Municipal tobacco control in the Capital Region of Denmark can be improved

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ABSTRACT

INTRODUCTION: Smoking remains the single preventable factor with the highest impact on morbidity and mortality in Denmark. The aims of this study were to assess the quality of municipal tobacco control (TC) in the 29 municipalities of the Capital Region of Denmark, and to compare the quality of the TC and the priority given to TC with the prevalence of daily smoking across municipalities.

MATERIAL AND METHODS: In March 2012 a questionnaire regarding municipal TC was sent to the 29 municipalities of the Region. The response rate was 100%. Data were merged with information from the Health Survey undertaken in the Capital Region in 2010 which included 49,806 respondents. We assessed the quality of TC using two measures: self-reported priority (scale 1-10) and calculated quality score (scale 0-70), and compared these measures with the prevalence of daily smoking two years before.

RESULTS: There were large differences in TC between the municipalities of the region. A high smoking prevalence in 2010 was significantly associated with a high priority given to TC in 2012 (p = 0.03). The mean priority of TC was 7.1 (range 3-10) and the mean quality score was 37.1 (range 17-55). Smoking cessation services and prevention of second-hand smoking exposure seem to be the main areas of focus, while several at-risk groups were given a low priority.

CONCLUSION: In some municipalities, TC seems to be neglected, while others have achieved high standards. We call for major improvements in TC in the majority of municipalities.

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TRIAL REGISTRATION: not relevant.

With the Danish Structural Reform which came into force in 2007, the former 271 municipalities were merged into 98 larger municipalities, which became responsible for a broad range of health and welfare services [1].

A health survey performed in 2010 in The Capital Region of Denmark showed significant differences in smoking prevalence (14% to 26%) and in the prevalence of children exposed to second-hand smoke (SHS) at home (4% to 23%) across the 29 municipalities of the region [2]. This predominantly reflects the socioeconomic composition of the citizens, but may also reflect differences in local tobacco control (TC). The health consequences of smoking represent a substantial economic burden, and it has been estimated that in a municipality with 30,000 citizens, smoking costs 14 million DKK annually [3]. The decline in tobacco consumption in Denmark has been relatively small [4], and smoking remains the single factor with the highest impact on morbidity and mortality, the direct cause of approximately every fourth death, and also results in fewer years with a good quality of life [5]. Smoking causes 2.8 million days of sick leave and 5,000 cases of early retirement every year [6], and exposure to SHS is an important cause of morbidity and mortality [7]. Treatment of tobacco dependence is highly cost-effective [8, 9]. Nevertheless, there is little knowledge of TC across the municipalities of Denmark.

The aim of our study was therefore to investigate the volume and quality of municipal TC activities in the Capital Region and to compare these with the prevalence of daily smoking and of children's exposure to SHS.

MATERIAL AND METHODS

The questionnaire was developed by one researcher (CP) and critically reviewed by another researcher (KMR). The questionnaire was then piloted by a health professional working with health promotion in a municipality outside of the Capital Region. The questionnaire consisted of 20 questions and was sent to each of the 29 municipalities of the Capital Region; the first time on 15 March 2012. The questionnaires were sent directly to professionals known to work with health promotion/prevention in the municipalities. They were asked to complete the questionnaire or pass it on if another person had more knowledge of the topic. Also, the questionnaire could be completed in collaboration with others. Three reminders were sent to those who did not respond; the response rate was 100%.

TC was assessed using two methods. The person who completed the questionnaire gave a subjective view on the priority given to TC in the municipality: 1 (lowest) to 10 (highest). A senior researcher (CP) with experience in TC rated the questions on quality of TC: ranging from zero points (worst) to five points (best). A municipality could attain a maximum of 70 points for excellent quality. Furthermore, we assessed the level of implementa-

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tion of regulations/interventions as high if ≥ 80% of the municipalities responded that they were implemented.

The Health Survey undertaken in 2010 in the Capital Region of Denmark comprised a random sample of all citizens stratified by municipality drawn from the Civil Registration System [2]. A total of 49,806 persons (52.3%) completed the questionnaire. All municipalities were ranged in four socioeconomic categories based on the proportion of citizens with a low education, the proportion of citizens who were unemployed and mean gross income.

Statistics

All data processing was done with the SPSS 19.0 software (SPSS Inc., Chicago, IL, USA). Frequencies and Explore were used for simple description of the data.

The daily-smoking prevalence and the prevalence of children's exposure to SHS at home were dichotomised to "significantly higher than the mean value in the region" (yes/no). To investigate whether smoking prevalence in a municipality was associated with the priority given to TC or the quality score, we used logistic regression analyses. No further adjustments were made as analyses from the Health Surveys were already weighted for the size of the municipality and non-response (sex, age, socioeconomic factors, ethnicity, cohabiting with partner, number of visits and sign-up for 'research protection') and results were thus representative for the entire population in the region.

