

Injury Epidemiology in a Safe Community Health Service Center in Shanghai, China

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Abstract

The current study has investigated the injury epidemiology in a community health service center (CHSC) under a Safe Community in Shanghai, China. It was a cross sectional study with data generated from hospital records and ‘Injury Report Card’ (IRC). Open wounds constituted 571 (50.8%) injuries. Majority of the injuries (99.64%) did not need any hospitalization. Among the injured victims, 59.16% were floating population and occupied in the manufacturing or transportation sector (31.49% of the injury), commercial services and farms. Finger, toes, head and face were most affected part of the body due to injuries. Mechanical objects and falls constituted nearly 95% causes of injuries. During start of working hours (9am) and during Wednesday and Thursday the frequencies of injuries were highest. In a WHO Safe Community program, injury epidemiology has great emphasize as it dwelled with proper scientific evidences of the injury etiologies. The study had identified some important issues within its objected framework. Education and supervision of the floating workers can be effective for reducing injuries.

Key words: injury epidemiology, injury report card, China.

Introduction

Injury has been emerged as a major public health problem worldwide. ¹⁻⁵ Injury not only incurs ill-health, disability and deaths but also results se-

veral negative economic consequences. ⁶⁻⁸ Injuries consume a considerable amount of health care resources. ^{5, 9, 10} It disproportionately affects low income countries. ^{11, 12} However, despite its devastating impact on individuals, societies and health budgets, injury still remains a neglected area, especially in low and middle income countries. ^{5, 9, 12}

According to World Health Organization (WHO) prediction, by the year 2020, injuries will be responsible for even more morbidity, mortality and disability, with significant socioeconomic impact on the developing countries. ¹⁰ With a mortality rate of 83.7/100,000 population, during the year 2000 an estimated 5 million people died worldwide from injuries accounting for 9% of the world’s deaths and 12% of the world’s burden of disease. ¹³ The available statistics indicates that during 1999, injuries accounted for approximately 750,000 deaths and 3.5 million hospitalizations in China, resulting annual economic loss of 12.5 billion US dollars – almost four times that of the total public health services budget of China. ^{14, 15} Injury has become an important public health problem in China. ¹⁵

The World Health Organization (WHO) Manifesto for Safe Communities states that “All human beings have an equal right to health and safety”. “A ‘Safe Community’ can be a: Municipality; a County; a City or a District of a City working with safety promotion, Injury-, Violence- and Suicide- prevention and prevention of the consequences (human injuries) related to Natural Disaster, covering all age groups, gender and areas and is a part of an international network of accredited programmes”. ¹⁶ The Safe Communities program

emphasizes on collaboration, partnership and community capacity building to reduce the injury incidence and promote behaviours related to injury-reduction. Throughout the world approximately 200 (until 25 June 2010) communities have been designated as 'Safe Communities', in countries as diverse as Sweden, Australia, China, Taiwan, South Africa, the Czech Republic and Serbia.

Safe Community has to fulfill the following six criteria:

1. An infrastructure based on partnership and collaborations, governed by a cross-sectional group that is responsible for safety promotion in their community;
2. Long-term, sustainable programs covering both genders and all ages, environments, and situations;
3. Programs that target high-risk groups and environments, and programs that promote safety for vulnerable groups;
4. Programs that document the frequency and causes of injuries;
5. Evaluation measures to assess their programs, processes and the effects of change;
6. Ongoing participation in national and international Safe Communities networks.

Safe Community program is almost 20 years in continuous progress. There are several indications that Safe Communities are effective to reduce injuries.¹⁷⁻²⁰ However, those literatures are mainly from Nordic and Western Pacific countries suggesting more literatures from the developing countries such as China.¹⁹ China has resorted the Safe Community movement for the last 10 years. Until June 2010, there are 33 safe Communities in China. To the best of authors' knowledge there is lack of literature about Safe Community activities in China.

Shanghai has three levels of hospitals: First level = Community Health Service Center; Second level = district level hospital and Third level = municipal level hospital which is most advanced in terms of equipments and HR. In Shanghai each community has one Community Health Service Center (CHSC). People can choose which hospital they would like to visit the doctor. If they have severe health problem normally they prefer to second or third level hospital.

The current study has investigated the injury epidemiology in a community health service center (CHSC) under a Safe Community in Shanghai, China.

