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REVIEW

Screening and prevention in Swiss primary care: a systematic review

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Background and objectives: Prevention is a challenging area of primary care. In Switzerland, little is known about attitudes to and performance of screening and prevention services in general practice. To implement prevention services in primary care it is important to know about not only potential facilitators but also barriers. Primary care encompasses the activities of general practitioners, including those with particular interest and/or specializations (eg, pediatrics, gynecology). The aim of this study was to review all studies with a focus on prevention services which have been conducted in Switzerland and to reveal barriers and facilitators for physicians to participate in any preventive measures.

Methods: The Cochrane Library, PubMed, EMBASE and BIOSIS were searched from January 1990 through December 2010. Studies focussing on preventive activities in primary care settings were selected and reviewed. The methodological quality of the identified studies was classified according to the guidelines in the Consolidated Standards of Reporting Trials (CONSORT) statement.

Results: We identified 49 studies including 45 descriptive studies and four randomised controlled trials (RCTs). Twelve studies addressed the prevention of epidemics, eleven out of them vaccinations. Further studies focused on lifestyle changes, physical activity counselling, smoking cessation, cardiovascular prevention and cancer screening. Perceived lack of knowledge/training and lack of time were the most commonly stated barriers. Motivation, feasibility and efficiency were the most frequently reported supporting factors for preventive activities. The methodological quality was weak, only one out of four RCTs met the applied quality criteria.

Conclusion: Most studies focussing on screening and prevention activities in primary care addressed vaccination, lifestyle modification or cardiovascular disease prevention. Identified barriers and facilitators indicate a need for primary-care-adapted education and training which are easy to handle, time-saving and reflect the specific needs of general practitioners. If new prevention programs are to be implemented in general practices, RCTs of high methodological quality are needed to assess their impact.

Keywords: disease prevention, primary care, Switzerland, epidemic, screening, education, descriptive study

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Background

The WHO as well as most national health care authorities strongly recommend preventive services since there is a clear and overwhelming evidence of their effectiveness in many areas, especially in primary prevention. Primary prevention has shown to be four times as cost-effective as secondary prevention.[1] Counselling and vaccinations are the most important preventive services,[2] but there is also clear evidence for some

screening procedures. Despite the fact that these services can easily be provided, especially in a primary care setting, the delivery of preventive services remains low.[3]

In Switzerland, prevention is a central public health objective and should therefore play a major role in general practitioners' (GPs) daily work. In consequence, over the years, several preventive programs as for example the recent "gesundheitscoaching-project" ("health coaching project") from the Swiss college of primary care physicians (KHM) have been launched.[4] If new prevention programs in primary care are to be introduced successfully, it is important to know about not only potential facilitators but also barriers to implementation. So far, little is known about GPs' attitudes towards and performance of screening and prevention services in Switzerland. Several studies from the US have determined some barriers and facilitators to the performance of preventive services,[5–9] namely and most importantly lack of time, along with provider forgetfulness, inconvenience and logistical difficulties, lack of expertise, lack of positive feedback, disagreement with recommendations, patient discomfort or refusal, high cost, and lack of third-party reimbursement. It remains unclear if these findings can be transferred to Switzerland. The Swiss health care system differs in many aspects, especially with regard to insurance schemes. In contrast to countries such as the US, in Switzerland all residents are insured and these insurances cover a large variety of preventive services. Therefore, the aim of this study was to review all studies with a focus on prevention services which have been conducted so far in Switzerland and to reveal the reported barriers and facilitators in Switzerland's primary care setting.

Methods

Search strategy

The databases PubMed, BIOSIS, EMBASE and the Cochrane Library were searched systematically from January 1990 through December 2010 using medical subject headings and title key words related to "prevention", "screening" and "primary care". In addition, a manual search was done for four Swiss journals ("Schweizerische Ärztezeitung", "Primary Care", "Ars Medici" and "Managed Care") which focus on primary care. The search was limited to studies performed in Switzerland and included articles in German, English and French.

Inclusion and exclusion criteria

Studies were considered relevant if they addressed screening and prevention activities (including primary, secondary and tertiary prevention) in Swiss primary care. In addition, we included studies which were conducted in settings in which a primary care provider played a key role (eg, as an author or as a study participant). Review articles, study descriptions and studies about epidemiological prevalence were excluded. The methodological quality of all included studies was assessed using the guidelines in the Consolidated Standards of Reporting Trials (CONSORT) statement.[10]

Data extraction and validity assessment

Data extraction was performed by one of the authors (DE) and checked independently by a second (MZ). Final extraction was decided by consensus of both. Included studies have been systematically analyzed for study motivation, topics, methods, age and gender of participants, results, conclusions, barriers and supporting factors for preventive measures and the specific role of the GP.

