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ORIGINAL ARTICLE

Use of evidence in local public health work in Denmark

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Abstract
Objective The aim was to investigate how and on which level evidence is used in policy processes related to local public health work in Denmark.
Method A survey was carried out in municipalities in Denmark ($n = 98$, response rate 81%) with health managers as respondents.
Results A large variation in understanding of the concept of evidence was found. Less than half of the health managers expressed that evidence is used at a high level. The health managers' emphasis on use of evidence, political desire for use of evidence and evidence capacity were associated with the actual use. The health managers' educational background and size of municipalities had no association to this. A request for more use of evidence was found. Barriers for this were conditions connected to time and competences. Increased collaboration between municipalities, collaboration with research units, and guidelines for evidence use were suggested as facilitators.
Conclusion There is a need for development and dissemination of methods for working with evidence-based public health in Danish municipalities.

Keywords Evidence · Evidence-based public health · Health policy · Local public health · Research utilisation · Research dissemination · Knowledge exchange

Introduction

The concept of health has developed through the last decades (World Health Organization 1948; Banta et al. 2003; Orme et al. 2003), and within it an increased focus on evidence-based public health has evolved (Jenicek 1997; Glasziou and Longbottom 1999; Brownson et al. 1999; Black 2001; Hanney et al. 2003). Public health initiatives must be based on the best available knowledge, in that way evidence can potentially influence the process of prioritisation, planning and implementation of public health interventions. Evidence is expected to facilitate implementation of most appropriate and effective interventions in relation to cost-effectiveness and the interests of populations and each individual's state of health (Kohatsu et al. 2004; Rychetnik et al. 2004).

Via the structural reform in Denmark in 2007 municipalities were assigned the primary responsibility for public health work outside hospitals (Andersen and Jensen 2009). One of the arguments for doing so was the fact that the local municipality is the place where people's everyday life unfolds, and the municipalities therefore have a number of opportunities to intervene in people's lifestyles through interventions targeted at risk groups and general structural actions (Pedersen 2006). These tasks are new to the municipalities, who therefore face challenges in prioritisation,

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planning and implementation of interventions. In this workflow it would be advantageous if the health administrations in municipalities use evidence throughout the policy process.

The definition of the concept of evidence used in this study is mainly adopted from work done by the National Board of Health in Denmark (Skovgaard et al. 2008) and reads: "Evidence in public health includes both research-based knowledge (e.g., results of research studies) and non-research-based knowledge based on scientific methods (e.g. meta-analysis, evaluation reports and quality assurance systems). Evidence can be classified into three categories; Type I: Descriptions and analyses of the determinants of health and disease and their distribution. Type II: Assessments of the relative effectiveness of interventions. Type III: Accounts of the best possible design and implementation of interventions in specified contextual circumstances." (Brownson et al. 2009; Rychetnik et al. 2004).

The aim of this study was to investigate how and at which level evidence is used in policy and work processes in relation to local public health work in Denmark. A secondary aim was to find out how use of evidence can be enhanced. We explored the association of the following correlates with the use of evidence in Danish municipalities: health managers' level of training; the emphasis that health managers place on evidence use; the political managements' desire for evidence use; size of the municipality and health administrations' capacity to process evidence.

Methods

Study population

The study was carried out in all Danish municipalities ($n = 98$) in May 2007 using the managers of municipal health administrations as respondents to a questionnaire. Response rate was 81%. This fairly high response rate may be explained by the fact that we made a telephone call to all respondents before sending out the questionnaire. In this call we briefly informed about our study and the importance of getting responses to our questionnaire. Via the calls we could also make sure that the questionnaire was answered by the right person in each municipal organisation.

Variables

An electronically based questionnaire was developed based on reviewing the literature on development of the concept "evidence based public health" and on the question of how evidence can be used in policy processes. The questionnaire was designed such that it reflected the Danish context of municipal public health work.

