Community action for health in socioeconomically deprived neighbourhoods in Barcelona: evaluating its effects on health and social class health inequalities

Abstract

Background: The aim of this study was to analyse the evolution of several health-related indicators in socioeconomically deprived neighbourhoods in Barcelona with strong community action for health (CA) compared to those without such community action. A secondary goal was to analyse the evolution of socioeconomic inequalities in health in both types of neighbourhoods.

Methods: We performed a quasi-experimental pre-post study using data from the Barcelona Health Surveys of 2001 and 2011. Our dependent variables were self-perceived health, mental health, previous drug use, and smoking cessation. We used Poisson regression with robust variance to calculate prevalence ratios (PR) and 95% Confidence Intervals (95% CI).

Results: Neighbourhoods with strong CA had higher proportions of people from low income countries, or who were unemployed, manual workers, or had low educational levels. Despite this, the percentage of men who had ever used drugs decreased over time in neighbourhoods with strong CA (PR=0.48; 95% CI:0.25-0.92, from 2001 to 2011), but not in neighbourhoods without CA (PR=1.02; 95% CI:0.74-1.40). However, the prevalence of poor mental health among men increased more in neighbourhoods with strong CA than in neighbourhoods without CA (p-value=0.025). Among women, social class inequalities in poor mental health and smoking cessation decreased over time in neighbourhoods with strong CA but not in neighbourhoods without CA.

Conclusions: Our study shows promising results of the effect of community action on health, in particular regarding inequalities and encourage the allocation of resources to implementing and continuously evaluating CA initiatives.

Key words: community action for health, health, health behaviours, health inequalities

Introduction

Community action for health was defined by the World Health Organization (WHO) in 1998 as "the collective efforts by communities which are directed towards increasing community control over the determinants of health, and thereby improving health" [1]. Community action (CA) is based on community participation and empowerment and encompasses the participation of many social agents, including formal organizations, neighbourhood associations and individuals. Community participation reduces social inequalities in health and strengthens communities' capacity and participation in health-related decisions [2–4]. CA draws on existing human and material resources in the community to enhance independence and social support [5], while guaranteeing sustainability. Community action interventions can be very diverse and act at very different levels, such as the environment and the community, health-related behaviours or health outcomes. They may refer to the implementation of new programmes, communication strategies, services or resources that facilitate healthy behaviours or improve life conditions, and can be carried out at schools, neighbourhoods or work places. They can also be political changes that aim to promote healthy behaviours or improve work and life conditions [6].

Two systematic reviews analysed the effect of community action interventions among disadvantaged populations and found that it had a positive effect on improving health and reducing inequalities [7,8]. One of these systematic reviews found that 21 out of 24 studies analysed reported improvements in health-related behaviours, a range of health outcomes, health literacy and the use of health services, as well as community changes such as empowerment or public health planning. In addition, 60% of the studies included reported reduced health inequalities [7]. Similarly, a meta-analysis of randomised and non-randomised controlled trials found that community engagement interventions improve health-related behaviours, health outcomes, the efficacy of self-health behaviours, and perceived social support [8]. Most experiences of community engagement have been evaluated as single actions or interventions instead of as a whole process. Two studies focusing on larger programs or initiatives studied population reach as an indicator of impact [9], or variables such as social capital or access to public services [10]. However, health outcomes have not been addressed in such studies.

A wide range of CA experiences have been implemented in the last two decades in Barcelona. These experiences have for a long time been driven by community entities with the participation of residents and professionals. In addition, specific public policies have been developed, such as a community health strategy called "Barcelona Health in the Neighbourhoods". This strategy aims to introduce programs to address priority health needs using a community-based approach. It includes alliances with partners and stakeholders, assessment and planning of health needs and assets and implementation and evaluation of programs and interventions [2]. As a Community Action for health strategy, "Barcelona Health in the Neighbourhoods" includes groups from the community itself, which participate in the decisions of the entire process. It is important that the interventions implemented in the strategy have been demonstrated to be effective in addressing the prioritised health needs. These interventions include programs for preventing addictions in young people, especially smoking; programs for reducing risky sexual behaviour; programs for improving parenting skills; and programs for reducing social isolation in the elderly [6,11]. Since one of the main city-wide goals is to reduce health inequalities, an important priority was to introduce programs into more socioeconomically deprived neighbourhoods (starting in 2007 with two of the 73 neighbourhoods of Barcelona, and growing

to 21 currently). There have been other community health experiences in the city, mainly as part of community development plans, community social service programs, or in the activities of Primary Healthcare Teams [12,13]. To date, these interventions have not been evaluated in a comprehensive manner that address them as a whole.