Results

Description of studies

The search of the databases yielded 1918 references, of which 49 met our inclusion criteria for detailed data abstraction (Figure 1). All studies were conducted in Switzerland and were published in German, English or French between 1990 and 2010. The main characteristics and the results are summarized and presented in Table 1. Most of the included studies were cross-sectional surveys and descriptive studies, with four randomized controlled trials (RCTs). The preventive interventions provided in the studies varied widely according to the addressed preventive subject. Twelve studies addressed the prevention of infectious diseases, especially influenza by providing vaccinations[11–22] or by performing a specific diagnostic test.[22] For clinical topics, most prevention activities addressed cardiovascular disease prevention,[23–30] cancer screening,[31–34] HIV,[35–37] prevention of osteoporosis,[38,39] addiction prevention,[40,41] and others[42–47] (Table 2). The most common observed intervention was counseling on lifestyle changes with twelve studies.[30,48–59] Among them, six addressed counselling about physical activity and two dealt with smoking cessation. Most of the studies addressed specific age groups or patient characteristics, such as influenza vaccination in people older than 65 years, or enhancing physical activity in patients younger than 65 years.

Methodological quality

Our review revealed a remarkable number of studies performed in Swiss primary care with a focus on preventive services. Most of these studies did not define a clear intervention and did not define clear clinical outcomes or process parameters.

Only six studies were two-armed studies with a defined control and intervention group. Of these six only four studies reported a randomization process. In consequence, only four

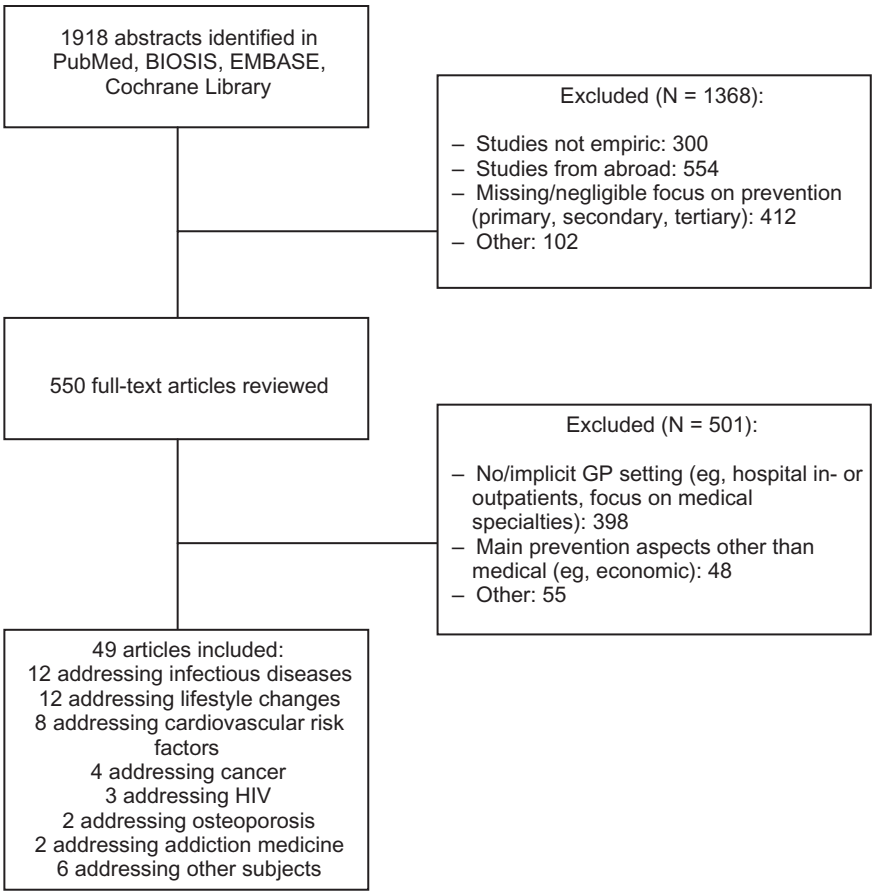

Figure 1 Search strategy and article review process.

studies fulfilled the criteria for a randomized controlled trial (RCT).[41,48,51,53] Detailed information is displayed in Table 1.

In order to assess the methodological quality of the included RCTs, we used the guidelines in the Consolidated Standards of Reporting Trials (CONSORT) statement.[10] Overall, the methodological quality was weak. None of the RCTs fulfilled all of the CONSORT criteria. The best study fulfilled 30 out of 37 checklist items.[53] Two of the remaining three RCTs met more than half and one of the RCTs met less than half of the criteria.

Barriers

Table 3 displays the most frequently mentioned barriers in screening and prevention services from a GP's as well as from a patient's perspective.

