



EVIDENCE IN HEALTH PROMOTION
AND DISEASE PREVENTION

2008

Evidence in Health Promotion and Disease Prevention

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URL: <http://www.sst.dk>

Subject words: Evidence; Prevention; Health Promotion; Planning; Evidence-based Prevention

Category: Exposition

Language: English

Version: 1.1

Version date: 20080128

Format: pdf

Copyright: The Danish National Board of Health. This publication can be freely cited with a clear indication of its source.

Electronic ISBN: 978-87-7676-609-1

Published ISBN: 978-87-7676-613-9

Published by: The Danish National Board of Health, December 2007

Foreword

Evidence has become a central concept in the prevention of health problems. In recent years, focus has been directed in earnest towards the type and quality of the knowledge that provides the basis for preventive and health promoting interventions. A growing necessity for evidence-based disease prevention and health promotion has been expressed from many sources.

With the adoption of the Danish Health Act, the municipalities and regions in Denmark have taken over responsibility for citizen-oriented – and partly patient-oriented – disease prevention and health promotion. Together with the regions, the municipalities must play a part in tasks pertaining to research and development within the field, with the aim of ensuring that preventive health care is carried out with a high level of professionalism. Evidence-basing is a vital aspect of this work.

The relevant actors of preventive healthcare need greater clarity regarding what constitutes evidence in connection with practical prevention and what working with prevention on the basis of evidence means.

With this report, the National Board of Health wishes to provide an account of how evidence can be understood in the area of health promotion and disease prevention. The report also emphasises the advantages – and importance – of applying an evidence-based approach to the planning of preventive and health promoting interventions in municipalities and regions.

The Danish National Board of Health, December 2007

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1 Introduction and purpose

The last decade has witnessed an increasingly strong move to base health promotion, preventive policies and practice decisions on evidence. The overriding aim is to support sensible, reasonable decision-making and enterprising in the health and related sectors, by combining research findings with other solid forms of information that meet the needs and wishes expressed by targeted populations.

This report underlines that the area of prevention¹ including the adequate planning of preventive interventions needs to take different kinds of evidence into account, i.e. evidence produced by the employment of various scientific methodological approaches. The report also stresses the importance of the interpretation of empirical findings from formal research or systematic inquiries and of considering and including community preferences in order to tailor interventions in ways that are relevant and usable for specific target groups (1, 2). These types of insight are integrated with the expertise and experience-based knowledge already available via professionals and practitioners working with prevention. Determining the best course of action comes from combining these different kinds of input.

Of course, evidence of any kind is and will continue to be only a part of the input needed in connection with preventive healthcare. However, more enlightened decisions can be made by those who receive good quality and timely information on the need for, feasibility and expected outcomes of preventive measures. Whenever possible an attempt should be made to ensure the integration of the best current available knowledge in policy and practice. What is considered "best, current available knowledge" varies but typically it is sought after to: 1) estimate the need and possibilities for interventions, 2) demonstrate "what works", 3) guide efficient implementation and 4) single out action plans that seem more cost-effective than feasible alternatives.

The comprehension of evidence, stated above, is deliberately broad in scope covering not just the question of "what works" but also "what is the nature of a given problem, why does it occur and how might it be addressed" (3).

Preventive and health promoting interventions are target (group) directed activities that are applied in an attempt to prevent the emergence and development of disease, psychosocial problems, or accidents with the aim of promoting public health.

¹ In this report, "prevention" also covers the concept of health promotion. The WHO glossary on Health Promotion defines the two terms, disease prevention and health promotion, as follows. Disease prevention covers measures not only to prevent the occurrence of disease, such as risk factor reduction, but also to arrest its progress and reduce its consequences once established. Health promotion is the process of enabling people to increase control over, and to improve their health.

1.1 The report's purpose and target group

The purpose of this report is to provide a conceptual account of "what evidence is" and how it can be applied in connection with preventive work and measures. In addition, the report is intended to establish a common platform for further discussions of important elements, qualities, and challenges connected with evidence-based prevention. The main target groups are decision-makers, administrative staff, and practitioners working in the field of prevention.

1.2 Background

In relation to health, the basic aim of preventive work is to hinder the emergence and development of diseases and thereby promote well-being through such means as strengthening the individual, socio-economic and physical determinants of health and health-related behaviours (4).

Prevention typically takes its point of departure in the notion that health and disease are functions of a dynamic interplay between personal lifestyles, living conditions, and the general way society functions. To these elements circumstances such as sex, certain genetic factors, and biological age must be added (5).

