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ORIGINAL ARTICLE

Financing intersectoral health promotion programmes: Some reasons why collaborators are collaborating as indicated by cost-effectiveness analyses

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Abstract

Aims: Intersectoral collaboration is an important part of many health promotion programmes. The reasons for the local organisations to collaborate, i.e. to finance programmes, are presumably based on benefits they derive from the collaboration. The aim of this study is to discuss whether subsector financial analyses based on data from cost-effectiveness analyses reflect incentives of collaborating organisations in two intersectoral health promotion programmes. *Methods:* Within economics, financial incentives are important reasons for actions. The financial incentives of collaborators are exemplified with two subsector financial analyses containing avoided disease-related costs as estimated in two cost-effectiveness analyses, on an elderly safety promotion programme (Safe Seniors in Sundbyberg) and on a diabetes prevention programme (Stockholm Diabetes Prevention Program, SDPP) from Stockholm, Sweden. *Results:* The subsector financial analyses indicate that there are financial incentives for the key local community organisation, i.e. the local authority, to collaborate in one of the programmes but not the other. There are no financial benefits for other important community organisations, such as non-governmental organisations. ***Conclusions:*** **The reasons for collaborating organisations to collaborate within intersectoral health promotion programmes extend beyond financial benefits from averted disease. Thus, the reported subsector financial analyses are only partial reflections of the incentives of collaborators, but they might be used as a starting point for discussions on cost sharing among potential intersectoral collaborators.**

Key Words: *Community-based, diabetes prevention, economics, economic evaluation, elderly safety promotion, financing, health promotion, implementation, intersectoral collaboration*

Background

For several decades, collaboration with organisations outside the healthcare sector has been advocated to address health issues [1,2], often termed intersectoral action for health (IA) [3]. One reason is that the determinants of health extend well beyond the individual and individual-level lifestyle factors into general socioeconomic, cultural, and environmental factors [4]. Consequently, other sectors of society, apart from the healthcare sector, also need to assume responsibility for the public health and related measures. Intersectoral action has also been advocated to address health inequity, e.g. by the WHO Commission on Social Determinants of Health [5].

Intersectoral collaboration has also been proposed as a means to reach other important health promotion objectives: it presumes local community participation, which facilitates community and individual-level capacity building and empowerment, and ensures that programme goals and methods are adapted to local conditions, which in turn increase sustainability and programme effectiveness [6].

A prerequisite for intersectoral collaboration, however, is that organisations are willing to collaborate, i.e. to dedicate their resources. Economic theory asserts that incentives are required for any action, incentives that are often assumed to involve financial gains. If there were a lack of incentives, presumed collaborators would not participate. The result might

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be that interventions that are desirable from a societal point of view might not be implemented, or be implemented less efficiently, which in economic terms would be called suboptimal resource allocation.

Health economic cost-effectiveness analyses contain data that might be employed to investigate financial incentives of collaborating organisations. If these analyses are performed from a societal perspective, i.e. the analyses include all changes in resource consumption because of the programmes, regardless of payer or beneficiary [7], the financial implications of programmes for different organisations might be calculated. By comparing the resources committed, the intervention costs, with the estimated resources saved for different organisations or sectors of society, the analysis might highlight which organisations have financial incentives that might induce them to collaborate in intersectoral programmes.

The need for subsector analyses is particularly obvious in a Swedish setting, because the responsibility for public health legislation and policy is divided among three organisational levels: the state, the regional county councils, and the local authorities (municipalities). Even though the county councils, by legislation, are responsible for the population health and, furthermore, are in charge of the health care, the local authorities administer several population welfare matters, such as infrastructure and social care, as well as supervise some public health legislation. During recent years, the state and the county councils have sought to encourage the local authority public health work by several means (financial, expertise, information, and governance) in order to reach the population [8].

The aim of this article is to assess whether subsector financial analyses reflect incentives of collaborating organisations by comparing two Swedish cases based on two cost-effectiveness analyses of community-based programmes: one elderly safety promotion programme and one diabetes prevention programme.

Methods

The programmes

The two programmes were implemented in municipalities in the Stockholm metropolitan area: the elderly safety promotion programme (Safe Seniors in Sundbyberg) during 5 years, 1995–1999, and the diabetes prevention programme (the Stockholm Diabetes Prevention Program, SDPP) during 10 years, 1995–2004. Both programmes were based on principles for community organisation and intersectoral collaboration [9] with project funds allocated from the Stockholm County Council.

The safety promotion programme, which combined structural changes in the environment with individually based measures using both safety promotion and injury prevention methods, was aimed at preventing falls among the elderly. The diabetes prevention programme was aimed at promoting healthy lifestyles in the general population to prevent diabetes and pre-diabetes, focusing on physical inactivity, poor dietary habits, and tobacco use by means of both individual lifestyle and community change.

