

# Study of Socio-Demographic Factors among Injured Persons in a District of Western Uttar Pradesh – A Cross Sectional Study

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**Background:** Injuries are becoming major public health problem worldwide and since India is also passing through a major socio-demographic, epidemiological and technological transition; injuries are coming up as an emerging health problem. **Objectives:** To find out prevalence of “Injuries” and role of socio demographic factors related with injuries. **Material & Methods:** It is a type of observational study in rural & urban area of Agra district. The area to be surveyed was selected by multistage stratified random sampling technique. A recall period of three months for minor injuries & one year for major injuries or deaths due to injury was used. A total of 4 villages covering 2439 population and in urban area 2 mohalla & 2 slums covering 2410 population were surveyed. Data collected was entered on Fox. Pro (vs. 2.6) and analyzed by SPSS (vs. 10). **Results:** A total of 93 persons in rural and 142 persons in urban had major while 147 peoples in rural and 200 peoples in urban had minor injuries during the recall period. It was found that as the age increases the number of minor injuries increased from 0-35 yrs while decreased after that and maximum major & minor injuries were found in 16-35 yr age group. Regarding socio-economic class maximum injuries both major & minor were found in class IV (lower middle). **Conclusions:** Considering the high morbidities due to injuries focusing health education efforts based on local epidemiology and behavioral practices is needed.

**Keywords:** Cross sectional study, Injuries, Socioeconomic status

## INTRODUCTION

An injury is damage to a body organ which occurs rapidly and is visible, with the causative mechanism being sudden energy transfer.<sup>1</sup> Four factors that differentiate injury from other health conditions are: (i) A definite interaction between agent-host and environment, (ii) Acuteness of the event, (iii) Varying severity, and (iv) Chance of repetitiveness.<sup>2</sup>

Regarding burden – Globally nearly 50 lakh people lost their lives due to injury as per WHO estimates during the year 2002 (WHO 2004a), injuries caused 9% of the total deaths.<sup>3</sup> The global injury mortality rate is estimated to be 98/100,000 population, with male and female rates of 128/100,000 (38 lakhs deaths) and 67/100,000 (19 lakhs deaths), respectively<sup>4</sup> (WHO 1999). In South-East-Asia region with changes, reforms and progress occurring in every sphere of human life across the SEAR region, injuries are already one among the five major public health problems. In India the precise number of deaths and injuries due to specific causes, or any scientific estimates of injury deaths in India are not available from any single source. Only the national crime records bureau (NCRB) is the principal nodal agency under the

ministry of Home Affairs, Government of India, and is responsible for the collection, compilation, analysis and dissemination of injury related information.<sup>5</sup>

Every year, injuries contribute to a significant number of deaths, hospitalizations for (short & long periods), emergency care, disabilities (physical, social and psychological), amputations, disfigurement, pain, suffering and agony. Many children become orphans, women become destitute and the elderly grieve in isolation. In addition, injuries also result in disruption of several activities leading to loss of work, income, education and other social activities, causing long term suffering among survivors and families.<sup>1</sup> Present study was carried out to find the prevalence of injuries in a community scenario and to study various demographic factors related with injuries.

## MATERIALS & METHODS

Present study was conducted in Agra district (U.P). Population of the district was 3.62 million<sup>6</sup> with rural being 2.05 million & urban 1.57 million. For administrative purpose, district is divided into 6 tehsils and 15 rural blocks. Agra Corporation is divided into 80 municipal wards. Present study was undertaken in

