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Determinants of application of the multilevel approach in management of a non-communicable disease in Denmark

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Abstract

Background Working at multiple levels (intrapersonal, interpersonal and structural) and within multiple settings (medical, communities/municipalities, regional, and governmental) plays a significant role in promoting health and preventing chronic diseases. We analyzed determinants of the use of multilevel approach-based work on the example of the management of type II diabetes in the Region of Southern Denmark.

Method A qualitative interview study comprising 19 individual interviews with health professionals at different levels and two focus group interviews with diabetes patients in municipalities of the Region of Southern Denmark.

Results Communication, funding, lack of clarity of content and aims of collaboration, and organizational, structural, and legislative issues were identified as the main barriers to effective multilevel approach-based management of type II diabetes.

Conclusion Organizational, structural and capacity-related barriers should be addressed in order to develop an effective multilevel public health approach to target type II diabetes and potentially other non-communicable diseases.

Background

Working at multiple levels (intrapersonal, interpersonal and structural) and within multiple settings (medical, communities/municipalities, regional and governmental) plays a significant role in shaping health systems, promoting health and preventing chronic diseases (1–8). The Danish health system comprises three levels of governance: the state level responsible for policies, the regional level responsible for hospitals and general practitioners, and the municipal level responsible for health promotion and disease prevention (9). This structure seems to be optimal for tackling non-communicable diseases via public health actions, yet there is sparse knowledge on determinants (either barriers or enablers) of public health work based on the multilevel approach, either internationally or in Denmark (10). To analyze how the multilevel approach is applied in Denmark on non-communicable diseases overall would prove an impossible task; therefore we chose type II diabetes (T2DM) as an example and located our study geographically within the Region of South Denmark. Successful control of the T2DM epidemic requires input on all levels of the health system in a harmonized, well-coordinated manner (11–16), serving as an excellent example to study application of the multilevel approach.

Methods

We conducted qualitative interviews with informants from the areas of health policy, health promotion, disease prevention, diagnosis, treatment, and rehabilitation to identify viewpoints on collaboration.

The 22 municipalities of the Region of South Denmark were ranked by T2DM prevalence, divided into quintiles, and 2 municipalities from each quintile were selected, taking in account geographic distribution within the region, leading to a sample of 10 municipalities. Eight municipalities agreed to participate and provided interviewees from responsible health departments, mostly health directors and health department workers. Invitation letters were sent to 89 general practitioners (GPs) in the municipalities and 4 agreed to participate in interviews. Hospital staff, 2 nurses and 2 hospital doctors, were invited from a regional hospital. The health unit of the Region of South Denmark and the National Board of Health provided 3 interviewees (totaling 19 individual semi-structured interviews) and 2 focus group interviews were conducted with patient organizations. Informants were strategically selected, ensuring representation from areas of health policy, health promotion, disease prevention, diagnosis, treatment and rehabilitation.

A semi-structured interview guide was developed based on literature reviews (10). The main themes comprised questions on how the participants experienced the collaboration process across levels, what challenges they experienced in collaboration, what contributed to improved collaboration, and communication issues.

The duration of face to face interviews varied between 30 minutes and one hour. The settings were health departments of the municipality, hospitals, GP offices, and the regional and national board of health offices. All interviews were audio recorded and transcribed verbatim.

Data analysis in this study applied conventional content analysis (17,18). To ensure the consistency of the analysis and coding, five interviews were independently coded and analyzed by a second analyst. In case of disagreement, consensus was reached between the two analysts through discussion. In addition, a coding manual was developed, consisting of categories, definitions or rules for assigning codes, and examples, in order to ensure consistency. The overall coding scheme was discussed and approved by all co-authors.

Results

Main issues facilitating or hindering multilevel collaboration in the study area are summarized in Table 1, in categories and sub-categories without respect to levels.