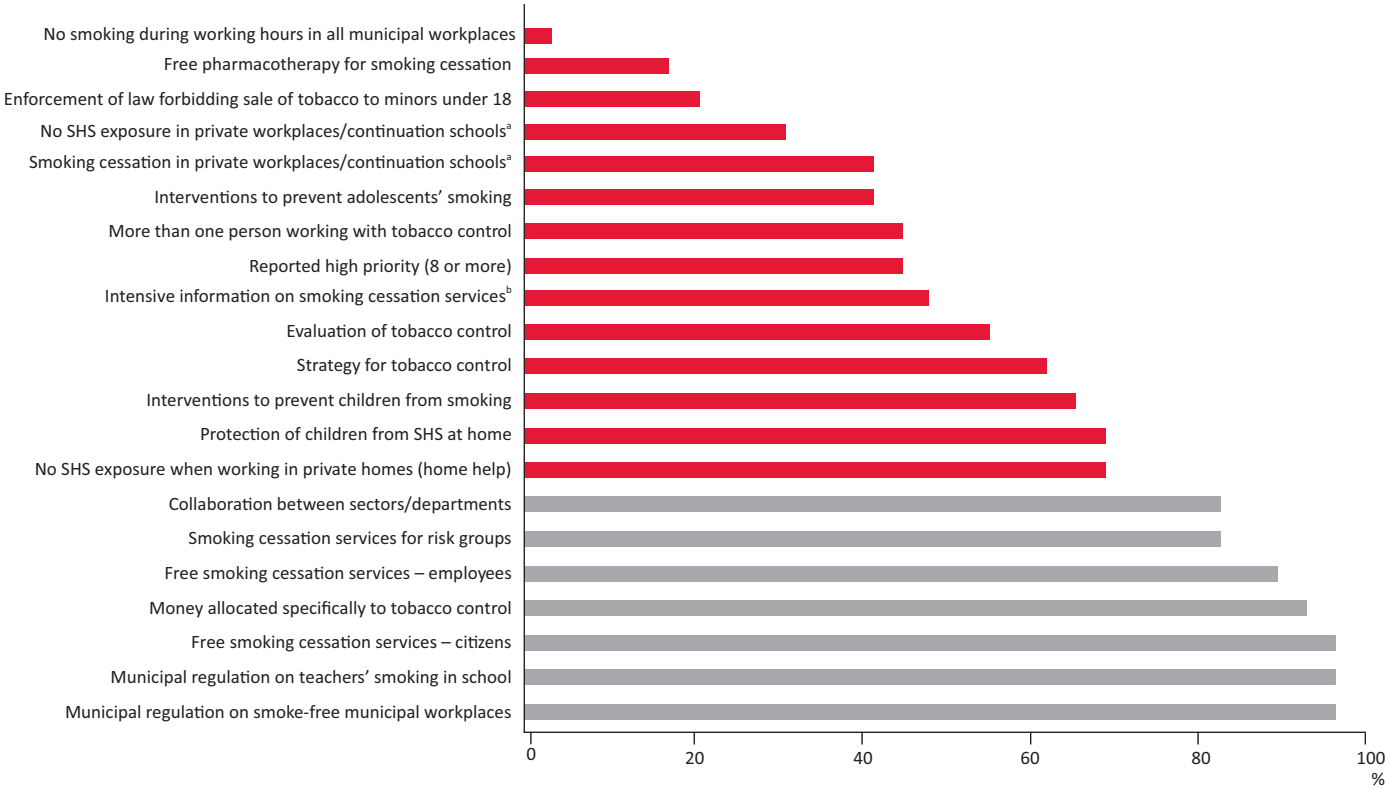
The logistic regression analyses were repeated for children's exposure to SHS and for the information level about the harmful effects of SHS. In this case, we adjusted for smoking prevalence. The Municipality of Copenhagen is very large and consists of ten districts that differ much in terms of socio-economic status and smoking prevalence.

The Municipality was not included in the regression analyses as we only had one answer regarding TC in the municipality, but had data on the smoking prevalence from ten districts. The model was controlled using the Hosmer-Lemeshow goodness-of-fit test. The level of significance was 0.05 in all analyses.

Trial registration: not relevant.

FIGURE 1

Municipal tobacco control interventions/regulations in the Capital Region of Denmark with high (grey bars) or low (red bars) levels of implementation. 80% was assessed as a "high level of implementation" of a specific intervention/regulation.



