

# Bridging the gap between doctors and policymakers

## The use of scientific knowledge in local school health care policy in The Netherlands

Wim H.M. Gorissen<sup>1</sup>, Tom W.J. Schulpen<sup>2</sup>, Antoon H.M. Kerkhoff<sup>3</sup>, Oscar van Heffen<sup>3</sup>

**Background:** The decentralization of school health care policy in The Netherlands was followed by an increase in diversity, which was most often not evidence-based. This study aims to clarify the use of scientific knowledge in school health care policy-making processes: multi-actor processes in networks, trying to solve certain problems. **Methods:** Case-study design in four Municipal Health Service regions, using documents and half-structured interviews as data sources. **Results:** Scientific knowledge is used by only 42% of the actors in 58% of decision-making rounds in policy-making processes. 'Recent' regional data on health indicators are used more often than 'established' (inter)national knowledge of theoretical models. Mainly school health professionals use knowledge as a resource to influence the policy process. Other actors (e.g. managers and municipalities) use formal power, money or 'initiative' as their main resources. Powerful actors put forward less scientific knowledge than actors in dependent positions. Individual actors with a combined scientific and political frame of reference put forward knowledge most frequently, especially in complex networks with many actors, more than one powerful actor, more than one arena, more than one dominant resource and more than one dominant frame of reference. **Conclusion:** The use of scientific knowledge in school health care policy-making processes can and must be improved. Liaison officers can bridge the gap between doctors and policymakers, especially in complex policy networks. They combine a scientific and a political frame of reference and act upon scientific knowledge as a resource in their efforts to influence the policy-making process.

**Keywords:** policy networks, resource dependence approach, school health care, use of knowledge

School Health Care (SHC) in The Netherlands is carried out by Municipal Health Services (MHSs) and is subject to municipal politics.<sup>1</sup> Since the beginning of the 20th century, a growing number of school doctors has been employed by municipalities.<sup>2</sup> After the Second World War, state subsidies promoted the development of national school health services and more or less imposed standardization of activities, with periodic school health examinations as their main activity. The Collective Prevention Act (1990) gave more freedom to municipalities to adapt SHC to their needs. This resulted in divergent policies in SHC practice between MHS regions. One MHS completely abandoned the periodic school health examinations, replacing them with school-oriented health education activities, while another still examined all children four times during their school career.

This increasing diversity was considered undesirable in view of the development of evidence-based SHC, in which regional aims and targets as well as intervention instruments should be based on the best available scientific knowledge.<sup>3–5</sup> Instead of

scientific knowledge, a diversity of local interests appeared to determine the policy-making processes. SHC professionals appeared to have a poor understanding of how municipal policies are made. Therefore they seemed unable to play a part as actors in these policy-making processes and were not able to help policy makers to find a balance and cooperation between local interests and scientific knowledge.

This study aims to clarify the limited use of scientific knowledge in SHC policy-making processes and the poorly understood relationship between research and policy.<sup>6</sup>

### Theoretical framework

A policy-making process can be seen as problem solving. In general it is a process consisting of rounds in which divergent actors are involved with mutual power-dependency relations, usually having different frames of reference and using different resources. It is characterized by a sequence of actions with a recognizable course. It is more a social (political) process, than a rational analytical process.<sup>7,8</sup>

Policy-making processes are realized in networks of actors. Actors are individuals (e.g. a school nurse), groups of individuals (e.g. a group of school doctors) or organizations (e.g. a MHS), who interact with each other,<sup>7</sup> while trying to influence the outcome of the policy-making process.

The social systems in which actors interact are called policy networks.<sup>9–11</sup> Within these policy networks, sub-networks or 'arenas' are recognised.<sup>12,13</sup> Policy-making processes can be segmented into decision-making rounds: the period between two crucial decisions.<sup>12,14,15</sup>

1 Municipal Health Service Utrecht, Department of Child and Adolescent Health, Utrecht, The Netherlands

2 University Medical Centre, Department of Social Paediatrics, Utrecht, The Netherlands

3 University of Twente, Faculty of Public Administration and Public Policy, Enschede, The Netherlands

**Correspondence:** Wim H.M. Gorissen MD, PhD, Koeweitdreef 14, 3564 HC Utrecht, The Netherlands, tel. +31 20 5198799, fax +31 20 5198800, e-mail: w.gorissen@demeren.amc.nl