[Table 1: Categories and sub-categories influencing multilevel collaboration]

Communication

Many participants described the importance of having common terminology in order for health professionals to understand how their work contributes to outcomes. A respondent from the health unit

of the Region of South Denmark said: “Then we should learn to speak the same language, and also have a deeper insight into each other’s work and working conditions… I think that could help lift something.” All participants mentioned the need for meetings and workshops where professionals from different sectors could meet to discuss and plan further collaboration and create an opportunity to interact and create relationships across disciplines. A municipality worker mentioned:

I really think that the more we know each other the more it will lead to good collaboration. For instance, one day we invited the general practice staff, doctors and nurses for a workshop. We met face to face and had conversations about what works and what doesn’t work. It really helped because now you know them personally and have seen their faces.

The same individual also said, "I think it’s really relevant that we keep meeting across cultures and educational backgrounds.”

Participants also stated the importance of establishing a data and information platform allowing for quick and complete exchange of information between professionals as well as providing an overview of the patient’s status, offers and needs. As a general practioner stated:

One of the clear problems is that we do not write in the same systems, i.e. that the information is found in several different systems. Where we do not necessarily have direct access to their systems, and they do not have access to ours.

Financial issues

The reimbursement system was seen as a barrier, as mentioned for instance by a hospital doctor as follows:

Most important thing is that the municipalities seek “pulje” [grant] money for all possible projects, but they never have an intention to introduce them as a fixed procedure… and we are so terribly tired of being involved in projects that do not lead to permanent changes… it does not contribute to the collaboration.

…An option could be that each sector put some funds into a shared pool, and then secure a common education concept across sectors so all professionals get trained in the same direction in working together, and this also provides the opportunity to get to know each other and make better relationships regarding collaboration.

Legislation as barrier for collaboration

Another factor that hinders collaboration is legislation on different areas: for instance, differences arose between social care and health law, as described by a respondent from the National Board of Health:

"There are also some restrictions in relation to legislation. The two, the service law and the health act, must interact." The same respondent also said:

One of the elements in creating good coherent processes is that you have updated relevant knowledge about the citizen regardless of what sector. And there is legal discrepancy between the different sectors in relation to data sharing. Legislation is conservative to what the patients or citizens themselves are expecting. For instance, they may wonder that their own GP or health workers in the municipality do not know what you have talked about to your doctor in hospital. And that's not because our system has let them down, but that's because we are not allowed to talk about such things. It is obviously also a barrier. This is probably one of the most important issues concerning collaboration between the levels.

Lack of clarity concerning content of collaboration

The majority of the respondents support the idea of collaborating with other health professionals; however, there is no clarity concerning the content of collaboration. Disease management programs are a part of the health agreement (19) which describes the areas of responsibility for the GP, hospital and municipality; a hospital doctor said: "Clear collaboration agreements are needed. The municipal self-government allows all the municipalities to act differently and they have different ways to do things." A municipality worker described: "We are all important parts in creating good collaboration; no part is more important than the other."

Another important topic identified in the interviews was to what extent the disease management program for T2DM was implemented in the municipality, both by GPs and hospitals. A number of doctors had never heard of a disease management program, which is developed to improve coordination and collaboration regarding prevention, management and rehabilitation.

Municipal reform and Denmark's Health Act were established in 2007, at which time it became mandatory for municipalities and regions to enter into binding agreements for collaboration (19). At the same time, municipalities were allowed significantly greater responsibility for health promotion, disease prevention and rehabilitation. Yet GPs and hospital doctors have a lack of trust or belief in municipalities' competency to perform health activities; as a general practitioner stated: "But there are some municipalities that are not geared to do it; they did not obtain competencies to carry out the task. That is discussed a lot recently. How can they get the skills, should it be with help from us? Or how?"

Organizational issues

A major challenge identified by a great number of informants is organizational complexity. In order to apply the multilevel approach, respondents mentioned that organizations need to communicate and collaborate to offer rehabilitation to citizens. For instance, the need for a formalized approach as

specified in the health agreement, where there is a definite structure of formal collaboration between the levels.