SHS = second hand smoke (passive smoking).

a) Not protected from second hand smoke by the law. b) Five different types of advertising or more.

RESULTS

Only a few municipal TC measures had a high level of implementation: money allocated for TC, collaboration between several sectors/departments, regulation of smoke-free municipal workplaces, free smoking cessation (SC) services and assistance for at-risk groups (**Figure 1**).

Many municipalities reported that TC was a high priority. The four municipalities with the highest quality score also had a maximum score on priority given to TC (**Figure 2**). All of these municipalities have the second highest municipal socioeconomic status, except one, which has the second lowest. The mean TC quality score was low (**Table 1**). Only two municipalities had a score higher than 50. We found that a higher quality score was associated with a higher priority score with a medium strength of correlation between the two scores (R^2 linear = 0.129, Pearson's correlation = 0.36; p = 0.055).

In regression analyses, we found no association between the quality score and smoking prevalence (p = 0.875), or number of different places/persons providing information about the harmful effects of SHS and the prevalence of children's exposure to SHS at home (p = 0.155). However, there was a significant association between a high municipal smoking prevalence in 2010 and a high priority of TC two years later (odds ratio (OR) = 1.95 (95% confidence interval (CI) 1.1-3.6), p = 0.032).

More than nine out of ten municipalities had allocated funds for TC (Table 1). Almost half had more than one person working on TC. Six out of ten had a TC strategy. In the majority of the municipalities, the strategy involved collaboration between several sectors/departments. A little more than half of the municipalities had performed an evaluation of their TC measures.

Only one municipality had no local regulations protecting their employees from SHS in municipal workplaces. In most municipalities indoor smoking was completely forbidden, and in one municipality smoking was forbidden during the whole working day.

Seven out of ten municipalities had regulations protecting their home-assistants and other employees from SHS when working in private homes, etc. However, only a third of those working with mentally ill persons were protected. Almost every third municipality tried to decrease SHS exposure for employees working in private workplaces.

Seven out of ten municipalities had interventions in place to reduce children's exposure to SHS at home. In most municipalities, a nurse who was specialized as an infant health visitor was responsible for informing the parents about the health hazards of SHS.

All but two municipalities had free SC assistance for employees and all but one had free SC assistance for citizens. Most municipalities were advertising this service on their website, in local newspapers or in general practices. Most of the SC counselling took place in a public office or at the local health centre.

Eight out of ten municipalities were offering SC assistance specifically to high risk groups, most frequently to chronically ill patients. Mentally ill patients, socially deprived persons and pregnant women received this offer less frequently.

Two out of three municipalities had interventions aimed at preventing children from starting smoking. Mostly these interventions took place in schools. Efforts to prevent adolescents from smoking in continuation schools was less frequent, with only four out of ten municipalities reporting interventions. All but one municipality had local regulations on teachers' smoking in

FIGURE 2

Calculated quality of tobacco control (red, maximum = 70) and self-reported priority of tobacco control (grey, maximum = 10) in the 29 municipalities in the Capital Region of Denmark.

