

Epidemiology of Karachi road traffic crash mortality in 2013

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Abstract

Road Traffic Crash (RTC) is the eighth leading cause of death globally. In a recent World Health Organization report, there were 5,192 RTC deaths reported from Pakistan in 2010. The Road Traffic Injury Research and Prevention Center (RTIRPC) is a unique public-private public health enterprise in Karachi, and collects data from five major public and private hospitals' emergency departments in the city. Cumulatively, 1130 deaths were recorded in the year 2013. Males accounted for 981 (86.8%) deaths. The most vulnerable decades of life were twenties and thirties; accounting for 307 (27.2%) of all deaths. In terms of involvement of vehicle type in fatalities; over half 577 (51.1%) of all fatalities involved motorbikes, while the second most common type of vehicle involved were buses/coasters which accounted for 108 (9.6%) fatalities. In the burgeoning cities of developing countries, road injury and fatality surveillance can fulfill a vital role in highlighting the human cost of rapid motorization.

Keywords: Road Traffic Fatalities, Surveillance, Karachi, Pakistan.

Introduction

Road traffic crashes (RTCs) are the leading cause of mortality among 15-29 year olds, and the eighth leading cause of death in general globally, with 1.24 million people annually succumbing to RTCs.¹⁻³ In a recent World Health Organization report on Road Safety, there were 5,192 RTC deaths reported from Pakistan in 2010.¹ In a study of RTCs in Islamabad, based on the record (First Information Reports - FIRs) of the traffic police for the years 2008 to 2010, there were 250 fatal RTCs reported, resulting in 270 deaths.⁴

A study based on the Karachi based Road Traffic Injury Research and Prevention Center (RTIRPC) for first year since inception i.e. September 2006 to August 2007 reported a total of 892 RTC fatalities in Karachi.⁵ Another study based on the RTIRPC for three years i.e.

September 2006 to August 2008 reported a total of 3097 RTC fatalities.⁵ A third study based on the RTIRPC records for the 5-year September 2006 to August 2011 reported 5,753 RTC fatalities from emergency departments of the five participating hospitals.⁶ However, these studies provided RTC morbidity as well as mortality burden and did not provide detailed epidemiological profile of RTC fatalities in Karachi. In this study, we provide the epidemiological profile of all Karachi RTC fatalities recorded for the year 2013, by the RTIRPC.

Methods and Results

The Road Traffic Injury Research and Prevention Center (RTIRPC) was established in September 2006 and is a unique public-private public health enterprise in Karachi, Pakistan financed by community and corporate donors. The injury surveillance project was established as a collaboration between Jinnah Post Graduate Medical Center (JPMC), Aga Khan University Hospital, and NED University of Engineering & Technology and was notified by the Ministry of Health, Government of Pakistan.

RTIRPC activities entail RTC data collection from the emergency departments of five major public and private hospitals in the city: Jinnah Postgraduate Medical Center, Civil Hospital Karachi, Liaquat National Hospital, Aga Khan University Hospital and Abbasi Shaheed Hospital. Data pertaining to all injured and deceased victims of RTCs brought/admitted to these hospitals are recorded from the victims and accompanying persons and then collated at the RTIRPC project office located at Jinnah Postgraduate Medical Center. Data collectors are stationed at these five sites on 24/7 basis, in three shifts, ensuring that information pertaining to all RTCs gets properly recorded. Additional information is also obtained — where needed — from ambulance drivers, police and witnesses to ensure accurate recording of all pertinent information. Data were analyzed using statistical package STATA 13 and frequencies and percentages were calculated for all the epidemiological characteristics of RTC fatalities, disaggregated by sex.

Cumulatively, 1130 deaths were recorded in the year

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Table: Epidemiological characteristics of RTC's fatal victims in Karachi disaggregated by gender.