The programme effects were studied with quasi-experimental methods: time series analysis with several control areas in the elderly safety promotion programme and cohort analysis with one control area in the diabetes prevention programme. The safety promotion programme effects were measured as the number of avoided first hip fractures in the intervention area during the intervention period (assumed avoided for 1 year) in comparison with the control areas. The diabetes prevention programme effects were changes in the levels of the risk factors systolic blood pressure, body mass index, and fasting plasma glucose during 8–10 years among men and women aged 36–56 years at baseline in comparison with changes in similar groups in the control area. Because the baseline risk levels were different in the groups, the changes in risk factors were compared as changes in future disease-related costs.

The effect evaluations were thus conducted at different levels for the two programmes: at the community level in the elderly safety promotion programme (i.e. numbers of avoided hip fractures in the community) and at the individual level in the diabetes prevention programme (i.e. average changes in individual risk factor levels), which determines how the economic evaluation result is reported: community overall vs. per individual. Both studies were approved by the regional ethics committee in Stockholm.

The cost-effectiveness analyses

The cost-effectiveness analyses of the two programmes have been reported in detail previously [10,11], but for this study only data from one of the three intervention municipalities (I2) in the diabetes prevention programme is included. Both economic evaluations were performed from the societal perspective, aiming to include costs and consequences for all sectors of society, including participants' time. All costs, including the intervention costs, were discounted 3% annually and are presented as 2004 Euros (1 € = 9.13 SEK), converted by the Swedish consumer price index and the official rate of exchange.

The intervention costs, i.e. the costs of implementing the programmes, were based on document analyses and self-reports by key persons in collaborating organisations and in close cooperation with the project coordinators; prospectively for the elderly safety promotion programme and retrospectively for the diabetes prevention programme (reported in [12]). Wage costs for employed within the programmes were taken from the project accounts, whereas wage costs for employed in collaborating organisations were estimated by occupation in five/seven categories, including payroll taxes of 40%. Unsalaried work and participant time are important resources in health promotion programmes, but the valuation of the time is contentious [7]. The time by voluntary workers was unfortunately valued differently in the two programmes: at the average Swedish wage excluding payroll taxes in the diabetes prevention programme and at 35% of the average Swedish wage in the safety promotion programme. The latter is a frequently used Swedish valuation of leisure time [13], which was also used for participants' time in both studies. Other resource consumption was taken from project accounts or quantified from standards (e.g. 3 hours for each meeting, including travelling time in the safety promotion programme). Standards were also used for valuing resources, such as 20% of wages for running costs such as office space, computers, etc., and €22 for a meeting room.

The financial benefits are calculated from the estimated future long-term effects on injury/disease incidence and related societal costs, which were obtained via simulation models, called Markov models [7], constructed in DATA (Treeage Inc; see the models' technical reports [14,15] for details). The model used for the elderly safety promotion programme was fairly simple and only incorporated hip fracture-related consequences. The model used for the diabetes prevention programme incorporated not only diabetes but also the diseases included in the metabolic syndrome, i.e. coronary heart disease, stroke, and diabetes including diabetes-related complications, as the programme aimed to affect risk factors not only for diabetes but also for cardiovascular disease. Both models only contained Swedish data on disease-related costs, with medical treatment costs taken from the Stockholm County Council databases. Several cost items are underestimated, because of lack of appropriate data sources, in particular community and informal care costs that are due to the coronary heart diseases (Table I).

Results

Both programmes attracted collaborators from several sectors of society (see the first two columns in Tables II and III). The total intervention costs of the elderly safety promotion programme amounted to about €700,000, of which local collaborators paid about €280,000. The most significant collaborator was the local healthcare organisation, that contributed about €163,000 apart from the project funds of €260,000 committed by the central healthcare organisation. The local authority, i.e. the municipality, spent about €425,000, while local commercial companies contributed about €50,000. Approximately 50% of the total intervention costs were thus mobilised among local collaborators.

Table I. Disease-related costs included in simulation models (annual costs per individual).

