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Incidence of Self-Reported Interpersonal Violence Related Physical Injury in Iran

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Background: Violence is the cause of death for 1.5 million people in a year.
Objectives: Our study aimed to estimate the incidence rate of self-reported interpersonal violence related physical injury (VRPI) and its associated factors in Iran.
Patients and Methods: The sample included people ranged from 15 to 64 years old who were residing in Iran. A total of 1525 clusters were selected from the whole country. Six families were selected from each cluster via a systematic random sampling method. Then, the residential units were identified and the interviewers contacted the inhabitants. In the next step, one of the family members was selected by using Kish grid method. The instrument was a researcher-made questionnaire and consisted of two sections; demographics and project related data. Face validity and content validity of our questionnaire were investigated based on expert opinions and the reliability was confirmed by a pilot study, as well. The inclusion criteria were considered for choosing the interviewers. An interviewer was assigned for each 42 participants (7 clusters). An educational seminar was held for the administrative managers (54 persons) and interviewers (230 persons) for a week. The field work was distributed among all 46 Medical Sciences universities in Iran. In each university, administrative issues were related to an executive director. Mann-Whitney U test and odds ratio were used to analyze the data with 95% confidence interval. α value was considered less than 5%.
Results: The frequency of VRPI among 7886 participants was 24 during the last three months. The incidence rate of interpersonal VRPI was estimated at 3.04 per 1000 population (95% CI: 2.66-3.42) during a three-month interval in Iran. The incidence was 4.72 per 1000 population (95% CI: 4.01-5.43) for males and 1.78 per 1000 population (95% CI: 1.39-2.17) for females during a three-month interval. The mean (SD) of age of the participants with and without a history of VRPI were 26.5 (7.21) and 33.05 (12.05) years, respectively (P = 0.008). Considering the participants' gender, 66.7% were males (OR = 2.66, 95% CI: 1.14-6.23). Khuzestan Province had the most VRPIs (25% of all VRPIs). Streets and roads were the places with the highest frequency of injury (50%). The most frequent injured organ was the upper limb (54.17%). The most prevalent type of injury was a superficial wound (50%). Finally, the most common place of treatment was home (45.83%).
Conclusions: We determined the incidence rate of self-reported interpersonal VRPI for the first time in Iran based on a national survey. The injuries were more common among young men. We suggest consecutive national surveys with different data gathering methods and more sample sizes.

Keywords: Incidence; Health Surveys; Violence; Wounds and Injuries; Iran

1. Background

The World Health Organization introduced control of the violence as the main priority in public health in 1996. It described violence with the following statements: "The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation" (1). Violence is the cause of death for 1.5 million people in a year and it is one of the most important causes of death among 15 - 44 years old persons in the world now (2). In the USA, over 8 million individuals report vio-

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lence against intimate partners annually, 101 people die due to suicide every day, more than 6000 persons are killed and over 1500 children expire due to child abuse annually (3).

The government of the USA established National Center for Injury and Violence Prevention with an independent budget under the surveillance of Center of Disease Control and Prevention in 1992 (3). In developing countries, there are not adequate valid data on violence related injuries and deaths. However, the existing data show that such countries sustain more burdens of injuries (4). Without knowing the epidemiology of violence related injuries, we cannot properly schedule inhibiting strategies. There are some good articles focusing on violence related injuries and their associated factors (5-8). Although such studies prepare valuable information, cultural differences complicate comparisons between nations. Therefore, we need intercultural studies. In our country, Iraq-Iran war has been considered the main topic for violence related papers in recent decades and our researchers have paid less attention to interpersonal violence (9-14).

According to the recent global burden of diseases report, the rank of years of life lost due to interpersonal violence has increased from 21st in 1990 to 13th in 2010 (15). Thus, it is necessary for us to analyze the process. So far, adequate information has not been available on the incidence of interpersonal violence in Iran. Our study was a part of Iran Mental Health National Survey, which has been implemented in 2011 based on a population based study.

2. Objectives

Our project aimed to determine the incidence of self-reported interpersonal VRPI and its associated factors in Iran.

