

Community-based injury prevention: effects on health care utilization

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Background	Worldwide, an estimated 78 million people are disabled each year because of unintentional injuries and about 3 million die. The WHO Safe Community model is a framework for community-based injury prevention programmes. The aim of this study is to evaluate the outcome on health care utilization of a Safe Community programme.
Methods	The incidence of injuries treated at health care facilities in an intervention municipality (pop. 41 000) was compared to the injury incidence in a control municipality (pop. 26 000). The incidence was recorded immediately before and one year after programme implementation from registrations made during all first-contact health care visits and from examination of hospital discharge registers.
Results	The incidence of health care treated injuries in the intervention area had decreased by 13% (95% CI : 9–16%) from 119 (95% CI : 115–122) per 1000 population-years to 104 (95% CI : 101–107). In the control area, the corresponding injury incidences were 104 (95% CI : 100–108) and 106 (95% CI : 102–109). The hospital-treated injuries in the intervention area decreased by 15% (95% CI : 7–24%) from 19 (95% CI : 17–20) per 1000 population-years to 16 (95% CI : 15–17), while in the control area, the incidences remained at 13 (95% CI : 11–14) per 1000 population-years. Utilization of acute care in the intervention area for reasons other than injuries increased by 8% (95% CI : 6–10%), while in the control area, the number of visits did not show significant change.
Conclusion	This first controlled evaluation showed that an injury prevention programme based on local action groups can significantly reduce injuries requiring health care in a community. Local prevention can provide a complement to national level campaigns.
Keywords	Unintentional injuries, community-based prevention programmes, health service utilization studies, evaluation, quasi-experimental design
Accepted	1 October 1998

Unintentional injuries are a global health problem, causing nearly 3 million deaths each year and imposing a considerable burden on health care.¹ In Europe, the WHO Regional Office set as a goal for the last decade of the 20th century the reduction in incidence of significant injuries by at least 25%. However, the means to achieve this reduction have not been established. The participation of community organizations and the utilization of their strategies have been suggested in order to get health promotion programmes to populations most at risk² as top-down approaches have been shown to be inappropriate for reaching these groups.³ Community-based injury prevention programmes have been reported as successful in specific injury areas,^{4,5} but

the effects of a programme covering all injury types have only seldom been reported and this mainly for restricted age groups.⁶ Outcome studies have also been sought to complement surveys of knowledge, attitudes and behaviours for demonstrating intervention effectiveness.⁷ For such studies, quasi-experimental methods have been proposed.⁸

In Sweden (pop. 8.8 million), unintentional injuries are the cause of about 900 000 medical consultations each year.⁹ Epidemiological studies of injuries occurring in particular at-risk groups, such as children,¹⁰ have been performed for many years and the first community-based intervention programme aimed at preventing injuries was initiated in 1978 in the municipality of Falköping.¹¹ The aim of the present study is to evaluate the effect on health care utilization of a injury prevention programme based on local action groups and covering all injury areas and including both health education and changes in the physical environment. In particular, the aim is to study the

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incidence of injuries treated in health care before and after programme implementation using a quasi-experimental design. Effects at the individual level, the long-term outcome and the relative impact of parts of the programme are not included in the analyses. An assessment of the programme structure and process have been reported.¹²

The Safe Community model

The programme was implemented in the Motala municipality in the western part of Östergötland County in Sweden. The programme is one of the original reference sites for the WHO Safe Community accreditation criteria. The theoretical framework for the programme was based on general health promotion concepts and a participative strategy for community involvement. Underlying the programme is the principle that all preventive actions should rely on local community motives and resources without external involvement. The programme goals, which are synonymous with the Safe Community criteria, include: (a) organization of a local cross-sectoral reference group; (b) reliance on existing local community networks; (c) coverage of all ages, environments and situations; (d) empowerment of the socially weak; and (e) continuous tracking of high-risk environments and groups.