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rural & urban mohalla and slums of the district. It was a cross sectional type of study. The study population was persons having either major or minor injury in household of surveyed sampled population. A multistage stratified random sampling technique was adopted for selecting desired population. A recall period of three months for minor injuries and one year for major injuries or deaths due to injury was used. Study period was May 2005-Oct2006. For calculating suitable sample size that could generate relevant information on the concerned issues, indicator selected was overall prevalence of injuries. It was revealed from the data published by WHO (2004) from community based survey for nearest country where it was 41.2 per thousand population, since it was a community based study so it was used for calculation of sample size. Sample size was calculated by using the formula, Sample (N) =  $4pq / (20\% \text{ of } p)^2$  Where, p = prevalence of injuries (positive character), Q=100-p, 20% of p is taken to allow for a margin of error, N=minimum sample size. Thus, the minimum sample size comes out to be 2357. To minimize the sampling error and keeping the dropouts and non-respondents in consideration, the sample size is increased and rounded off to 2400. For selecting the desired population firstly from the list of wards two wards from urban & one block from rural were selected randomly from the list available with Municipal corporation of Agra, now from each selected ward one mohalla & one slum were further selected randomly in urban area and from one block two PHC's were selected in rural further two villages were selected from each selected PHC's, one near the PHC and other from remote area in rural setup were selected. From each selected unit whole of the village/slum/mohalla was spanned using left hand rule until target population was covered or area completed. A total of four villages from two selected PHCs covering 2439 population, and in the urban area a total of one mohalla and one slum from two selected wards covering 2410 population were surveyed.

Data thus collected on semi-structured, predesigned, pretested and open ended questionnaires was computerized on a regular basis in a specific program developed on Fox-Pro (Ver.2.6) and then analyzed with the help of SPSS Software (Ver.10) and results transferred to predesigned and classified tables.

## RESULTS

It was found that a total of 93 persons in a rural area and 142 persons in the urban area had major injury during last one year preceding the day of survey while 147 peoples in rural and 200 peoples in urban had minor injuries during the recall period of 3 months. Thus the annual incidence of major injuries per thousand populations was 38.18 in rural and 58.92 in urban areas, and quarterly incidence of minor

injuries per thousand populations was 60.27 in rural and 82.99 in urban area. Thus, incidence of both type of injuries was higher in the urban area, the difference being highly significant for major injuries and just significant for minor injuries (Table 1).

It was found that in both rural & urban areas, the no. of persons with minor injuries increased as the age increased from 0-35 yrs and above 35 yrs decreased in both areas. Thus maximum no. of injuries were seen in the age group of 16-35 yrs (48.39% & 39.44% in rural & urban area respectively) while minimum in age group of above 60 yr (4.23% in urban and none in a rural area). It was found that the annual incidence of major injury was maximum in 16-35 yr age group in rural area (56.39) and in 36-60 yr age group in urban area (117.39) followed by 50.21 in age group of 36-60 yr in rural area and 61.22 in age group of above 60 in urban area. The incidence was almost similar in the age group 6-15 in both areas (27.3 in rural & 28.76 in urban). No injury was found in age group of above 60 in rural area. Injury incidence was minimum in 0-5 yr in both rural and urban area (14.15 & 27.47 respectively). The difference in the occurrence of major injuries in different age groups in both rural & urban areas was found to be statistically highly significant and the age wise variation of major injuries among rural and urban areas was also found to be statistically significant.

For minor injuries, a similar pattern to major injuries was seen i.e. maximum no of injured persons were seen in 16-35 yrs. age group (36.73% in rural & 47% in urban area). Below 15 yrs. age group, 44.89% and 38% had minor injuries during last three months in rural and urban areas respectively. On further analysis, it was seen that the quarterly incidence of minor injuries per thousand population was maximum in age group of 16-35 yrs. in the urban area (100.86) and in the age group of 6-15 yrs. In a rural area (72.62). next higher incidence was 67.67 in 16-35 yrs. age group in rural area while in urban area it was 82.73 & 82.42 in age group of 6-15 and 0-5 respectively. The difference in incidence of minor injuries in different age group was statistically significant in urban area while insignificant in rural area. Regarding difference in occurrence of injuries among rural and urban

**Table 1: Distribution of major & minor injuries in rural & urban areas**

Injury place	Population	Major injury		Minor injury	
		No. of injured person	Annual Incidence/ thousand population	No. of injured person	Quarterly Incidence/ thousand population
Rural	2439	93	38.13	147	60.27
Urban	2410	142	58.92	200	82.99
Test of significance		$\chi^2=11.36$ , df=1, p<0.001		$\chi^2=9.42$ , df=1, p<0.05	

area in different age groups it was seen that difference in occurrence of major injuries was significant in 36-60 yrs. and above 60 yrs. age group, being more in urban area while for minor injuries significant difference was seen in 0-5 yrs. and 16-35 yrs. age group again being more common in urban area (Table 2).