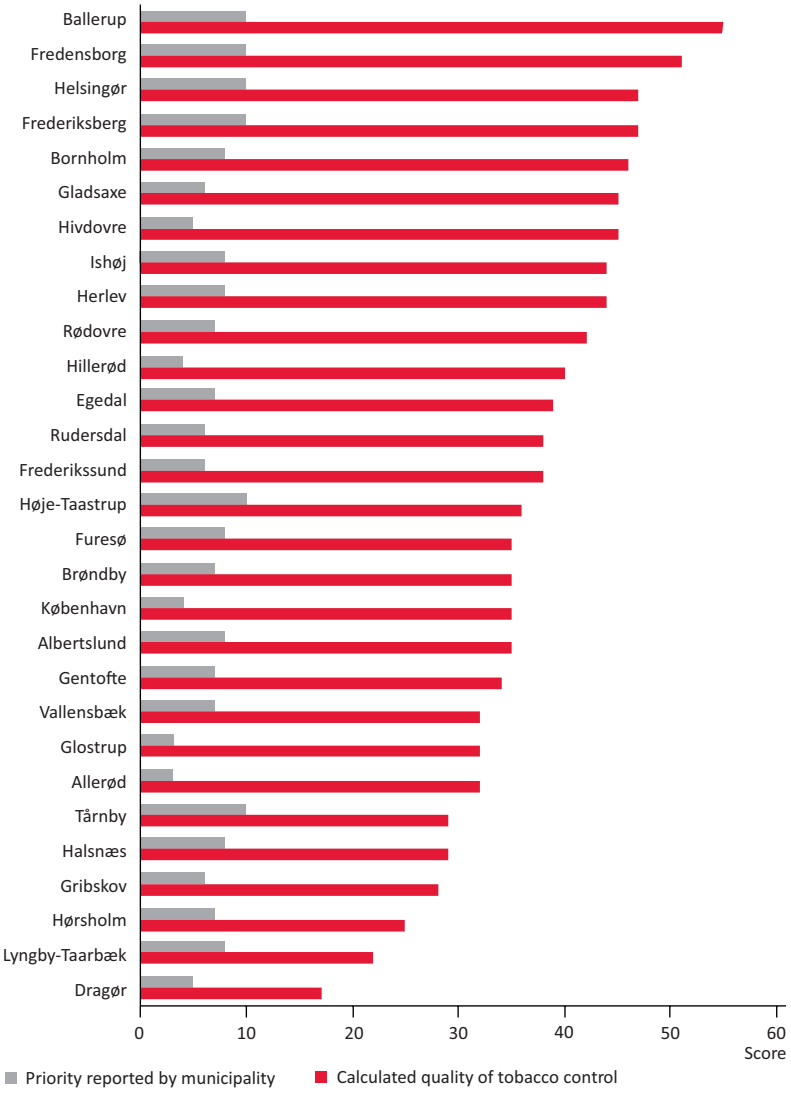


TABLE 1

Tobacco control in the 29 municipalities in the Capital Region of Denmark in 2010.

Tobacco control	% or mean (± SD)
Calculated quality score of TC, scale 0-70	37.14 (± 8.8)
Self-reported priority of TC, scale 1-10	7.10 (± 2.1)
Money allocated specifically to TC = yes	93.1
Duration of economic support for TC, years	
1	3.4
2	3.4
≥ 3	82.8
More than one person working with TC	44.8
Strategy for TC = yes	62.1
Collaboration between sectors/departments	
Yes, between two sectors/departments	34.5
Yes, between three or more sectors/departments	48.3
No	17.2
Evaluation of TC = yes	55.2
Evaluation of effect = yes	44.8
Evaluation of number of interventions = yes	41.4
Evaluation of economy = yes	13.8
Evaluation of other kind = yes	6.9
Municipal regulation on smoke-free municipal workplaces = yes	96.6
Permitted in smoking cabin only	3.6
Permitted in closed smokers' room	3.6
No indoor smoking	85.7
Permitted in smoking cabin or closed smokers' room	3.6
No smoking during working hours	3.6
No SHS exposure when working in private homes, etc. = yes	69.0
Private homes (home help) = yes	44.8
Residential homes for elderly = yes	44.8
Residential homes for mentally ill = yes	31.0
Psychiatric wards = yes	27.6
Shelters for mentally ill = yes	34.5
Action on smoke-free private workplaces and/or continuation schools[a] = yes	31.0
Private workplaces only = yes	30.0
Continuation schools only = yes	60.0
Both private workplaces and continuation schools = yes	10.0
Focus on increased protection of children from SHS at home = yes	69.0
Enforcement of law forbidding sale of tobacco to minors under 18	20.7
Municipal regulation on teachers smoking in schools = yes	96.6
No smoking during working hours	3.6
Permitted in smokers' room, not visible to pupils	3.6
Permitted outdoors, not visible to pupils	60.7
Permitted outdoors/in smokers' room, not visible to pupils	3.6
Permitted outdoors/in smokers' room, no demand for lack of visibility to pupils	17.9
Free SC services – citizens	96.6
Free SC services – employees	89.7
Intensive information on SC services[b]	51.7
SC services for at-risk groups	82.8
Chronically ill citizens	69.0
Mentally ill citizens	37.8
Pregnant women	17.2
Socially deprived citizens	31.0
Ethnic minorities	20.7
SC in private workplaces/continuation schools[c]	41.4
Free pharmacotherapy for SC	17.2
Interventions to prevent children's smoking in schools and/or after-school centres = yes	65.5
Schools only = yes	68.4
After-school recreation centres only = yes	0.0
Both schools and after-school recreation centres = yes	26.3
Interventions to prevent adolescents smoking in continuation schools = yes	41.4

SC = smoking cessation; SD = standard deviation; SHS = second hand smoke (passive smoking); TC = tobacco control. a) Not protected from SHS by the law. b) At least four different ways of advertising. c) Percentages with missing information in a specific question are not shown.

schools. In most municipalities, teachers were only permitted to smoke outdoors, away from students. In almost one out of five, teachers were not required to only smoke out of sight of pupils. In one municipality, teachers were required to avoid smoking during working hours. One out of five municipalities had interventions in place to enforce the law banning the sale of tobacco to minors.