The aim of the *community analysis* stage of the programme, performed in 1983–1984, was to study the local injury epidemiology, to follow the economic consequences of the injuries, and to analyse the local social structure and values. Stage two, the programme *design and initiation* (1985–1987) included organizing the management of the interventions and setting local planning goals. The district Health Services Board, the Municipal Board, and political committees and management groups were approached to accept responsibility for the programme from its initial stages. The goal set for the programme was to reduce the total injury incidence in the municipality by 25% by the year 2000. Following the results of the community analysis, it was decided that the interventions would be focused on two risk populations (children and teenagers, and the elderly) and three risk environments (traffic, sports and recreation, and the workplace). According to the participation strategy, self-regulatory local action groups were formed for each risk area, consisting of a group facilitator (KL) and representatives from the local organizations that managed injuries. The design evolved into a programme of action during the *implementation* stage (1987–1988). This stage was based on involvement from a cross-section of the population, and both professionals and lay people were invited to participate in injury prevention. To set the agenda in the community, a general media campaign was initiated in 1987. All interventions were based on decisions taken by the action groups. The possibility of both passive interventions, in terms of modifications of the physical environment, and active interventions aimed at behavioural changes through health education were introduced to the local action groups by the facilitator. During the implementation year, most groups decided to make changes in the physical environment, but safety education programmes were also started. At stage four, programme *maintenance-consolidation* (1989–1995), the facilitator withdrew from the action groups and intervention activities were completely integrated into existing community networks. The final stage, *evaluation* (1995–1999), focuses on assessing and reporting from the programme.

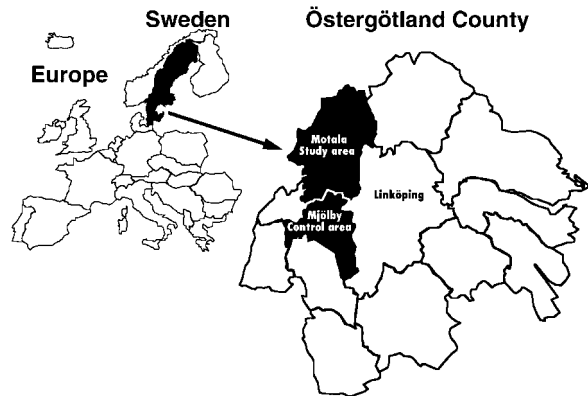


Figure 1 Locations of study area, control area and Linköping University Hospital in Östergötland County, Sweden

Method

A quasi-experimental design¹³ was used with pre- and post-implementation measurements in the programme implementation area and in a neighbouring control municipality in Östergötland county (Figure 1). The main intervention effect was studied using two measurements, prospective registration of all acute care episodes in the areas and retrospective analysis of hospital discharge registers. Since the study areas were not randomly chosen, specific validity tests were applied. To avoid bias, the research team was composed of evaluators who had not taken part in the implementation (TT, MÅ) and programme managers with experience of the programme process (KL, LS).

Data collection

The pre-implementation study period covered the 52 weeks from 1 October 1983 to 30 September 1984. The post-implementation period covered 52 weeks from 1 January 1989 to 31 December 1989. Data were collected at two levels:

(i) For all patients contacting a health care unit located in the study area during the study periods, a report form with the time of contact and standard personal data was filled in by staff at the care unit. The same form registered whether unintentional injury was a possible reason for the contact. For registered patients, specially trained nurses recorded an ICD-8 based¹⁴ diagnostic classification using the medical records and discussions with physicians.

The routine for data collection was tested in a pilot project. Before starting each study period, the staff at all relevant health care units were carefully informed and the routine was practised for 2 weeks.

(ii) Hospital discharge data from all hospitals in Östergötland county were retrospectively collected for all inhabitants in the study and control areas from both registration periods. Care events following injury (according to the ICD-8 classification) were selected for further analysis. Patients being readmitted after referral between hospitals were omitted. In Sweden a register of hospital discharges is kept for administrative and economic purposes. The number of discharges per year is about 1.7 million, of which 160 000 are due to injuries. Data are estimated to be

missing from 2% of discharges and the mean error rate in injury registrations is 7% on the ICD-8 5-digit level.¹⁵

Validity and reliability tests

Environmental indicators which might influence injury incidence were selected with guidance from social change theory.^{16,17} Data regarding population age and sex mix, sites of residence, education, income, employers, and motor vehicles were collected retrospectively from national registers (Statistics Sweden/SCB) for the study periods. The study area had four health care centres and a county annex hospital with a casualty department, while the control area shared the annex hospital and had two health care centres, one of them with an emergency unit. The use of acute health care services at these units was followed by recording data from all attendances during both registration periods. Both the study and control areas lie 50 km from Linköping university hospital. Systematic differences between the areas regarding injured people attending for care outside the registration areas were sought by analysing all attendances at the emergency departments of the university hospital during September 1984. Fatal injuries other than those recorded in the project were researched by analysing the local police records.