The aim of this study was to analyse the evolution of several health-related indicators in socioeconomically deprived neighbourhoods in Barcelona with strong community action compared to those without such community action. The study period was 2001-2011. A secondary goal was to analyse the evolution of socioeconomic inequalities in health in both types of neighbourhoods.

Methods

Design, study population and information sources

We performed a quasi-experimental pre-post study of neighbourhoods in Barcelona with a low socioeconomic status. Neighbourhoods were defined as having a low socioeconomic status if their mean Family Available Income Index value in 2013 [14] was below 90 (the theoretical mean for Barcelona being 100). The analysis focused on socioeconomically deprived neighbourhoods because most community action interventions were carried out in these neighbourhoods [6].

The degree of CA in health was characterised in a previous stage of this project [15,16] using an index consisting of the sum of 4 single indicators: 1) health programs and community-based interventions; 2) stable participation structures for the implementation of community-based interventions; 3) a community team specifically devoted to health; and 4) the program "Health in the Neighbourhoods Barcelona". Index values ranged from 0 (no community action) to 22 (high community action). The index was applied to neighbourhoods following a documentary review and 12 structural interviews: 7 with members of community teams, people specifically in charge of leading community action in the field, and 5 with health professionals involved in community-based interventions. After that, the results of the index were sent to six known professionals in the field of community health projects in Barcelona (including doctors, nurses and project managers), with the aim of assessing the extent of their agreement with the classification results, and the index was recalculated for cases in which new information was received. The index had good internal consistency according to Cronbach's Alpha [17]. The index values were classified using single linkage clustering and CA was rated as follows: strong community action (13 to 22), emergent community action (3 to 12) and no community action (values 0 or 1). In the current study, we only compared neighbourhoods with strong community action to those with no community action, as the category of emergent community action could make the results less clear.

Our information sources were the Barcelona Health Surveys [18] for 2001 and for 2011, two cross-sectional surveys. The statistical universe of the Barcelona Health Survey is the non-institutionalised population registered as residents in Barcelona city. The sampling units are the individuals, who are selected by simple random sampling from the municipal register, stratifying by district with quotas of age and gender. The surveys are performed every 5 years; however, in 2006 we did not have information on the address of residence, so we could not assign neighbourhood. Thus, the study population consisted of non-institutionalised individuals aged ≥15 who lived in the neighbourhoods defined above. The study sample consisted of 3,068 individuals in 2001 (1,617 women and 1,451 men), and 1,336 individuals in 2011 (659 women and 677 men).

Variables

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The **dependent variables** were health variables that could have been affected by community action and that had been collected using an identical protocol in both editions of the survey, as follows:

-Self-perceived health, comprising two categories: good health (excellent, very good or good) and poor health (fair, poor). This variable is known to be a good indicator of present overall health and a predictor of morbidity and mortality [19].

-Mental health, measured using the General Health Questionnaire (GHQ-12) and classified either as good mental health (GHQ-12 < 3) or poor mental health (GHQ-12 ≥ 3) [20].

-Previous drug use: subjects were presented with a list of 4 illegal drugs (marihuana/hashish; cocaine; amphetamines/acid; heroine), and were asked to indicate if they had consumed any of these 4 drugs at any time during their lives.

-Smoking cessation, which compares individuals who used to smoke every day but no longer do with those who currently smoke on a daily basis.

Our **main independent variables** were the degree of CA devoted to health in the neighbourhood (either no CA or strong CA) and the survey year (either 2001 or 2011).