Ensuring optimal planning, implementation and evaluation of preventive interventions aimed at specified health related problems calls for the linkage of a number of scientific and professional fields with specified methods, theories and "world views" (6-8).

Where prevention is concerned, the evidence concept must be able to encompass knowledge from widely differing scientific traditions; such as epidemiological findings regarding the connection between risk factors and disease or sociological knowledge on human relations, social institutions, and analyses of how specific features of particular social environments have independent impact on, for instance, health related behaviour and initiatives to promote general (public) health objectives.

This report makes a distinction between three types of evidence (1):

Type I: Descriptions and analyses of the determinants of health and disease and their distribution.

Type II: Assessments of the relative effectiveness of preventive interventions

Type III: Accounts of the best possible design and implementation of interventions in specified contextual circumstances.

Together the three types form the evidence base for prevention.

1.3 Reading Guide

The report contains six chapters in all. Chapters 2-4 contain short reviews of evidence type I-III. Chapter 5 focuses on how the available evidence can be used in practical preventive work. Chapter 6 highlights how local and regional actors can play a central part in the systematic generation and compilation of practice based evidence in relation to prevention.

2 Evidence of the determinants of health and disease

There is a need for solid knowledge with regards to individual, social and wider contextual determinants of relevant health outcomes. Justification for proposed preventive interventions should be grounded in knowledge about the causes of health and disease. In general, causality is fundamental in relation to two basic components of evidence-based prevention: 1) demonstrating the causes of a given health problem and 2) furnishing insight into the likelihood and character of causal relations between an intervention and its effect (1).

This type of evidence predominantly builds on epidemiological studies and approaches. Evidence of the determinants of health and disease provides knowledge of the significance and nature of examined risk factors for health at the individual and population levels. Furthermore, it is used to evaluate the preventability of various health problems.

To give one example: Epidemiological knowledge shows that physical inactivity leads to lower life expectancy. Sedentary lifestyle is also linked to sizeable losses of health-related quality of life. At the same time we know that physical inactivity is not an unchangeable state. There are effective ways to promote exercise and active living. This type of insight shows that something can and should be done to counteract low levels of physical activity.

Evidence of the determinants of health and disease play a part when answering questions like: **What do we know about the cause of a given state of health, its distribution, and the possible consequences of implementing preventive interventions for the individual and larger groups – and do we know enough on issues like these to actually consider and design actions with the aim to intervene?**

Typically, the first answer to queries such as these takes off from an analysis of the health status of specified populations. A classic example is constituted by public surveys of the nature and impact of health-related problems affecting the individual and the wider community.

Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems (9).

In Denmark, The National Health Interview Surveys (SUSY) constitutes one of the most developed uses of survey instruments to generate evidence of the determinants of health and disease. From the late 1980's onwards, The National Institute of Public Health in Denmark has conducted a number of population surveys that give a solid account of health and morbidity in representative samples of Danish adults. The latest survey was reported in 2007. The reported studies inform about how often health related events occur in different groups of people. To some extent explanations can also be given as to why variations in the pattern of health and disease exist.

”SUSY-2005” is the fourth national survey of health and illness in the adult Danish population. It provides a broad view of public health, quality of life, disease patterns as well as factors of significance for such trends. Developments from 1987 to 2005 are described.

http://www.si-folkesundhed.dk/upload/hele_rapporten_2005.pdf (*in danish*)

Surveys, similar to SUSY, are also conducted regularly by a number of regional and municipal authorities, NGO’s and private companies.

Health profiling is one concrete way to describe the state of health at the individual, community or wider societal level. The content of a health profile varies, but it may include information on lifestyles, living conditions, and various dimensions of health and wellbeing. Typical lifestyle factors are tobacco, alcohol consumption, diet, use of prescriptive and non-prescriptive drugs, cultural and leisure activities, stress, and exercise. As to living conditions, the focus may be on family and/or kinship relations, the social surroundings, education, profession, occupation, income, general standard of living, physical environments with an impact on health and health behaviours etc. Information on health conditions may include morbidity and mortality rates, functional capacity, self-rated health assessment and quality of life. Many health profiles also contain information on the resources and use of health services (4).