To estimate the quality of the injury registration procedure, secondary sampling of all acute attendances in the study area was undertaken during the third week of the pre-implementation registration period and in both the study and control areas during the third week of the post-implementation registration period.

Statistical methods

The total populations in the areas under study were considered to be exposed to the risk of unintentional injury and were thus used as the basis for calculating injury incidence. Age and gender standardization was performed against national demographic

data for analyses at community level. The intervals used for the breakdown of the population by age and sex were chosen with regard to the target groups for the interventions. Descriptive statistics and confidence intervals were calculated using the SPSS software package.

Results

Quality of registrations

During the pre-implementation study period, identity data were missing for 18 patients (0.4%) in the study area and 23 (0.9%) patients in the control area. During the post-implementation period, 10 patients (0.2%) in the study area could not be identified in the medical records. For six patients (0.2%) in the control area, identity data were missing.

In the registration test during the pre-implementation period, 5 (5%) of the 102 secondarily observed injuries were found not to have been registered in the study area: three had mistakenly not been registered as injuries and two others were found not to have been recorded. During the post-implementation period in the study area, 4 (5%) of 84 secondarily observed injuries had not been registered: these had not been recorded. In the control area, 7 (14%) of 51 secondary observed injuries had not been registered: three had mistakenly not been registered as injuries and four others had not been recorded.

Environmental indicators

The age and sex mix in both areas was stable over the registration periods and was close to the national average (Figure 2). Residential and income characteristics also remained stable (Table 1). The distribution of employers was similar for both areas and registration periods, the share employed by manufacturing industries (31–34%) being higher than the national average (21–20%). The educational level in both areas was slightly

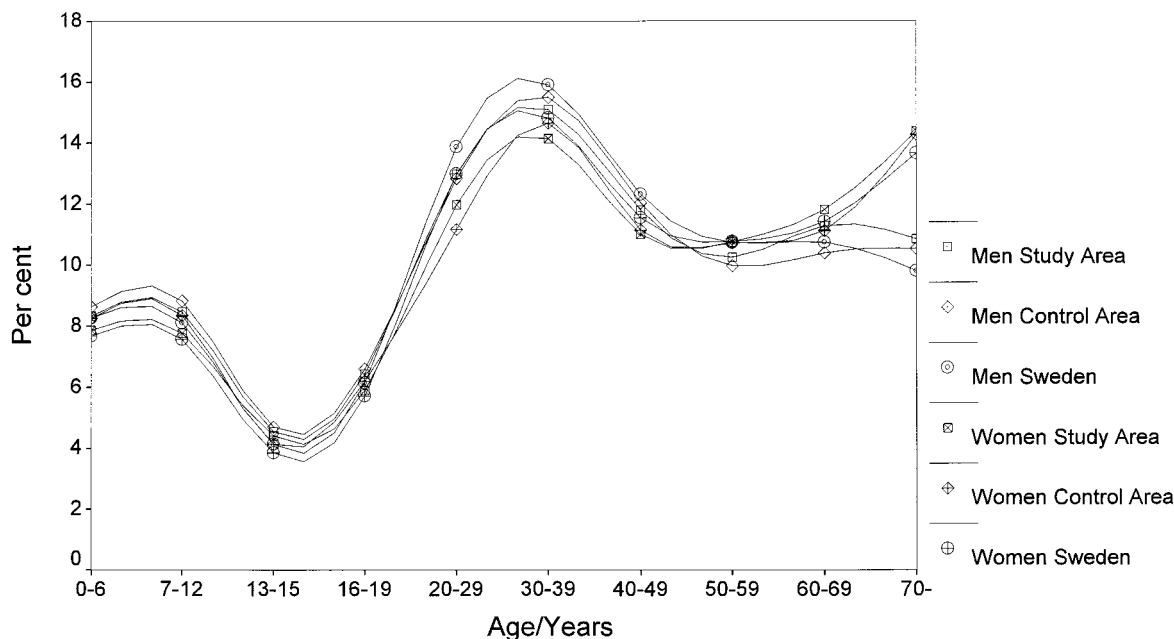


Figure 2 Age and gender distribution in the study and control areas displayed against the total population in Sweden

Table 1 Socio-demographic trends in the study area (Motala) and control area (Mjölby) over the registration periods

	Population characteristics (%)			
	Study area		Control area	
	1984 N = 41 400	1989 N = 41 700	1984 N = 25 900	1989 N = 26 100
Urban residents	82	82	79	81
Gainfully employed	49	50	49	51
Average income ^a	93	93	93	93

^a Per cent of national mean.