Another topic discussed during the interviews was the lack of common management and leadership for GPs. This makes collaboration even more problematic due to the fact that no one can represent the GPs; an interviewee from the Region of South Denmark said:

So, I think the biggest challenge in general practice as a sector is that it's a lot of small private units. Hospitals and municipalities have management and leadership, and if you want something at the director level, you have at least a hierarchical system to get things done, with the challenges that are of course also internal to large systems. But with general practice, there are about 400 private units that do not have a common board of directors. They have a common association, but it's just not the same. And that makes it unequal to implementing new initiatives, difficult to communicate, difficult to be in dialogue with them as a sector. And they are struggling to represent each other, also internally at the municipal level.

Structural limitations

The informants emphasized the need for a clear mandate from the top to enable the different levels in the health system to work together effectively. A respondent from the health unit of the Region of South Denmark stated:

It is not always the resource which is a limitation, we have to be honest to ourselves; in many cases it could be different traditions or sector limitation. You know the barriers with incentives or other things, which makes it really difficult. Sometimes it is limitations in the general structure that are decided on the highest level.

All participants mentioned the general incentive structure as challenging for collaboration. For example, a respondent from the health unit of the Region of South Denmark formulated it as follows:

Yes, that's it. Incentive structures [are] so basic. So what do you get money for and to. The hospital is rewarded for activity and productivity and not so much for quality. General practice is paid by the service, so they do not necessarily get incentives to prevent or refer to community activities or to create coherence at all. That's how it may be. In fact, it may be time-consuming to collaborate for doctors, if you look at it economically. And, of course, the municipalities also have their incentives, which is different. It is probably the biggest barrier…

Resources

The participants viewed having a diabetes nurse at the GP's office as a facilitator for collaboration, as mentioned by a hospital doctor:

There is a big difference if [a] general [practitioner] has a practice nurse in his consultation. Sometimes it is the nurse who follows up on citizens/patients, meets them, asks questions about their knowledge about diabetes and complications.

Discussion

The aim of this study was to analyze how the multilevel approach is implemented in public health work in Denmark, focusing on the identification and description of potential barriers and facilitators of full implementation of the multilevel approach, using T2DM as a disease example. The most important facilitators for better organized and coordinated collaboration across sectors such as health policy, health promotion, disease prevention, diagnosis, treatment and rehabilitation were shared goals and visions, trust and mutual respect, leadership that supports collaboration, and effective communication, including meetings and workshops and competency development. Weaknesses in any of these areas counts as a barrier; funding issues were recognized as a barrier as well. Our results are consistent with the results found in the literature (20–25). Findings from a study conducted by Vrangbæk & Scheele showed personal relations, trust and communication as facilitators for collaboration, and organisational issues and lack of clarity concerning the content of collaboration as barriers (26). Local/regional and national stakeholders also have major roles to play to facilitate collaboration in the health system, as shown by literature (4, 5, 21, 27–29). The decentralized Danish health system offers an excellent opportunity for full implementation of the multilevel approach, but more systematic coordination and harmonization among different levels is needed.

Based on consensus of statements from regional staff, municipality workers, general practitioners, hospital doctors, and the national board of health, a common view was held that a lack of vision for collaboration, where people are not clear on the end result of collaboration, can be a significant barrier to collaboration. Therefore it is imperative that the vision for any collaboration be determined early on and clearly communicated across all levels and among partners in collaborations, ranging from the structural to the intrapersonal level.

Another barrier identified in this study is the lack of electronic health records that all collaboration partners have full access to. Participants from all levels mentioned the importance of online communication platforms as a tool to communicate.