In their efforts to influence the outcome of the policy-making process, actors use resources such as formal authority, money, workforce, expertise/knowledge and access to information (see table 2).<sup>16–18</sup> Power-dependency relations between actors are based on the control of one actor over resources on which other actors depend.<sup>18–20</sup>

Frames of reference are the 'spectacles' through which actors look at the world. For the purpose of this study, they are defined as scientific, economic, juridical and political.<sup>21,22</sup> The scientific frame considers scientifically established knowledge as crucial to the rational solution of policy problems. The political frame of reference emphasizes that the solution of problems is a matter of yielding power. The juridical frame focuses on the necessity that policies safeguard the 'trust in justice' and the enforcement of juridical rules. The economical frame stresses that policies primarily distribute the limited amount of resources on which a community relies.

The definition of 'scientific knowledge' is much debated. In the public health sector, empirical knowledge and 'evidence-based healthcare' are considered to be of particular importance.<sup>5</sup> Therefore (scientific) knowledge is, for the purpose of this study, defined as: insights from research that, by means of collection and analysis of data, contribute to the understanding of (i) the health of children, (ii) its determinants and (iii) instruments to improve it.<sup>23</sup> It is distinguished into three interrelated antonyms (see table 1):

- (epidemiological) fact knowledge versus empirically grounded theoretical-model knowledge on causalities;
- 'established' knowledge from the 'body of knowledge' of a field of science versus 'recent', possibly not yet generally accepted, knowledge;
- regionally bound knowledge versus knowledge from the (inter)national literature.

These antonyms can, on a municipal level, be clustered as recent regional epidemiological fact knowledge versus established theoretical-model knowledge from the (inter)national literature.

The communication between the fields of research and policy is problematic. It is nevertheless of crucial importance to an evidence-based SHC.<sup>24–27</sup>

In this study we explore the relation between these variables. Our hypothesis is that the use of scientific knowledge in policy-making processes can be explained by the characteristics of actors and the networks in which they interact.

## Study design

The central research question of the study is therefore formulated as follows: Are the characteristics of actors, and networks in which they operate, related to scientific knowledge being put forward in policy-making processes in SHC in The Netherlands?

This central question is elaborated into three sub-questions, referring to:

- The type of knowledge used.
- The relation with the characteristics of the actors in a network.
- The relation with the characteristics of the networks in a decision-making round.

The case-study method is used to study these questions.<sup>28–30</sup> The research domain is limited to the SHC for 4–19-year-olds<sup>31,32</sup> in the last decade of the 20th century.<sup>1</sup> The cases (policy-making processes) are selected as the 'most different' policy subjects and MHS regions. The study is confined to five policy subjects:

**Table 1** Use of knowledge by actors (first column) and in decision-making rounds (second column; one or more indications of use of knowledge in an interview or a document)

Aspects of use of knowledge	Actors (n = 133)		Rounds (n = 52)	
	No.	%	No.	%
Type of knowledge				
(Epidemiological) fact knowledge	41	31%	28	49%
Knowledge of theoretical models	35	26%	21	37%
Degree of acceptance of knowledge				
Established knowledge	40	30%	16	28%
Recent knowledge	44	33%	29	51%
Territoriality of the knowledge				
Regionally bound knowledge	37	28%	28	49%
(Inter)national knowledge	35	29%	22	39%
Total use of knowledge	56	42%	33	58%

**Table 2** Prevalence of actor-characteristics in actors (first column) and the relation of the actor-characteristics with the use of knowledge (second column; chi-square tests, Fisher's exact tests for small numbers, or analysis of variance for continuous dependent variable; n = 133)

Resources	Prevalence in actors (%)	Relation to use of knowledge
Formal authority	54	++
Money	35	n.s.
Workforce	84	+
Other physical resources	25	++
Appeal to legislation	13	++
Access to target population	15	n.s.
Relations	41	n.s.
Experience	22	n.s.
Expertise	71	++
Personal skills	27	+++
Access to information	53	+++
Reputation	20	+++
Power rate	(continuous)	–
Frames of reference:		
(Medical) scientific	53	+++
Economic	31	+
Juridical	5	n.s.
Political	50	+
Combined scientific and political	38	+++

+, ++, +++:  $P < 0.10$ ,  $P < 0.05$ ,  $P < 0.01$ , respectively, all with a positive association.