Table 3 Number of motor vehicles for 1000 residents in the study area (Motala) and control area (Mjölby) during the registration periods

	Motor vehicles per 1000 inhabitants			
	Study area		Control area	
	1984 N = 41 400	1989 N = 41 700	1984 N = 25 900	1989 N = 26 100
Cars	365	412	384	434
Motorcycles	16	16	15	14
Lorries and buses	25	32	23	36
Total	406	460	422	484

Table 2 Formal education of those aged 26–64 years in the study area (Motala), the control area (Mjölby) and nationally (Sweden). Elementary school comprised 9 years during the registration periods

Population schooling levels (%)	Study area				Control area				Nationally			
	Men		Women		Men		Women		Men		Women	
	1984	1989	1984	1989	1984	1989	1984	1989	1984	1989	1984	1989
<10 years	48	42	54	46	49	44	52	45	45	41	45	39
10–12 years	40	44	33	39	40	43	36	40	38	40	37	40
>12 years	12	14	13	15	11	13	12	15	17	19	18	21
N	10 142	10 232	9999	9917	6313	6421	6147	6155	2.1 × 10 ⁶	2.1 × 10 ⁶	2.2 × 10 ⁶	2.1 × 10 ⁶

below the national average and showed a tendency to increase (Table 2). The number of motor vehicles owned by residents increased by 12% in the study area and by 13% in the control area (Table 3).

Total injury incidence

The incidence of injuries treated in health care facilities in the study area decreased by 13% (95% CI : 9–16%) from 119 (95% CI : 115–122) per 1000 population-years in 1983–1984 to 104 (95% CI : 101–107) per 1000 population-years in 1989. The injury incidence in the control area was 104 (95% CI : 100–108) per 1000 population-years in 1983–1984 and 106 (95% CI : 102–109) per 1000 population-years in 1989. In the study area, the largest decrease in injury incidence was observed among males aged 7–15 and 50–59 (Table 4).

Hospital treated injury incidence

The incidence of hospital treated injuries in the study area decreased by 15% (95% CI : 7–24%) from 19 (95% CI : 17–20) per 1000 population-years in 1983–1984 to 16 (95% CI : 15–17) per 1000 population-years in 1989. The incidence of injuries in the control area was 13 (95% CI : 11–14) per 1000 population-years in both 1983–1984 and 1989. In the study area, the largest decrease in injury incidence was observed among women over 70 years of age (Table 5). No decrease was observed among males. In the control area, no changes in injury incidences were observed.

Acute care utilization

Attendances at acute health care facilities in the study area units for reasons other than injuries increased by 8% (95% CI : 6–10%)

Table 4 Incidence of injuries treated in health care per 1000 (95% CI) population-years in the study and control areas before and after the programme intervention, displayed by age and gender

Age (years)	Study area				Control area			
	Men		Women		Men		Women	
	1983–1984	1989	1983–1984	1989	1983–1984	1989	1983–1984	1989
0–6	147 (128–165)	138 (121–154)	115 (99–131)	86 (73–100)	127 (106–148)	124 (103–145)	89 (71–107)	90 (72–108)
7–12	200 (179–221)	146 (126–165)	134 (117–152)	111 (94–129)	168 (144–192)	131 (108–153)	107 (87–127)	125 (103–147)
13–15	242 (211–274)	175 (147–203)	188 (160–216)	149 (122–176)	131 (102–160)	166 (132–201)	135 (104–166)	118 (89–147)
16–19	245 (219–272)	213 (187–240)	113 (94–132)	124 (103–145)	236 (203–268)	222 (190–254)	126 (102–151)	99 (77–122)
20–29	243 (224–262)	209 (192–226)	72 (61–82)	91 (79–103)	228 (205–251)	239 (217–261)	68 (55–81)	77 (64–91)
30–39	143 (129–156)	134 (120–147)	66 (57–75)	67 (57–77)	120 (105–135)	152 (134–171)	47 (37–57)	66 (54–79)
40–49	112 (99–126)	92 (82–103)	67 (56–78)	58 (49–67)	137 (119–156)	120 (105–135)	55 (43–67)	44 (35–54)
50–59	108 (94–122)	78 (66–90)	69 (58–79)	61 (50–71)	89 (72–105)	97 (79–114)	64 (51–78)	67 (52–81)
60–69	76 (65–88)	65 (55–76)	74 (63–84)	57 (47–66)	71 (57–85)	60 (47–73)	72 (58–85)	53 (41–65)
≥70	68 (57–79)	59 (49–69)	92 (81–103)	88 (78–98)	38 (27–48)	50 (39–62)	82 (69–95)	84 (71–96)
Total	149 (144–154)	125 (120–130)	89 (85–93)	81 (77–85)	132 (126–138)	135 (129–141)	77 (72–82)	76 (71–81)
N	20 539	20 720	20 893	20 990	12 888	12 996	12 970	13 059

