Thomas von Lengerke[1], **Alfred Rütten**[2], **Jan Vinck**[3], **Thomas Abel**[4], **Lasse Kannas**[5], **Günther Lüschen**[6], **Josep A. Rodríguez Diaz**[7], **Jouke van der Zee**[8]

[1] *GSF-National Research Center for Environment and Health, Neuherberg*
[2] *Friedrich-Alexander-University of Erlangen-Nuremberg, Erlangen*
[3] *Limburg University Centre, Diepenbeek*
[4] *University of Berne*
[5] *University of Jyväskylä*
[6] *University of Illinois at Urbana-Champaign (em.)*
[7] *University of Barcelona*
[8] *Netherlands Institute of Health Services Research, Utrecht*

Research utilization and the impact of health promotion policy

Summary

Objectives: The conditions under which research utilization leads to policy impact are an important issue in health promotion. This analysis tests the assumption that utilization is positively associated with policy impact only if both political will (i.e., policy opportunities) *and* social strategies (in intervention and implementation) are present.
Methods: A survey of 719 policymakers involved in four policies was conducted in six European countries. Policy impact (output, i.e., program implementation, and outcome, i.e., effects on behavior) and its proposed determinants were analyzed.
Results: Regression analyses reveal limited cross-national differences in research utilization, but show comparably high use in policies with a pathogenic focus. Utilization is associated with impact only if political will is lacking; for outcome, this tends to depend on social strategies. Political will is the strongest determinant of impact.
Conclusions: Research utilization is not supporting health promotion policy impact if political will is favorable, but if it is poor; political will itself is *the* crucial determinant of impact. The study contributes to the "research utilization"-field by showing that research utilization may partially compensate for lack of, rather than depend on, political will.

Keywords: **Research utilization – Science/policy-relationship – Public health – Health promotion – Health policy models – Policy impact.**

It is a truism that policy in general and health promotion policy in particular are only partly determined by scientific research. Much scrutiny has been directed to how, when and why research is (or is not) transferred to and utilized in policymaking. This *"research utilization"-field* has mostly drawn on models of how researchers and policymakers relate to one another, e.g. the "two communities"-hypothesis (Caplan et al. 1975; Innvær et al. 2002) or the decisionistic vs technocratic vs pragmatic modes of interface between science and policy (Habermas 1968; 1971). Furthermore, Hoppe (2002) has discussed different forms of collaboration of science and policy as depending on their relative power and divergence.

Beyond explaining research utilization itself, however, another crucial issue is how, when and why research utilization is associated with and contributes to *policy impact*. Put differently: Given research findings *are* utilized, does it make a policy more likely to be enacted and effective? Certainly, one may argue: if research has done its job properly, this surely should be the case![1]

However, particularly in an understanding of public health as the science and *art* of promoting population health by *organized community efforts*, it has been argued that – beyond its scientific foundations – it is an essentially *political* endeavor, and that it is fundamental to "…pay heed to the interdependence of science with the social and political dimensions of public health" (Atwood et al. 1997). In other words, the question arises as to the political and strategic

[1] Plus, obviously, if science is used properly by policymakers, i.e., not only in order to justify decisions they would have taken anyway (for a discussion of such "cynical views", see Hoppe 2002).

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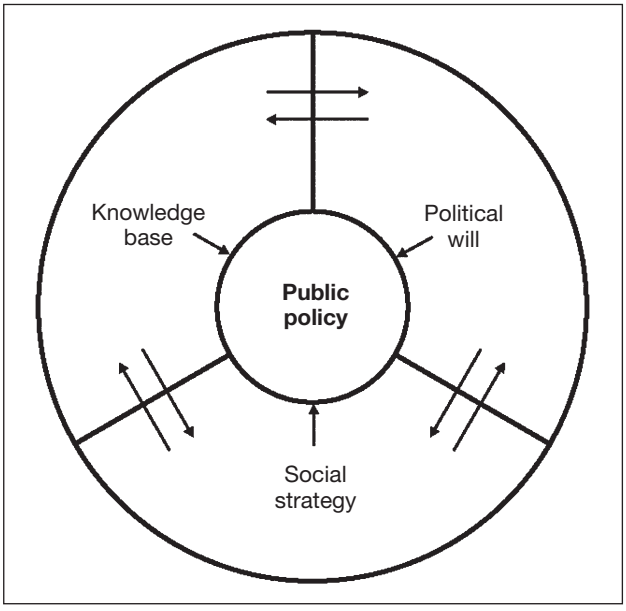

Figure 1 The development of policy according to the Three-Part Health Policy Model by Richmond & Kotelchuck (1983)

Table 1 Dimensions of policy rationality and determinants suggested by Rütten et al. (2000) and their relation to those specified by Richmond & Kotelchuck (1983)

Theoretical framework by Rütten et al.	Model by Richmond & Kotelchuck
Rationality of health promotion policy	
Problem structure + research utilization	Knowledge base
Intervention strategy educational orientation psychosocial orientation	Social strategy
Policy implementation policy networking social technology	
Determinants of health promotion policy impact	
Opportunities organizational political public	Political will

Note: Rütten et al.'s framework includes three more determinants of policy impact (goals, resources, and obligations) not directly relevant to the present study; see Rütten et al.'s (2000; 2003a; 2003b) for details (both on theory and empirical evidence)

dimensions essential to translating public health research into effective health promotion policy. Here, models of policy determinants come into play.[2] For example, Richmond and Kotelchuck (1983) have developed a so-called "Three-Part Health Policy Model" (see Fig. 1) in which two other factors beyond the *knowledge base*, i.e., the "…scientific and administrative data base upon which to make decisions" (Atwood et al. 1997: 1604), determine policy: *political will*, i.e., "…society's desire and commitment to develop and fund new programs or to support or modify existing programs" (ibid.), and *social strategy*, i.e., the "…plan by which we apply our knowledge base and political will to improve or initiate programs" (ibid.). Specifically, the model demands that "…all three components of the pie must be present in some degree for preventive action to proceed" (ibid.), and that "No single component suffices to produce effective preventive action" (ibid.). For the present focus, research utilization, this implies that without strong political will and clear social strategies it cannot translate into any high-impact policy.