3. Patients and Methods

3.1. Target Population

This study was a part of the national survey project of mental health in the Islamic Republic of Iran. The survey was performed using a population based, door to door method in 2011. The sample included people ranging from 15 to 64 years old residing in Iran. The following groups were excluded: people with foreign nationality, people living in institutions (such as nursing houses, prisons, asylums, hospitals, garrisons, educational centers, and so on.), people unable to answer the questions because of cognitive disorders, acute psychosis, mental retardation or deafness, and those who did not know Persian language .

3.2. Sample Size and Sampling Method

The sample size was computed based on the objectives of a national project. One thousand five hundred and twenty five clusters were selected from the whole country according to the following parameters: census of Iranian Statistical Center in 2006, probability proportional to size sampling method and population of each province. The same number of clusters was selected from different provinces as back up to replace subjects having problems to identify their addresses or contacting them. Finally, 9150 people were considered as the sample size. The full address of the selected clusters was given to the interviewers. Each interviewer had to do the following 4 steps (for which he was trained to ensure the appropriate randomization of these steps and also the presence of different groups of participants according to gender and age): assigning the residential units, identifying the involved families, determining a list of people included in the study, and choosing a participant.

After referring to clusters, all families of each cluster were counted, and 6 families were selected via a systematic random sampling method. Then, the residential units were identified and the interviewers contacted the inhabitants. At this stage, the head of the family or the most informed member was selected to be questioned. Then, the interviewer with his help tried to make a list of members in families ranging from 15 to 64 years old and arranged them from the oldest to the youngest. Next, one of the family members was selected using Kish grid method. In the next step, a defined time was scheduled for interviewing. Each interview was conducted in the participant's house, in a quiet place.

3.3. Instruments

The instrument was a researcher-made semi-structured questionnaire and consisted of some questions on all kinds of injuries, including internal and external causes, place and type of injury, injured organ, and place of treatment (Appendix). For this purpose, we modified valid similar national and international questionnaires considering our conditions. The face and content validity of our questionnaire were examined based on expert opinions and also its reliability was confirmed in a pilot study (16). Our questionnaire was named short form injury questionnaire and placed as a part of the national survey of mental health questionnaires.

3.4. Interviewers and Their Training Programs

The following criteria were considered for choosing the interviewers: having at least a bachelor degree in psychology or consultation, being local or at least residing in the geographical area of the related university and being fluent in the local language of the area under studied. An interviewer was assigned for each 42 participants (7 clusters). An educational seminar was held for our administrative managers (54 persons) and in-

terviewers (230 persons) from December 17 to 23, 2010. The seminar included interactive education in classes (4.5 days), practice in groups (half a day), and practice with patients (1 day for managers and 2 days for interviewers). During the training course, all interviewers' responsibilities were explained and they were also trained on how to use the questionnaire, and conduct an interview; in addition, a guide booklet was given to them. Pictorial cards were prepared for some items of the questionnaire. Interviewers showed the cards to the participants for a better understanding of the questions during their interviews. To inform well, a website (http://iranmhs.tums.ir), including all related information such as new guidance for unexpected cases was designed. Inter-rater reliability was studied in a group of clients of primary health care services and a group of inpatient cases of psychiatric hospitals. The inter-rater reliability for the items was from poor to excellent. The items with poor and fair reliability were reviewed and appropriate changes were made by considering the possible reasons for the low reliability.

3.5. Administration

The field work was distributed to all 46 universities of Medical Sciences in Iran. In each university, administrative issues were related to an executive director. In areas with a sample size of more than 300 people; there was an assistant for the executive director. The interviewers' activities were monitored by some expert trained auditors. The field work was performed from winter through spring, 2011.

3.6. Informing Local People

One of the most important points was to encourage families for better coordination. Therefore, the following methods were used: informing people by different local media, installing posters near the participants' houses a few days before the interviews, and showing brochures of the project interviewers' identification card and the letter of reference from the department of health universities to the participants. The executive administrators were asked to control and edit the completed questionnaires prior to sending them to the central office in Tehran within 72 hours after the interviews.