Other covariates used were: a) age, as a categorical variable (15-19, 20-34, 35-49, 50-64, or 65+ years); b) being an immigrant from a country other than an advanced economy [21]; c) employment status, according to 5 categories: (i) working for a salary, (ii) being unemployed, (iii) being disabled or retired, (iv) being a homemaker and (v) being a student; d) social class based on the current or last employment if the person is not currently employed, originally classified in 5 categories: (i) class I, managing positions in the public administration or in large companies; (ii) class II, managing positions in small companies and professionals; (iii) class III, administrative positions, security staff and manual worker supervisors; (iv) class IV, semi-skilled and skilled manual workers; (v) class V, non-skilled manual workers [22]. Some of the 5 categories were merged in order to obtain 3 final categories: classes I-II, class III, classes IV-V [23]. The last independent variable that was taken into account was e) educational level, classified into: i) first stage of secondary education, ii) secondary education and iii) tertiary education.

Analyses

All analyses were stratified by sex, using the following analysis strategy: independent variables were described according to the degree of CA in the neighbourhood and the year in which the survey was carried out. We used the Chi-square test to detect whether the distribution of the variables changed over time or depending on the type of neighbourhood. We calculated the age-standardised prevalence (in 10-year age groups standardised using the direct method [24]; the reference population was the 2011 sample) of each of the four health indicators according to the degree of CA in the neighbourhood and the year in which the survey was carried out. To analyse the association between the health outcomes and the main independent variables, we calculated prevalence ratios (PR) and 95% Confidence Intervals (95% CI) using Poisson regression models with robust variance [25]. These models provide correct estimates and are a preferred alternative to logistic regression for analysing cross-sectional studies with binary outcomes. These models were first adjusted for age and after that for all independent variables except for educational level (due to its high correlation with social class). To determine whether the evolution of indicators differed according to the type of

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neighbourhood, we tested for interaction between survey year and the type of neighbourhood. Finally, we calculated age-standardised prevalences for the health indicators in each social class –manual (classes I-III) and non-manual (classes IV-V)–, and estimated social class inequalities in health indicators using PR and 95% CI in models adjusted for age, immigration status and employment status. These indicators were calculated for neighbourhoods with strong CA and those without CA, at two different time points, 2011 and 2001. We measured the change in social class inequalities in each type of neighbourhood by testing for interaction between the year variable and the social class indicator.

Results

Characteristics of neighbourhoods

The distributions of the independent variables are shown in Table 1 (women) and Table 2 (men). In both surveys, neighbourhoods with strong CA showed poorer socioeconomic indicators than those without CA, such as a higher unemployment rates, and a higher percentage of people from low income countries, manual workers and individuals with a low level of education. The percentage of people from low income countries increased over time in both types of neighbourhoods, but especially in those with strong CA (e.g. 4.4% in 2001 to 31.7% in 2011 for women). Unemployment rates also increased, especially among men (from 3.9% to 11.1% in neighbourhoods without CA and from 7.5% to 16.7% in neighbourhoods with strong CA).

Trends in health indicators

In women (Table 3) self-rated health improved in both types of neighbourhoods during the study period, especially in those with strong CA (poor self-rated health decreased from 29% to 25.6% in neighbourhoods without CA and from 37.7% to 27.9% in neighbourhoods with strong CA). In fact, self-rated health improved significantly in neighbourhoods with strong CA (PR=0.78, 95%CI: 0.60-1.00) but not in neighbourhoods without CA (PR=0.92, 95%CI: 0.76-1.11). There was a slight but non-significant improvement in poor mental health in neighbourhoods without CA (from 19.6% to 16.4%) and the percentage of previous drug use showed a non-significant decrease in neighbourhoods with strong CA (from 8.1% to 5.5%). Finally, the prevalence of smoking cessation increased in both types of neighbourhoods: 21.6% to 36.8% in neighbourhoods without CA, and 6.6% to 11.2% in neighbourhoods with strong CA. However, none of these health indicators showed a statistically different evolution in one type of neighbourhood compared to the other.