Despite its qualitative nature, the interview data is a unique dataset of the opinions of health system professionals in Denmark on facilitators of and barriers to public health work; this dataset is definitively the biggest strength of our study. Studying the application of the multilevel approach solely on T2DM could be perceived as a limitation due to reduced potential generalization to other non-communicable disease. However, we believe that this is a minor limitation, as T2DM in principle served to select the municipalities for analysis and develop the conceptual framework for interviews. Similar responses could likely be obtained regarding any other non-communicable disease. Another question related to this study's limitations is whether the identified facilitators and barriers are relevant for the Danish health

system as a whole or only the Region of South Denmark. It is known that there are small differences in organization among Danish municipalities, mostly in disease prevention and health promotion work, yet the overall system is the same across the five regions of the country. Therefore, we believe our findings are relevant for Denmark as a whole.

Conclusions

Shared goals and visions, trust and mutual respect, leadership, communication, and funding oriented more toward long-term sustainability (e.g. not short-term project-oriented work) were identified as the most important facilitators of and barriers to full implementation of multilevel approach-based work in the Danish health system. The system requires more harmonization and better coordination on the macro and micro level.

Declarations

List of abbreviations

T2DMType II diabetes

GP General practitioner

Ethics approval and consent to participate

According to Danish law no ethical approval is needed. The consent obtained from study participanys was writtten

Consent for publication

Not applicable

Availability of data and materials

Not applicable

Competing interests

The authors declare that they have no competing interests.

Funding

None

Authors’ contributions

FN have made substantial contributions to the conception and design of the work; and the acquisition, analysis, interpretation of data, and have drafted the work or substantively revised it

FN has approved the submitted version (and any substantially modified version that involves the author's contribution to the study). And also to have agreed both to be personally accountable for the author's own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature. Furthermore FN ensured that original data/original figures/materials/code upon which the submission is based are preserved following best practices in the field so that they are retrievable for reanalysis, confirming that data/figures/materials/code presentation accurately reflects the original

GG have made substantial contributions to the conception and design design of the work; and interpretation of data; AND to have approved the submitted version (and any substantially modified version that involves the author's contribution to the study); AND to have agreed both to be personally accountable for the author's own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature.

JS have made substantial contributions to the conception and design design of the work; and interpretation of data; AND to have approved the submitted version (and any substantially modified version that involves the author's contribution to the study); AND to have agreed both to be personally accountable for the author's own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature.

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Key points

- Successful application of the multilevel approach requires actors on different levels to have articulated and well-understood shared goals and strategies to manage and prevent T2DM.
- Formalized approaches including policies, information platforms, and data sources are needed to support and endorse collaboration between the levels.

- There is a strong need to develop models for chronic diseases in which the multilevel approach is well integrated and therefore contributes to better population health.

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Tables

Table 1: Categories and sub-categories influencing multilevel collaboration

Category	Sub-category
Communication	· Common terminology · Meeting and workshops · Lack of quick and direct communication · Shared information and data system
Funding	· Funding system based on “pulje”(call for project proposals) · Lack of stable funding that promotes collaboration
Legislation as barrier for collaboration	· Regulations as barrier for collaboration · IT system
Lack of clarity concerning content of collaboration	· Clearly defined collaboration agreement between actors GP´s must be obliged to collaborate · Implementation of disease management program · Lack of trust or belief in municipality´s competence
Organizational issues	· Formalized approach in health agreement · Lack of common management and leadership for GP´s · Leadership in the organization that supports collaboration

Structural limitations	· Lack of relevant policy initiatives to support collaboration · Incentive structure
Relational collaboration among actors	· Knowing each other's values and competencies · Mutual respect and trust · Shared vision and goals · Different cultures and traditions · Personal relations
Resources	· Diabetes nurse at GP · Time · Competence development · Compensation model for doctors/ GP activity based remuneration
Patients perspective on collaboration and navigation in health system	· Knowledge of healthy lifestyle · Supportive environment · Satisfaction with intervention programs in municipality · Motivation for lifestyle change · Lack of coherent patient flow

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- COREQChecklist.pdf