3.7. Ethical Issues

The project was approved by I.R. Iran's National Institute of Health, Ministry of Health and Medical Education, with ethical approval code of 241/M/482 dated 3/11/2010. All subjects gave informed consent to the project. None of the authors had any conflict of interests.

3.8. Statistical Analysis

Considering Kolmogorov-Smirnov test, we used Mann-Whitney U test to analyze numerical data along with odds ratio with 95% confidence interval. α value was considered less than 5%. We used SPSS (version 16) as our analytical software.

4. Results

We finally selected 9150 families. Eight hundred and thirty-five families (or participants) declined to participate in the project. We could not contact 328 families (or participants) through at least three references, as well. The mean (SD) of the interviewers' references to families were 1.8 (1). Seventeen participants were excluded after the initiation of the interviews. We also withdrew 84 completed questionnaires due to their unacceptable quality. Ultimately, the response rate was 86.14% (7886 out of 9150). The mean (SD) and median of interview time were 87.8 (39.8) and 80 minutes, respectively.

The frequency of VRPI among 7886 participants was 24 during the last three months. The incidence rate of interpersonal VRPI was estimated at 3.04 per 1000 population (95% CI: 2.66-3.42) for a three-month interval in Iran. The incidence was 4.72 per 1000 population (95% CI: 4.01-5.43) for males and 1.78 per 1000 population (95% CI: 1.39-2.17) for females for a three-month interval. We evaluated VRPI based on age, gender, marriage, head of family, years of full time education, settlement, having insurance, employment, and number of children (Table 1).

The mean (SD) age of the participants with and without a history of VRPI were 26.5 (7.21) and 33.05 (12.05) years, respectively (P = 0.008). Based on the participants' gender, 66.7% were males (OR = 2.66, 95% CI: 1.14-6.23).

The data were presented for injured people according to province, place of violence, injured organ, and type of injury, and place of treatment (Table 2).

Khuzestan Province had the highest number of VRPIs (25% of all VRPIs). Streets and roads had the highest frequency of injuries (50%). The most frequently injured organ was the upper limb (54.17%). The most prevalent type of injury was superficial wound (50%). Finally, the most common place of treatment was home (45.83%).

5. Discussion

We determined the incidence of interpersonal VRPI to be 3.04 per 1000 population (95% CI: 2.66-3.42) for a 3-month interval in Iran. To generalize the measure for a year, this rate could rise to 12.16 per 1000 population. Since various studies confirmed the relationship between violence and different seasons both nationally (17, 18) and internationally (7), it should be interpreted more carefully.

In the USA, VRPI was reported to be 7.56 per 1000 population in 2011 and 7.59 per 1000 population in 2010 (19). In Boston, VRPI for children aged 3-18 years was estimated at 5.27 (95% CI: 5.05-5.49) in 2002 (20). In Iran, based on Rahimi-Movaghar's study, the incidence of VRPI was estimated at 0.77 per 1000 population among 44 cities with

Table 1. Age, Gender, Marital status, Head of Family, Years of Full Time Education, Settlement and Having Insurance According to History of VRPI Among Participants [a]

Variable	History of Violence Related Injury		Test Statistics	P Value
	Yes	No		
Age, y	26.50 ± 7.211; 24	33.05 ± 12.047; 31	Z Mann-Whitney, U = -2.659	0.008
Gender			OR = 2.664 (1.139-6.233) (baseline: female)	0.019
Male	16 (66.7)	3371 (42.9)		
Female	8 (33.3)	4491 (57.1)		
Marital status			OR = 1.987, (0.889-4.442), (baseline: married)	0.088
Single	11 (45.81)	2348 (29.9)		
Married	13 (54.2)	5514 (70.1)		
Head of family			OR = 0.906, (0.387-2.120), (baseline: yes)	0.820
No	16 (66.7)	5407 (68.8)		
Yes	8 (33.3)	2450 (31.2)		
Years of full time education	7.88 ± 4.436; 8.5	8.50 ± 4.574; 9	Z Mann-Whitney, U = -0.804	0.422
Settlement			OR = 1.12, (0.497-2.527), (baseline: rural)	0.783
Urban	14 (58.3)	4366 (55.6)		
Rural	10 (41.7)	3496 (44.5)		
Having insurance			OR = 1.328, (0.495-3.563), baseline: yes)	0.572
No	5 (20.8)	1300 (16.5)		
Yes	19 (79.2)	6561 (83.5)		
Employed			OR = 0.456, (0.204-1.020), (baseline: yes)	0.05
No	11 (45.8)	5107 (65)		
Yes	13 (54.2)	2754 (35)		
No. of children	0.62 ± 0.924; 0.00	1.68 ± 1.970; 1	Z Mann-Whitney, U = -2.890	0.004