DISCUSSION

This survey performed in all municipalities in the Capital Region of Denmark showed that few TC strategies were thoroughly implemented and that there were large discrepancies in the quality of TC across the municipalities. It has been a difficult task, especially for the small municipalities, to take over all the prevention responsibilities from the counties. Five years after the reform, smoking seems to be completely neglected in some municipalities, while others have high TC standards.

The Health Survey was meant to be a tool to highlight the need for health promotion, and it seems that the municipalities do actually use the information as those with a high smoking prevalence in 2010 have also given a higher priority to TC in 2012. Priority was a subjective measure and might give a truer picture of municipal TC than a short questionnaire which may not portray "real life". For example, there may be barriers from local politicians or there may be very devoted employees working with TC, neither of which is captured by the calculated quality score. On the other hand, priority might just reflect good intension and not implementation of TC activities. There was, however, good concordance between the priority and the quality score when assessing the top four municipalities.

Individual-oriented prevention

SC courses have shown high cessation rates, are highly cost-effective [9, 10] and have had a high priority in Denmark for decades, which is confirmed by our data. Almost all municipalities offer free SC services and many also have offers for special risk groups. Mentally ill persons are generally neglected even though there is evidence that they have a desire and are able to quit [11]. A recent study showed that even though the municipalities doubled their number of SC courses after the reform, the overall number of participants fell by 16% [12]. International recommendations are that 5% of smokers who want to quit participate in SC programmes; in Denmark it is less than 1% [12]. Also, we found that only very few municipalities offered free SC medication to at-risk groups.

Most schools offered programmes to prevent smoking; however, these interventions have generally shown disappointing results [13, 14]. In most municipalities the

infants' health visitor was responsible for informing parents about the health hazards of SHS. Only a few had additional activities in other places, so there is considerable potential for improvement.

Legislation and regulation

Protecting employees from SHS was given a high priority, and in most municipalities employees may only smoke outdoors. However, only one municipality has implemented 'the gold standard' – no smoking at all during working hours. In Sweden, almost 60% of all municipalities have implemented this standard [15]. Most employees are also protected from SHS when working in private homes, except for those working in shelters or with psychiatric patients.

The impact of TC implemented at the local levels to prevent youth tobacco use is not well documented, except for the low density of tobacco outlets [16]. However, there is good evidence suggesting that youth smoking is reduced owing to interventions at the state level, such as high pricing of tobacco, strict smoking bans, aggressive media campaigns and enforcement efforts to prevent the sale of tobacco to minors [17, 18]. It is expected that these interventions have an effect at local levels, too. We found that very few municipalities in the region had taken any actions to enforce the law to prevent sales to minors – if so as part of the schools, social authorities and police (SSP).

It is of great importance that children do not see their teacher smoke as many studies have shown that pupils who see their teachers smoke have a much higher probability of taking up smoking themselves than pupils who do not see their teacher's smoke [19]. Several municipalities had no regulations relating to teachers smoking in front of children, which is of great concern.

Finally, only a few municipal activities were targeted at adolescents with regard to smoking prevention and cessation in continuation schools and protection from SHS.

The strengths of the study are that the questionnaire was critically examined by two independent persons, the response rate was 100%, the data could be merged with large population-based data from the region, and two different measures were used to look at quality of TC.

There are, however, limitations. The person completing the questionnaire might not have been fully informed on TC. Also, the questionnaire could have included information on annual numbers of SC groups, restrictions on tobacco retailers (e.g. close to schools), etc. A very detailed questionnaire, however, could have affected the response rate. The reported priority score is subjective, and another employee would perhaps have rated it differently.

Smoking is still the single factor with the greatest impact on health. However, the municipalities do not make the most of the tobacco control options available to them.

The data are cross-sectional and can only give insight into what is going on now. Some municipalities reported that they were just about to implement a new TC strategy. For example, in one municipality improvements will increase the priority score by four points.

CONCLUSION

Five years after the national Structural Reform, smoking seems to be completely neglected in some municipalities, while others have achieved high TC standards. Results from the Health Profile Survey seem to influence municipalities' priority of TC.

In general, the municipalities are lagging behind in TC compared with Nordic neighbouring countries, e.g. with regard to the implementation of completely smoke-free working hours. Low priority areas in municipal TC are: mentally ill people, socially marginalized people, pregnant women and adolescents. Even though SC services seem to be one of the main focus areas for the municipalities, the overall national activity in this field has declined after the reform. We call for major improvements in TC in most municipalities; especially, we appeal to the municipalities to be much more ambitious in enforcing strict regulation as this has proven to be effective at a state level.

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