It is the central aim of this paper to put these assumptions to an empirical test. To this end, however, it will employ an alternative theoretical framework recently proposed by Rütten et al. (2000; 2003a). This model, while being quite akin to Richmond and Kotelchuck's in its aims, is somewhat more extensive by specifying a number of distinct dimensions of policy rationality, of more proximal determinants of policy impact, and "within" the broader concepts of the Three-Part Model.[3]

Consider political will, conceptualized by Richmond and Kotelchuck as society's support for a policy. As Table 1 shows, this policy determinant is in Rütten et al.'s model reflected in a threefold way by the concept of *opportunities*, i.e., crucial situational changes that frequently serve as starting points for policy. In particular, the model distinguishes organizational opportunities (changes in co-operation within policy organizations), political opportunities (backing by different political levels), and public opportunities (support by the population).[4]

As for social strategy, it is reflected in Rütten et al.'s model by two concepts: intervention strategy, referring to e.g. traditional educational vs contemporary psycho-social approaches, and policy implementation, e.g. using policy networking-tactics such as policy issue networks vs measures of social technology such as public relations.

Finally, Table 1 shows that Rütten et al.'s model, like Richmond and Kotelchuck's, includes a research-related component, namely *problem structure and research orientation*. In particular, while problem structure refers to the

[2] Interestingly, Sager (2004) has applied one of the relational science/policy-models mentioned above (namely Habermas' modes of interface-model) to explain effectiveness of a prevention policy.

[3] In this theoretical context, the term policy "*rationality*" seeks to cover underlying principles *of* – in contrast to dispositional, structural and situational conditions *for* – policymaking (see Rütten et al. 2000, for details).

[4] These sub-dimensions have been empirically validated in former analyses (see e.g., Rütten et al. 2003b).

"…scientific knowledge and understanding about the epidemiology, etiology, variability, progression and changeability of health and illness states" (von Lengerke 2001), and thus is the direct counterpart of the Three Part-Model's concept of knowledge base, research orientation stands for the utilization of this knowledge by policymakers – and thus precisely marks the determinant of health promotion policy impact focused on in the present paper.[5]

To sum up, the primary aim of the subsequent analysis is to empirically test the assumption that in health promotion policy, utilization of public health research is associated with high policy impact only (or at least most strongly) if at the same time both (1) strong social strategies and (2) good policy opportunities, i.e., favorable political will of different policy environments, are present. Policy impact will be defined both in terms of output (implementation of programs) and outcome (effectiveness, especially intended behavioral changes in the population).[6] The analysis will be based on a policymaker survey covering four prevention and health promotion policies in six European countries. This design allows initial exploratory analyses regarding differences in research utilization across policies and nations, and subsequent adjustment for these factors in the analyses relating to the theoretical assumptions developed above. At the same time, it should be noted at this point that the use of such data reflects this study's methodological individualism-approach. Specifically, the premise is accepted that policies are collective structures that can be studied by making use of the experience and competence of relevant agents, here: policymakers. More details on this approach, its limitation, and also implication will be discussed in the concluding section.

Methods

Background

This study is part of MAREPS, an international project that has developed a *m*ethodology for the *a*nalysis of the *r*ationality and *e*ffectiveness of *p*revention & *h*ealth *p*romotion *s*trategies on behalf of the EU (BIOMED2-program). It comprised policymaker and population surveys in Belgium, Finland, Germany, The Netherlands, Spain and Switzerland. Four policies were selected for examination: early detection of breast cancer, prevention of smoking, promotion of physical activity, and creation of supportive living and working conditions. The present study reports data from the policymaker survey on all four policies.

Questionnaire development

Exploratory interviews with policymakers knowledgeable about one or more of the four policies were performed to elucidate national specificities of policy structures, and provide leads for the survey instrument. These interviews were also used to identify key policymaking personnel for the mail survey (see following paragraph). The questionnaire was developed jointly by all project parties, and translated from the German master-questionnaire and an English equivalent into the other languages (Dutch/Finnish/Spanish). Translation and re-translation was neither practical nor possible due to the available budget.[7] Finally, the questionnaire was pre-tested and a standardized version developed.

Sampling and realization

A total of 1379 policymakers were selected via a focused sampling procedure, a non-random approach akin to purposive/judgmental sampling (Babbie 1992).[8] This procedure was employed as a heuristic stratification scheme to guide sampling along three dimensions: policymakers (1) involved in at least one of the four policies[9] from (2) different system levels (typically national/federal, state/regional and local) and (3) public and private agencies. Uniform distributions were aimed at across the four policies (for realization, see following paragraph and Table 2; for details: Rütten et al. 2000). Care was taken that administrative personnel as well as decision makers were considered.[10] Examples of agencies are cancer aid organizations, integral cancer centers, tobacco prevention working groups, associations fighting drug addiction, federal sports offices, providers in health-enhancing physical activity, Healthy Cities and health promotion networks; typical for generic bodies (i.e., usually responsible for all four policies) were health ministries, local public health departments, and public or private health insurance companies. In sum, this procedure aimed at maximizing sample variability and reflecting common and specific characteristics of national health systems.

[5] Thus, and for the sake of terminological clarity, "research orientation" is rephrased "research *utilization*" both in Table 1 and throughout the remainder of this paper.

[6] See Rütten et al. (2000; also: von Lengerke 2001) for a rationalization of these definitions in lieu of the different usage of these terms in evaluation research.

[7] Nor is its utility undisputed in multinational survey methodology (Alwin et al. 1994).

[8] Non-random sampling can be considered typical for sampling in policy organizations because random samples would generate quite a few at a lower level of responsibility and might miss all or most of the higher echelon, thereby defeating its very purpose (Dexter 1970).

[9] "Involvement" here meant to hold professional responsibility for a policy in one's organization or agency.

[10] Thereby acknowledging Lindblom's assertion that "…administrators inevitably *make* policy" (1968).