Table 5 Incidence of injuries treated at hospitals per 1000 population-years (95% CI) in the study and control areas before and after the programme intervention, displayed by age and gender

Age (years)	Study area				Control area			
	Men		Women		Men		Women	
	1983–1984	1989	1983–1984	1989	1983–1984	1989	1983–1984	1989
0–6	19 (12–25)	19 (13–25)	11 (6–16)	10 (5–14)	12 (5–18)	14 (7–21)	6 (1–10)	9 (4–15)
7–12	24 (16–31)	18 (11–25)	11 (6–16)	13 (7–19)	11 (5–17)	16 (8–24)	6 (1–10)	8 (3–14)
13–15	15 (7–23)	22 (12–31)	22 (12–31)	15 (6–23)	25 (12–37)	13 (3–23)	19 (7–30)	7 (0–15)
16–19	26 (17–34)	21 (13–29)	8 (3–13)	10 (4–16)	13 (5–21)	13 (5–21)	11 (4–19)	5 (0–11)
20–29	23 (17–28)	18 (13–23)	9 (5–13)	5 (2–8)	19 (12–25)	14 (9–20)	6 (2–10)	2 (0–4)
30–39	15 (11–20)	17 (12–22)	7 (4–10)	7 (4–10)	11 (6–15)	10 (5–14)	6 (3–10)	4 (1–7)
40–49	13 (8–17)	11 (7–15)	10 (6–15)	7 (4–10)	10 (5–15)	6 (3–10)	10 (5–15)	3 (1–6)
50–59	18 (12–24)	12 (7–17)	14 (9–19)	7 (4–11)	17 (10–24)	6 (1–10)	9 (4–14)	6 (1–10)
60–69	19 (13–24)	8 (4–11)	23 (17–30)	16 (11–22)	13 (7–20)	17 (10–24)	13 (7–19)	5 (1–9)
≥70	53 (44–63)	31 (24–38)	72 (62–81)	43 (36–51)	28 (19–37)	20 (13–28)	56 (45–66)	45 (36–54)
Total	22 (20–24)	17 (15–19)	21 (19–23)	15 (13–16)	15 (13–17)	13 (11–15)	15 (13–18)	11 (9–13)
N	20 539	20 720	20 893	20 990	12 888	12 996	12 970	13 059

Table 6 Incidence of attendances at acute health care units for other reasons than injuries per 1000 population-years (95% CI) in the study and control areas before and after the programme intervention, displayed by age and gender