–,  $P < 0.05$ , with a negative association.

n.s., not significant.

1. General SHC policy: the main choices between an individual or a group approach; orientation on all children or a risk-oriented approach and focus on somatic or psychosocial problems.
2. Health-promoting schools: a systematic approach of health promoting activities in schools.
3. Pedagogical support to parents: courses for parents with minor educational problems.
4. Community networks youthcare: participation in neighbourhood-based networks of various professionals working with multi-problem families.
5. Bed-wetting counselling: ambulatory dry-bed training.

Policy-making processes have been studied in two urban (Utrecht, The Hague) and two rural MHS regions (Groningen, North-Limburg) with different general SHC policies.

In total we reconstructed 20 policy-making processes in these four regions and on the five policy subjects mentioned. In doing so, we collected 166 text sources from MHS archives (policy papers, meeting minutes, correspondence etc.) and conducted 77 semi-structured interviews with regional actors. Most text sources and interviews referred to more than one policy-making process.

The computer program Kwalitan, version 4.0, was used to support qualitative analyses.<sup>33</sup> The computer program SPSS, version 10.0, was used to perform quantitative analyses.<sup>34</sup>

### Operationalization

The use of knowledge is made operational into indicators for the use of knowledge at the actor-level (which of the three antonyms of knowledge previously defined does an actor use), and indicators for the use of knowledge at the network level (which of the antonyms are used in a decision-making round). The analysis at the network level can be considered as an 'ecological' analysis.<sup>35</sup>

All theoretical concepts are made operational into indicators at these two levels of analysis: actor characteristics and network characteristics.

Three categories of actors are distinguished: (i) SHC internal actors (e.g. SHC managers and school doctors), (ii) other MHS internal actors (e.g. director of MHS and health promotion professionals) and (iii) MHS external actors [e.g. municipalities (a collective noun for mayor, aldermen and city council), municipal officials, schools and regional mental health services]. Further actor characteristics are:

- the use of resources,
- power rates (the perceived relative power of an actor),
- frames of reference.

In the four MHS regions 133 actors were identified. The values of the characteristics of these actors are measured by 'counting' the number of text sources and interviews in which 'clues' are found, for example the use of a resource or the existence of a power-dependency relation between two actors. A 'clue' is a text fragment or a statement derived from an interview, from which it can be concluded that, for example, the actor 'SHC manager' did use the resource 'formal authority' to force school doctors to follow a guideline (resource use by actor), or that a school nurse asked approval of the school doctor to start an ambulatory dry-bed training (power-dependency relation between two actors). Two researchers coded the clues independently; differences in coding were resolved in discussion.

The network characteristics are:

- prominence of actors in the network and their grouping in arenas (SHC internal, MHS internal and MHS external),

- dominant resources (used by most prominent actors) in the network,
- type and number of powerful actors (with high power rates),
- dominant frames of reference (present in most prominent actors) in the network.

In the 20 SHC policy-making processes, 52 decision-making rounds were recognised (from one up to five rounds in one process). The values to the network characteristics of these rounds are judged using a qualitative analysis of the reconstructions of the policy-making processes in combination with the results of the analysis of the actor characteristics ('ecological' analysis). This combination was necessary, because many of the text sources and interviews did not refer to only one round of one policy-making process.

For example, school doctors were prominent and powerful actors in the total policy-making process on bed-wetting counselling. In the first round the school doctors prevented the school nurses from starting dry-bed training. In the second round, however, the school nurses negotiated the start of a project with the new SHC manager, without having to deliberate with the school doctors, who protested in vain. So in the first round the school doctors are coded as prominent and powerful, but in the second round only as prominent actors. Power positions apparently changed between the first and second round.

Two data-matrices are set up: one with the actor characteristics of and the use of knowledge by the 133 actors and a second with the network characteristics of and the use of knowledge in the 52 decision-making rounds. The associations between the variables in each data-matrix are analysed using chi-square ( $\chi^2$ ) tests, Fisher's exact tests and linear and logistic regression analyses.