In men (Table 3), there was a slight but significant improvement in self-rated health in neighbourhoods without CA (poor self-rated health decreased from 23.7% in 2001 to 19.7% in 2011), but not in those with strong CA. However, the difference in the trends between the two types of neighbourhoods was not statistically significant (p-value of the interaction 0.132). Mental health worsened in neighbourhoods with strong CA (from 12% in 2001 to 20% in 2011; not significant in the multivariate model, PR=1.25; 95% CI: 0.83-1.88) but not in neighbourhoods without CA. Nonetheless, the trends were statistically different between neighbourhoods (p-value=0.025). Drug use remained stable in neighbourhoods without CA but decreased in neighbourhoods with strong CA (14.3% in 2001, 5.9% in 2011, multivariate PR: 0.48, 95% CI: 0.25-0.92) and the difference in this trend between neighbourhoods was statistically significant (p-value=0.037). There was a greater improvement in smoking cessation in neighbourhoods with strong CA (from 19.5% to 31.7%) than in neighbourhoods without CA (from 19.2% to 27.9%), although this trend was not confirmed by the adjusted models.

<u>Trends in social class inequalities in health</u>

Among women, social class inequalities in self-rated health were present in both types of neighbourhood in 2001 but not in 2011 (Table 4) due to a more marked decrease in poor self-rated health among manual workers compared to non-manual workers. However, this reduction appeared to be more marked in neighbourhoods with strong CA (PR for social class decreased from 1.6 in 2001 to 1.06 in 2011) than in those without CA (from 1.47 to 1.12), although this result was not confirmed by the models. With regard to women's mental health, we found significant inequalities in 2001 in neighbourhoods with strong community action (PR=2.21), which no longer existed at the end of the period. This was due to both an increase in poor mental health among non-manual workers, and a decrease in poor mental health among manual workers. This change in inequality was statistically significant (p-value=0.038), while no change was observed in neighbourhoods without CA. In addition, in neighbourhoods with strong community action, there was a decrease in previous drug use among manual workers to the point that this was more prevalent among non-manual workers. Smoking cessation was more prevalent among non-manual workers at the beginning of the period, but not at the end. This change in inequalities was statically significant (p-value=0.029) in neighbourhoods with strong CA but not in those without CA.

Among men, we only observed significant social class inequalities in self-rated health in neighbourhoods without CA at the beginning of the study period; these inequalities disappeared at the end of the period. In terms of previous drug use, we only found significant inequalities in neighbourhoods without CA at the end of the period. There were no significant changes in inequalities.

Discussion

In this study we found that community action (CA) appeared to reduce drug use, as this outcome improved more in neighbourhoods with strong CA than in those without. However, the trend in mental health among men was less favourable in neighbourhoods with strong CA, and this was not entirely attributable to our individual variables. Socioeconomic inequalities in women's health, particularly mental health and smoking cessation, were further reduced in neighbourhoods with strong CA.

Health-related behaviours improved more among men from neighbourhoods with strong CA, and this effect was especially marked among younger individuals (results not shown). In fact, many interventions aim at avoiding drug consumption among young people, mainly focusing on healthy leisure [26]; in this regard, sport has been found to be an effective mechanism of social cohesion, especially in socioeconomically deprived settings [27]. In one of the Barcelona Health in the Neighbourhood programs, named "La Karpa", in which football sessions were used as educational and social learning spaces, 90% of the participants were boys [28], which could partly explain why the effect was seen among boys and not girls.

Social class inequalities, particularly in poor mental health and in smoking cessation, decreased among women from neighbourhoods with strong CA, so community action seems to achieve its goal of reaching those in most need, at least among women. Mental health is one of the most often prioritised problems in the neighbourhoods of Barcelona Health in the Neighbourhoods program [6]. Among middle aged people, one of the programs implemented aims to improve parental abilities and among the elderly, there are programs to improve quality of life and social relationships, to increase physicial activity and to reduce physicical isolation. In all these programs women participated more than men [6,29]. In addition,

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women, given their multiplicity of roles, are the social actors who mostly use, enjoy and put up with public spaces and facilities [30] and may be thus more exposed to community action processes and interventions. This may in part explain why inequalities were reduced among women but not men.