Methods

It was a cross sectional study with hospital records. So far for communities there are four possible channels to get injury information at regular basis in Shanghai. The first one is vital registration system which provides population level data on causes of death on an annual basis.²¹ The second is CHSC as we did in this study. The third one is from police department including traffic injury and violence et al. The last one is from school or insurance company et al. In terms of general injury surveillance CHSC should have the first priority. First of all the data covers only its own community instead of covering many communities. Next CHSC is within the community it is much easier to establish long term cooperation and collaboration relationship to cover all kinds of injuries.

In Shanghai, every patient who visited the CHSC because of injury needed to answer questions from the 'Injury Report Card' (IRC), a user friendly questionnaire form. The trained nurse on duty interviewed the patient and then filled the form. The current study has extracted data from the injury report cards (IRC) for a period of two years from 1st January 2007 to 31st December 2008. (more details of IRC can be obtained from author upon request)

Statistical analysis

Data were presented in simple descriptive statistics. Micro Soft Excel software was used for data analysis.

Ethical issues

The study has used secondary anonymous data without revealing any personal information of the injury victims. Appropriate permission was obtained from the hospital authority for using the data for scientific analysis.

Results

In total 1124 persons were injured during two years study period. In the year 2007, there were 543 injury incidences while 581 were injured during 2008. Number of male was 892 while female was 232, resulting a ratio of 3.84:1. The oldest person was 88.7 years old and the youngest was only several months old (average age 37.69 ± 13.98 , median age 36.95). Open wounds constituted 571 (50.8%) injuries. Majority of the injuries (99.64%) did not need any hospitalization while only four patients (0.36%) were hospitalized.

Productive age group 25-44 had highest proportions (57%) and 46-65 age group had 24% injuries. Among the injured victims, 59.16% were floating population. People working in manufac-

turing or transportation industry had accounted for 31.49% of the injured persons. Commercial services and farms had almost same level of injury incidences (table 1).

As indicated in table 2, among the study samples almost all (99.47%) had unintentional injuries. Industrial and constructed areas constituted for more than 50% injuries after home (22%). Considering physical position of the human body, fingers and toes had highest level of injuries (48%) after head and face (20%), crura (16%) and shoulders/arms (14%).

Considering causes of injuries in table 3, the study indicated that mechanical force by various objects constituted almost 78% injuries after fall (18%). Other causes like motorized- and non-motorized traffic accidents, animal bites/pushes, burn and other causes constituted very few injuries ($\leq 1\%$).

Table 1. Information about the injured persons

Individual Information		Number of Person	Percentage (%)
Age	≤ 5	20	1.78
	5-14	18	1.60
	15-19	48	4.27
	20-24	92	8.19
	25-44	639	56.85
	45-64	267	23.75
	≥ 65	40	3.56
Type of household registration	Same district within which the community located	428	38.08
	Other districts in Shanghai	25	2.22
	Out of Shanghai	666	59.25
	Unknown	5	0.44
Occupation	Manufacture/transportation	354	31.49
	Professional	193	17.17
	Commercial or service	133	11.83
	Farmer	124	11.03
	Homemaker	56	4.98
	Retired	51	4.54
	Civil servant	33	2.94
	Children before school	29	2.58
	Unemployed	21	1.87
	School students	14	1.25
	Military	2	0.18
Other/Unknown	114	10.14	

Table 2. Injury characteristics

		Number of injured	Percentage (%)
Intent	Unintentional	1118	99.47
	Self-inflicted	3	0.27
	Intentional by someone else	3	0.27
Place of occurrence	Industrial or construction area	569	50.62
	Home	245	21.80
	Commercial area	103	9.16
	Residential area	70	6.23
	Street/highway	63	5.60
	School/	53	4.72
	Farm/Field	12	1.07
	Sports and athletic area	5	0.44
	Other	4	0.36
Region of body	Finger and toe	534	47.51
	Head and face	224	19.93
	Crura	175	15.57
	Shoulder and arm	152	13.52
	Thorax	9	0.80
	Neck	8	0.71
	Other	8	0.71
	Nerve system	7	0.62
	Involving multiple body regions	7	0.62