	Medical treatment						
	Initial	Annual	Death	Pharmaceuticals	Community care	Informal care	Productivity[a]
Hip fracture	12,088	1379	NA	170	4184	353	NA
Acute myocardial infarction	12,496	6434	21,344	405	0	0	12,596
Ischaemic heart disease	NA	4179	22,242	296	307[a], 811[b]	570[a], 307[b]	11,720
Congestive heart failure	NA	5499	19,133	329	31,982[c]	0	2957
Stroke	10,230	4995	19,652	372	5082	1314	8762
Diabetes	NA	3590	NA	789	120	887	1862
Macro compl	NA	10,766	15,051	1128	120	887	1862
Micro compl	NA	3160	15,893	1128	120	887	1862
Both compl	NA	9777	15,764	1128	120	887	1862

Values are 2004 Euros.
Initial, during first year; Annual, during subsequent years; Death, during year of death; compl, complications; NA, not applicable.
[a]Under the age of 65 years.
[b]Over the age of 64 years.
[c]For 4% of patients.
For references and methods, see the models' technical reports [14,15].

In the studied municipality in the diabetes prevention programme, both the regional healthcare organisation and the local authority contributed to the assigned project funds; about €62 and €4 per inhabitant in the target group, respectively. Some resources were also mobilised from the local healthcare organisation and from the local authority, as well as from several other sectors of society, amounting to about 15% of the intervention costs.

Both programmes resulted in overall cost-savings, with the estimated financial savings €7900 higher than the total intervention costs in the elderly safety promotion programme and €812 higher per inhabitant in the diabetes prevention programme municipality. The largest financial savings in the elderly safety promotion programme were estimated for the local authority, which made that organisation the only net beneficiary from the programme, with estimated net savings of €293,000. The diabetes prevention programme, on the contrary, is estimated to result in cost increases for the local authority, of about €320 per middle-aged inhabitant, whereas the healthcare organisation is estimated to benefit by about €1000 per person.

The local authority in the diabetes prevention programme municipality is actually estimated to increase its costs, which is due to the estimated future disease patterns in the population. The diabetes incidence in the female population is estimated to decrease substantially in comparison with the control area. In the male population the incidence of stroke is estimated to increase. Because the costs for diabetes, and related complications, are similar to the costs of stroke for the healthcare organisation (Table I), the large savings from female diabetes are estimated to balance the costs for the strokes among males. For the local authority, on the other hand, the large differences in community care costs between the diseases will result in an overall increase in net costs.

For remaining local collaborators, i.e. local commercial companies, NGOs, and several other organisations, the subsector financial analyses indicate zero financial benefits. Participants and their relatives are estimated to draw some benefits, enough to balance the intervention costs in the diabetes prevention programme.

Table II. Subsector analysis of the elderly safety promotion programme.

Payer	Intervention costs	Financial savings	Net costs
Project funds	262,400		
Local health care	163,100		
Health care total	425,500	−272,800	152,700
Local authority	111,600	−404,600	−293,000
Local commercial companies	47,400	0	47,400
NGOs	15,700	0	15,700
Other	14,800	0	14,800
Participants and relatives	91,400	−36,900	54,500
Total	706,400	−714,300	−7900

Values are 2004 Euros.
NGOs, non-governmental organisations.

Table III. Subsector analysis of one of the municipalities in the diabetes prevention programme (per inhabitant aged 46–64 in year 2004).

		Financial savings			
Payer	Intervention costs	CHD	Stroke	Diabetes	Net costs
Project funds	62				
Local health care	0.4				
Health care total	62	88	652	−1816	−1014
Project funds	4				
Local authority	10				
Local authority total	14	−51	398	−44	318
Local commercial companies	0.2	0	0	0	0.2
NGOs	0.7	0	0	0	0.7
Other	1	0	0	0	1
Participants and relatives	14	4	103	−321	−200
Society overall[a]	0	−86	264	−96	82
Total	92	−45	1417	−2277	−812

Values are 2004 Euros.
NGOs, non-governmental organisations; CHD, coronary heart disease.

Discussion

The financial subsector analyses of the two cases resulted in conflicting results. In the elderly safety promotion programme the local authority was the only net beneficiary, with estimated financial savings from averted injuries considerably higher than committed intervention costs. In the diabetes prevention programme municipality, the healthcare organisation was estimated to draw substantial financial benefits from the programme, whereas the local authority was estimated to increase its costs related to metabolic syndrome diseases. Other collaborators were not expected to draw any financial benefits from their collaboration in the programmes. The financial incentives would thus suggest collaboration solely from the local authority in elderly safety promotion programmes.

Intersectoral programmes have a huge potential to affect population health in that different sectors contribute the competences and measures available to them. Intersectoral action, however, requires financing from several sectors of society, which is an acknowledged barrier [3]. Therefore, one of the recommendations of the WHO Commission on Social Determinants of Health was the establishment of cross-government mechanisms, including national and local government and civil society, to allocate budget funds [5]. Furthermore, clear descriptions of the financial incentives of each sector to participate, i.e. to take socially desirable actions [16], would facilitate the resource allocation. A critical review of cost-effectiveness analyses of public health programmes also suggested that the impact of programmes across sectors of society be clearly described in order to reflect the intersectoral costs and consequences [17]. There are also examples of such descriptions in a Swedish setting [18].