Nonetheless, the prevalence of poor mental health among men increased in neighbourhoods with strong CA (in all but the youngest age group). Neighbourhoods with strong CA were also those in which unemployment rates increased most as shown in our results. So, the economic crisis may have greater effects on people living in CA areas, in particular in mental health [31]. Unemployed middle-aged men are thought to suffer the harshest consequences of the economic crisis, probably because of the combined effect of the strain of their own self-expectations in the role as main providers and the poor chances of finding a new job [32,33]. In addition, some elderly men found themselves having to support their whole family with their retirement pensions, as most of the family members had lost their jobs [34]. CA interventions in Barcelona used to focus on improving health-related behaviours, but following the economic crisis and the rise in unemployment, many now also focus on promoting labor insertion and fostering relational networks and improving mental health in the neighbourhood [35,36]. However, the effects of such programs may only be observed in the longer term.

A previous similar study [37] evaluated the Neighbourhood Law, which was a law approved by the Catalan Parliament in 2004 as a policy for comprehensive rehabilitation of disadvantaged neighbourhoods in Catalonia. In their case the intervened neighbourhoods had a significant decrease in poor self-rated health in both sexes while no significant changes occurred in the comparison group. In our case, this happened but only for women, although the trends were not statistically significantly different (they did not show the p-value if the interaction). In their case poor mental health in men worsened in both neighbourhood groups but mostly in the comparison group and in our case the opposite happened. Barcelona Health in the Neighbourhoods targets the same neighbourhoods but explicitly promoting the development of community-based interventions for improving community health and reducing inequalities and in fact, our paper goes beyond this because it evaluates all type of community actions that have taken place in Barcelona.

Limitations and Strengths

One limitation of this study is the relatively small sample size, especially of the second survey (2011). The number of dependent variables was also low, as no other health variables were available that could be compared between surveys. For example, most interventions did not specifically target self-rated health or mental health, although these results may indicate a general trend in how quality of life is influenced by community action. In addition, our intervention comprises various programs developed in each neighbourhood in a different manner, according to their evaluated needs [11]. Unfortunately, we did not have access to numerical data for the coverage and quality of the various interventions undertaken but only a summary measure of the degree of community action in the community. The best way to measure causality, would have consisted in analyzing a cohort of people living in both type of neighbourhoods, and measuring how their health changed after the CA implementation. However, as this was not possible, we performed a sensitivity analysis including only people who had lived in the same neighbourhood for more than 10 years, and found that the results did not change.

One of the strengths of this study is that is one of the first to comprehensively evaluate the effect of community action in a neighbourhood on health, and is the first one in our context. In addition, it includes an intervention group (neighbourhoods with strong CA) and a comparison group (neighbourhoods without CA), which increases the internal validity of the study. Finally, it is also based on a representative sample of the population in Barcelona, which increases the external validity of the study and enables its further generalization.

Conclusions

Our study shows promising results of the effect of community action on health, in particular regarding inequalities, but further evaluations are needed using other study designs including those with longitudinal data.

Community interventions are a strategy to address health inequalities and it is important to provide evidence of those that work in this field. However, given its nature (results expected in the medium term, complex and intersectoral interventions, difficulty of finding good controls [38]), it is more difficult to provide evidence on these interventions than on other type of health interventions. But still, the modest evidence found does not mean that these interventions do not work, but that more evidence or of other type is needed. Even more so when a strong economic crisis has taken place in Spain in the last years affecting especially socioconomically deprived neighbourhoods.

Following this, both local (assessment of specific programs) and global (determination of the type of process with the highest impact evaluations should be undertaken. In addition, results should be made visible both in the health sector as well as in other sectors which are essential as social health determinants [6].

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Tables and figures

Table 1: Distribution of independent variables according to the degree of community action (CA) in the neighbourhood and the survey year in WOMEN. P-values for trend in the indicators and for differences according to neighbourhood type are shown.

