotional activities.

The rate of positive results in our campaign is 7%, which is similar to other data available from abroad. A study performed on asymptomatic adults 50 to 69 years of age in Spain with the participation of 15 tertiary care hospitals identified 675 positive results (6.5%) among the 8983 study participants who had a FIT test [5], and another study in the Netherlands (asymptomatic persons aged 50 to 74 years invited contacted through an invitation letter by postal mail) reported a rate of 8.1% for the first screening with FIT [15].

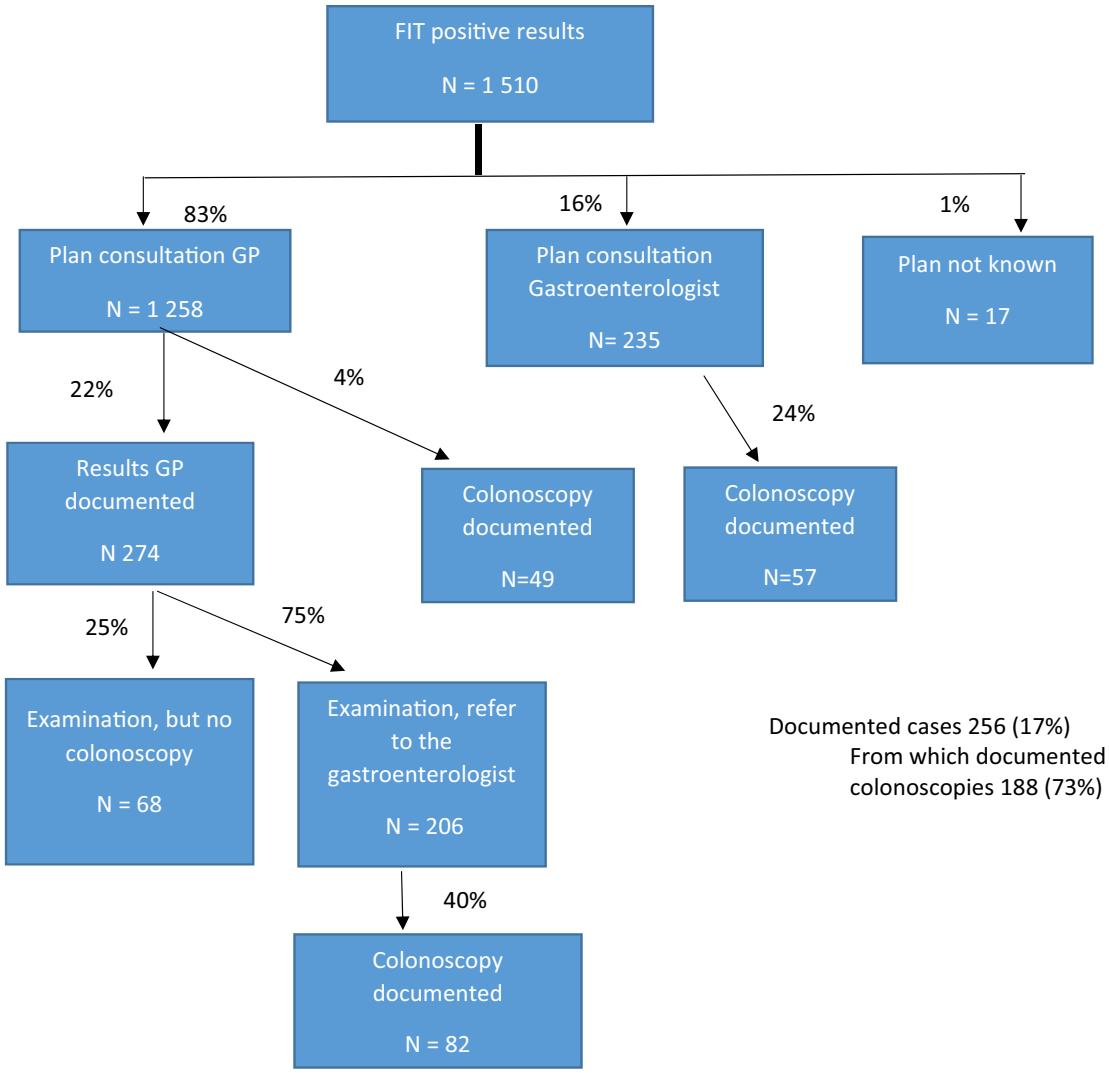

Fig. 1 Illustration I: process after a positive test

Faecal immunochemical testing is the most commonly used method for colorectal cancer screening worldwide. However, its effectiveness is frequently undermined by the failure to obtain follow-up colonoscopy after positive test results. Data available reveal an adherence to follow-up colonoscopy after positive results of 80% [16] to 87% [5]. Unfortunately, we do not have reliable data to assess whether all patients with positive results underwent a colonoscopy given the low report rate of GPs. It is however worrying that GPs documented that they did not refer 68 patients with positive stool test (25%) for a colonoscopy. This is an astonishingly high percentage given that international scientific literature clearly recommends that positive test results should always be further clarified using a colonoscopy [17, 18]. The GPs of these 68 patients were ultimately contacted by members of the scientific board and were given explanations on the reliability of the test and the necessity to send the patient for a colonoscopy. Data regarding their final decisions (after this individual contact by a scientific board member) have not been collected. Even if physicians were informed of the campaign, there is room for improvement in terms of collaborative practice. This potential limitation of the effectiveness of the campaign could be addressed by integrating the physicians more efficiently in the next campaign and by the implementation of organised screening programmes in more cantons. Based on the findings of our work, further research is needed regarding the doctors' understanding of the referral criteria for colonoscopies.

High-quality evidence supports a strategy of faecal occult blood testing every year or every 2 years to screen for colorectal cancer, followed up a colonoscopy in case of positive test. Swiss pharmacies followed this recommendation, by implementing this screening programme as a regular service

in pharmacies and inviting patients to take the test every two years through a new campaign in 2018.