## Results

### Use of knowledge

At least one indication of any type of knowledge being put forward is found in 42% of the actors (predominantly SHC internal actors and health promotion professionals; mean number of indications in 'users' of knowledge: 3.89) and in 58% of the decision-making rounds in policy-making processes (see table 1). 'Recent' knowledge (51%), (epidemiological) fact knowledge (49%) and regionally bound knowledge (49%) are used in more rounds than 'established' knowledge (28%), theoretical-models knowledge (37%) or (inter)national knowledge (39%). To illustrate this tendency to use recent regional epidemiological fact knowledge in preference to established international theoretical-models knowledge, we cite a municipal working party on health policy, chaired by an MHS employee, which used recent epidemiological data, collected by the same MHS, for prioritizing health fields.

### Actor characteristics

Actors predominantly use the resources: workforce, expertise, formal authority and access to information (see table 2, first column). SHC internal actors use a wider range of different resources than other actors: formal authority, workforce, experience, expertise, access to information and reputation. Other MHS internal actors use mainly formal authority, personal skills (e.g. psychological skills or eloquence) and access to information. MHS external actors use relatively often the resources of money and access to target population (e.g. children in schools).

MHS directors and SHC managers are powerful within their organization or department, but are dependent when they go outside. SHC internal actors are less powerful than other MHS internal actors and some MHS external actors: political actors

and municipal officials. There is a relation between the use of resources and the power rate. Actors who are considered powerful use the resources of formal authority and money more often. Actors who are considered dependent, mainly use the resources of workforce, expertise, access to information and 'other physical resources' (e.g. the availability of a building in which they work).

The scientific and political frames of reference are more widespread than the economic one. A juridical frame of reference is practically absent. In SHC internal actors, a scientific frame of reference is found relatively often (83%), as well as a combination of frames of reference (55%). Other MHS internal actors (e.g. MHS directors) have a political frame of reference relatively often. Actors with more frames of reference use more different resources (linear regression,  $P < 0.01$ ).

#### Use of knowledge related to actor characteristics

Knowledge is put forward more often by actors who use the resources: formal authority (50% versus 33%;  $\chi^2$  test:  $P < 0.05$ ), access to information (56% versus 26%;  $P < 0.01$ ) and expertise (48% versus 28%;  $P < 0.05$ ; see also table 2, last column). Actors who use more different resources also use more knowledge (ANOVA:  $P < 0.01$ ). The other significant relations are less relevant because of the lower prevalence of the resources (<33%). Due to the method used to judge the value of the indicators (one or more clues in text sources or interviews), the analysis is liable to overestimate relations.

Powerful actors use less knowledge than dependent actors (linear regression;  $P < 0.05$ ).

The combination of a scientific and a political frame of reference in one single actor is related to a much higher level of use of knowledge (76%) than the presence of either one (38% and 31%) or none of these frames (18%;  $\chi^2$  test:  $P < 0.01$ ; see figure 1). Actors with these two frames of reference are therefore referred to as 'liaison officers'.

#### Network characteristics in decision-making rounds

As expected, SHC internal actors are prominent actors in most rounds: SHC managers (in 86% of the 52 rounds), school doctors (77%) and school nurses (72%). Health promotion professionals (49%) and MHS directors (42%) are also prominent in many rounds. Most rounds consist of one arena, 39% have two arenas.

The resources: workforce, formal authority and expertise, are dominant in most decision-making rounds (see table 3, first column).

SHC managers (44%) and MHS directors (37%) are considered powerful in comparatively many rounds. Municipalities (25%), school doctors (19%) and health promotion professionals (16%) are considered powerful in fewer rounds. Municipalities are often powerful in one round in a policy-making process that consists of more rounds. SHC managers and MHS directors, on the other hand, are usually powerful in more rounds in one process. When municipalities are prominent actors, they are almost always powerful (in 14 out of 15 rounds in which they are prominent actors). This is in contrast to school nurses, who are often prominent, but almost never powerful actors (only in 3 out of 41 rounds in which they are prominent actors).

In almost all decision-making rounds the scientific frame of reference is dominant. The political and economical frames are dominant in fewer rounds, and usually in combination with a scientific frame.

Networks can be divided into simple and complex networks. Simple networks are characterized by few dominant resources and frames of reference, with one arena and one powerful actor. Complex networks have opposite characteristics: more dominant resources and frames of reference, two arenas and more than one powerful actor.