	Without CA					With strong CA*				
	2001 (N=1,004)		2011 (N=441)		P-value 2011 vs 2001	2001 (N=613)		2011 (N=218)		P-value 2011 vs 2001
	N	%	N	%		N	%	N	%	
Age					*0.105*					*0.093*
15-29	239	23.8	91	20.6		130	21.2	47	21.6	
30-49	285	28.4	152	34.5		195	31.8	88	40.4	
50-64	192	19.2	85	19.3		134	21.9	37	17.0	
65+	288	28.7	113	25.6		154	25.1	46	21.1	
P-value – with strong CA vs without CA							*0.121*		*0.375*	
Low-income country					*<0.001*					*<0.001*
No	981	97.7	373	84.6		585	95.4	148	67.9	
Yes	23	2.3	64	14.5		27	4.4	69	31.7	
Missing	0	0.0	4	0.9		1	0.2	1	0.5	
P-value – with strong CA vs without CA							*0.025*		*<0.001*	
Employment status					*<0.001*					*<0.001*
Salaried worker	365	36.4	209	47.4		249	40.6	92	42.2	
Unemployed	43	4.3	47	10.7		32	5.2	31	14.2	
Retired or disabled	199	19.8	87	19.7		113	18.4	39	17.9	
Homemaker	292	29.1	58	13.2		180	29.4	43	19.7	
Student	93	9.3	34	7.7		34	5.6	13	6.0	
Missing	12	1.2	6	1.4		5	0.8	0	0.0	
P-value – with strong CA vs without CA							*0.071*		*0.065*	
Social class					*<0.001*					*<0.001*
I-II	132	13.2	96	21.8		50	8.2	26	11.9	
III	253	25.2	122	27.7		129	21.0	35	16.1	
IV-V	575	57.3	177	40.1		415	67.7	132	60.6	
Missing	44	4.4	46	10.4		19	3.1	25	11.5	
P-value – with strong CA vs without CA							*<0.001*		*<0.001*	
Educational level					*<0.001*					*<0.001*
Lower secondary	636	63.4	220	49.9		454	74.1	128	58.7	
Higher secondary	230	22.9	99	22.5		97	15.8	47	21.6	
Tertiary studies	136	13.6	121	27.4		62	10.1	42	19.3	
Missing	2	0.2	1	0.2		0	0.0	1	0.5	
P-value – with strong CA vs without CA							*<0.001*		*0.094*	

*With strong CA: neighbourhoods in which there was strong community action according to a previous classification [15,16]

Table 2: Distribution of independent variables according to the degree of community action (CA) in the neighbourhood and survey year in MEN. P-values for trend in the indicators and for differences according to neighbourhood type are shown.

	Without CA					With strong CA				
	2001 (N=877)		2011 (N=425)		P-value 2001/11	2001 (N=574)		2011 (N=252)		P-value 2001/11
	N	%	N	%		N	%	N	%	
Age					*<0.001*					*0.018*
15-29	238	27.1	76	17.9		146	25.4	46	18.3	
30-49	288	32.8	142	33.4		185	32.2	108	42.9	
50-64	182	20.8	82	19.3		121	21.1	47	18.7	
65+	169	19.3	125	29.4		122	21.3	51	20.2	
P-value – with strong CA vs without CA							*0.773*		*0.029*	
Low-income country					*<0.001*					*<0.001*
No	866	98.8	376	88.5		545	95.0	166	65.9	
Yes	11	1.3	46	10.8		28	4.9	85	33.7	
Missing	0	0.0	3	0.7		1	0.2	1	0.4	
P-value – with strong CA vs without CA							*<0.001*		*<0.001*	
Employment status					*<0.001*					*0.003*
Salaried worker	535	61.0	196	46.1		313	54.5	117	46.4	
Unemployed	34	3.9	47	11.1		43	7.5	42	16.7	
Retired or disabled	218	24.9	153	36.0		173	30.1	76	30.2	
Homemaker	1	0.1	0	0.0		1	0.2	1	0.4	
Student	83	9.5	28	6.6		37	6.5	15	6.0	
Missing	6	0.7	1	0.2		7	1.2	1	0.4	
P-value – with strong CA vs without CA							*0.001*		*0.199*	
Social class					*<0.001*					*<0.001*
I-II	180	20.5	77	18.1		57	9.9	35	13.9	
III	263	30.0	103	24.2		128	22.3	34	13.5	
IV-V	424	48.4	223	52.5		382	66.6	171	67.9	
Missing	10	1.1	22	5.2		7	1.2	12	4.8	
P-value – with strong CA vs without CA							*<0.001*		*0.001*	
Educational level					*0.729*					*0.001*
Lower secondary	465	53.0	235	55.3		403	70.2	162	64.3	
Higher secondary	237	27.0	115	27.1		127	22.1	47	18.7	
Tertiary studies	172	19.6	73	17.2		42	7.3	40	15.9	
Missing	3	0.3	2	0.5		2	0.4	3	1.2	
P-value – with strong CA vs without CA							*<0.001*		*0.043*	

Table 3: Age-standardised prevalence of poor self-rated health, poor mental health, previous drug use, and smoking cessation, stratified by year and degree of community action (CA). Prevalence ratios (PR) and 95% confidence intervals (95% CI) comparing years and degrees of CA, adjusted for age and all independent variables (multivariate model) in women and men. P-values are shown for the interaction between year and degree of CA in the multivariate model.