[a] Data are presented as Mean ± SD; Median and No. (%).

Table 2. Related Factors to VRPI Among Victims [a]

Variable	Frequency
Province	
Khuzestan (n = 494)	6 (25)
Tehran (n = 893)	5 (20.83)
Fars (n = 534)	2 (8.33)
Kerman (n = 323)	2 (8.33)
East Azerbaijan (n = 419)	2 (8.33)
Alborz (n = 195)	2 (8.33)
Kurdistan (n = 173)	2 (8.33)
Isfahan (n = 582)	1 (4.17)
Hormozgan (n = 176)	1 (4.17)
West Azerbaijan (n = 349)	1 (4.17)
others (n = 3748)	-
Place of violence	
Street and road	12 (50)
Home	8 (33.3)
Workplace	3 (12.5)
Sport field	1 (4.17)
Injured organ	
Upper limb	13 (54.17)
Lower limb	4 (16.67)
Head and neck	6 (25)
Multiple organs	1 (4.17)
Type of injury	
Superficial wound	12 (50)
Fracture	4 (16.67)
Open wound	5 (20.83)
Strain	2 (8.33)
Burn	1 (4.17)
Place of treatment	
Clinic or emergency room (without hospitalization)	13 (54.17)
Home	11 (45.83)

[a] Data are presented as No. (%).

100000-200000 population (21). In another study, Rasouli and his colleagues reviewed the registered data in the trauma care system of Iran from 2005 to 2008 (22). The admission rate of all types of injury in the emergency departments of university hospitals was 14.2 per 1000 population from 2005 through 2008, every year. The mean (SD) age was 26 (12) years for VRPI among males and was 30 (15) years for VRPI among females. They stated that 5.2% of injuries and 3.2% of deaths were due to VRPI among hospitalized victims. Rahimi-Movaghar and Rasouli had only studied those injured people who had referred to the emergency departments. However, we studied all Iranians in a door to door survey. Incidence studies are not usually similar. There are many challenges for getting different results due to differences in instruments, sampling methods, interviewing techniques, diagnostic criteria, and so on. Consequently, because the majority of such injuries had been treated in houses or clinics, our rate should have been higher than the rate found by Rahimi- Movaghar's study (21).

There were some studies, which showed patterns of VRPI in Iran. Kiani et al. evaluated male violence related victims referred to the central office of Iranian Forensic Organization in Tehran in a three-month interval (23). Karbakhsh et al. reviewed all hospitalized patients in 6 main hospitals of Tehran in one year (18). In another study, they also assessed victims who had referred to the forensic clinic of an ophthalmologic hospital due to VRPI in Tehran (24). Afzali and his colleagues reported all outpatient applicants referred from legal authorities to the forensic office of Hamedan because of physical injuries (17).

Our results were consistent with previous studies. The violence-related injured people were younger than the others in our study (P value = 0.008). Other international (24-26) and national studies confirmed such a finding. The mean (SD) age of victims was 26.61 (7.35) years in our study. Likewise, in Kiani et al. study, most of the victims (48.2%) were 20-30 years old (23). In Karbakhsh et al. study in 6 hospitals, the mean (SD) age of the injured people's was 28.9 years (14, 18). Karbakhsh M also reported the mean age of patient in an ophthalmologic hospital at 30.89 (24).