#### Use of knowledge related to network characteristics

The presence in the network of MHS directors or health promotion professionals, is related to more use of knowledge by (other) actors in the network ( $\chi^2$  test;  $P < 0.05$ ). The presence of more than one arena (usually an SHC internal arena and an SHC external arena) is also related to more use of knowledge ( $P < 0.05$ ; see table 3, last column). The presence of more dominant resources is related to more use of knowledge (linear regression;  $P < 0.05$ ).

In rounds in which SHC managers ( $\chi^2$  test;  $P < 0.01$ ) or MHS directors ( $P < 0.05$ ) are powerful, other actors often use knowledge. The presence in the network of more than one powerful actor is related to more use of knowledge (linear regression;  $P < 0.01$ ).

The dominant presence of a scientific as well as a political frame in one decision-making round is related to more use of all aspects of knowledge (67% versus 50% for total use of knowledge; not significant).

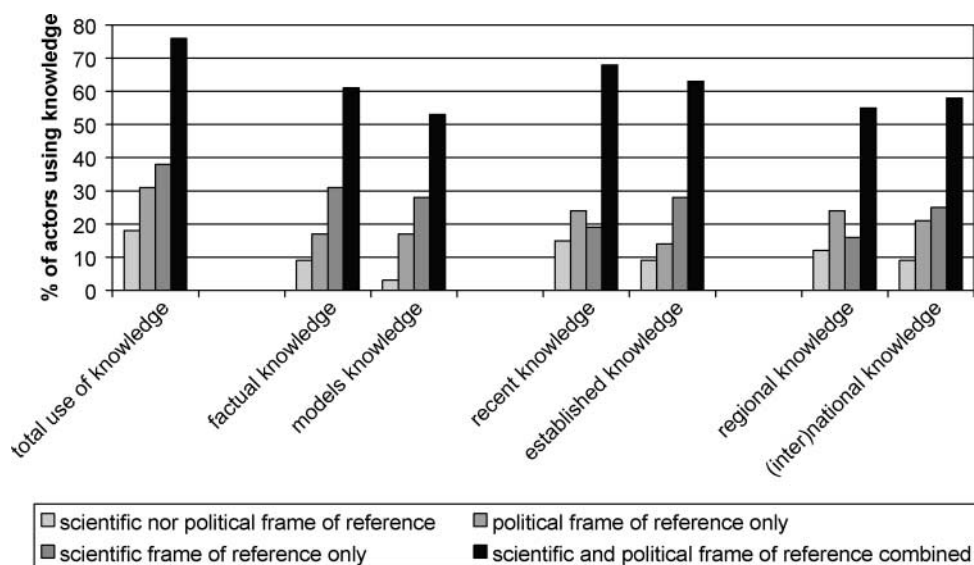


Figure 1 Combined frames of reference and use of knowledge by actors

**Table 3** Prevalence of network-characteristics in decision-making rounds (first column) and the relations of the network-characteristics with the use of knowledge (second column; chi-square tests, Fisher's exact tests for small numbers, or analysis of variance for continuous dependent variable;  $n = 52$ )

	Prevalence in rounds (%)	Relation to use of knowledge
More than one arena	39	++
Dominant resources:		
Formal authority	81	n.s.
Money	32	n.s.
Workforce	88	n.s.
Other physical resources	0	n.s.
Appeal to legislation	0	n.s.
Access to target population	7	n.s.
Relations	11	n.s.
Experience	5	n.s.
Expertise	74	n.s.
Personal skills	7	n.s.
Access to information	28	++
Reputation	2	n.s.
Three or more dominant resources	71	++
More than one powerful actor	60	–
Dominant frames of reference		
(Medical) scientific	96	n.s.
Economic	37	n.s.
Juridical	0	n.s.
Political	51	n.s.
More than one frame of reference	62	n.s.
Complexity of the network	(continuous)	++

++,  $P < 0.05$ , with a positive association.

–,  $P < 0.05$ , with a negative association.

n.s., not significant.

Generally speaking, a greater complexity of the network is related to more use of knowledge (linear regression;  $P < 0.05$ ).