	Prevalence 2001 (%)	Prevalence 2011 (%)	*PR and 95% CI 2011 vs 2001 (age)*	*PR and 95% CI 2011 vs 2001 (mult)*	P-value
WOMEN					
Poor self-rated health					*0.140*
Without CA	29.0	25.6	0.84 (0.71-1.00)	0.92 (0.76-1.11)	
With strong CA	37.7	27.9	0.69 (0.55-0.87)	0.78 (0.60-1.00)	
PR and 95% CI – with strong CA vs without CA (age)	1.29 (1.13-1.47)	1.05 (0.81-1.35)			
PR and 95% CI – with strong CA vs without CA (mult)	1.24 (1.08-1.41)	0.95 (0.70-1.29)			
Poor mental health					*0.603*
Without CA	19.6	16.4	0.82 (0.64-1.05)	0.91 (0.69-1.20)	
With strong CA	21.7	21.3	1.03 (0.76-1.39)	1.05 (0.75-1.47)	
PR and 95% CI – with strong CA vs without CA (age)	1.09 (0.89-1.33)	1.38 (0.98-1.92)			
PR and 95% CI – with strong CA vs without CA (mult)	1.06 (0.86-1.30)	1.21 (0.83-1.77)			
Previous drug use					*0.951*
Without CA	7.4	7.2	0.95 (0.64-1.40)	0.91 (0.58-1.42)	
With strong CA	8.1	5.5	0.77 (0.43-1.38)	0.79 (0.45-1.40)	
PR and 95% CI – with strong CA vs without CA (age)	1.00 (0.71-1.41)	0.81 (0.44-1.51)			
PR and 95% CI – with strong CA vs without CA (mult)	0.97 (0.68-1.38)	1.07 (0.57-2.02)			
Smoking cessation					*0.923*
Without CA	21.6	36.8	1.97 (1.17-3.31)	1.60 (0.85-2.98)	
With strong CA	6.6	11.2	2.01 (0.71-5.69)	1.65 (0.57-4.79)	
PR and 95% CI – with strong CA vs without CA (age)	0.56 (0.24-1.29)	0.51 (0.22-1.18)			
PR and 95% CI – with strong CA vs without CA (mult)	0.58 (0.25-1.31)	0.61 (0.25-1.46)			
MEN					
Poor self-rated health					*0.132*
Without CA	23.7	19.7	0.80 (0.64-1.00)	0.77 (0.61-0.98)	
With strong CA	26.0	27.6	1.01 (0.80-1.27)	1.02 (0.80-1.30)	
PR and 95% CI – with strong CA vs without CA (age)	1.19 (0.99-1.43)	1.45 (1.12-1.87)			
PR and 95% CI – with strong CA vs without CA (mult)	1.06 (0.88-1.28)	1.45 (1.11-1.90)			
Poor mental health					*0.025*
Without CA	11.5	8.8	0.80 (0.56-1.15)	0.78 (0.53-1.15)	
With strong CA	12.1	20.4	1.66 (1.19-2.32)	1.25 (0.83-1.88)	
PR and 95% CI – with strong CA vs without CA (age)	1.11 (0.82-1.49)	2.29 (1.54-3.41)			