Barriers from GP's perspective

Thirty nine studies reported any barriers which precluded GPs from performing screening and prevention services.[12,13,15–17,19–22,24–27,29–33,35,36,39–53,55,57–59] The most frequently cited barriers were "lack of knowledge/skills" (20 out of 39),[16,24,25,30–33,35,40–44,46,47,49,51,52,58,59] "lack of time/high workload" (11 out of 39)[12,29,30,32,33,43,48,51,53,55,59] and "own disbeliefs" (9 out of 39).[17,19,25,30,39–41,50,57]

Lack of knowledge/skills

Lack of knowledge or skills was the most common reported barrier and mentioned in studies with completely different clinical targets, eg, in studies addressing cardiovascular risk factors,[24,25,30] cancer prevention,[31,33] addiction prevention[40,41] or in different prevention interventions for infectious diseases.[16,35] The main barrier reported was the lack of specific communication skills for counselling in lifestyle changes[43,49] and insufficient routine in specific counselling.[51,58,59] Insufficient sources of information were mentioned, eg, in the field of advice-giving for travelling.[52] Five further studies on different areas of prevention also reported a lack of knowledge and skills as a barrier.[42–44,46,47]

Lack of time/high workload

Time constraints were found in several studies, independent of the prevention focus.[29,30,32] Five studies focusing

Table 1 Key features of studies included in the systematic review

Reference	Prevention	Intervention	Participants		Barriers
			No of providers	No of patients	Providers (GPs)
Allenspach et al[48]	2	Physical activity counselling depending on the current level of physical activity	40	4987	Workload, time constraints, disturbance, of daily routine, too complex project organisation, doubts about the own counselling abilities
Bally et al[30]	3	Retrospective analysis of adherence to plasma cholesterol management guidelines	20	866	Relevant comorbidity, priority of other disease, belief that risk doesn't require screening (acceptance and knowledge of guidelines), forgetting to follow guidelines, lack of time
Birchmeier et al[11]	1	Vaccination counselling by a healthcare professional	5	5	Medical contraindication, need for an additional person
Bovier et al[12]	1	Questionnaire about attitudes and use of recommended vaccinations	1166		No time to verify vaccination status and convince patient to be immunized and other logistic issues related to physician's practice, patients expressing a categorical no to vaccinations, allergy to a vaccine, lack of material and/or personnel
Bovier et al[13]	1	Mail survey about missed opportunities for vaccination in adults, regarding patients' perceptions and GPs' recommendations	123	2042	Lack of clear national objectives and guidelines regarding the prevention of vaccine-preventable diseases, area of residence
Bovier et al[49]	2	Review of medical files regarding adherence to diabetes care guidelines	186	3682	Documentation of family and personal history and of lipid profile, specific communication and counselling skills
Brunner-La Rocca/Marti[23]	3	Patients' questionnaire about after care following myocardial infarction	83	83	
Bucher et al[42]	8	Determination of the effect of study results reporting using either the relative or the absolute risk reduction	802		Misinterpretation of different variables expressing the same result, lack of training
Cerletti-Knusel et al[24]	3	Assessment of knowledge in terms of endocarditis prophylaxis	285 (164 dentists, 121 PCP)	93	Knowledge
Cornuz et al[43]	8	Determination of the relative importance of certain barriers to preventive interventions and exploration of the association between physicians' characteristics and their attitudes towards prevention	496		Lack of time, lack of patient interest, lack of training, consumption of more than three alcoholic drinks per day, sedentary lifestyle, lack of national certification and lack of awareness of their own blood pressure
Eckert/Junker[50]	2	Investigation about smoking cessation management by GPs		993	Weak belief in the efficacy of short counselling

	Supporting factors		Study design	Methodological quality of RCTs: fulfilled CONSORT criteria*
Patients	**Providers (GPs)**	**Patients**		
Time, interest	Personal contacts of the project team's colleagues, manageable workload, agreement with the project's idea and practical implementation, own physical activity	Patients' interest		
Refusal to take drugs	Positive predictors for overall guideline adherence were cardiovascular event in family and elevated triglycerides			
Medical contraindication, need for an additional person	Medical contraindication, patient's own choice put into question	Professional's aid, advice, reminder letter, organizational and administrative strategies, feasibility and effectiveness		
	Own positive attitudes towards vaccination, regular use of the different sources of information, readiness to take responsibility			
Physician's recommendation, perceived usefulness, opinion, lack of physician's encouragement, lack of efficacy of the influenza vaccination	French-speaking region, promotion campaigns	Patient's perceived usefulness of vaccination and opinion, age		
Lack of time to focus on the patient's individual needs	Risk of relapse (smoking), fear			
	Training, techniques to tailor information in a differentiated way		RCT	1b, 2a, 2b, 3a, 4a, 4b, 5, 6a, 8b, 11a, 11b, 12a, 12b, 13a, 15, 16, 17a, 17b, 18, 21, 22, 23, 24, 25
Education, knowledge	Knowledge, guidelines	Education and instruction		
Lack of interest	Acknowledgment of the responsibility for prevention, high motivation to implement prevention in the daily practice, consciousness of patients' expectations regarding prevention			
Missing advice from the physician, missing wish to stop	Patients' expectation of being asked about smoking, guidelines, short counselling with good effects	Physician's advice, poor health status, heavy smoking, intention to stop		

(*Continued*)

Table 1 (*Continued*)