This leads to the following answers to the research questions:

- In 42% of the actors and in 58% of the decision-making rounds in SHC policy-making processes, at least one indication is found for the use of scientific knowledge. Recent regional epidemiological fact knowledge is used more often than established (inter)national theoretical-models knowledge.
- MHS directors, SHC managers and other SHC internal actors use knowledge relatively often. MHS directors and SHC managers do so mainly in (for them) external arenas, where they are less powerful. The use of knowledge is minimal in powerful actors and extensive in liaison officers. These are the actors who combine a scientific and political

frame of reference and use a wider range of different resources.

- Complexity of a policy network (more dominant resources, more frames of reference, more arenas and more powerful actors) is related to more use of knowledge.

## Discussion

### Use of knowledge

The use of scientific knowledge in SHC policy-making processes is open to improvement. In a considerable number of the decision-making rounds (42%), no evidence was found for any use of scientific knowledge. Many actors (58%), even SHC internal actors, did not put forward scientific knowledge at all. Three possible causes for this finding are discussed: insufficient availability, insufficient accessibility or insufficient readiness to the use of knowledge.

### Availability and accessibility of knowledge

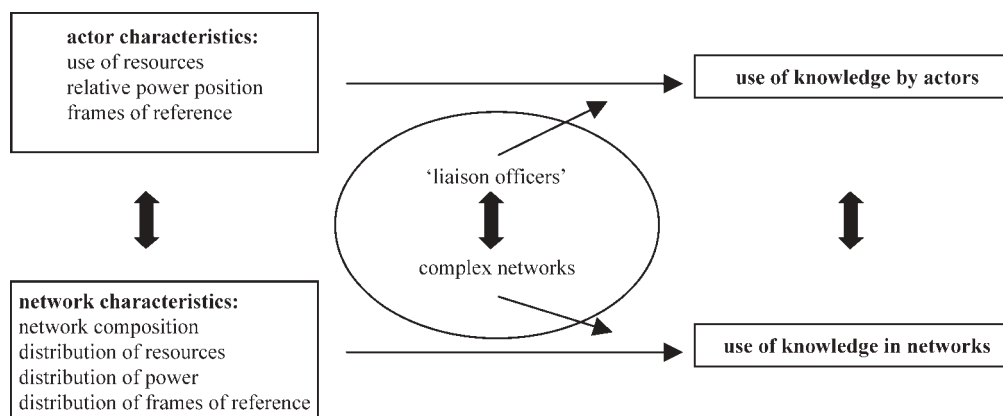
Insufficient availability of scientific knowledge is at least of some importance. A recent Dutch study on the availability of knowledge of the effects of SHC activities, supports this assumption.<sup>36</sup> The effectiveness of many SHC activities has never been studied properly; (systematic) reviews are scarce. To resolve this problem, co-operation between universities, national research institutes and regional MHSs is needed.

Insufficient accessibility to knowledge may partially explain the lagging behind of the use of established (inter)national knowledge of theoretical models, compared to the use of recent regional epidemiological facts, which are often produced by employees of the same MHSs in which they are also actors in the policy-making processes. This problem can partly be solved using modern information technology, e.g. by means of access to the internet.

It has to be mentioned that the finding that established international theoretical-models knowledge is used less, can be explained in part by professionals assuming they share this knowledge and therefore seeing no need in putting that forward. This assumption is consistent with the finding that SHC internal actors use less knowledge in SHC internal networks than in SHC external networks.

### Readiness to use knowledge

The presence of a combined scientific and political frame of reference, as well as the existence of complex networks, appears to increase the readiness to put forward scientific knowledge. This can be illustrated by the following. In a transition from an SHC internal to an SHC external arena, the SHC internal actors are confronted with relatively powerful actors. This 'confrontation' leads to a need to use a wider range of different resources for the SHC internal actors and probably therefore to more use of knowledge. Relatively powerful actors (like the SHC manager in an exclusively SHC internal arena) have little need to use other resources or scientific knowledge, besides the resources of money and formal authority. The use of knowledge seems to have to 'compete' with the mentioned resources, which are 'easy accessible' resources for powerful actors: using power is easier than arguing it out. When more powerful actors are present, they can rely less on their formal authority and money, but need to substantiate points of view with knowledge. An example is a SHC manager (power rate 0.60), who uses his own survey data to emphasize the importance of periodic health examinations when confronted with a critical city council (power rate 0.79). The presence of more than one powerful actor also encourages other actors to throw in their knowledge, because thus they are more likely to convince at least one powerful actor of their point



**Figure 2** The use of knowledge in policy-making networks

of view. The conclusion is that complexity of the network, in general, encourages the use of knowledge.