The report ”Risk factors and public health in Denmark” (2006) contains figures showing how much and in what ways risk factors influence public health. The report provides knowledge that can be used to prioritise and organise preventive interventions and also looks at how risk factors are associated with, for instance, the use of health services, the rate of sick leave or early retirement.

http://www.sst.dk/publ/Publ2006/CFF/Risikofaktorer/Risikofaktorer_SIF.pdf (*in danish*)

2.1 Summary

In the early planning phase of preventive interventions it is important to get an overview of:

- The pattern of disease and health in specified populations
- Possible links between these patterns and known measurable risk factors.
- What kind of effects (e.g. regarding life expectancy and quality of life) can be expected from interventions aimed at influencing the identified patterns and risk factors.

The knowledge provided by evidence type I forms the platform for the explicit selection of target populations. Suggestions may also be given as to what kind of interventions might be workable considering the population. This preliminary process is further stimulated by reviewing evidence on the effectiveness of interventions relevant for the issues at hand (see chapter 3).

3 Evidence of the effectiveness of preventive interventions

Evidence of effectiveness provides an answer to questions such as: What is the quality of knowledge on the effects of performed preventive interventions that is available to guide new practice and decision making?

Answering queries such as this involves finding out "what works best on whom?". What reliable knowledge is there of preventive interventions that have noticeable effects on certain sections of the population as defined by factors such as age, gender, ethnic background, health profile, profession, level of education, attitudes, motivation, knowledge etc?

Furthermore, one of the most important issues is whether the effects achieved are really due to the interventions rather than to other factors or pure chance. Both the negative and positive effects of interventions should be evaluated. Systematic reviews or metaanalyses are particularly solid ways to summarize published knowledge of the effectiveness of preventive interventions. Whenever possible, it is advisable to consult such reviews or analyses. However, the number of systematic reviews or meta-analyses in the area of preventive intervention is still rather limited.

Systematic reviews summarize the available evidence of a given problem complex. The methods used in reviews are predefined and each step is described in detail. A number of publications are included on the basis of explicit inclusion and exclusion criteria. The results from these publications provide the "backbone" for an overall conclusion on the effect of a given type of intervention. The method strives to ensure that if others perform a similar systematic review, they will arrive at the same results and be disposed to reach identical conclusions.

A **meta-analysis** is a special kind of systematic review which, with the help of statistical methods, combines the results of several reviews of the same problem complex with one or more target effects. A more reliable evaluation of the effect in question can be obtained through this type of summary than if the reviews were considered individually.

Strength of evidence is an expression of the quantity and quality of the evidence. Traditionally, the overall strength of the evidence appears from a systematic evaluation of the rigour of the study design, validity, and reliability of the results. Different study designs can be ranked in accordance with how high the risk of bias is.

3.1 Evidence gathered using different study designs

Evidence for cause-effect relationship – be it about determinants and health outcomes or efficacy of interventions to improve health – can only be provided with a great deal of precision by studies using rigorously controlled designs. A Randomised Controlled Trial (RCT) is a particularly suitable means to avoid selection-bias, i.e. to avoid confounding in the design and the results of intervention studies. An RCT involves dividing participants randomly into intervention and control groups. The control groups do not receive the interventions in question. They may be exposed to another kind of intervention. The assumption is that by randomisation, the groups will be comparable, apart from the interventions. This should make it possible to isolate and evaluate the effect of the intervention (3). If done in this way, the internal validity of RCTs are high.

Some preventive interventions can be tested with RCT designs. This requires the intervention and its effects to be well defined in advance and it must be possible to apply it within a framework that can relatively easily be checked and kept stable. An example could be an RCT in which smokers are randomised into two kinds of nicotine patch interventions to help them to stop smoking, one with free patches, the other one with patches for fee. Such a study will provide solid information on whether free or paid nicotine patches lead to more people stopping smoking e.g. within a year.

However, evidence for the effectiveness of preventive interventions comes more often from real life, complex community interventions than from interventions focusing on narrow subsets of individual health behaviours. Community interventions are typically partnership based; it are often carried out in communal settings, where the aims, priorities, values and methods of the interventions vary over time. Moreover, as interventions may take place in the course of a year the particular individuals who carry out the interventions and who perform its assessment may vary over time. Since community interventions happen in real life situations, strictly controlled study designs are often not feasible. Instead, there are many adaptations and modifications of the traditional RCT, which often better suit prevention and health promotion interventions, e.g. cluster randomization and designs which include a thorough process evaluation (10, 11).