Table 2 Sample description

	Belgium	Finland	Germany	Netherlands[a]	Spain	Switzerland	Total
Questionnaires issued	266	151	175	339	151	297	1379
Questionnaires returned	99	96	126	134	92	172	719
Response rate	37.2%	63.5%	72%	39.5%	60.9%	57.9%	52.1%
Female N	47	58	48	46	25	55	279
%	47.5	61.1	39	34.8	27.2	32.2	39.2
Male N	52	37	75	86	67	116	433
%	52.5	38.9	61	65.2	72.8	67.8	60.8
Age M	43.9	49.8	49.1	42.6	43.1	46.5	45.8
SD	9.7	7.9	8.8	9.1	5.5	8.7	8.9
Early detection of breast cancer	14	13	16	39	31	17	130
Column %	15.5%	14.2%	13.7%	30.9%	36.0%	10.1%	19.2%
Policy-specific response rate	67%	63%	77%		74%	57%	68[b]
Prevention of smoking	34	18	18	37	25	36	168
Column %	37.7%	19.7%	15.5%	29.3%	29.1%	21.5%	24.8%
Policy-specific response rate	26%	87%	69%		89%	71%	51[b]
Promotion of physical activity	21	24	39	21	19	56	180
Column %	23.3%	26.3%	33.6%	16.6%	22.1%	33.5%	26.6%
Policy-specific response rate	36%	67%	81%		56%	93%	67[b]
Creation of healthy conditions	21	36	43	29	11	58	198
Column %	23.3%	39.5%	37.0%	23.0%	12.7%	34.7%	29.2%
Policy-specific response rate	20%	88%	89%		56%	53%	52[b]
National level	56 = Flanders	26	24	27	12	65	210
Column %	59.6%	28.6%	19.7%	21.1%	13.2%	41.1%	30.7%
State level	21 = regions	9	36	66 incl. regions	62 incl. regions	67	261
Column %	22.3%	9.9%	29.5%	51.6%	68.1%	42.4%	38.2%
Local level	17	56	62	35	17	15	202
Column %	18.1%	61.5%	50.8%	27.3%	18.7%	9.5%	29.5%
Primary financing public	75	75	77	101	85	93	506
Column %	80.6%	78.9%	63.1%	77.7%	93.4%	54.7%	72.2%
Primary financing private	18	20	45	29	6	77	195
Column %	19.4%	21.1%	36.9%	22.3%	6.6%	45.3%	27.8%

Notes: Sums less than N = 719 due to missing data; [a] Data for calculating policy-specific response rates had not been available; [b] Calculated on basis of available data

The survey was carried out from April to October 1997 by the institutions conducting the project. Two mail and one telephone reminder were employed to improve response.

Sample

As Table 2 shows, 1379 questionnaires were issued. As there is no information on who actually received the questionnaire, there are no estimates of neutral losses and no net-samples; thus, response rates are conservative figures. Overall, 719 completed questionnaires were returned. Absolute samples range from N = 92 in Spain to N = 172 in Switzerland. The overall response rate of 52.1% for a mail survey can be considered above average, and for an elite study moderate (Dillman 1978). National response rates range from 37.2% in Belgium to 72% in Germany; no information is available to explain this variance. Overall, the respondents' mean age was 45.8, with 39.2% being female; here, distributions are generally analogous across nations.

Distributions across the four policies are a result of an item in the questionnaire asking which policy the respondent was mainly involved in (see below "Measures and scales"). Here, unequal distributions occurred across the surveyed countries. For instance, in Finland, Germany and Switzerland, majorities are involved in creating healthy conditions, followed by physical activity promotion, smoking prevention and breast cancer screening; in The Netherlands and Spain, this situation is inverted. Overall, policy proportions vary from just under 20% to 30% (19.2%, 24.8%, 26.6% and 29.2%, respectively), approximating uniform distribution more than within nations. Regarding policy-specific response rates, all numbers are above 50% and range up to 89%; a special case is Belgium, where the comparably low general response rate is mainly due to the smoking- and healthy conditions-policies.

Concerning the other sampling dimensions, the majority of policymakers are from public rather than private sectors in all countries (overall: 72.2% vs 27.8%). Regarding systemic

level, 30.7% came from the national, 38.7% from state, and 29.5% from local levels. Cross-national variations along this dimension are probably due to geographical specificities: in The Netherlands, sampling targeted the whole country, in Belgium only Flanders and (on state and local levels) Antwerp and Limburg, in Finland the region of Pirkanmaa, in Germany the states of North Rhine-Westphalia and Saxony, in Spain the autonomies with a focus on Catalonia and major cities (especially Barcelona), and in Switzerland its German-speaking part.

Measures and scales

As noted, policymakers were asked to indicate the policy they were mainly involved in; this item was used as a screening question for the policy involvement they had been selected for in the first place. Several item pools (total number of items: 115) then related to the dimensions of the theoretical framework (cp. Tab. 1). For the present study, 15 items to measure policy rationality, 10 items for opportunities, and four items for policy impact are relevant (all five-point Likert-scales). These items had emerged from principal component and reliability analyses. Detailed results for opportunities and impact have been reported elsewhere;[11] they had rendered one scale each for political opportunities ("The political climate has worsened/improved", "The support from other sectors has worsened/improved", "The co-operation between political levels involved has worsened/improved", "The co-operation between public and private organizations has worsened/improved", "The lobby for the action has worsened/improved"), public opportunities ("The involvement of the population has worsened/improved", "The population supports the action", "The media's interest has worsened/improved"), and organizational opportunities ("My own involvement has worsened/improved", "The co-operation within my organization has worsened/improved").[12] For policy impact, three items indicate outcome ("The action has achieved the intended behavior change in the population", "Considering cost-benefits, the action was worthwhile", "Personally, I am satisfied with the results"), while output was measured by a single item ("Various programs were implemented").

Analysis of policy rationality items, the focus of the present study, identified five factors.[13] As Table 3 shows, one indicates "research utilization", relating to etiological, health-behavioral and epidemiological research. Besides, two dimensions each were identified for intervention strategy ("psycho-social intervention strategy", "educational intervention strategy") and policy implementation ("policy networking", "socio-technological policy implementation").