Reference	Prevention	Intervention	Participants		Barriers
			No of providers	No of patients	Providers (GPs)
Eichler et al[25]	3	Evaluation of barriers impeding the application of cardiovascular prediction rules in primary prevention	356 questionnaires		Restricted acceptance and trust: doubts concerning over-simplification of risk assessment, lack of knowledge, distrust in validity, distrust in stakeholders, distrust in concept of prevention, lack of practicability
Escher/Sappino[31]	4	Assessment of physicians' knowledge, attitude and perception of their role towards testing for hereditary breast and ovarian cancer	243		Feeling unsure about testing, testing incorrect without approved strategies for the prevention and detection of early breast cancer; testing could do more harm than good
Etter et al[51]	2	Testing of the acceptability and effectiveness of mailing "Smoker" stickers to private practitioners (and its influence on smoking cessation counselling)	497		Lack of time, lack of patient interest, lack of training, consumption of more than three alcoholic drinks per day, sedentary lifestyle, lack of national certification and lack of awareness of their own blood pressure, relative importance of different barriers varies across different preventive interventions
Gaspoz et al[26]	3	Analysis of the impact of a public campaign on chest pain on physicians involved in the prehospital care (physician delay, rates of immediate hospitalization, transportation by ambulance)		749 before, 866 after the campaign	Insufficient integration of the campaign organization into the healthcare delivery process of GPs
Gasser et al[38]	6	Validation of a case finding strategy for postmenopausal women who would benefit most from subsequent DXA measurement	90	382	
Gauthey et al[14]	1	Evaluation of flu vaccination coverage of the geriatric population living in the community		1010	
Götschi et al[29]	3	Experiences with a program for patients with coronary artery disease: patient identification, measuring of performance, recruitment and motivation of patients for a CAD-training		Practice A: 66; practice B: 114	Time needed, administrative efforts
Gugelmann et al[15]	1	Evaluation of hepatitis B vaccination attitudes referred to existing guidelines	62		Lack of information about epidemiology, concerns about long-term efficiency and safety of the vaccine, cost-effectiveness-relation perceived as unfavorable
Haller et al[58]	2	Brief intervention using a motivational interviewing style and a guide known as the 5A's. Training sessions with actors	7	76	Being unprepared for dealing with a diagnosed cannabis dependence

Patients	Supporting factors: Providers (GPs)	Supporting factors: Patients	Study design	Methodo-logical quality of RCTs: fulfilled CONSORT criteria*
	Suggestions: workshops, journal articles, more simple prediction rules, lectures. The effect is questionable			
	Favorable opinion of genetic testing, feeling of responsibility, suggested: targeted educational programs			
Lack of interest	Acknowledgment of the responsibility for prevention, high motivation to implement prevention in the daily practice, consciousness of patients' expectations regarding prevention	Interest	RCT	1a, 1b, 2a, 2b, 3a, 4a, 4b, 5, 7a, 7b, 8a, 13a, 15, 16, 17a, 20, 21, 22, 23, 24, 25
	Specific education and training			
	Phalangeal measurement site easily accessible, widespread access to conventional x-ray devices	Better diagnosis, cost-efficiency		
Rarely affected by flu, "good health", no recommendation, fear of vaccination side effects, doubts about the effectiveness, information, little knowledge		Physician's advice and information, information in general		
Recently absolved rehabilitation program, feeling to be too old to participate	Useful tool in chronic disease management, network synergies, additional personnel	Satisfaction with the program, felt to be helpful, gratefulness for the time given to discuss personal matters		
	Older children or adolescents, combined vaccines			
	Being flexible in time schedule, good feasibility and usefulness, benefit from training	Confidentiality		

(*Continued*)

Table 1 (*Continued*)

Reference	Prevention	Intervention	Participants		Barriers
			No of providers	No of patients	Providers (GPs)
Hasse et al[16]	1	Evaluation of anti-infectious strategies after splenectomy, assessment of adherence to vaccination guidelines, the use of antibiotics and the awareness of the infectious risks	32	91	Misunderstandings concerning vaccination between hospital doctors and GPs, lack of guidelines for antibiotic prophylaxis, lack of knowledge
Hatz et al[52]	2	Survey about knowledge, sources of information and the needs of physicians regarding travel advice	300		(Updated) knowledge, adequate sources of information
Hausser/Jeangros[44]	8	Evaluation of preventive activities in ambulatory care among self-employed physicians	191	7482	Lack of adequate training, modes of payment for medical acts, own effectiveness not that evident
Hayoz et al[27]	3	Investigation of the Ankle/Brachial Pressure Index (ABI) for its suitability in daily practice to identify patients at atherothrombotic risk	276	25,351	Underestimation or missing recognition of atherothrombotic risks
Huguenin et al[32]	4	Assessment of the knowledge, attitudes and practices of women in respect to breast cancer and its prevention. The present study focuses on access by women to medical preventive measures	NR	382	Embarrassment, lack of time
Jimmy/Martin[53]	2	Investigation of physical activity based on the transtheoretical model (TM) of behaviour change	5	132	Some increase of workload
Krause et al[54]	2	Assessment of the awareness of the risk of rabies for travelers, and of the relevant preventive measures	150 Swiss, 150 German		
Malinverni et al[35]	5	Questionnaire about current practice, attitudes and knowledge on care, prevention and treatment of HIV infection and HIV-related problems	688		Lack of medical skills and knowledge, fear of own infection (or of the personnel), difficulty to address the topic
Marki et al[55] (a)	2	Systematic counselling by general practitioners for promoting physical activity in elderly patients	2	29	Lack of time, paperwork
Marki et al[56] (b)	2	Development and testing of a counselling program based on the Transtheoretical Model of behavioral change	33	448	