It appears that, particularly, actors who are able to link the scientific and political approaches, use knowledge in the complex networks mentioned. They are referred to as liaison officers: persons who are familiar with the nature of the research process, the professional process and the policy-making process and are therefore able to ‘translate’ questions and answers to and fro. They are the actors with a combined scientific and political frame of reference illustrated in figure 1. Better than other actors, they are able to realize the importance of bringing up the right knowledge at the right time in the right policy-making processes. Actors with a scientific frame of reference prefer the use of international theoretical-models knowledge; actors with a political frame of reference prefer the use of regional epidemiological fact knowledge. Even on this level the liaison officers appear to close a gap: we found that they use both types of knowledge more often. They seem more aware of the importance of combining both types of scientific knowledge to establish rational policies. They are also more likely to be able to put forward scientific knowledge adequately, because they have a better understanding of the policy-making process and the demands it imposes on actors who want to exert influence. Departments of SHC would do well, therefore, to see to it that they have liaison officers at their disposal. These liaison officers can regulate the communication and bridge the gap between professionals, managers, researchers and municipalities. Health promotion professionals and epidemiologists should likewise improve their liaison skills.

Other authors also concluded that the availability and accessibility of knowledge only, does not guarantee its use. Weiss describes frames of reference as ‘filters’, through which new information has to pass before it is admitted to a policy-maker’s ‘stock of knowledge’. Some of these filters are: the relevance of the knowledge to their work, the quality of the research, the plausibility of the results and the explicitness and feasibility of the recommendations. She also points out that knowledge is often not used by actors at the very moment it is presented to them. Not until a policy-maker encounters a problem does he consult his ‘stock of knowledge’.<sup>24,37</sup> Nutbeam argues that research is more likely to influence policy when it takes into account the experience of practitioners in delivering programmes, and of the public who are intended to benefit from the different types of public health interventions.<sup>38</sup> Elliot points to the informal use of knowledge and the importance of long-term relations between policy-makers and ‘trusted researchers’. To reach the status of trusted researcher, the researchers must have gained respect and trust; among other things by showing they understand how (in this case) the British National Health Service works.

She argues in favour of a ‘dialogical’ model of the use of knowledge, instead of the more popular ‘problem-solving’ model, which, in her opinion ‘only exists in the mind of researchers’.<sup>39</sup> Lomas and others also point to the differences in frame of reference between researchers and policy makers, and to the importance of responsive researchers and of ‘receptors for research’ in health departments, in creating points of exchange between these two worlds.<sup>40–43</sup>

## Conclusion

The interaction between an SHC internal and an SHC external arena with (other) powerful actors appears to call for knowledge to support points of view. This ‘confrontation’ is stronger when, apart from the distribution of power, different resources are also used and different frames of reference are present. Therefore, in complex networks the use of knowledge is encouraged.

The presence of liaison officers, who combine a scientific and a political frame of reference and therefore can act as a point of exchange between these worlds, appears to be a requirement for the effective and beneficial use of knowledge in policy-making processes. The need for liaison officers is even greater in complex networks. They must be found within the regular workforce of the public health sector. Policy-makers should actively become ‘receptors of research’ or employ such persons. This implies that school health professionals (e.g. school doctors, epidemiologists, health promotion professionals) and their managers need to acquire more understanding of the nature of the policy-making process in order to be able to play an effective liaison role in these processes. Only then can the gap between doctors, managers, researchers and (other) policy-makers be bridged and a more evidence-based SHC be achieved.

## Key points

- This study aims to clarify the use of scientific knowledge in school health care policy-making processes.
- Scientific knowledge is used by only 42% of the actors in 58% of decision-making rounds in policy-making processes.
- ‘Liaison officers’ combine a scientific and political frame of reference and use scientific knowledge to influence the policy-making process.
- Liaison officers can bridge the gap between doctors and policy-making, especially in complex policy networks.

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