Indexing

In accordance with the models and hypotheses put forward above, specific indices were constructed based on the scales for intervention and implementation strategies, and opportunities. To start with the latter, an index for "political will" was constructed by assigning the code "1" for good opportunities if a policymaker had a high score (with "high" vs "low" defined by median-split) on at least two of the subscales "political", "public" and "organizational" opportunities; else, the code "0" was assigned indicating poor opportunities. Likewise, an index for "social strategies" was constructed by assigning the code "1" for "strong social strategies" if a policymaker had a high score on at least two of the four scales for intervention strategy and policy implementation (else, the code "0").[14] In general, these indexing rationales were employed to operationalize "social strategies" and "political will/policy opportunities" by compromising between the comprehensiveness of constructs proposed by Richmond & Kotelchuck and the more multifaceted dimensionality of those by Rütten et al.

As for policy output and outcome, scales were dichotomized by median-splits to distinguish "high" vs "low" program implementation (output) and effectiveness (outcome), respectively.

Finally, the central explanatory variable, i.e., research utilization, was both trichotomized into "high" (scale range: 4.1–5), "medium" (3.1–4) and "no or low" (1–3) utilization, and dichotomized by distinguishing "high or medium" vs "no or low".

Statistical analyses

First, differences in research utilization across policies and nations were explored using multinomial logistic regression analysis. Second, binary logistic regression analyses were carried out for policy output and outcome in which their proposed determinants, and subsequently also their interactions, were entered in a theory-driven manner. The aim was to determine the factors that contribute in a unique way

[11] See e.g. Rütten et al. (2003b).

[12] As a rule, all multi-item scales used in the present analysis were constructed by sum-scoring and subsequent division by the respective number of items.

[13] See Rütten et al. (2000) for a related examination with slightly different item pools and solutions in a slightly different analytic context.

[14] As an additional condition at least one of the two or more high scores had to relate to "psycho-social strategy" or "educational strategy", and at least one other to "policy networking" or "socio-technological implementation". This rule ensured that the "strong"-code was dependent on both intervention strategy and policy implementation.

Table 3 Factor analysis of 15 policy rationality items, and internal consistencies of scales

Items	Components				
	Research utilization (a = 0.71)	Psycho-social intervention strategy (a = 0.77)	Policy implementation by policy networking (a = 0.67)	Educational intervention strategy (a = 0.60)	Policy implementation by social technology (a = 0.64)
The action takes into account up-to-date research about the causes of disease	**0.83**	–0.18	–0.16	0.15	–0.22
The action takes into account scientific insight about potential behavior modification	**0.77**	–0.18	–0.10	0.16	–0.38
The action takes into account that the problem is epidemiologically significant	**0.76**	0.02	–0.14	0.04	–0.25
How important in health policy is promoting psychological well-being?	0.10	**–0.85**	–0.06	0.03	–0.14
How important in health policy is promoting social relationships?	0.05	**–0.81**	–0.20	–0.08	–0.18
How important in health policy is supporting self-help?	0.18	**–0.80**	–0.04	0.05	–0.09
One must find the right partners in the own policy field	0.14	–0.13	**–0.83**	–0.02	–0.22
A lot depends on how smart on is in getting themes on the political agenda	0.19	–0.03	**–0.75**	0.05	–0.13
One has to persuade others of one's own position.	0.08	–0.11	**–0.73**	0.07	–0.11
The action takes into account that health education is the best method to change people's behavior	0.11	0.02	–0.04	**0.84**	–0.02
The action takes into account that health is the outcome of a healthy lifestyle	0.10	–0.11	–0.12	**0.79**	–0.12
The action takes into account the effect of deterrent images to illustrate health hazards to the population	0.11	0.07	0.07	**0.59**	–0.25
The action takes into account insights of political and administrative sciences	0.32	–0.08	–0.10	0.16	**–0.83**
The action takes into account that behavior modification requires the modification of settings	0.17	–0.13	–0.14	0.14	**–0.73**
The action takes into account professional approaches to public relations	0.35	–0.18	–0.22	0.04	**–0.67**

Extraction method: principal component analysis. Rotation method: oblimin with Kaiser normalization. Loadings above 0.5 are highlighted by bold format. English translations of originally German items are shown

to policy impact, and to identify those patterns of social strategies and policy opportunities under which research utilization would make a maximal difference for policy impact.

Results

Research utilization across policies and nations

First, a descriptive analysis of research utilization across the four policies was conducted. As Figure 2 (a) shows, 11% of the policymakers predominantly involved in early detection of breast cancer and 13% of those in smoking prevention reported low or no research utilization. In contrast, respective rates among policymakers involved in physical activity promotion or creation of health-promoting conditions are considerably higher at 35% and 22%, respectively. These differences are essentially reversed when comparing within policies the rates of policymakers who report "high" utilization: 26% and 33% for physical activity promotion and creating healthy conditions, respectively, while being in excess of 40% for the other two policies. In sum, in the breast cancer- and the smoking-policy utilization is highest, while especially physical activity promotion falls behind in this regard.

As for cross-national differences, an analogous analysis displayed in Figure 2 (b) reveals that health promotion policymakers are most strongly utilizing public health research in Spain and Switzerland, followed by Germany, Belgium, The Netherlands, and Finland.

A subsequent multiple multinomial logistic regression analysis with policies (reference: breast cancer early detection) and nations (reference: Spain) as predictors and the trichotom research utilization index as criterion (reference category: "no or low") reveals that variation across policies is larger and more consistent than across nations. In particular, policymakers involved either in creating healthy conditions or