In the area of prevention reliable evidence on effectiveness is based on information which wherever possible illustrates the cause and effect relation of interventions by using the principles of controlled trials. In the absence of or in dealing with questions not amenable for controlled study designs evidence is based on less rigorous study designs or on other kinds of valuable information and experiences.

In measuring effect, it may be relevant to differentiate between **effectiveness and efficacy**.

Effectiveness indicates the degree to which interventions have an effect under what are designated normal circumstances, such as daily municipal preventive practice.

Efficacy indicates the degree to which interventions have an effect under what are designated ideal circumstances, such as in a controlled trial. Documentation for efficacy in a trial is not synonymous with the achievement of effectiveness in practice if the circumstances in a practical context differ significantly from the circumstances present in a trial situation.

Adapted from a dictionary developed by Nordisk Campbell Center:
<http://www.sfi.dk/sw29919.asp> (in danish)

3.2 Final and intermediate effects measures at individual, group or structural levels

In studies designed to find out which preventive intervention methods work best on certain target groups, it is a good idea to focus both on 1) final effects and intermediate effects and 2) impacts related to individual, group or structural levels. Let us consider an example of a community project on preventing students from becoming overweight within schools by introducing healthy meals.

Final effects are health outcomes such as ill-health and mortality. Due to the element of time, it is often difficult to measure the long term consequences of preventive interventions by its final effects; for instance, the extent to which the introduction of healthy school meals contribute to the prevention of cardiovascular diseases.

Intermediate effects are often the better option when assessing the impact of preventive measures. In relation to the example of school based prevention of obesity amongst children, intermediate effects could concern such things as weight loss or improved weight regulation via alterations in relevant attitudes, knowledge and health behaviours in the target population, together with making effectual, changes in various structural conditions.

The development in intermediate effects is often measured even though the reliability of this in predicting final effects varies. However, changes in health behaviours like dietary habits and physical activity can be said with considerable certainty to be of significance for the later development of final effects like cardiovascular disorders. Changes in attitudes and knowledge may be measured by tracking to what degree the participants believe that lifestyles and living conditions are changeable via personal efforts.

Intermediate effects on the structural level, may concern valuation of the impact of initiatives in relation to school meal policy or promotion of the bicycle as a means of transport to and from school by improving bicycle lanes and general traffic safety.

As stated above, preventive interventions mostly use intermediate effects for measuring potential impacts of the implemented actions.

At an individual level, the intermediate effects concern, for instance, the effectiveness of interventions in relation to supporting the belief that habits and routines can be changed and that these changes can be maintained over time and thereby make a positive contribution to better health. In addition, assessing the effects of attempts to strengthen individual skills, knowledge of, attitudes to, and experience of healthy living, for instance in relation to diet and foodstuffs, could also be examined.

At the group level the intermediate effects concern the effectiveness of, for instance, different types of social relations to influence the individual's health (behaviour) in a positive direction. With reference to the generic example regarding prevention of overweight youngsters, one dimension could concern evaluating the effect of using children's or parents' networks and groups as the platform for interventions designed to change eating habits. By comparing the effects of various activities, attempting to create a positive attitude towards healthy diet and sensible weight and weight control, it is possible to evaluate which type of intervention seems to have the greatest potential.

At the structural level, the assessment of intermediate effects can be used to establish whether the conformity of political measures helps to create consistent and effective interventions with regard to risk factors. In the case of healthy school meals, it is possible to see whether national recommendations and public programs on, for instance, packed lunches have a positive effect on the number of young people who develop healthy dietary habits. However, it can be difficult to document that policy measures have any direct effect on individual dietary preferences and habits.

3.3 Summary

When planning preventive interventions it is important to pin down which effects – both positive and negative – have been achieved in connection with previous, similar interventions. By accumulating knowledge of the impacts of interventions, it is possible to arrive at knowledge of what works best on whom. Systematic reviews and meta-analyses provide the best summarized analysis on questions like this.

Randomised controlled trials are a particularly rigorous way to assess the effects of interventions. However, it is not always possible or even desirable, to use the randomised design in the evaluation of preventive interventions. In prevention there is a need for evidence that answers the question "what works", building on high quality data reflecting everyday circumstances. Traditional RCT designs are not fitted to capture the influence of the multitude of contexts that frequently have a considerable impact on the outcome measures of preventive interventions. The evaluation of effects must therefore be based on methods (both quantitative and qualitative) that catch and take account of the complexity involved.