Supporting factors			Study design	Methodo-logical quality of RCTs: fulfilled CONSORT criteria*
Patients	**Providers (GPs)**	**Patients**		
Lack of knowledge and education		Knowledge, being informed		
Compliance	Interest in the provision of information and awareness of the need for improved information; vaccination schedules; requested: checklist, information leaflets on malaria and medical journals Own motivation	Compliance, leaflets		
	ABI: easy to use and to integrate in the daily routine, cost-effective, non-invasive, no radiation exposure, no allergic reactions, higher awareness			
Lack of information		Information		
Symptoms of pain (rheumatism, back pain), lack of time, lack of interest	Feasibility of the system, physicians' commitment	Good and useful perception of the project, being given an incentive to get moving (brief feedback)	RCT	1b, 2a, 2b, 3a, 4a, 4b, 5, 6a, 8a, 8b, 9, 10, 11a, 11b, 12a, 12b, 13a, 13b, 14a, 14b, 15, 16, 17a, 17b, 18, 21, 22, 23, 24, 25
Physician's awareness	Published recommendations on travel advice	Physician's awareness		
	Education programs, experience in treating HIV-patients			
Poor motivation, already high level of physical activity	Handling of the counselling protocol was considered easy	Tailored information materials		
Health problems (already high level of physical activity)	Nurse	Good acceptance of the program		

(*Continued*)

Table 1 (*Continued*)

Reference	Prevention	Intervention	Participants		Barriers
			No of providers	No of patients	Providers (GPs)
Matter et al[17]	1	Evaluation of the impact of the Swiss MMR vaccination campaign (started in 1987) on disease frequency	150–200	>200	Mumps vaccine quality
Matter et al[18]	1	Monitoring clinical pertussis over time	150–200		
Meystre-Agustoni et al[36]	5	Prevention practices of primary health care physicians in Switzerland in the context of the HIV/Aids epidemic: changes between 1990 and 2002	1212 (2002); 791 (1995); 699 (1990)		Sexual/drug history taking as a delicate topic, limitation of investigations to classic risk constellation
Moiradat Rytz et al[19]	1	Questionnaire about the use of vaccination against influenza in the hospital milieu and by family physicians in Fribourg in 1997: facts and opinions	104 GPs, 19 clinicians	383	Oblivion of vaccination, patient refusal, disagreement with official guidelines
Muntwyler et al[28]	3	National survey on prescription of cardiovascular drugs among outpatients with coronary artery disease in Switzerland	650	565	
Page et al[37]	5	Study about the quality of generalist versus speciality care for people with HIV on antiretroviral treatment	10 GPs, 6 clinicians	120	
Pelet et al[40]	7	Evaluation of governmental policies of easier and increased access to MMT in Vaud	236	1782	Difficult management, comorbidity, lack of knowledge about adequate methadone dosage; ambivalence about methadone, treating unstable patients
Peltenburg et al[45]	8	Survey about preserving vision in the elderly: quality development program in general practice	107	4918	Implementation and awareness of ophthalmological concerns
Perdrix et al[41]	7	Detection of alcoholism in general practice: Applicability of the CAGE test by the general practitioner	12	416	Negative perception of the test (partly as useless, eg, If clinical evaluation was clear enough), delicate topic for the first consultation and relationship to patients, own attitude, education
Pichert et al[33]	4	Questionnaires about Swiss primary care physicians' knowledge, attitudes and perception towards genetic testing for hereditary breast cancer	1391		Lack of knowledge, time, high workload, limitations of providing genetic services at the primary care level, understanding of risks and benefits is still very insufficient
Praz et al[34]	5	Questionnaires about screening of the prostate cancer	204		
Ramseier[46]	8	Survey on the observance of the international guidelines for relapse in acute and long-term treatment of depression and schizophrenia	176		Lack of knowledge

	Supporting factors		Study design	Methodo-logical quality of RCTs: fulfilled CONSORT criteria*
Patients	**Providers (GPs)**	**Patients**		
Lower vaccination coverage in the Romandie				
		High vaccination coverage		
Risk of banalization	Conviction of responsibility in HIV prevention			
Fear of side effects, disbelief in necessity	Overall high opinion of the vaccine efficacy and tolerance			
	Patient's' history of myocardial infarction and coronary revascularization, guidelines	Patients' motivation to comply with the medication		
Bad health status, bad health-related quality of life, health care model	High motivation, specialized knowledge, communication skills, cooperation with specialists	Choice of an individual health care model		
	Treatment program	Easy access, low-threshold management; high level of integration in the social framework		
	Cooperation with ophthalmologists, special skills			
	Possible way to tackle an undetected/denied alcohol problem, own attitude, education, being in an public institution		RCT	1b, 2a, 2b, 3a, 4a, 4b, 5, 7a, 12a, 13a, 16, 17a, 20, 21, 22, 24
	Knowledge and awareness of complexity, favorable attitudes and readiness to play a central role in every part of the genetic counseling and testing process			
	Guidelines	Own initiative		
	Guidelines			