Majority of the major injured persons were males (74.19% in rural and 70.42% in urban area) and rest were females. The annual incidence of major injuries was almost double in males in both areas (52.04 and 76.80 in males while 21.56 and 37.91 in females of rural and urban areas respectively). This difference in the occurrence of major injuries among two sexes was found to be statistically highly significant.

Regarding minor injuries, picture was almost same i.e. majority of minor injured persons were males (61.22% in rural and 60.0% in urban area). The quarterly incidence of minor injuries was also seen more in males (67.87 in rural and 92.17 in urban area) as compared to among females (51.21 in rural and 72.20 in urban areas). However this difference was found to be statistically insignificant in both the areas.

Regarding difference of injury occurrence in rural and urban area there was significant difference in occurrence of injuries for both sexes for both major and minor injuries being more common among urban areas (Table 3).

It was seen that maximum no. of major injured person were belonging to class IV (54.84 % in rural and 33.80% in urban area) followed by Class III (22.58%) in rural area while equal number in Class I in urban area. Minimum no. of major injured persons was from class V (9.68% in rural and 2.82 in urban area). Regarding incidence, maximum annual incidence of major injury was seen in Class II in rural

(74.07) and class I in urban area (88.56) followed by class III, Class IV & Class V (37.23, 35.56 & 32.26 respectively) in rural area while in urban area the decreasing order was in Class III, Class V, Class IV and Class II (68.97, 52.63, 49.9 & 40.74 respectively). Thus in rural area as socio-economic status increases the incidence of major injuries was also increasing and for urban area also the condition was same except Class II which showed lowest incidence.

For minor injuries, it was found that no. of minor injured persons were maximum in Class IV (61.22% in rural & 38.0% in urban) followed by Class III (20.41% in rural and 21% in urban) while minimum in Class II in rural and Class V in urban area (4.08% & 4.0%). The no. of minor injured persons belonging to Class II and Class I in urban area was 20 percent and 17 percent respectively. It was seen that quarterly incidence of minor injuries was maximum in Class V (75.29) in rural area and in Class III (144.83) in urban area. Socio-economic class wise difference in incidence of injuries was insignificant in rural area while it was significant in urban area for both major and minor injuries.

Regarding difference in injuries among rural and urban areas in different S.E Class it was found that there was no significant difference in major injuries in all classes except class I while for minor injuries, they were found to be significantly more in class II and class III in urban area. Class I was an exception because there was no population of class I in rural area and hence no injuries either major or minor (Table 4).

It was found that in both areas as the literacy status increases the no. of major injured cases decreases. Maximum no. of major injured cases were illiterate (32.26% in rural & 25.35% in urban), while minimum were in undefined group (3.23% in rural & 2.82% in urban). No persons of above

**Table 2: Age wise distribution of major and minor injuries in rural and urban area**

Age group (in yrs)	Population	Rural				Population	Urban				z-test (Rural vs Urban)	
		Type of injury					Type of injury				Major	Minor
		Major		Minor			Major		Minor			
		No. (%)	Annual incidenc	No. (%)	Quarterly incidence		No. (%)	Annual incidence	No. (%)	Quarterly incidence		
0-5	424	6 (6.45)	14.15	18 (12.24)	42.45	364	10 (7.04)	27.47	30 (15.0)	82.42	1.29	2.29*
6-15	661	18 (19.35)	27.23	48 (32.65)	72.62	556	16 (11.27)	28.76	46 (23.0)	82.73	0.16	0.66
16-35	798	45 (48.39)	56.39	54 (36.73)	67.67	932	56 (39.44)	60.09	94 (47.0)	100.86	0.33	2.50*
36-60	478	24 (25.81)	50.21	24 (16.33)	50.21	460	54 (38.03)	117.39	24 (12.0)	52.17	3.73*	0.14
>60	78	-	-	3 (2.04)	38.46	98	6 (4.23)	61.22	6 (3.0)	61.22	2.52*	0.70
Total	2439	93	38.13	147	60.27	2410	142	58.92	200	82.99	*p<0.05	
Test of significance		$\chi^2=21.04$ , df=4, p<0.001		$\chi^2=6.44$ , df=4, p>0.05			$\chi^2=43.99$ , df=4, p<0.001		$\chi^2=10.26$ , df=4, p<0.05			