Age (years)	Study area				Control area			
	Men		Women		Men		Women	
	1983–1984	1989	1983–1984	1989	1983–1984	1989	1983–1984	1989
0–6	788 (746–830)	1008 (963–1053)	729 (687–770)	845 (802–887)	723 (673–773)	625 (578–671)	740 (687–792)	559 (514–604)
7–12	408 (378–438)	431 (398–464)	446 (413–478)	485 (449–521)	349 (315–384)	326 (290–361)	382 (345–419)	403 (363–443)
13–15	284 (250–319)	338 (300–377)	326 (290–363)	394 (350–437)	209 (172–245)	249 (206–291)	300 (254–346)	388 (335–440)
16–19	386 (353–420)	503 (462–543)	642 (597–687)	779 (727–831)	276 (240–311)	333 (294–373)	507 (458–556)	526 (473–578)
20–29	612 (582–641)	580 (552–608)	804 (769–839)	849 (813–884)	414 (383–445)	395 (366–423)	685 (642–727)	618 (580–657)
30–39	555 (529–581)	578 (550–606)	673 (643–702)	728 (696–760)	364 (337–390)	422 (392–453)	550 (516–584)	626 (587–664)
40–49	456 (430–483)	470 (446–495)	613 (581–645)	581 (553–610)	315 (287–343)	365 (338–392)	435 (402–468)	497 (465–529)
50–59	500 (470–530)	506 (476–537)	554 (523–585)	651 (617–686)	325 (293–356)	392 (357–427)	455 (419–491)	533 (493–573)
60–69	507 (478–536)	539 (508–571)	480 (452–507)	561 (531–592)	376 (343–409)	399 (365–433)	439 (405–473)	470 (434–505)
≥70	673 (639–707)	694 (660–727)	509 (484–535)	526 (501–550)	557 (517–596)	565 (526–604)	589 (554–624)	529 (497–561)
Total	536 (526–546)	579 (569–689)	592 (582–602)	649 (638–660)	399 (388–410)	417 (406–428)	521 (509–533)	529 (517–541)
N	20 539	20 720	20 893	20 990	12 888	12 996	12 970	13 059

from 568 visits (95% CI : 560–575) per 1000 population-years in 1983–1984 to 614 visits (95% CI : 606–621) in 1989 (Table 6). The relative share of injury cases decreased from 17% (95% CI : 17–18%) to 14% (95% CI : 14–15%) of all attendances. The number of attendances in the control area showed a tendency to increase: from 463 visits (95% CI : 454–471) per 1000 population-years in 1983–1984 to 475 visits (95% CI : 466–483) per 1000 population-years in 1989. The relative share of injury cases in the control area remained at 18% (95% CI : 18–19%). In the study area, the relative share of injury cases decreased for men from 22% (95% CI : 21–23%) to 18% (95% CI : 17–18%), and for women from 13% (95% CI : 12–14%) to 11% (95% CI : 11–12%). In the control area, the relative share remained constant for both genders.

Injuries managed outside local units

A lower share of all injured residents from the study area (11/422, 3%, 95% CI : 1–5%), than from the control area (28/253,

12%, 95% CI : 7–17%), were found to have been directly provided with acute care outside the local health care units during the month of the control study. The police records did not disclose previously unrecorded injuries.

Discussion

In 1996, 14 Safe Communities had been accredited. In this first outcome evaluation of the model, two separate measurements showed that, after one year, the incidence of unintentional injuries requiring health care in the study community had been reduced by half the magnitude of the WHO goal for year 2000. In the study, only non-fatal injuries were considered, since the number of fatalities was estimated to be too small to be analysed. When the observed reductions in total injuries and hospital-treated injuries are compared, the effect is found to be most pronounced for the former among schoolboys, and the latter among elderly women. This suggests that a basic part of

the programme effect was mediated by groups at risk of injury who were not immediately available for national-level information campaigns, which often reach active adults in their roles as employees, parents or vehicle owners.

Reliability of data

The rate of missing data observed was lower than in comparable studies.^{4,6} It still has to be noted that misclassification was studied in the control area only during post-implementation registration. However, the same routines were used during both registrations. The missing data rates in both areas and the misclassification rates in the study area were constant over the periods, which indicates that the misclassification rate in the control area may also be estimated as constant. Concerning the retrospective collection of hospital discharge data, national injury data sets including ICD E-codes have also proved to be of satisfactory quality in countries other than Sweden.¹⁸ Nevertheless, based on a concern about these data sets,¹⁹ case readmissions in this study were manually controlled and omitted.

Preventive effects

The statistical methods most suitable for experimental comparisons, those involving the assignment of intact social units to different intervention groups using a random allocation mechanism, are different from those best suited for quasi-experimental comparisons.²⁰ For the evaluation of injury prevention, a clearly defined design and use of robust statistics have recently been recommended.²¹ Due to the voluntary nature of injury prevention based on local action groups, a full experimental design in which individuals or groups are randomized to exposure to preventive measures is not practicable. Therefore, the evidence of causal preventive effect has to be interpreted from quasi-experimental designs, where both sampling error and biased selection have to be considered as possible explanations of hypothesized intervention effect.^{22,23} In this study, the reduction of injury-based health care attendances displayed convincing strength using both post-implementation measurements. The size of the decrease is consistent with evaluations of targeted community-based programmes addressing burns among children²⁴ and falls,⁵ and the specificity of the programme effect is indicated by the finding that an increase in acute care utilization for reasons other than injuries was observed.