The questionnaire contained questions on:

1. The health managers' understanding of the concept of evidence: eight statements were presented and the health managers were asked to estimate their level of agreement using a seven-point Likert scale from 1 = not at all to 7 = to a great extent. The eight statements were: (1) evidence is knowledge solely derived from randomised controlled studies; (2) evidence is knowledge solely derived from other kinds of research-based studies; (3) evidence can be results of evaluation reports, literature reviews, monitoring and quality assurance systems constructed with use of scientific methods; (4) evidence can be knowledge from expert statements; (5) evidence can be knowledge from personal experience; (6) evidence is solely derived from quantitative studies; (7) evidence is solely derived from qualitative studies; (8) evidence is derived from both quantitative and qualitative studies.
2. Consistency between the health managers understanding of the concept of evidence and the presented definition: health managers were asked to estimate their level of agreement with the previously presented definition of the term evidence using a seven-point Likert scale from 1 = not at all to 7 = to a great extent.
3. Level of evidence use in three parts of the policy process (prioritisation, planning and implementation): health managers were asked to asses the actual level of evidence use in the health administration's work using a seven-point Likert scale from 1 = not at all to 7 = to a great extent.
4. Municipality characteristics with possible association to use of evidence: health managers educational background (vocational training, bachelor of science degree, master of science degree or higher), size of municipalities (number of inhabitants), level of emphasis on use of evidence from health managers, level of emphasis on use of evidence from political management, level of evidence capacity in health administrations. The last three was measured using a seven-point Likert scale from 1 = not at all to 7 = to a great extent.
5. Future use of evidence: the health manager was asked to asses whether or not there was a desire for greater use of evidence and generation and publication of evidence in future among the employees in the health administrations and among politicians using yes/no/do-not-know categories.

When analysing the results, the answers from the seven-point Likert scale were grouped (1, 2 = not at all; 3, 4,

5 = neutral; 6, 7 = to a great extent). This merging of answers was done to make sure that all categories contained an acceptable number of people and to increase the visibility of tendencies.

In addition to the seven-point Likert scale and the yes/no/do-not-know categories, open text responses were used. These open text responses provided qualitative data such as written statements from the respondents to support their quantitative answers.

As one of the aims was to investigate the understanding of the concept of evidence, the definition of this concept was only presented in the middle of the questionnaire.

Data collection

We tested the questionnaire on following levels:

First draft of the questionnaire was tested by four relevant professionals. The aim of this testing was to identify any missing components and/or any included but irrelevant components.

After the first round of correction the questionnaire was tested on four respondents from the study population. The aim of this testing was to find out if the questions were understandable and clear to the target group.

Subsequently, adjustments were made and the questionnaire was finally tested by the group of professionals again. The aim of this testing was to make sure that the adjustment made after second round of testing did not influence the scientific level of the questionnaire.

It might have been beneficial to include more persons in testing the questionnaire, but this was not doable due to time limitations of the study. Instead it was emphasised to include persons with different professional backgrounds and competences to get various inputs.

Data analysis

To analyse association between municipality characteristics and the level of evidence use correlation was calculated using Kendall tau rank correlation coefficient and corresponding p values. Besides this, simple descriptive statistics were used.

Results

Understanding of the concept of evidence

A large variation in perception of the concept of evidence was found among the health managers; Fig. 1 presents an overview of level of agreements in the eight statements. Health managers perception of the concept of evidence shows most agreement with statement 3 (evidence can be results of evaluation reports, literature reviews, monitoring and quality assurance systems constructed with use of scientific methods) ($n = 55$; 70%) and statement 8 (evidence is derived from both quantitative and qualitative studies) ($n = 54$; 68%). In addition a significant part of the health managers expressed that statement 1 (evidence is knowledge solely derived from randomised controlled studies) ($n = 18$; 23%) and 2 (evidence is knowledge solely derived from other kinds of research-based studies) ($n = 19$; 24%) matched their own perception of the concept of evidence.

When the health managers were asked to assess to what extent the previously mentioned definition of the concept of evidence was consistent with their own perceptions of evidence 80% responded "to a great extent" (6 and 7 of Likert scale), 18% responded in the neutral category (3, 4, 5 of Likert scale), while only 3% answered "not at all" (1, 2 of Likert scale). However, several health managers commented that the municipal health administrations are still not explicitly aware of how they understand the concept of evidence. The uncertainty of contents is probably due to the fact that the concept "evidence", as well as the public health tasks, is new to the municipal health administrations, and therefore the answers might have to be considered with caution.