**Table 3: Sex wise distribution of major and minor injuries in rural and urban area**

Sex	Rural					Urban					z- test (Rural vs Urban)	
	Population	Type of injury				Population	Type of injury				Major	Minor
		Major		Minor			Major		Minor			
		No. (%)	Annual incidence	No. (%)	Quarterly incidence		No. (%)	Annual incidence	No. (%)	Quarterly incidence		
Male	1326	69 (74.19)	52.04	90 (61.22)	67.87	1302	100 (70.42)	76.80	120 (60.0)	92.17	2.59*	2.30
Fem.	1113	24 (25.81)	21.56	57 (38.78)	51.21	1108	42 (25.98)	37.91	80 (40.0)	72.20	2.27*	2.06*
Total	2439	93	38.13	147	60.27	2410	142	58.92	200	82.99	*p<0.05	
Test of significance	$\chi^2=15.32, df=1, p<0.001$		$\chi^2=2.97, df=1, p>0.05$		$\chi^2=16.77, df=1, p<0.001$		$\chi^2=3.14, df=1, p>0.05$					

**Table 4: Socio-economic status wise distribution of major and minor injuries in rural and urban area**

S.E. Class	Rural					Urban					z- test (Rural vs Urban)	
	Population	Type of injury				Population	Type of injury				Major	Minor
		Major		Minor			Major		Minor			
		No. (%)	Annual incidence	No. (%)	Quarterly incidence		No. (%)	Ann. incide.	No. (%)	Quarterly incide.		
Class I	-	-	-	-	-	542	48 (33.80)	88.56	34 (17.0)	62.73		
Class II	162	12 (12.90)	74.07	6 (4.08)	37.04	540	22 (15.49)	40.74	40 (20.0)	74.07	1.50	1.99*
Class III	564	21 (22.58)	37.23	30 (20.41)	53.19	290	20 (14.08)	68.97	42 (21.0)	144.83	1.88	4.03*
Class IV	1434	51 (54.84)	35.56	90 (61.22)	62.76	962	48 (33.80)	49.90	76 (38.0)	79.0	1.68	1.50
Class V	279	9 (9.68)	32.26	21 (14.29)	75.29	76	4 (2.82)	52.63	8 (4.0)	105.26	0.74	0.78
Total	2439	93	38.13	147	60.27	2410	142	58.92	200	82.99	*p<0.05	
Test of significance	$\chi^2=6.24, df=3, p>0.05$		$\chi^2=3.31, df=3, p>0.05$		$\chi^2=13.80, df=4, p<0.05$		$\chi^2=18.76, df=4, p<0.001$					

graduate level in rural area have either major or minor injury and in urban area also in this group none had minor injury but strikingly a good number (11.27%) had suffered major injury. The annual incidence of major injuries was maximum in inter to graduate level group (75.32) in rural and in above graduate level group (135.59) in urban area, while it was minimum in undefined group i.e. 6.02 & 10.99 in rural and urban area. This difference was found to be highly significant.