Table 3. Causes of injury

Cause	Number of injured	Percentage (%)	Accumulative number of injured
Mechanical force by object	872	77.58	872
Fall	190	16.90	1062
Non motor vehicle traffic accident	19	1.69	1081
Mechanical force by animal	13	1.16	1094
Motor vehicle traffic accident	10	0.89	1104
Exposure or contacting heat or hot thing	10	0.89	1114
Other	5	0.44	1119
Suffocation/hanging	2	0.18	1121
Drowning	1	0.09	1122
Other transportation accident (ship et al)	1	0.09	1123
Overwork/travelling/fatigue	1	0.09	1124

The study had investigated time of occurrence of injuries (figure 1 and 2). During January (44) and February (47) number of injuries were lowest while July (150) and August (138) had constituted highest numbers of injuries. Within 24 hours framework, injury incidences had a sudden jump at 0700am with continuous rise till morning 0900am (52 to 132 to 163). Then the incidences started to fall to 119 at 1000am to 19 at 1100am. The trend had another slightly upward movement to 51 at 1200 noon to 80 at 1300pm. After 1600pm the trend had continuous decrease (figure 1). During Wednesday the numbers of injuries was highest 192 (figure 2). The differences in injury incidences were visibly marked in Saturday (119) and Sunday (156).

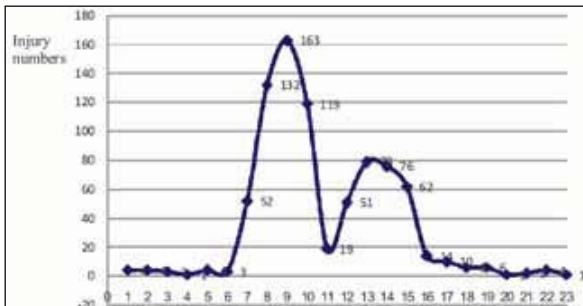


Figure 1. Distribution of injury cases in 24 hours



Figure 2. Distribution of injury cases in a week

Discussion

The current study had investigated the injury epidemiology in a community health service center (CHSC) in designated Safe Community in Shanghai, China. In a WHO Safe Community program, injury epidemiology has great emphasize as it dwelled with proper scientific evidences of the injury etiologies. The study had identified some important issues within its objected framework.

Over half of the injured were not Shanghai citizens (59.25%). Most of the injured were working

in manufacture or transportation (31.49%) while majority of those injuries were happened in industrial or construction area (50.62%). The most frequent activities during the injury occurrence was in work (62.01%). Hospital records revealed that mechanical force by object was the main cause (77.58%) of injury. Combining the information above it may suggest that floating populations working in manufacture or transportation should be considered as the top priority when carrying out community injury prevention programmes. Because of the urbanization every year thousands of people from rural areas migrate to big cities like Shanghai and most of them work in industry or construction or service industry. In 2000 the floating population people living for over half a year in Shanghai was around 2.99 million. By the end of 2008 this number went up to 5.17 million which might result two to three fold increase in injuries without any effective intervention.²² Other priorities suggested by this study included home safety and fall prevention. Therefore the study has provided necessary information to the policy makers for effective planning for injury reduction.

The current study suggests two ways for floating population injury prevention:

- Education: because of low awareness on risk factors and injury outcomes which leads to risk behavior during working, for example not wearing helmet.
- Supervision: in one side to strength the supervision of worker to follow the safety rules; in the other side to strength the supervision of the working site including identification of risk environments and behaviors, checking establishments regularly.

Since China is such a big country it is understandable that each region, each city or each community should have different priorities regarding injury prevention. So CHSC based injury surveillance will definitely play very important role in this regard. But obviously it is not enough by just using the data from CHSC. The disadvantages of CHSC based data are the mortality cases are not available. And the severe injures normally are sent to first or second level hospital. Some local people they prefer to visit more advanced hospitals when they get any kind of medical issues.

So the ideal way is to work together of different sectors and departments and to combine the four possible resources which is also one of the requirements to become the member of international safe community member. If allowed household survey can be one of the options as well. However, in that case, recall bias and expensive interview techniques should be considered.²³ The current study has presented the injury epidemiology in a designated safe community in China. Studies from Europe and Australia indicate a strong decline of injuries in their designated Safe Communities and also highlighted effectiveness of injury reduction under different social strata.¹⁷⁻¹⁹ The current study warrants such epidemiological (both cross sectional and longitudinal) studies from different Safe Communities in China, which not only help the policy makers also reduce the economic burden of the society by saving direct and indirect costs of injuries.

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