(*Continued*)

Table 1 (*Continued*)

Reference	Prevention	Intervention	Participants		Barriers
			No of providers	No of patients	Providers (GPs)
Richard et al[20]	1	Evaluation of the performance of sentinel and mandatory-based surveillance systems for measles in Switzerland (comparison of both systems in terms of their aptitude to promote measles elimination)	230		Reporting system, reporting compliance, unclear diagnosis criteria
Schmid et al[59]	2	Evaluation of two procedures to tackle physical inactivity: counselling and mailing	12	38	Little routine, time pressure, personal obstacles of the physician, physical activity promotion alone perceived as too specific
Sebo et al[57]	2	Cross-sectional assessment of diabetes care in order to identify diabetic patients' characteristics and medical care factors associated with recommended glycemic control (HbA1c $\leq$ 7%)	204	366	Quality of care, motivation
Steurer-Stey et al[47]	8	Investigation of physicians' knowledge of the principles and implementation of self-management in asthma care	1039		Inadequate financial compensation, lack of training
Stoll et al[39]	6	Self-reflection about the implementation of guidelines in osteoporosis management	13 (1996), 14 (1997)	53 (1996), 116 (1997)	No regular follow-ups, no clear indication for therapy, skepticism against guidelines
Vaudaux/ Steinemann[21]	1	Assessment of Swiss physicians' knowledge on hepatitis B, their perception of parental information concerning this infection, their attitude towards planned universal vaccination, and their agreement with different universal immunization scenarios	2506		Logistic problems arising from the administration of three doses within two subsequent school years
Wunderli et al[22]	1	Assessment of the use of a 'near patient' test for rapid antigen detection to obtain the more timely acquisition of data for the surveillance of influenza epidemics	253		Lower sensitivity of the rapid test, results not always accurate

on preventive lifestyle changes reported a lack of time as a major barrier in counselling regarding physical activity,[48,53,55] cannabis use, smoking cessation or alcohol reduction.[43,51,59]

A study addressing the prevention of hepatitis B by providing vaccination stated a lack of time to verify vaccination status and to convince patients to be immunised.[12]

Own disbeliefs

Own disbeliefs were a barrier found in many studies. This includes reluctance to use tests, eg, a detection-test of alcoholism;[41] ambivalence about the use of methadone in patients with drug use disorders;[40] disbeliefs in the quality of interventions;[17] or in their necessity;[25,30] or skepticism about current guidelines.[19,39]

Patients	Supporting factors: Providers (GPs)	Supporting factors: Patients	Study design	Methodo-logical quality of RCTs: fulfilled CONSORT criteria*
	Motivation, compliance			
Lack of patient's interest	Face-to-face contact, regarding a patient's individual situation			
	Adherence to lifestyle counselling (dietary and physical activity)	Compliance, absence of risk factors, comorbidities and disease complications, short duration of the disease		
	Interest in training of the needed skills			
Refusal of the patient, psychiatric and physical comorbidity, formal contra-indication, compliance problems, language problems	Stronger conviction of the physician to implement guidelines			
	Good access to the children at schools			
	Faster yield of results, no laboratory needed			

Notes: *The CONSORT criteria are according to Moher et al.[10] Data as far as reported (empty cells: not reported). Subject of prevention: 1, Prevention of epidemics and infectious diseases; 2, Lifestyle changes; 3, Cardiovascular risk factors; 4, Cancer; 5, HIV; 6, Osteoporosis; 7, Addiction medicine; 8, Others.
Abbreviations: RCT, Randomised Control Trial; INTS, Intervention Study; NR, Not Reported; PCP, Primary Care Physician; GP, General Practitioner; SD, Standard Deviation; DXA, Dual-Energy X-Ray Absorptiometry (bone densitometry); CAD, Coronary Artery Disease; ABI, Ankle Brachial Index; CAGE, clinical test for the assessment of alcohol-related problems (Cut down, Annoyed, Guilty, Eye-opener).

Barriers from patient's perspective

We identified 24 studies which reported barriers precluding patients from using screening and prevention services.[11,13,14,16,17,19,23,24,29,30,32,36,37,39,43,48,50–56,59] The most frequently cited barriers were "the lack of GP's engagement" (5 out of 24),[13,14,32,50,54] "the lack of interest or time" (8 out of 24),[23,43,48,51,53,59] and "own disbeliefs" (3 out of 24).[13,14,19]

Lack of GP's engagement

In the patient's view a lack of GP engagement was a common barrier. This referred to the lack of encouragement from

Table 2 Subjects of prevention

Subject of prevention	Number of studies (n = 49)
Prevention of infectious diseases and epidemics	12
Lifestyle changes	12
Cardiovascular prevention	8
Cancer screening	4
HIV	3
Osteoporosis prevention	2
Addiction medicine	2
Others	6

the GP,[13,14,32] or missed advice eg, in smoking cessation[50] or concerning travel medicine.[54]

Lack of interest

Four studies described a lack of patient interest in physical activity counselling,[48,53,59] and in smoking and alcohol counselling[43,51] as a barrier to using preventive services.