Regarding minor injuries, the number of injured persons was found to be maximum in primary education group (38.78%) in rural and in illiterates (27.0%) in urban while minimum were in undefined age group. It was seen that quarterly incidence of minor injuries was more among illiterates and primary education group than higher education groups. Incidence was maximum among primary level education group in rural (71.70) and among illiterates (107.57) in urban closely followed by illiterates in rural (58.39) and primary education group in urban area (103.45). Minimum incidence was seen in inter to graduate level in rural (14.71) and in undefined group in urban (71.43). This difference was found to be significant.

Regarding difference in occurrence of injuries among rural and urban in different educational groups it was seen that major injuries were significantly more in primary education group in urban area than rural. Major injuries were also seen in above graduate level in urban area while none in rural area. Minor injuries were significantly more among all educational groups except primary in urban area. In undefined group, difference was found to be significant for minor injuries & non-significant for major injuries in both area (Table 5).

Maximum no of major injured were students in rural (32.26%) and house worker (25.35%) in urban area, while minimum in undefined group (3.23% in rural & 2.82 in urban). The second common group who suffered major injuries was labor and farming (16.13% each) in rural and students & labor (14% each) in urban area. Strikingly, the persons having no occupation (9.68%) were third common group in rural area while minimum in urban (2.82%). In rural area, the annual incidence of major injuries was interestingly maximum among those people who were not indulged in any type of occupation (107.14), while in urban area the respective indices were found to be most common

**Table 5: Literacy status wise distribution of major and minor injuries in rural and urban area**

Literacy status	Rural					Urban					z-test (Rural vs Urban)	
	Population	Type of injury				Population	Type of injury					
		Major		Minor			Major		Minor			
		No. (%)	Annual inciden.	No. (%)	Quarterly incidence		No. (%)	Annal inciden	No. (%)	Quarter incidence		
Illiterate	411	30 (32.26)	72.99	24 (16.33)	58.39	502	36 (25.35)	71.17	54 (27.0)	107.57	0.07	2.73*
Primary (5 <sup>th</sup> class)	795	21 (22.58)	26.42	57 (38.78)	71.70	406	26 (18.31)	64.04	42 (21.0)	103.45	2.80*	1.80*
High school	510	24 (25.81)	47.06	21 (14.29)	41.18	546	30 (21.13)	54.95	44 (22.0)	80.59	0.58	2.70*
Inter to graduate	204	15 (16.13)	73.53	30 (20.41)	14.71	474	30 (21.13)	63.29	34 (17.0)	71.73	0.48	3.92*
Above graduate	21	-	-	-	-	118	16 (11.27)	135.6	-	-	-	-
Not defined	498	3 (3.23)	6.02	15 (10.20)	30.12	364	4 (2.82)	10.99	26 (13.0)	71.43	0.77	2.66*
Total	2439	93	38.13	147	60.27	2410	142	58.92	200	82.99	*p<0.05	
Test of significance		$\chi^2=39.5$ , df=5, p<0.001		$\chi^2=41.61$ , df=5, p<0.001			$\chi^2=29.58$ , df=5, p<0.001		$\chi^2=18.37$ , df=5, p<0.05			

among labors (152.17). It was found to be minimum in undefined population i.e. 6.02 & 10.99 in rural & urban area respectively. This difference was found to be statistically highly significant.

Regarding minor injuries, the analysis shows that the no. of injured persons was found to be a maximum in students class in both rural and urban area (46.94% & 30.0%) followed by house workers (18.37% & 24%). Minimum was found in Govt. service class in rural (2.04%) and private service (8.0%) in urban. It was seen that incidence was more among students, labor, and interestingly no occupation group (102.22, 81.63 & 71.43 respectively) in rural. In urban maximum incidence were in labor class and business class (152.17 each) while minimum in undefined group in rural (71.43) and in private service in urban (57.97). This difference found to be statistically highly significant in rural while significant in urban.

It was seen that difference in occurrence of major injuries among two areas was significantly more in house workers in rural and private service in urban. For minor injuries labors had significantly more injuries & house worker had significantly less injuries in urban area. The difference was also observed in business, farming and no occupation group but these were due to absence in one or the other area (Table 6).