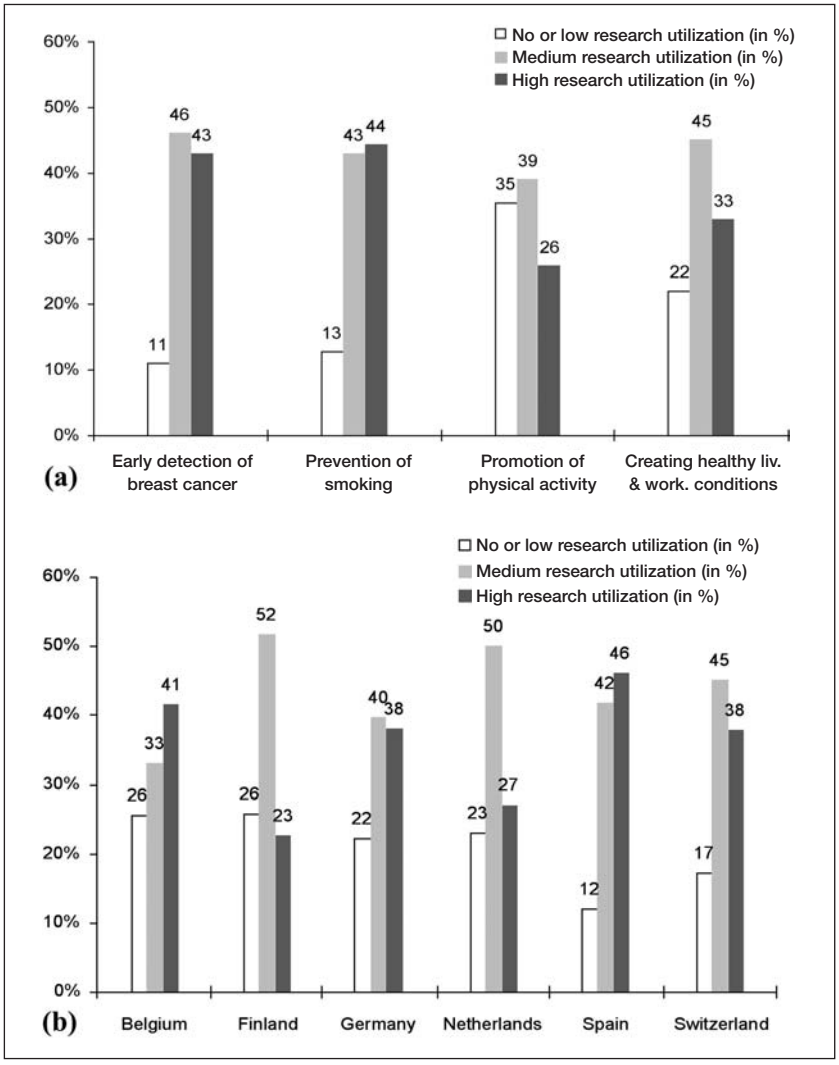

Figure 2 Research utilization across (a) policies and (b) nations

promoting physical activity are significantly less likely to score "high" (OR = 0.37, $p = 0.008$, and 0.16, $p < 0.001$, respectively) or "medium" in research utilization (OR = 0.47, $p = 0.039$, and 0.24, $p < 0.001$) than policymakers involved in the early detection of breast cancer (see Tab. 4). In contrast, while the Finnish and Dutch policymakers are significantly less likely than their Spanish counterparts to highly utilize research (OR = 0.28, $p = 0.008$, and 0.32, $p = 0.01$), these differences are insignificant for the odds of scoring "medium" (here, only the Belgians significantly differ from the Spaniards; OR = 0.37, $p = 0.03$). In sum, mutually adjusting for the factors "policy" and "nation" does not considerably change the inferences from the prior descriptive analysis.

Additionally, utilization was checked for variations along the dimensions "national-state-local level" and "public-private background". As it were, regarding the latter no significant differences were found; in contrast, the odds of policymakers on local levels to report *no* research utilization were 1.8 times higher than of those working on the national or state level (95% CI: 1.2–2.6). The reasons for these differences are not clear; possible explanations include greater need for information, more implicit use of research, or a more "executive" perspective on the local level.

Policy impact regressed on research utilization, social strategies, and political will/policy opportunities

To answer the main research question (i.e., under which specific conditions research utilization is positively associated with policy impact), both for policy output and outcome a set of multiple binary logistic regression analyses was conducted. These aimed to determine if research utilization, social strategies and political will make unique contributions to policy impact, and if the latter two modify the effect of the former.

Table 4 Research utilization (trichotomized index: "no or low" [reference], "medium", "high") regressed on policies and nations (dummy-coded, reference categories: "breast cancer detection" and "Spain", respectively)

Extent of research utilization		OR	95 % CI	
			Lower bound	Upper bound
"High" (vs "no or law")	Creating healthy conditions	0.37	0.18	0.78
	Physical activity promotion	0.16	0.08	0.34
	Smoking prevention	0.91	0.42	1.98
	Breast cancer detection (= reference)	1.00		
	Germany	0.74	0.31	1.78
	Belgium	0.43	0.18	1.05
	Switzerland	0.88	0.38	2.03
	Finland	0.28	0.11	0.71
	Netherlands	0.32	0.14	0.77
	Spain (= reference)	1.00		
"Medium" (vs "no or low")	Creating healthy conditions	0.47	0.23	0.96
	Physical activity promotion	0.24	0.12	0.49
	Smoking prevention	0.85	0.39	1.83
	Breast cancer detection (= reference)	1.00		
	Germany	0.77	0.32	1.84
	Belgium	0.37	0.15	0.91
	Switzerland	1.05	0.46	2.41
	Finland	0.73	0.31	1.74
	Netherlands	0.63	0.27	1.45
	Spain (= reference)	1.00		

As for the results, it should first be noted that the dummy-coded "nation"-factor with Germany as reference category without exception rendered odds ratios lower than 1 for policy output (see Tab. 5a). This indicates that German health promotion policymakers report more program implementation than their counterparts; statistically, differences are significant for Spain (OR = 0.35, $p = 0.001$), Finland (OR = 0.46, $p = 0.021$), and Belgium (OR = 0.32, $p = 0.001$). In contrast, Germany fares worse than most other countries (except Belgium) with regard to the outcome of policies: the odds for Swiss policymakers to report a high policy outcome are 2.56 times higher than for Germans ($p = 0.001$), for the Spanish 2.4 times higher ($p = 0.008$), and for the Finnish more than 3 times higher ($p < 0.001$; see Tab. 5b).

Second, the analysis across the four policies reveals that compared to the early detection of breast cancer, the other policies are characterized by higher odds of strong output (with marginal significance only for smoking prevention [OR 1.63, $p = 0.064$]). In contrast, the analogous comparisons for policy outcome point in the opposite direction: policymakers involved in smoking prevention, physical activity promotion, or the creation of healthy conditions have lower odds of achieving a high outcome than those working in breast cancer early detection (ORs = 0.40, 0.50 and 0.40, with $p = 0.001$, $p = 0.009$ and $p < 0.001$, respectively).