A financial subsector analysis, however, demands appropriate data to be reliable. In the two programmes considered in this paper the intervention costs were probably underestimated, because of difficulties to collect data from the large number of collaborators during the extended programme periods. The estimated financial savings from the programmes, in turn, depend on the effectiveness of the programmes and the avoided costs included in the economic evaluations. The effect evaluation of the diabetes prevention programme in the municipality considered here indicated that there were positive effects for women, but not for men, in comparison with the control area. The financial subsector analysis thus includes cost increases for the male population, which affected the estimated local authority financial benefits to a large extent. The financial subsector analysis is therefore only reliable if the effectiveness evaluation is reliable. Furthermore, the financial disease-related savings are probably underestimated in both cases: the analysis of the elderly safety promotion programme only included costs for hip fractures, although the programme probably affected other injuries as well, and several cost items for the metabolic diseases included in the analysis on the diabetes prevention programme were lacking or probably underestimated, in particular the costs for community care financed by the local authorities.

The underestimates are probably aggravated by the difficulties to fully reflect the health gains and related cost savings from physical activity [19], one of the main components of the diabetes prevention programme. For measures to increase physical activity, the local authority is the key organisation in Sweden, as they are responsible for the local road system, recreational areas, and sports facilities. Thus, the local authorities have at their disposal many of the means to affect population health by creating supportive environments for physical activity, which also have been acknowledged under the term urban planning [20]. Yet, available Swedish economic evaluations include very few benefits to the local authorities from physical activity measures. For example, a cost–benefit analysis of some measures to convert Linköping into "The bike city" showed that overall benefits outweighed the costs by a factor of 7 to 1, but the analysis included very few financial benefits for the local authority even though the organisation would pay most of the costs [21].

Given that the stated purpose of economic evaluations is to serve as a basis for decision making and that these economic evaluations include available data, also to the local authorities, there must be other factors included in the actual local authority decisions. The Linköping local authorities obviously have good reasons for investing in measures to convert the city into "The bike city". The local authority that participated in the diabetes prevention programme also has a long tradition of collaborating in public health programmes, even after the diabetes prevention programme ended [22]. It therefore appears that local authority objectives extend beyond saving disease-related costs.

There might be other incentives than financial. For instance, improved population health has been claimed to contribute to economic growth at the European [23] and Swedish regional level [24]. Other reasons for collaborating organisations might be increased networking and access to information and skills, or that participation in work perceived as

commendable results in goodwill, i.e. a good reputation among the customers [6]. Intersectoral collaboration might also be a way of attaining goals that should be fulfilled anyway because of organisational responsibilities or public demands, or that would be impossible to attain without collaboration over organisational boundaries [25]. Consequently, intersectoral action has frequently been used as a strategy to deal with complex policy problems, framed as, e.g., community development, employment and education, crime prevention, or, more recently, environmental protection, which often determines which sectors of society are seen as the leader and as the collaborators [3].

During recent decades, public health might have become distanced from the realm of the health sector and approaching that of other societal sectors, reflected by the Ottawa Charter statement: "health is created in the context of everyday life: where people live, love, work and play" (cited from [26]). Hence, successful public health programmes do not only prevent disease but also increase individual wellbeing and societal welfare. These might also be the objectives for other sectors of society, such as the local authorities and the voluntary sector [27], which might explain why these sectors, presumably not primarily concerned with health issues, are willing to collaborate in public health programmes. Indeed, the conclusion of an overview of the evidence-base for IA was: "...need to shift from *IA for health* to *IA for shared societal goals*." [3, p.34].

Unfortunately, the financial subsector analyses of the two public health programmes reported here were only able to include some benefits of the programmes, namely estimated costs saved from preventing certain diseases or injuries. To the extent that the objectives of collaborators are to maximise societal and individual welfare, and not minimise disease-related costs, the analyses seriously underestimate the benefits to the collaborators. Accordingly, the major drawback of the reported subsector financial analyses is that they only include parts of the societal value of public health programmes. This underestimate turns the subsector financial analyses into partial reflections of the incentives of collaborators, which needs to be emphasised when reported. Nevertheless, the data obtained from cost-effectiveness analyses on public health programmes might be employed as indications on financial benefits for collaborators and used as a starting point for discussions on cost sharing between potential intersectoral collaborators to ensure that effective and cost-effective public health programmes are implemented.

Conclusions

Intersectoral collaboration requires financing from several sectors of society, but comprehensive data on the benefits to the collaborators are needed if incentives are to be truthfully reflected in subsector financial analyses.

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