Evidence of the effects of preventive interventions in relation to a number of major health problems, have increased in recent years. Thus, in a growing number of areas it is possible to inform intervention efforts on science-based knowledge and not only on loose assumptions of positive effects. This applies, among other areas, to

tobacco where we have a great deal of knowhow on which intervention schemes are most effective in putting an end to smoking. In other areas, such as the prevention of obesity, it is more difficult to come up with a highly qualified answer to what works best – meaning better than feasible alternatives.

Evaluating how health related interventions might provoke and support individuals to make life changes, in order to curb obesity or promote active living is a very difficult task. Such interventions are often multifaceted and the pathways to impact are complex. Thus, it is a challenge to produce solid knowledge on the relative effectiveness of interventions and equally challenging to determine the degree to which promising preventive programs can be reproduced across subgroups such as different settings and target populations. On the other hand, it should be kept in mind that the relevant requirement is not for studies that establish causality under optimal conditions. Instead, the need is for "real-world" investigations to determine results under typical conditions. In technical terms, what is required is a balanced assessment of both the internal and external validity of well-defined interventions. Such appraisals are needed and sought-after in policy and practice but they are not always easily produced – both due to gaps in the empirical information but also because there is not much agreement on what constitutes coherent theoretical frameworks that would lead to a methodological toolbox suited to deal with the complex, interconnected and reciprocal problems that most health issues present us with.

4 Evidence on organisation and implementation

There is a need for evidence on how preventive interventions should be organised and implemented in a given setting to have the intended effects. Generating this type of evidence entails sourcing viewpoints and assessing needs in selected target groups, together with procuring systematic knowledge on efficient and feasible ways to organise and deliver interventions to selected target groups. Evidence on effective ways to organise and implement interventions answers the question: **How do organisational factors and implementation processes influence the outcome (effect) of the intervention?**

This is an extension of the question from chapter 3 asking "what works best on whom?" with the questions "where, how, and when?" It involves discovering the preconditions for and consequences of preventive interventions as an aspect of everyday practice. In combination with other evidentiary sources, this third type of evidence is crucial in adopting, adapting and acting in ways leading to quality interventions with sizable impact on the targeted populations and/or settings (12).

Implementation is the process between the adoption of a decision, such as a new law or health policy principle programme, and putting it into practice (13). An example could be a decision to do something about accidents involving elderly people falling. The implementation phase begins when the objective (e.g. reducing the number of these falls among 75-85 year-olds living at home by 20 % during the course of five years) is turned into concrete preventive intervention. The implementation phase ends after the intervention has been undertaken.

Evidence regarding organisation and implementation of interventions relates to how certain interventions should be designed and carried out in order to have the greatest possible effect. Thus, evidence type III concerns questions like:

- What kind of organisation is needed?
- Which professionals should be involved – and which minimum competences and resources should they possess?
- Can it be recommended to build up partnerships and other platforms for collaboration with private, public, and voluntary stakeholders?
- Is the proposed intervention well chosen in relation to the target group?
- How can user involvement and activity be ensured in the best possible way?

The bullet points underline that in order to plan successful interventions it is imperative to consider which barriers and facilitating factors there might be on the way to actual action. Barriers do not only exist among the targeted population but resistance is often found among health care workers and other professionals intended to carry out the intervention. Prefatory analyses of implementation processes will help inform about possible pitfalls.

Evidence on how preventive interventions should be organised and implemented supplement evidence type I on determinants and distribution of health and disease

and evidence type II on the relative effectiveness of preventive intervention. Together evidence type III provides systematic knowledge on relevant, effective and feasible ways to improve the health of targeted populations.

4.1 Knowledge of the process and impact of interventions

Evidence on implementation and organisation should cover knowledge of both the process and impact of a certain intervention. Among other things, insight is required into whether it turned out to be possible to execute a given intervention as originally planned and if the effects of the intervention corresponded to what was expected (12, 14). There is a need for knowledge that can help to explain why an intervention proved to be successful or unsuccessful in achieving expected results. If, for instance, it appears that supervision carried out by nurses rather than other professional group's best keeps participants in a group-based exercise programme, it is important to look for knowledge that can explain the observed difference. This kind of information often springs from qualitative studies that focus on conveying meaning and interpreting complex situations. Among these are studies involving attitudes and perceptions. Evidence of this nature is highly relevant for anyone working with preventive projects in the real world.