Lack of time and own disbeliefs

The lack of time was mentioned as a major barrier in three studies.[23,48,53]

The patients' doubts about the necessity and effectiveness of an influenza vaccination were revealed as barrier in three different studies.[13,14,19]

Facilitators

The included studies revealed several facilitators to the performance of screening and prevention services both from the GP's and the patient's perspective.

Table 3 The most frequently presented barriers and facilitators

	Number of studies*
GP's perspective	
Barriers	
Lack of knowledge/skills	20
Lack of time/high workload	11
Own disbelief	9
Facilitators	
Motivation/interest/attitude	15
Education/knowledge	10
Feasibility/Usefulness	7
Patients' perspective	
Barriers	
Lack of GP's engagement	5
Lack of patients' interest	5
Lack of time	3
Own disbeliefs	3
Facilitators	
Counselling	8
Conviction/motivation	5
Feasibility/usefulness	4

Note: *Multiple responses were possible.

Facilitators from GP's perspective

Independent of the prevention subject, 43 studies reported any factor which supports GPs to perform preventive activities.[11–13,15,19–31,33–37,39–48,50–59] Most frequently cited facilitators were "counselling" (15 out of 43),[12,19,20,31,33,36,37,39,41,43,44,47,48,51–53] "conviction/motivation" (10 out of 43),[24,26,33,35,37,41,42,45,50,58] and "feasibility/usefulness" (7 out of 43).[13,21,22,27,29,48,50,53,55,58]

Motivation/attitude

Physicians' acknowledgement of responsibility for prevention and high motivation to implement prevention were the main facilitators in several studies, independent of the main prevention focus (lifestyle changes,[48,51–53] infectious diseases,[12,19,20,36,37] cancer screening,[31,33] and further aspects of prevention[41,43,44,47]).

Education/knowledge

Several studies showed that a specific awareness[33] and knowledge about a disease, as well as an existing guideline (eg, guidelines on endocarditis prevention[24]) or a specific training or educational programmes can increase the probability that the GP will provide prevention services.[26,35,37,41,42] Also the role of special skills was highlighted in an ophthalmological study in elderly patients in routine ophthalmologic controls to preserve vision as factor that increases specific prevention.[45]

Feasibility/usefulness

Counselling of inactive patients,[48,53,55] smokers,[50] and patients using cannabis[58] was considered as feasible in daily practice. This was considered as a facilitator in using these preventive interventions. Useful tools in chronic disease management (patient education, reminder)[29] and for identification of patients at atherothrombotic risk (ankle/brachial pressure index)[27] were also found to be facilitators in performing preventive services.

Facilitators from patient's perspective

We identified 23 studies describing factors which support patients to use preventive activities.[11,13,14,16,18,24,28,29,32,34,37,38,40,43,48,50–58] The most frequently cited facilitators were "education/knowledge" (8 out of 23),[11,14,16,22,24,32,50,54,55] "conviction/motivation/information" (5 out of 23)[28,34,43,48,50,51] and "feasibility/usefulness" (4 out of 23).[11,13,38,53]

Counselling

Information and GP's advice to use screening and preventive services are supporting factors.[11,14,16,22,24,32,55] Receiving information and advice from a physician was not only an

important determinant in the decision to receive influenza vaccination[11,14] but also regarding smoking cessation, or preventive arrangements in the context of travel medicine.[50,54]

Conviction/motivation

The patient's interest or own initiative (eg, in smoking cessation[50,51]) was found to be an important factor in different studies[28,34,48] Another study showed that the patient's perceived usefulness of tetanus, influenza and pneumococcal vaccination were associated with vaccination status.[13]

Feasibility/usefulness

A personal proposal suggesting a hepatitis B vaccination by a health care professional was considered as an effective measure to achieve high vaccination coverage.[11]

By a specific intervention (feedback, counselling) one study observed that patients' physical activity could be improved effectively.[53]

Sponsorship/conflicts of interest

The following papers in our review indicated sponsorship or conflicts of interest, as noted