Level of evidence use

The health managers reported following level of evidence use in relation to the three stages of policy-making in local public health work (priority setting, planning and implementation of interventions): in relation to prioritisation (choosing areas/issues to intervene in) 44% responded "to a great extent" (6 and 7 of Likert scale), 54% responded in the neutral category (3, 4, 5 of Likert scale) and 1% answered "not at all" (1, 2 of Likert scale). In relation to planning (designing the intervention) 48% responded "to a great extent" (6 and 7 of Likert scale), 51% responded in the neutral category (3, 4, 5 of Likert scale) and 1% answered "not at all" (1, 2 of Likert scale). And finally in relation to implementation (organising how to put the intervention into action and maintaining activities) 42% responded "to a great extent" (6 and 7 of Likert scale), 47% responded in the neutral category (3, 4, 5 of Likert scale) and 1% answered "not at all" (1, 2 of Likert scale).

Conditions with possible association to use of evidence

Table 1 presents correlations showing the association between various municipality characteristics and the level of evidence use in determining priorities, planning interventions and implementing interventions.

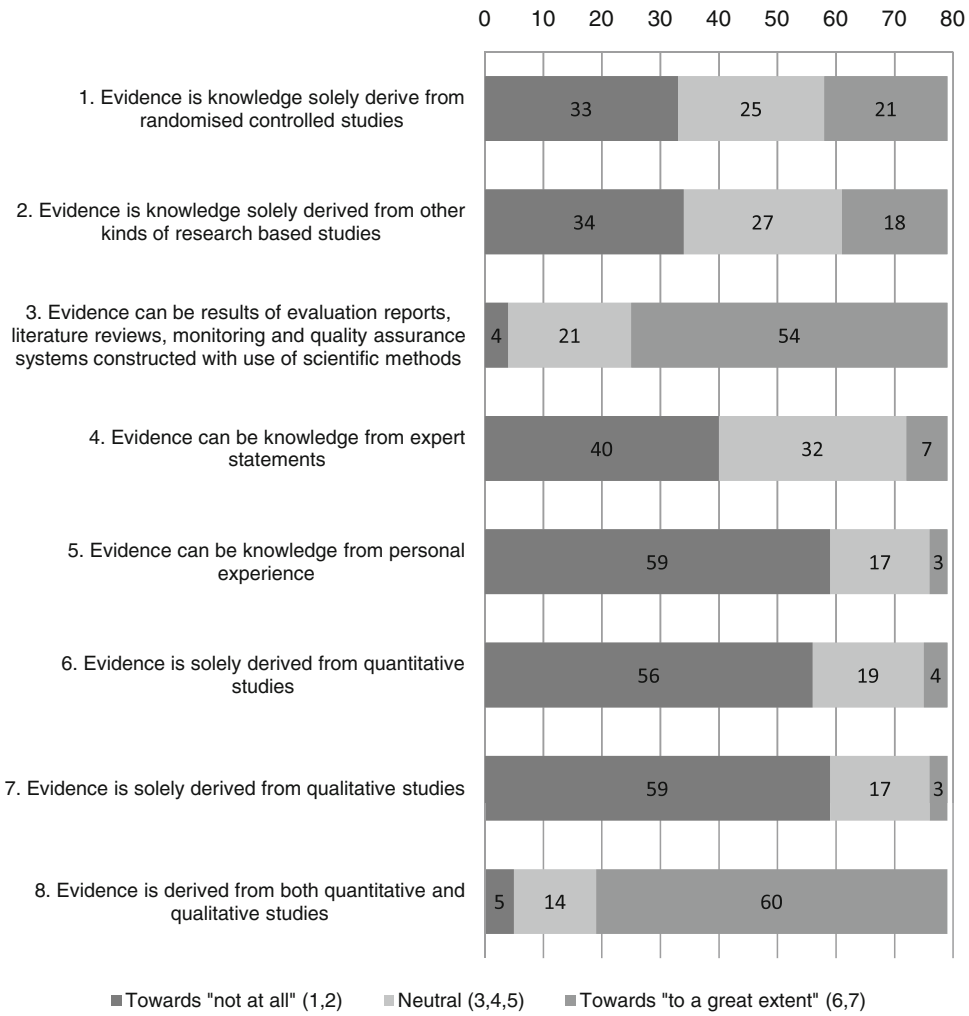

Fig. 1 Health managers' perception of the term "evidence", agreement measured in total numbers

We expected that health managers with training at Master of Science level would report a higher level of evidence use than health managers who have lower educational background, but no statistically significant correlation was found. Actually, health managers with lower educational background reported on average a higher level of evidence use.

We expected that health administrations in which the health manager places great emphasis on evidence use would use evidence at a higher level than others. This is the case in relation to prioritisation, but not in relation to planning and implementation.