A significant proportion of patients (33%) who took part in the screening campaign were insured by the partner health insurance, while its market share in Switzerland is approximately 15%. The fact that the insurance pays for the screening test, was therefore a clear incentive to do the screening. Ensuring that such test is paid by all healthcare insurances is a critical point to sustain the screening in pharmacy and reach its full potential.

This study has several limitations. First, no randomised control studies regarding the long-term performance of colorectal cancer screening based on FIT are currently available. Literature research relies therefore mainly on case studies. Second, it was not possible to analyse long-term endpoints, such as the reduction in colorectal cancer incidence or colorectal cancer mortality. Third, short-term endpoints, such as the results of the follow-up colonoscopy, were only directly observable in a minority of patients due to a lack of feedback from the medical community. Therefore, the number of detected colorectal cancers or advanced adenomas had to be extrapolated. The projections are based on information about the positive predictive value of the test and assumptions about patient compliance based on campaign data and health insurance billing data. The projections are subject to considerable uncertainty (large plausible range). Another significant limitation could be the fact that the cost of the screening was covered by the patients, potentially resulting in a screening accessibility bias as more vulnerable persons may not be able to afford such as test.

Conclusion

Pharmacy service for the screening of colorectal cancer has been well received by patients as seen by the number of participants despite that most of them needed to pay for the service. This campaign enables the identification of patients with a risk of colon cancer who needed further investigation with their physician. Having the opportunity to take colorectal cancer prevention measures with a low threshold (like in a community pharmacy) encourages the population to perform the screening. Many cantons have also begun to organise their own screening programmes. It would be essential to integrate not only physicians in these programmes but also the pharmacists, to increase accessibility of this service to the population.

Acknowledgements We would like to thank the many pharmacists and patients of Switzerland who took part in the screening programme, as well as CSS which covered the testing for some of their insured. We also would like to thank the members of the scientific board of the campaign. Thank you to Samuel Allemann and Luc Besançon for their review of the manuscript.

Funding This study was partly funded through the "Qualitäts-und Forschungsfonds LOA IV", a fund managed jointly by the two umbrella organisations for Swiss health insurance (santesuisse and Curafutura) and the Swiss association of pharmacists (pharmaSuisse).

Conflicts of interest All the authors declare that they have no conflict of interest.

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