- Bovier et al:[13] The research was funded by the Swiss Academy for Medical Sciences and the Federal Office for Public Health (contract no 316.98.6766)
- Cornuz et al:[43] One co-author is supported by a Population Health Investigator Award from the Alberta Heritage Foundation for Medical Research and received sabbatical support from the Institute of Social and Preventive Medicine and the Department of Medicine, University of Lausanne
- Eichler et al:[25] Support by the Helmut Horten Foundation
- Etter et al:[51] Support by the Health Authority of the Canton of Geneva
- Gasser et al:[38] Provision of the digital processing system: Merck Sharp and Dohme-Chibret AG Switzerland
- Gauthey et al:[14] Grant from the President of the State Department for Health and Social Affairs
- Gugelmann et al:[15] Financial support of the study by SmithKline Beecham corporation
- Hayoz et al:[27] Support by a grant from Bristol–Myers Squibb and Sanofi–Synthelabo
- Jimmy and Martin:[53] Financial support by Helsana AG
- Marki et al:[55,56] Financial support of the study by Health Promotion Switzerland (project 1191)
- Meystre-Agustoni et al:[36] Sponsoring by the Federal Office of Public Health Page et al:[37] This study was financed by the Swiss National Science Foundation (Grant no 3346-62449) and by an unrestricted educational grant of Merck Sharp and Dohme-Chibret AG, Glattbrugg, Switzerland
- Pelet et al:[40] Financial support by the Federal Office of Public Health
- Pichert et al:[33] Swiss Cancer League (administrative support), Janssen–Cilag AG, Baar (provision of adresses of physicians)
- Sebo et al:[57] University Hospitals of Geneva, Novartis (subsidiary unrestricted research)
- Stoll et al:[39] Sponsoring by Roche, MSD, Novartis and Hoechst
- Wunderli et al:[22] This study was collaboration between Roche Pharma AG, which made available the reagents free of charge, the Swiss Sentinel Surveillance Network (SSSN), and the Swiss National Influenza Center. The study was funded by grants from Roche Pharma AG and the SSSN.

Discussion

The study was performed to review all studies with a focus on prevention services in Swiss primary care settings, and to identify barriers and facilitators which influenced physicians in performing and patients in using preventive services.

We could include numerous studies which were conducted in Switzerland during the last twenty years. Taking into account the small number of all studies performed in primary care in Switzerland, the proportion of studies focussing on preventive services is remarkably high. This fact may demonstrate the importance of prevention in primary care, not only in acute or infectious, but also in chronic illnesses. Many studies have shown that preventive activities are an effective way to reduce the burden of chronic illnesses.[2,60–62] A major finding of our review was that the methodological quality of the available studies is very low. Our results strongly emphasize that future projects should have clearly defined populations, interventions, and outcomes to be able to create valid data about the efficacy but also efficiency of preventive services in primary care.

We identified 49 studies which addressed the prevention of epidemics, lifestyle changes, physical activity counselling, smoking cessation, cardiovascular disease prevention and cancer screening. Included studies revealed several barriers and facilitators in performing screening and prevention activities from GP's as well as from patients' perspective.

Perceived lack of knowledge/skills, lack of time/high workload and own disbeliefs were the most commonly stated barriers to performing screening and prevention services from the GP's perspective. The lack of GP engagement, lack of interest and time as well as own disbeliefs were the most frequently reported barriers in using preventive activities from the patients' perspective. Two reviews on cancer screening, one specifically on colorectal cancer screening[63] and one screening for both colorectal and breast cancer[64] have found very similar barriers, including the GP's disbelief in the usefulness of testing on the physician's side and the lack of recommendation to screen as a barrier from the patient's perspective. A British study on intervention against excessive alcohol consumption showed that GPs report too little training to deal with the problem in everyday practice.[65] An American study based on a questionnaire about cholesterol treatment revealed an insufficient knowledge and awareness about the treatment goal of non-HDL-Cholesterol.[66]

Both reviews on cancer prevention[63,64] also revealed the lack of financial coverage by insurance as a major barrier. This problem did not arise in our study since in Switzerland everyone is obliged to have health insurance that also covers many of the mentioned preventive interventions. The following supporting factors in performing preventive services were mentioned by GPs: motivation/attitude, education/knowledge, feasibility/usefulness. From a patient's perspective, counselling, conviction/motivation and feasibility/usefulness were the most frequently reported supporting factors for using preventive activities. Similar facilitators such as extent of knowledge or attitude of both the GP and the patient were found in cancer screening.[63,64] In the US an electronic medical record reminder was found to augment the influenza and pneumococcal vaccination rate.[67]

Sponsorship

Half of the disclosed sponsorships relate to the pharmaceutical industry and the other half originates in foundations and official authorities. This latter finding suggests that some political efforts are made to support prevention in primary care.

Strengths and limitations

Our review included a broad variety of studies addressing prevention in primary care over a time period of two decades, but has several limitations. The main limitation is that the methodological quality of the studies is very low. Due to this, conclusions about effective preventive services are not possible. Furthermore, the focus on the country rather than on a single disease or a disease class precludes clear findings regarding barriers and facilitators.

Conclusion

Most reviews focussing on screening and prevention activities in primary care addressed vaccination, lifestyle modification and cardiovascular disease prevention. Identified barriers and facilitators indicate a need for primary-care-adapted education and training in prevention which are easy to handle, time saving, and reflect the specific needs of general practitioners. If new prevention programs are to be implemented in general practices, RCTs of high methodological quality are needed to assess their impact.

Disclosure

The authors report no conflicts of interest in this work.

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