We expected that administrations led by a political management with a great desire for evidence use would use evidence at a higher level than others, and this was also the case in all three parts of the policy process.

We expected that large municipalities would have a higher level of evidence use than smaller municipalities, but no statistically significant correlation was found.

We expected that health administrations who reported high levels of evidence capacity would have a greater use of evidence than administrations with lower levels of evidence capacity. This was partly the case since the association was found in relation to planning and implementation but not in relation to prioritisation. However, in general not many health managers estimated that the administrations have a high level of evidence capacity (23%).

Future use of evidence

Table 2 presents the presence of political and administrational desire for greater evidence use in the future as well as generation and publication of evidence through evaluation of municipal initiatives.

Several health managers used the open text responses in the questionnaire to propose actions consisting of more time, more staff and recruitment of resource persons to promote evidence use. Several health managers also

Table 1 Correlation between municipality characteristics and level of evidence use

Kendall's tau_b	Use of evidence in prioritising between interventions	Use of evidence in planning interventions	Use of evidence in implementing interventions
Health managers emphasis on evidence use			
Correlation coefficient	0.272**	0.183	0.020
Sig. (2-tailed)	0.006	0.064	0.837
N	79	79	79
Political desire for evidence use			
Correlation coefficient	0.226*	0.262**	0.193*
Sig. (2-tailed)	0.017	0.006	0.038
N	79	79	79
Evidence capacity			
Correlation coefficient	0.088	0.257**	0.264**
Sig. (2-tailed)	0.355	0.007	0.005
N	79	79	79
Health managers' educational background			
Correlation coefficient	0.030	0.125	0.081
Sig. (2-tailed)	0.763	0.217	0.416
N	79	79	79
Size of municipality			
Correlation coefficient	0.008	0.020	−0.035
Sig. (2-tailed)	0.933	0.834	0.709
N	79	79	79

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 2 Intentions for future use and production of evidence in municipal health administrations

Future use of evidence	Yes (%)	No (%)	Do not know (%)
Political desire for greater evidence use in the future	76	11	13
Administrational desire for greater evidence use in the future	79	11	10
Intention to contribute to development of evidence	80	10	10
Most often performing evaluations of local public health interventions	68	17	15
Publishing the performed evaluations of local public health interventions	59	17	24

mentioned education and upgrading the skills of employees as crucial actions for increased evidence use. Collaboration among municipalities and research institutions consisting of knowledge exchange and advising was also mentioned as actions to increase the use of evidence. Finally, several health managers stated that national bodies can contribute to increase the level of evidence use by means of publication of guidelines and descriptions of best practice for evidence use.

Discussion

Understanding the concept of evidence in relation to municipal health work

We found a large variation in perceptions of the concept of evidence among the municipal health managers. This can possibly be explained by the fact that many of them are educated as nurses/physiotherapists/occupational therapists and therefore characterised by the medical society's approach to the concept of evidence (Victora et al. 2004; Jenicek 1997; Aro et al. 2008). It is generally accepted that a definition of evidence only including results from RCT's leads to excluding wide range of important evidence (Victora et al. 2004; Aro et al. 2008). Such an approach focuses on measuring the intervention's effects and underestimates issues of context and implementation. The literature also shows that a systematic evidence-based approach to public health work can be recommended (Brownson et al. 2003). Since the different stages of such an approach require evidence of different characters, there is a need for a definition which allows for use of different kinds of evidence depending on what the purpose is (Brownson et al. 2003).

Several health managers commented that they are not clearly aware of how they understand the concept of evidence. Despite the fact that The European Advisory Committee on Health Research have concluded that it is not advisable to run simple definitions of the concept of evidence (Banta et al. 2003), in this presented context there is a need for fleshing out the meaning of the concept in order to make this manageable for municipalities.

The National Institute of Clinical Excellence (NICE) has developed a framework for the assessment of evidence relevant to public health (Weightmann et al. 2005); it includes a critical appraisal of individual studies and the consistency between different studies. The framework is divided into three questions (Does it work? Does it matter? Will it work?), which in combination may help to assess the potential public health interventions (Weightmann et al. 2005). This framework is very much in line with the definition of the concept of evidence presented to health managers in this study. Hence, it might be helpful for the municipal health administrations and could possibly contribute to higher level of evidence use.