Turning to the three hypothesized policy determinants i.e., research utilization, social strategies, and political will, the analyses show that the latter has the by far strongest effect both on policy output (OR = 2.57, $p < 0.001$) and outcome (OR = 2.48, $p < 0.001$). In other words, the odds of reporting a favorable impact of one's health promotion policy are about two and a half times higher for policymakers working in an environment supportive of the policy than under conditions of poor opportunities. Moreover, while pursuing clear-defined social strategies makes rather modest differences (OR = 1.47, $p = 0.036$, and 1.49, $p < 0.027$, respectively), a high degree of utilization relates inconsistently to the two impact dimensions: namely, positively with output (OR = 1.80, $p = 0.009$), but not substantially with outcome (OR = 1.18, $p = 0.463$).

These results, however, while isolating the specific contributions of the hypothesized policy determinants, do not inform about the hypothesized specific effects of research utilization under conditions of favorable vs poor political will and strong vs little social strategies. Thus, interactions terms of the three components were fitted into the regression models. Contrary to expectation, the three-way interactions was nowhere near significance (for output: OR = 0.54, $p = 0.536$; for outcome: 0.80, $p = 0.815$ [both not shown in the table]), thus failing to provide evidence for the notion that social strategies and political will jointly modify the effect of utilization. However, both for output and outcome the interaction of utilization with policy opportunities emerged to be significant (at least when using the "$p < 0.10$"-criterion frequently recommended for interaction terms: OR = 0.25 and 0.37, respectively).

To disentangle these effects, the odds ratios for research utilization from the full models (i.e., those with all interactions terms) were specified for each combination of social strategies and political will. As Figures 3 (a) + (b) show, the odds for

Table 5a Policy output regressed on nation, policy, and determinants[15]

	OR	95 % CI	
		Lower bound	Upper bound
Germany (= reference)	1.00		
Belgium	0.32	0.17	0.61
Switzerland	0.86	0.48	1.55
Finland	0.46	0.24	0.89
Netherlands	0.84	0.44	1.61
Spain	0.35	0.18	0.67
Breast cancer detection (= reference)	1.00		
Smoking prevention	1.63	0.97	2.73
Physical activity promotion	2.87	1.65	4.99
Creating healthy conditions	2.46	1.45	4.18
Research utilization			
"no or low" (= reference)	1.00		
"high or medium"	1.80	1.16	2.80
Political will in terms of opportunities			
"poor" (= reference)	1.00		
"good"	2.57	1.77	3.74
Social strategies			
"little" (= reference)	1.00		
"strong"	1.47	1.03	2.11
Constant	0.64		

Table 5b Policy outcome regressed on nation, policy, and determinants[16]

	OR	95 % CI	
		Lower bound	Upper bound
Germany (= reference)	1.00		
Belgium	0.61	0.30	1.24
Switzerland	2.56	1.48	4.44
Finland	3.11	1.66	5.82
Netherlands	1.33	0.72	2.44
Spain	2.40	1.26	4.57
Breast cancer detection (= reference)	1.00		
Smoking prevention	0.40	0.24	0.68
Physical activity promotion	0.50	0.30	0.84
Creating healthy conditions	0.40	0.24	0.67
Research utilization			
"no or low" (= reference)	1.00		
"high or medium"	1.18	0.76	1.85
Political will in terms of opportunities			
"poor" (= reference)	1.00		
"good"	2.48	1.76	3.51
Social strategies			
"little" (= reference)	1.00		
"strong"	1.49	1.05	2.13
Constant	0.29		

high policy output and outcome are significantly higher for research utilizing policymakers compared to those who report no or low utilization only *if political will is lacking*. In other words, for both impact dimensions, research utilization has no significant effects if policy opportunities are favorable. Moreover, this dependence on research utilization holds irrespectively of social strategies for policy output (OR = 2.6 and 2.4), whereas for policy outcome it holds only when strong social strategies prevail (OR = 3.2; this variability in findings does not, however, reflect a three-way interaction, and thus may be rather coincidental).

Discussion

Referring to two theoretical models of health promotion policy determinants (Richmond & Kotelchuck 1983; Rütten et al. 2000; 2003a), this paper hypothesized that the utilization of public health research is only (or most strongly) associated with policy impact when both strong social strategies *and* the political will to support a given policy (i.e., favorable policy opportunities) are present. To test this assumption, data were analyzed from a policymaker survey across four prevention and health promotion policies and six European countries. The survey assessed policymakers' research utilization, social strategies, and political will in terms of opportunities through distinct and reasonably reliable scales.

The evidence emerging from the analysis, however, indicates that the hypothesis has to be rejected or, at any rate, revised. As it were, research utilization is positively associated with policy output and outcome only in case of *poor* political will. Also, these positive effects were largely independent of social strategies (which themselves are significantly associated with policy impact, but less so than political will). In sum, favorable political will in terms of good policy opportunities seems to correlate strongest with high health promotion policy impact. At the same time, the former precludes a positive association of research utilization with impact, whilst in its absence this association turns positive.

Furthermore, analysis shows that while cross-national differences in research utilization are limited, it is significantly higher in policies with a pathogenic (vs salutogenic) focus. This, along with the finding that policymakers involved in breast cancer early detection have significantly higher odds to report good outcomes than those working in the other policies, is consistent with former analyses in MAREPS. These have shown that the breast cancer-policy has the most concrete goals and the most resources (i.e., finances and personnel; see Rütten et al. 2000). Possibly, all this reflects the comparably firm integration of this policy in health care which – in contrast to health promotion – receives the lion's share of total expenditures on health in many countries.

[15] From multiple logistic models *not* incl. interactions between determinants.

[16] From multiple logistic models *not* incl. interactions between determinants.