Evidence regarding organisation and implementation is, of course, also to be found in accessible information generated via quantitative approaches. Apart from results and findings published through formal channels, like scientific journals, this type of information is typically to be found in the "grey literature" (e.g. policy evaluations, statistical analyses of quality indicators, government reports, white papers produced by political commission or international organisations such as WHO). Often large amounts of the information on promising prevention projects must be located in non-scientific domains.

4.2 4.2 Summary

When planning preventive interventions it is important to look for evidence on:

- Where, how and when an intervention works best, e.g. how to organise and perform the intervention so that it has the greatest possible effect in relation to the defined target area
- The resources and framework conditions necessary to achieve effects, e.g. which professional groups should be involved in the intervention and which competences they should possess, how their motivation influences the process and effect of the intervention
- The process and impact of the intervention, e.g. if the intervention went as planned, what actually happened and why, and if the effects corresponded to what was expected
- How successful the intervention can be adapted to different settings without compromising the core content and qualities of the original effort

This calls for detailed information on, for instance, content and delivery of the intervention as well as how the intervention was received and experienced by the intended recipients. The requested type of evidence is rare and often rather diffuse and complex. In order to make preventive interventions more evidence-based we must improve both the quantity and quality of reports on local and regional preventive, public health programs. Applying and adhering to common and explicit standards on how to produce and communicate the design, implementation and effectiveness of real world preventive measures would be an advantageous move forward (15).

5 Getting evidence into practice

In recent years, systematic tools have been developed to assist in the assessment of whether effective interventions conducted as research trials can be recreated under less ideal everyday circumstances (16). Often, such assessments consist of answering a series of questions such as the five below².

1. How many in the overall target group can and are actually willing to participate in the intervention?

An example can be drawn from a series of studies showing that an intervention focusing on changing dietary habits leads to healthier behaviour in selected groups of ethnic minorities. The question is whether the intervention would be effective in relation to all members of the minority groups in question and not just to those who have been studied. The study group could deviate markedly from the target population at large on such variables as age, gender, level of education and income. Perhaps those who participated in the research studies were highly motivated, had special reasons for participating, and possessed adequate personal resources that allowed them to comply.

The example calls attention to the importance of evaluating to what degree one can generalize from the current amount of evidence to the overall target group or similar target groups in other contexts. If this is the case, the existing evidence can form the starting point for prioritisation, development and implementation of particular intervention schemes, or at least help to promote the view that it is possible to do something with good effect in relation to a specific health issue.

2. Which negative and positive effects can be expected?

It is important to evaluate both the positive and negative effects of a preventive intervention. If possible, it would also be relevant to differentiate between intentional and unintentional effects. An example could be extensive campaigns addressing the general public regarding the harmful effects of narcotics. An informative intervention of this kind could have an unintentionally negative effect, as it could prompt some groups to begin experimenting with narcotics.

Information on the positive and negative effects (intentional or not) of an intervention is worth reporting and including.

² Read more at <http://www.re-aim.org/>

3. Can and will those who are supposed to execute the intervention actually commit themselves?

The ability and motivation of different professional groups to include preventive measures in their work is often regarded as central for the actual reach and impact of both population- and settings-based interventions. Based on the available evidence, one must therefore try to determine which opportunities and barriers a given professional group, such as home carers, educators, and GPs, might have in relation to performing preventive interventions as part of their work.

4. To what degree is the intervention performed as prescribed?

It is important to know whether a preventive intervention is actually delivered as planned (cf. chapter 4.1.). If there is uncertainty about this, it means firstly that it is difficult to evaluate the causes of the effects demonstrated. Secondly, it will be difficult to point out those parts of the intervention that are particularly important to retain. It is not unusual for the entire intervention to be only partly performed as prescribed in connection with health education intervention, for instance.

5. Can a given preventive intervention and its effects be maintained over time??

This last question is often decisive in connection with an overall evaluation of an intervention. Where the individual is concerned, the maintenance issue could zoom in on the ability to keep up changes in health-related habits and routines brought about by a given intervention. At the organisational level, the maintenance issue could circle around the feasibility of making the intervention part of day-to-day operations.

An illustrative example of the way in which these five questions are usable in assessing which ways and to what degree promising interventions are transferable from one context to another can be extracted from school-based intervention with a focus on diet and nutrition. Imagine there is solid evidence to show that an intervention designed to improve eating habits among children and young people, has a significant effect on important outcomes measures. This could, the first time round, lead to the recommendation that the intervention was worth implementing on a larger scale. However, if the intervention has solely been introduced and maintained at very few schools with above-average resources, consideration should be given to whether the intervention would have the same effect at schools where there were fewer resources.