## DISCUSSION

Estimating the burden of injuries is crucial for understanding the magnitude of the problem, developing mechanisms for intervention, allocating physical, human, financial recourse for control of the problem, and for reducing the burden of

injuries in the coming years. In this study the ratio of serious injuries resulting in some type of impairment to minor injuries was 1:5.95 and a review of other Indian studies and observations by other agencies indicate the ratio of serious injuries needing hospitalization to minor injuries as 1:2.5. In Bangalore and Haryana this ratio was 1:2.7 & 1:2.4, respectively.<sup>7,8</sup> A large-scale population-based survey of 96,569 individuals from Bangalore revealed a ratio of 1:2 for hospitalizations: Injuries.<sup>9</sup> The annual incidence of major injuries was 38.13 in rural and 58.92 in urban areas, and quarterly incidence of minor injuries was 60.27 in rural and 82.99 in urban area per thousand population this was much more than found in population based survey from Bangalore in which incidence rate was 12 in total, 10 each in urban and slum areas and 14 in rural area.<sup>9</sup> In another study in Delhi<sup>10</sup> in urban area total incidence was 116 and injuries without disability 62 and with disability 9 per thousand individuals and Verma et al<sup>11</sup> in their study found injury incidence to be 93 per thousand in rural area of Faridabad, Haryana. An injury incidence of 115 was seen in rural area of Punjab,<sup>12</sup> In urban area of Bangalore<sup>13</sup> injury incidence was found to be 51 and in a follow up study in rural area of Haryana found the incidence to be 80.<sup>14</sup> Another study by Pramod V in MCD Delhi annual injury incidence was 73.1/1000 population.<sup>15</sup>

Annual incidence of major injury was maximum in 16-35 years age group in rural area (56.39) and in 36-60 years age group in urban area (117.39). Injury incidence was minimal in 0-5 year's age group in both rural and urban area (14.15 & 27.47 respectively). In case of minor injury also maximum incidence belonged to 16-35 years age group in rural area (100.86) and in the age group of 6-15 years in urban area (72.62) showing that injuries affecting the

**Table 6: Occupation status wise distribution of major and minor injuries in rural and urban area**

Occupation status	Rural					Urban					z-test (Rural vs Urban)	
	Population	Type of injury				Population	Type of injury				Major	Minor
		Major		Minor			Major		Minor			
		No. (%)	Annual incidence	No. (%)	Quarterly incidence		No. (%)	Annual incidence	No. (%)	Quarterly incidence		
Student	675	30 (32.26)	44.44	69 (46.94)	102.22	664	28 (19.72)	42.17	60 (30.0)	90.36	0.20	0.73
House work	531	6 (6.45)	11.30	27 (18.37)	50.85	572	36 (25.35)	62.94	48 (24.0)	83.92	4.63*	2.20*
Priv. service	159	3 (3.23)	18.87	9 (6.12)	56.60	276	26 (18.31)	94.20	16 (8.0)	57.97	3.65*	0.06
Govt. service	72	6 (6.45)	83.33	3 (2.04)	41.67	94	6 (4.23)	63.83	-	-	0.47	1.76
Labor	147	15 (16.13)	102.04	12 (8.16)	81.63	184	28 (19.72)	152.2	28 (14.0)	152.17	1.38	2.03*
Business	66	6 (6.45)	90.90	-	-	144	10 (7.04)	69.44	22 (11.0)	152.77	0.52	5.09*
Farming	207	15 (16.13)	72.46	6 (4.08)	28.99	-	-	-	-	-	-	-
No occupation	84	9 (9.68)	107.14	6 (4.08)	71.43	112	4 (2.82)	35.71	-	-	1.88	2.54*
Not defined	498	3 (3.23)	6.02	15 (10.20)	30.12	364	4 (2.82)	10.99	26 (13.0)	71.43	0.77	2.66*
Total	2439	93	38.13	147	60.27	2410	142	58.92	200	82.99	*p<0.05	
Test of significance		$\chi^2=43.6$ , df=5, p<0.001		$\chi^2=36.35$ , df=5, p<0.001			$\chi^2=45.38$ , df=5, p<0.001		$\chi^2=18.15$ , df=5, p<0.05			