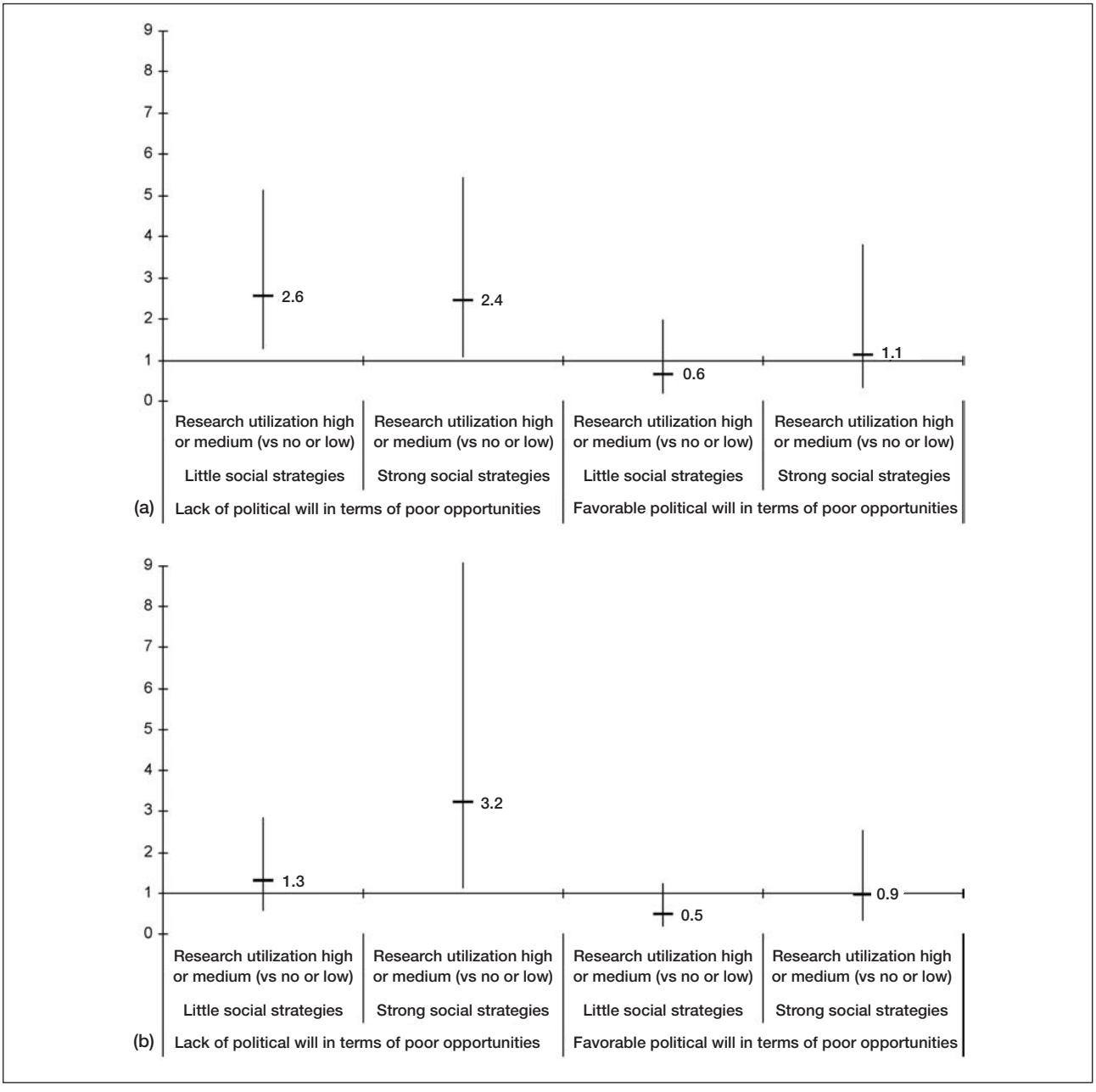

Figure 3 Odds ratios for (a) high vs low policy output and (b) high vs low policy outcome, both as dependent on research utilization, under different patterns of social strategies and political will in terms of policy opportunities (confidence intervals: 95%)[17]

However, before turning to conclusions and implications flowing from the present analysis, some cautionary notes should be made on methodical limitations of this study. First, by using a policymaker survey, it did rely on a methodological individualism-approach. Thus it assumed that policies as essentially collective structures that can be studied by use of the views of individual policymakers, and that policymakers as sources of policy analysis are not merely objects of study but expert witnesses to policy processes. The latter assumption was addressed by strict implementation of a thorough sampling frame. The former certainly represents all but one approach to policy analysis, which should be complemented by other data sources in future studies.

Second, the validity of causal pathways underlying the present approach (and chosen mainly for reasons of theoretical plausibility) cannot be affirmed by a cross-sectional design.

[17] Estimates are from multiple logistic models regressing each impact dimension on nation, policy, the three policy determinants, and the latter's interactions (i.e., three 2- and one 3-way), respectively.

To that end longitudinal studies confirming such pathways will be necessary. For instance, forces such as political will, which obviously (co-)determine policy impact, may themselves be affected by positive results of health promotion efforts (e.g., in other countries, or of model projects).

Lastly, indices of "political will" in terms of policy opportunities and "social strategies", as they were used here, implied (mainly for simplicity and interpretability) that the more specific scales used in this regard be essentially equivalent. As noted before, the rationale behind this was to compromise between the breadth of Richmond an Kotelchuck's concepts and the more multipart character of Rütten et al.'s framework. At the same time, specific interactions with research utilization or among the sub-dimensions of social strategy or political will are still conceivable, and may deserve further scrutiny – albeit with samples larger than the one available here.

Despite these limitations, the present analysis in our view allows for a number of – even if tentative – conclusions and implications:

(1) Irrespective of the utilization of public health research in health promotion policy, *political will (i. e., favorable policy opportunities) seems to be one of the most crucial determinants of policy impact*. This is in line not only with theoretical considerations, but has also been demonstrated for other emerging fields of public health practice (e.g., see Schneider Jamner 2000, for wellness promotion).