A different scenario is also possible: A preventive intervention that receives positive evaluations due to the ease to which it can be disseminated and maintained over time in many surroundings, is really not that interesting if it has no significant, relevant effects on the target group, e.g. in terms of maintaining behaviour change or reducing the risk of specific diseases, etc. (17).

6 Evidence-based prevention

It is important to have a critical attitude to different types of evidence when working with preventive interventions. Members of the public who are affected by preventive interventions and those who ultimately make rulings on which intervention schemes should run and at what costs, are entitled to be informed on the basis of the best current available knowledge as regards 1) the size and severity of the health problem that needs to be addressed, 2) the likely effects and potential harms of proposed interventions and 3) the feasibility of implementation. One way to secure this is via generating, synthesising, and making accessible, quality evidence on the formation, implementation, outputs and outcomes of preventive intervention and programs.

Adhering to this kind of evidence, informed practice in relation to preventive work is clearly quite a challenge. One reason for this is that there still are many areas where we only have scarce knowledge on important questions, like how best to reach targeted populations; how to develop organisational support to deliver selected interventions; and how to ensure that the intervention is delivered properly in order to be effective in expected ways. However, revealing those areas where evidence is lacking makes it possible to take them into account when prioritising and developing interventions. It also points out areas where we need to focus future building of practice-based evidence in order to promote evidence-based practice (18). Research-based methods should, of course, be used to generate this type of evidence, but research is not the main purpose of such efforts.

At the same time, it is worth remembering that a lack of solid evidence does not make evidence-based interventions impossible. What is needed is the best available evidence, not the best possible evidence. Perfection must not be made the enemy of the good, or put into different terms: much valid and reliable evidence is good, but a little or less solid insight is better than none at all. Finally, it must be highlighted that a lot of relevant evidence is, in fact, available – and the various stakeholders involved in prevention must be engaged in tracking this evidence down and making it have a real impact on health related practices and policies.

6.1 Practice-based evidence

Practice-based evidence builds on empirical findings from preventive interventions implemented in, more or less, everyday settings. Such interventions are a kind of "natural experiment" in which the exact content and circumstances of the intervention are not strictly controlled. Because such interventions take place in "typical" situations, they can be used as reality tests on interventions shown to be effective in controlled research trials. In Denmark, municipalities and regions are central in the further development of "reality tested", practice-based evidence. Local and regional authorities must be asked to and even instructed to systematically describe and assess their preventive interventions schemes and thus provide information on issues like the ones raised in this booklet. Mutual cooperation and strategic collaboration with research institutions or other similar enterprises, is one solid way to build up sufficient resources and competences to perform high quality evaluations of preventive measures and wider health related policy programs at local and regional levels.

Monitoring is the ongoing surveillance of intervention or an area that has the aim of ensuring that requirements, standards, etc. are complied with.

Evaluation is a systematic assessment of the organisation, performance, and effect of an intervention. There are several types of evaluation, including process and effect evaluation. Process evaluation describes and assesses the implementation of an intervention. Its purpose is to describe how a given process has been performed and how the process can be improved. An effect evaluation reveals the overall effect of the intervention. This applies to foreseen and unforeseen, positive and negative effects in the short and long term.

Read more about evaluation in **”Vejviser til evaluering”** (Guide to evaluation) (National Board of Health, Denmark, 2006):

<http://www.sst.dk/publ/publ2006/CFF/Vejviser/vejviseval.pdf> (*in danish*)

The National Association of Local Authorities in Denmark has published two documents regarding how municipalities can work with evidence, documentation and evaluation in the health area.

The use of evidence in municipal health work:

http://www.kl.dk/_bin/450fadb6-b7d6-402a-ad52-6e7106c32f09.pdf

Methods of documenting and evaluating municipal health tasks – a pragmatic approach:

http://www.kl.dk/_bin/e58da6c3-2624-4ff1-9fee-336a3dbcf05e.pdf

(*in danish*)

6.2 Rounding off

The area of Health Promotion and Disease Prevention is in a state of change. New knowledge emerges and new practice is developed. The evidence that already exists on effective and less effective interventions is communicated better today than just a few years ago. This is a positive trend which should be supported by continuing the work of accumulating evidence regarding effective methods and interventions, relevant target groups, settings and necessary resources.

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