PR and 95% CI – with strong CA vs without CA (mult)	0.94 (0.69-1.28)	1.85 (1.21-2.81)			
Previous drug use					*0.037*
Without CA	13.0	12.2	0.96 (0.71-1.31)	1.02 (0.74-1.40)	
With strong CA	14.3	5.9	0.46 (0.27-0.77)	0.48 (0.25-0.92)	
PR and 95% CI – with strong CA vs without CA (age)	1.05 (0.81-1.35)	0.50 (0.29-0.87)			
PR and 95% CI – with strong CA vs without CA (mult)	1.04 (0.80-1.36)	0.51 (0.27-0.93)			
Smoking cessation					*0.705*
Without CA	19.2	27.9	1.76 (1.06-2.93)	1.47 (0.82-2.65)	
With strong CA	19.5	31.7	1.68 (0.94-3.02)	1.44 (0.73-2.84)	
PR and 95% CI – with strong CA vs without CA (age)	1.28 (0.76-2.14)	1.23 (0.68-2.20)			
PR and 95% CI – with strong CA vs without CA (mult)	1.16 (0.67-2.01)	0.82 (0.38-1.76)			

Table 4: Age-standardised prevalence of poor self-rated health, poor mental health, previous drug use, and smoking cessation according to social class. Prevalence ratios (PR) and 95% confidence intervals (95% CI) of manual workers (classes IV-V) compared to non-manual workers (I-III) adjusted by age, immigrant status and employment status are shown.

	Without CA		With strong CA	
	2001	2011	2001	2011
	%	%	%	%
WOMEN				
Poor self-rated health				
Classes I-III	24.2	23.3	29.3	28.1
Classes IV-V	32.3	29.8	42.0	27.7
PR and 95% CI (IV-V vs I-III)	1.47 (1.15-1.89)	1.12 (0.80-1.57)	1.60 (1.19-2.17)	1.06 (0.64-1.76)
P-value for evolution of inequalities		0.335		0.368
Poor mental health				
Classes I-III	19.3	19.4	10.0	16.4
Classes IV-V	19.2	17.8	25.8	21.5
PR and 95% CI (IV-V vs I-III)	1.09 (0.82-1.47)	0.92 (0.59-1.44)	2.21 (1.38-3.53)	0.94 (0.53-1.69)
P-value for evolution of inequalities		0.891		0.038
Previous drug use				
Classes I-III	7.8	9.2	10.1	9.9
Classes IV-V	7.4	4.5	6.4	2.7
PR and 95% CI (IV-V vs I-III)	1.00 (0.64-1.55)	0.53 (0.21-1.31)	0.67 (0.38-1.19)	0.28 (0.08-0.93)
P-value for evolution of inequalities		0.097		0.272
Smoking cessation				
Classes I-III	30.0	18.3	9.9	6.3
Classes IV-V	14.9	44.6	4.0	15.2
PR and 95% CI (IV-V vs I-III)	0.63 (0.29-1.35)	1.44 (0.63-3.25)	0.21 (0.06-0.70)	3.05 (0.72-12.94)
P-value for evolution of inequalities		0.336		0.029
MEN				
Poor self-rated health				
Classes I-III	19.4	16.6	23.7	27.2
Classes IV-V	29.1	21.7	27.0	27.0
PR and 95% CI (IV-V vs I-III)	1.59 (1.22-2.06)	1.35 (0.91-1.99)	1.11 (0.82-1.49)	0.89 (0.58-1.36)
P-value for evolution of inequalities		0.308		0.314
Poor mental health				
Classes I-III	10.8	6.6	8.6	11.7
Classes IV-V	13.4	10.8	13.9	21.7
PR and 95% CI (IV-V vs I-III)	1.38 (0.93-2.05)	1.91 (0.98-3.75)	1.27 (0.75-2.16)	1.36 (0.68-2.72)
P-value for evolution of inequalities		0.512		0.907
Previous drug use				
Classes I-III	12.2	9.1	15.1	4.2
Classes IV-V	13.8	15.3	13.0	6.4
PR and 95% CI (IV-V vs I-III)	1.00 (0.73-1.39)	1.88 (1.03-3.45)	0.72 (0.48-1.08)	1.81 (0.49-6.68)

P-value for evolution of inequalities		0.054		0.321
Smoking cessation				
Classes I-III	20.5	19.5	15.5	25.8
Classes IV-V	20.3	33.6	17.6	27.7
PR and 95% CI (IV-V vs I-III)	1.52 (0.77-3.01)	1.24 (0.56-2.71)	0.95 (0.41-2.19)	1.40 (0.41-4.79)
P-value for evolution of inequalities		0.407		0.851