productive age group i.e. 16-60 years also same picture found in another study in Delhi,<sup>15</sup> the injuries were more among under 5 years of age (IR 90.7) followed by age group of 5–25 years (48%), 25–45 age group (28%). This may be due to that they were more exposed to outer environment for occupation, in rural area as persons usually indulge in agricultural related occupation early in age so more in 16-35 years age group while in urban area this age group persons were mainly involved in education and career making so lesser injuries and as age increases and they indulge in occupation injuries also increases.

Males had significantly suffered more injuries than females in both rural and urban area and incidence being approximately twice for major injuries (52.04 & 76.80 in rural and urban area) in males than females. For minor injuries also respective incidence were 67.87 in rural and 92.17 in urban area. Males were involved due to doing more physical work and exposed to greater risk than females. Males had double incidence (IR94.9) as compared to females (IR47.6) in Delhi.<sup>15</sup>

It was found that in rural area as the socioeconomic status increases the incidence of major injuries also increases and condition was same for urban area except class II which showed least incidence while for minor injuries it was reversed i.e. more injuries were seen in lower socioeconomic status (class III, IV and V). This would indicate that with the increase in better pattern of living there is more proneness of mishaps and shows the direct effect of modernization while

minor injuries may be just a function of neglect. Maximum annual incidence of major injury was seen in class II in rural (74.07) and class I in urban area (88.56) followed by class III, class IV & class V (37.23, 35.56, & 32.26, respectively) in rural area while in urban area the decreasing order was in class III, class V, Class IV and class II (68.97, 52.63, 49.90, & 40.74 respectively). Maximum incidence of minor injuries was in class V (75.29) in rural area and in class III (144.83) in urban area followed by class IV (62.76) in rural area and class V (105.26) in urban area.

Annual incidence of major injuries was maximum in the intermediate to graduate educational level group (75.32) in rural and in above graduate level group (135.59) in urban area, while it was minimum in undefined group (less than five years) i.e. 6.02 & 10.99 in rural and urban area. Incidence of minor injuries was more among illiterates and primary education group than higher education group in rural (71.70) and among illiterates in urban area (107.57) closely followed by illiterates in rural (58.39) and primary education group in urban area (103.45). Minimum incidence was seen in inter to graduate level in rural area (14.71) and in undefined group in urban area (71.43). These finding further corporate with the inference that with the increases in education level there is increases in exposure to outside world which leads to increases in major injury while minor injuries which were mainly sue to personal neglect were more among illiterate populations. Study from Delhi also showed incidence of injury was more among lower educated

group (primary education IR79.6), as compared to educated (postgraduate group IR66.1).<sup>15</sup>

In the rural area, the annual incidence of major injury was interestingly maximum among those people, who were not indulged in any type of occupation (107.14), while in urban area; the respective incidence were found to be most common among labor class population (152.17). These finding signify the nature of occupation in rural which is not so complicated in rural area as compared to urban area. Difference in occurrence of major injuries among two areas was significantly more in House workers in rural and private service in urban areas. For minor injuries labors, had significantly less injuries in urban area. As females in rural area were involved both in housework as well as agriculture work so more injuries while in urban area the private job mainly involved the small factories and shops which have less safety aspects and hence more injuries. Business group most affected (IR95) followed by labor class (IR92.9) and least among housewives (IR 52.1).<sup>15</sup>

## CONCLUSION

With the realization that injuries are caused by a complex interaction among agent (vehicle, product), human and environmental factors; operating in complex sociopolitical and economic systems, injury prevention and control depending on evidence-based research is gaining momentum all over the world. Maximum incidence of injuries was in the productive age group of the population hereby hindering the development of the country. Males were almost involved doubled in injuries due to their risk taking behavior & involvement in physical work. Injuries were inversely related with the socio-economic status and educational status. Physical labor & ignorance of occupation was the main cause of injuries

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