Level of evidence use

The municipalities have a need to prioritise between public health areas based on solid evidence due to limited resources available (Pedersen 2006). Evidence can provide valuable knowledge about public health problems and consequences (Brownson et al. 2009; Skovgaard et al. 2008); 45% of health managers indicated that they are using this kind of evidence. The relatively limited use is not surprising; literature clearly indicates that many factors other than evidence can be decisive for what is selected in a policy process (Hanney et al. 2003; Bernard et al. 2005; Landry et al. 2001; Nutbeam 1996). Requests from political side, desires from various organisations and citizens, and "what's up in time" has just as much impact on prioritising public health areas as evidence has. Many municipalities have started to develop health profiles of their populations, and in the future these can possibly be used for priority making and thereby increase the use of evidence in this phase.

When public health areas have been prioritised, interventions have to be planned. Evidence can provide valuable knowledge on how to plan interventions to make sure that they will provide the contemplated effects (Brownson et al. 2009; Skovgaard et al. 2008); 48% of the health managers indicated that they are using evidence at a high level when planning interventions. The literature again highlights the fact that other conditions than evidence (policy-makers' personal experiences, opinions and beliefs, and the interests of different stakeholders) may influence the planning process (Hanney et al. 2003; Bernard et al. 2005; Landry et al. 2001; Nutbeam 1996). Moreover, the fact that public health tasks are still very new to the municipalities might influence the degree of evidence use. A perception of the fact that it is better to "do something" than to "do nothing" can be widespread.

When a public health intervention has been planned the implementation has to be prepared and initiated. Evidence in this context can provide valuable knowledge on, for example what resources and conditions are required to achieve tangible and positive results (Brownson et al. 2009; Skovgaard et al. 2008). This is the area where the reported high level of evidence use was the least (42%). The reason may be the fact that this type of evidence (often Type III evidence) is not often included in the evidence debate. However, it is estimated that Type III evidence will get more attention in the future, because it can be used to asses external validity and transferability of studies to local settings.

Conditions with possible association to use of evidence

In the literature it is clear that leaders—formal and informal—have great influence on employees' behaviour. A manager can affect the attitudes and ways of thinking of his team (Rogers 2003; Nonaka and Takeuchi 2005). It may be the reason why health managers' emphasis on evidence use was associated with the actual use. Also the political leadership can do this particularly because of the fact that it is the politicians who must approve the administration's work. Thus, it is important to ensure that the health managers and the political leaderships are aware of the possibilities in use of evidence.

Also the observed association between evidence capacity and actual evidence use is consistent with the literature that shows that capacity to identify relevant evidence, understand the content and apply evidence to concrete public health initiatives are of great importance to the level of evidence use (Hanney et al. 2003; Landry et al. 2001; Nutley et al. 2007; Weiss 1979). The nonexistent link in relation to prioritisation may again be due to the fact that evidence use is still new to the municipal health administrations. Because of that, evidence capacity may not yet lead to evidence use.

Future use of evidence

There is a need for and potential to promote evidence use in relation to the municipal public health work; moreover, municipal health administration can play a significant role in the development of Type III evidence. This can be done in the form of disseminating knowledge on best practice. The survey showed that 80% of the municipal administrations intend to produce and disseminate this type of evidence. A crucial condition for making this possible would be that they carry out and publish evaluations of interventions.

The health managers suggested that greater collaboration between municipalities and research institutions could contribute to greater evidence production and use in the municipalities, which is consistent with the literature (Bernard et al. 2005; Oh 1996). Finally, the health managers suggested actions by national bodies in the form of guidelines for evidence use and description of how this can be practiced. This is again consistent with the literature that clarifies the fact that that encouragement by top agencies can promote use of evidence (Rogers 2003; Nonaka and Takeuchi 2005).

Limitations of the study

This study could have been improved by testing the questionnaire on more people and by performing extensive psychometric testing on this. Still, we believe that the results are interesting because of, e.g. the high response rate. The study only reflects a Danish context and this has

to be considered in relation to transferability to other settings.

Conclusion

The study showed that it will be beneficial to disseminate and explain an operational definition of the concept of evidence in relation to local public health work. In the everyday work in the municipalities, health managers and political leaders have to be aware of their possibilities to affect the level of evidence used in local public health work. If they emphasis the importance of evidence use the administrations will be more likely to include evidence in their work. Furthermore, increased collaboration between municipalities and with research institutions can be implemented with the aim to share knowledge and facilitate provision of evidence-based public health work. Finally, it can be recommended that national bodies continue to publish guidelines for handling evidence in relation to local public health work.

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