In Afzali and colleagues' study, the mean (SD) age of victims was 31.2 (14.6) years (17). In our study, the occurrence of VRPI was statistically significant and more common among men than women (OR = 2.66, 95% CI 1.14-6.23). Based on gender, other studies confirmed our results nationally (17, 18, 27) and internationally (20, 25). In our study, the most frequently injured organs were the upper limbs followed by head and neck. Our results were consistent with Karbaksh et al. study (18), but they were not compatible with other international (25, 28) and Kiani et al. studies (23).

Most of such studies assessed their victims in forensic centers. However, we carried out the survey via a house to house method. Additionally, most of our victims' injuries were superficial. Therefore, it is logically justifiable to have different results. Based on our study, injuries took place in these areas: street and road, home, workplace and sport field. this finding was consistent with Karbakhsh and her colleagues studies (18, 27). However, in Kiani et al. study, the most common place of injury was street followed by workplace and home (23). In our study, most injuries were superficial. This finding was consistent with Kiani (23) and Afzali's studies (17) but it was not compatible with Karbakhsh's study (18) in which most type of injuries were open wounds. In her study, superficial wounds were in the third rank.

In our study, Khuzestan province had the highest frequency of victims (25%). We used a probability proportional to size sampling method in our survey. Since there were some provinces with more population in Iran, it was a challenging issue. Amini Rarani and his colleagues recently compared violence among Iranian provinces in an ecological study (29).

They evaluated violence based on willful murder data, which had been drawn from Iranian police force statistics. They reported Sistan and Baluchistan as the province with the highest rate of violence. However, we did not have any victims from Sistan and Baluchistan province in our study.

Our study had some limitations though. We recorded VRPI according to self-reports of injuries happened during last three months. It was possible that some people had concealed their VRPIs because of concerns about probable future legal issues. In addition, some people might have forgotten their history of injuries, especially bruises and minor superficial ones. Furthermore, considering cultural issues in our country, the number of injuries owing to child abuses, partner-related violence, and sexual assaults might be underestimated. Moreover, in each city, there are some locations with a higher frequency of violence compared to other safer places. Although we used a random sampling method, it might become another limitation. Therefore, the valid incidence rate could be more than our estimated measure. Likewise, despite evaluation of face and content validity of the questionnaire by several focus group discussions, we did not use any index for evaluating them.

In conclusion, we estimated the incidence rate of self-reported interpersonal VRPI for the first time in Iran based on a national survey. Such injuries were statistically significant and more common among young men. We suggest consecutive national surveys with different data gathering methods and larger sample sizes.

Appendix

Appendix 1. Short Form Injury Questionnaire

Inj 1: Have you gotten any injuries or trauma (due to motor vehicle crashes, falls, burns, electrical shock, poisoning, collision to hard objects, incision with sharp and cutting objects, bites, drowning), which required any treatments (including sticking plaster, tissue, traditional therapy at home or referring to a physician or health center) since 12 months ago.	Yes □ No □

If the answer is positive, ask about any kind of injury or trauma since 3 months ago. Consider all items, which they used for treatments even if the wounds have been covered by tissue or sticking plaster, the patient has referred to a clinic, or she/he has cured her/his wound traditionally. Write all previous injuries over the last 3 months.

Write all following items through asking respondents in one sentence. For instance:

She/he was fallen during playing at home and broke her/his forearm, which was casted in clinic.

Cause/Activity/Place/Injury Organ/Type of Injury/Type of Treatment/Place of Treatment

Inj 2: ……

Inj 3: ……

Inj 4: ……

Inj 5: ……

Inj 6: ……

Inj 7: ……

Other examples:

Appendix 2. Examples for Cause of Injury

Cause	Activity	Place	Injured Organ	Type of Injury	Type of Treatment	Place of Treatment
Tire chain	Repairing bicycle	Sidewalk	Finger	Cutting	Sticking plaster	Home
Fall	Through playing	University	Face	Scratching	Tetanus vaccine	Clinic
Contacting to hot dishes	Cooking	Mountain	Palm	Burning	Dressing and antibiotics	Emergency ward
Bicycle to car collision	Cycling	Road	Leg	Fracture	Casting	Operating room and hospitalization

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Authors' Contributions

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