A regression effect on the injury decrease could be suspected because the baseline injury incidence in the study area was higher than in the control area. However, the large number of injuries observed by two separate registration methods suggests that it is questionable whether regression towards the mean could explain the findings.²⁵ For prospective registration, the baseline difference in injury incidence could instead be explained by the higher utilization of local acute care resources in the study area and the fact that the total availability of care was lower in the control area. This interpretation is also supported by the finding that the relative share of injury cases remained constant in the control area, while it decreased in the study area.

Apart from community programmes, there has been a historical trend towards injury decrease in the European countries which can be attributed to national information and product safety campaigns, particularly addressing traffic²⁶ and child injuries.²⁷ At the time of the study, the national trend had declined in Sweden⁹ as is also indicated by the absence of injury

reduction in the control area. Concerning adaption of preventive behaviour, it is known that the general educational level in a population exerts an influence.²⁸ Even though the level of education rose in the study area, a similar observation was made for the control area. The remaining environmental indicators which could theoretically influence injury rates showed no change or indicated an increase in risk, e.g. by an increase in the number of motor vehicles.

Limitations

It has been suggested that interpretation of results from evaluations of preventive programmes is based on the theory for the intervention.²⁹ For community-based injury prevention, the theoretical basis calls primarily for an analysis of the nature of the community action.¹⁷ Therefore, the critical issue for the validity of the observed effects is the transfer of participatory change processes between different communities. In the Safe Community model, initiatives for changes in the physical environment and health education are decided at a local level.^{30,31} The evaluated programme was implemented in a semi-rural community in north-western Europe, defined by the geographical area ruled by a local government. The availability of a local political administration enhanced the possibility for implementing programme decisions, because both organizations and citizens could negotiate with the decision-makers who were responsible. Local government in Sweden also has responsibility for health care, which in other countries may be managed at national level.³² The results are therefore not immediately generalizable to areas which differ in local government structure and size from Scandinavian municipalities,³³ but matching areas are still prevalent in most regions of the world.

Moreover, given that the actions in the self-regulatory groups were based on knowledge of the local injury epidemiology, it can also be asked whether the observed effect can be replicated in regions with differing epidemiology. From other settings, experience has shown that the average income in the population influences the critical network building more than the local infrastructure.³⁴ The Safe Community model is built on local priority-setting and the principle that no additional funds other than those in routine budgets are used for the preventive actions. Even in other health promotion settings, a high degree of flexibility and attention to local priorities has been found to be necessary to gain an effect from community-based interventions.³⁵ There are therefore reasons for a careful optimism that the model can also have an effect in regions which differ in epidemiology and local resources, but provide the possibility for voluntary community participation. It is also possible that the effects can become more manifest in total populations, due to the fact that nationwide safety campaigns are less usual.

Future work

The resources for the programme interventions came from local organizations which only indirectly benefit from the programme effects. In a recent Swedish analysis,³⁶ the total socioeconomic cost to the community of an average injury was estimated at 21 000 SEK (£1900) in 1991 prices. However, before recommendations can be given for reallocation of local resources between the organizations that benefit and bear the costs of the programme, a structured cost-utility analysis, including consideration of injury severity, has to be performed.

It should also be remembered that the aim of this study was to investigate the outcome of the implementation phase of the programme. When compared to disease prevention, the latency time for injury prevention is relatively short, and an effect can be observed in the time interval. However, even for initially successful programmes, continuous surveillance into the maintenance phase is necessary.³⁷

Conclusions

The Safe Community model for injury prevention based on self-regulatory local action groups provides a complement to national safety campaigns. This study, covering 134 000 population-years, showed that the programme reduced the incidence of injuries requiring health care in numbers approaching WHO goals. The study, however, has not addressed injury severity, specific impact in the different risk areas and unintended consequences of the programme. Future studies need to approach these issues and also further evaluate the policy relevance of the programme,⁷ i.e. the overall cost-utility and the ability to replicate it at other sites.

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