(2) The association of research utilization with policy impact is obviously restricted to situations of unfavorable political will for the policy in question. In other words, the present data suggest that research utilization, rather than being dependent on good opportunities, may partially compensate for a lack in political will. Combined with the great importance of political will as a single determinant of policy impact, this indicates at least two *future research directions*: (a) Under which conditions can research utilization contribute to policy impact even in case of favorable political will? For example, research *quality* (not assessed in the present study) may facilitate the effect of utilization on policy impact, regardless of other factors; normatively, this question is important because in optimal conditions, policies would work based *equally* on research and political will (and, not to forget, social strategies). (b) How does political will emerge, and what factors influence relevant policy opportunities? Again, it may be that research quality influences political will; regarding other causes, case studies using qualitative methods might usefully supplement surveys such as that presented here. They could, among other things, identify to what extent policymaking is context-specific (e.g., with regard to economic and party-political circumstances).[18]

(3) For health promotion policy and efforts to enhance its impact, the present findings indicate that *too simplistic applications of "research utilization"-theory are probably problematic*. That is, such efforts should take into account the relative importance of policy impact determinants as well as their interactions. Specifically, researchers should advocate their findings to policymakers especially in case policy opportunities for the recommended actions are rather scanty. For policymakers, one implication might be that if they pursue a controversial policy issue, genuine utilization of research could be particularly compelling and, combined with clear-cut social strategies, make a crucial difference with regard to their policy's outcome.

(4) A crucial issue for the future of public health research itself is that it is not only utilized, but to a large part commissioned and funded by one and the same community of policymakers. Put differently, which research results are available for utilization is (at least partly) subject to decisions of policymakers, and thus their political will. For instance, the high utilization of research in the policies with a pathogenic focus may not reflect relevance to health promotion or research quality, but rather agendas and ultimately funding decisions of policymakers. More research findings eventually resulting from this may then (a) provide more evidence and publications which (b) may lead to a greater understanding of respective issues, which finally (c) may support political will – possibly, however, for politically likable policies only. One implication of this potential "vicious circle" is that *public health research should be policy-oriented* – both to avoid the doctrine of pure, basic and fundamental research in the privacy of academic ivory towers, and to truly be a factor in the science *and* art of health promotion. At the same time, it should decidedly defend its *independence* of political and other external pressure, i.e., endorse scientific rationality to answer relevant questions by replicable and transparent methods – unprejudiced by what it may ultimately reveal.

(5) Finally, models of health promotion policy determinants such as those suggested here seem to be yet another promising "approach to the science/policy relationship" (Berridge & Stanton 1999). Most importantly, they provide for empirically oriented frameworks to test pathways from public health research to health promotion policy. In addition, further development of such models could examine utilization not only of scientific, but also of "lay knowledge" (Bryant 2002), which likewise is of great importance to public health promotion as a field basically relying on the co-production of health by policy systems and populations.

[18] For an overview of the European health promotion context before the MAREPS survey, see Rütten et al. (2000).

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Zusammenfassung

Die Verwendung von Forschungsergebnissen und der Impact von Gesundheitsförderungspolitik

Fragestellung: In der Gesundheitsförderung sind die Bedingungen, unter denen die Verwendung von Forschungsergebnissen zu einem Impact entsprechender Politik führt, ein wichtiges Thema. Die vorliegende Analyse überprüft die Annahme, dass Verwendung nur dann positiv mit Impact assoziiert ist, wenn gleichzeitig politischer Wille (im Sinne von Gelegenheiten für politisches Handeln) *und* soziale Strategien (in Intervention und Implementation) gegeben sind.

Methoden: In sechs europäischen Ländern wurde eine Befragung von 719 Policymakern in vier Politikfeldern durchgeführt. Die Analyse bezieht sich auf den Impact von Gesundheitsförderungspolitik (Output, also Programmimplementation, und Outcome, also Verhaltenseffekte) sowie seine angenommenen Determinanten.

Ergebnisse: Regressionsanalysen zeigen länderübergreifend nur geringe Unterschiede in der Verwendung von Public-Health-Forschungsergebnissen, gleichzeitig jedoch eine vergleichsweise starke Verwendung in Politikfeldern mit einem pathogenetischen Fokus. Ein Zusammenhang zwischen Verwendung und Impact zeigt sich nur dann, wenn politischer Wille fehlt; dabei ist dieser Effekt für Outcome tendenziell von sozialen Strategien abhängig. Insgesamt ist der politische Wille die stärkste Determinante des Impact von Gesundheitsförderungspolitik.

Schlussfolgerungen: Die Verwendung von Forschungsergebnissen fördert den Impact von Gesundheitsförderungspolitik nicht, wenn politischer Wille vorhanden ist, sondern wenn dieser fehlt. Politischer Wille selbst ist dabei *die* entscheidende Determinante von Impact. Zusammenfassend trägt diese Studie vor allem dadurch zur Verwendungsforschung bei, indem sie zeigt, dass die Verwendung von Forschungsergebnissen fehlenden politischen Willen teilweise kompensieren kann.

Résumé

L'utilisation des recherches et impact sur la politique de promotion de la santé

Objectifs: Les conditions selon lesquelles l'utilisation des résultats de la recherche a un impact sur la politique de santé est un sujet important. Notre analyse teste l'hypothèse selon laquelle l'utilisation est positivement associée à l'impact politique, mais seulement s'il y a une volonté politique (c'est-à-dire des opportunités politiques) *et* si les stratégies sociales (d'intervention et de mise en place) sont fortes.

Méthodes: Une enquête de 719 politiciens impliqués dans quatre domaines politiques a été menée dans six pays européens. L'impact politique (output, c'est-à-dire mise en place du programme et outcome, c'est-à-dire effet sur les comportements) ainsi que leurs déterminants possibles sont analysés.

Résultats: Les analyses de régression révèlent que les différences internationales d'utilisation des résultats de la recherche sont faibles, mais montrent une forte utilisation relative à des politiques portant sur des maladies. Une association entre utilisation et impact n'apparaît que lorsqu'il n'y a pas de volonté politique. L'effet dépend aussi des stratégies sociales. La volonté politique est le déterminant le plus important de l'impact.

Conclusions: L'utilisation des résultats de recherche n'est utile à la promotion de la santé que s'il n'y a pas de volonté politique. La volonté politique est le déterminant crucial de l'impact.

L'étude contribue au domaine de l'utilisation des résultats de recherche en montrant que l'utilisation peut partiellement compenser le manque de volonté politique.

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Address for correspondence

Dr. Thomas von Lengerke
GSF-National Research Center
for Environment and Health
P.O. Box 1129
D-85758 Neuherberg
Tel.: +49 89 3187-4161
Fax: +49 89 3187 3375
e-mail: lengerke@gsf.de