Characteristic	Men (%) (N = 981)	Women (%) (N = 149)		
Age (years)				
1 - 5	17 (1.7)	20 (13.4)	Taxi	3 (0.3)
6 - 10	29 (3.0)	20 (13.4)	Bicycle	3 (0.3)
11 - 14	43 (4.4)	3 (2.0)	Car	76 (7.8)
15 - 20	132 (13.5)	10 (6.7)	Water/Oil Tanker	24 (2.5)
21 - 25	136 (13.7)	13 (8.7)	Rickshaw	13 (1.3)
26 - 30	145 (14.8)	13 (8.7)	Dumper	15 (1.5)
31 - 35	96 (9.8)	15 (10.1)	Trailer	39 (4.0)
36 - 40	66 (6.7)	11 (7.4)	Loading Pickup	17 (1.7)
41 - 45	60 (6.1)	12 (8.1)	Animal Cart	4 (0.4)
46 - 50	66 (6.7)	8 (5.4)	Train	0
51 - 55	42 (4.3)	4 (2.7)	Qing-qi Rickshaw	3 (0.3)
56 - 60	49 (5.0)	7 (4.7)	Multiple	6 (0.6)
61 - 65	29 (3.0)	5 (3.3)	Others	50 (5.1)
66 +	33 (3.4)	7 (4.7)	Missing/Not Applicable	582 (59.3)
Missing	38 (3.9)	1 (0.7)	Driver/Passenger Status	
Occupation			Rider of a 2-Wheeler	401 (40.9)
Professional	21 (2.1)	3 (2.0)	Driver of 3-Wheeler	11 (1.1)
Skilled	115 (11.7)	0	Driver of 4-Wheeler	25 (2.5)
Semi-Skilled	138 (14.1)	5 (3.3)	Driver of >4-Wheeler	10 (1.0)
Unskilled	2 (0.2)	1 (0.7)	Pillion Passenger	91 (9.3)
Student	102 (10.4)	22 (14.8)	Passenger	83 (8.5)
House Wife	-	69 (46.3)	Pedestrian	313 (31.9)
Other	4 (0.4)	5 (3.3)	Others	40 (4.1)
Law Enforcement	12 (1.2)	0	Missing	7 (0.7)
Elderly/retired	22 (2.2)	1 (0.7)	Type of collision	
Unclear	80 (8.3)	0	Head-on	34 (3.5)
Missing	485 (49.4)	43 (28.9)	Rear-end	169 (17.2)
Vehicle Involvement (Primary)			Hit Object	4 (0.4)
Motorbike	509 (51.9)	68 (45.6)	Side Swipe	35 (3.6)
Mini Van/Coaster	11 (1.1)	4 (2.7)	Right Angle	8 (0.8)
Bus/Minibus/Coaster	93 (9.5)	15 (10.1)	Missing	731 (74.5)
Truck	38 (3.9)	3 (2.0)	Type of location	
Taxi	3 (0.3)	2 (1.3)	Intersection	160 (16.3)
Bicycle	8 (0.8)	0	Mid-block	625 (63.7)
Car	61 (6.2)	15 (10.1)	U-Turn	2 (0.2)
Water/Oil Tanker	17 (1.7)	3 (2.0)	Flyover	8 (0.8)
Rickshaw	20 (2.0)	3 (2.0)	Bridge	27 (2.8)
Dumper	8 (0.9)	2 (1.3)	Underpass	1 (0.1)
Trailer	18 (1.8)	3 (2.0)	Missing	158 (16.1)
Loading Pickup	15 (1.5)	9 (6.1)	Arrival at trauma center/emergency by	
Animal Cart	2 (0.2)	0	Ambulance	755 (77.0)
Train	28 (2.9)	4 (2.7)	Police	6 (0.6)
Qing-qi Rickshaw	2 (0.2)	0	Private	90 (9.2)
Multiple	15 (1.5)	3 (2.0)	Public	18 (1.8)
Others	96 (9.8)	12 (8.1)	Missing	112 (11.4)
Missing	37 (3.8)	3 (2.0)		
Vehicle Involvement (Secondary)				
Motorbike	60 (6.1)	5 (3.3)		
Mini Van/Coaster	11 (1.1)	0		
Bus/Minibus/Coaster	45 (4.6)	4 (2.7)		
Truck	30 (3.1)	2 (1.3)		

2013. Males accounted for 981 (86.8%) deaths. Table provides the numeric epidemiologic profile of 2013 RTC's deaths, disaggregated by sex. The most vulnerable decades of life were twenties and thirties; accounting for 307 (27.2%) of all deaths, while subsequent decades of life showed a downward gradient for RTC mortality. In terms of profession, skilled and semi-skilled workers accounted for 253 (25.8%) of all male deaths; among women, housewives accounted for 69 (46.3%) of all female deaths. The next

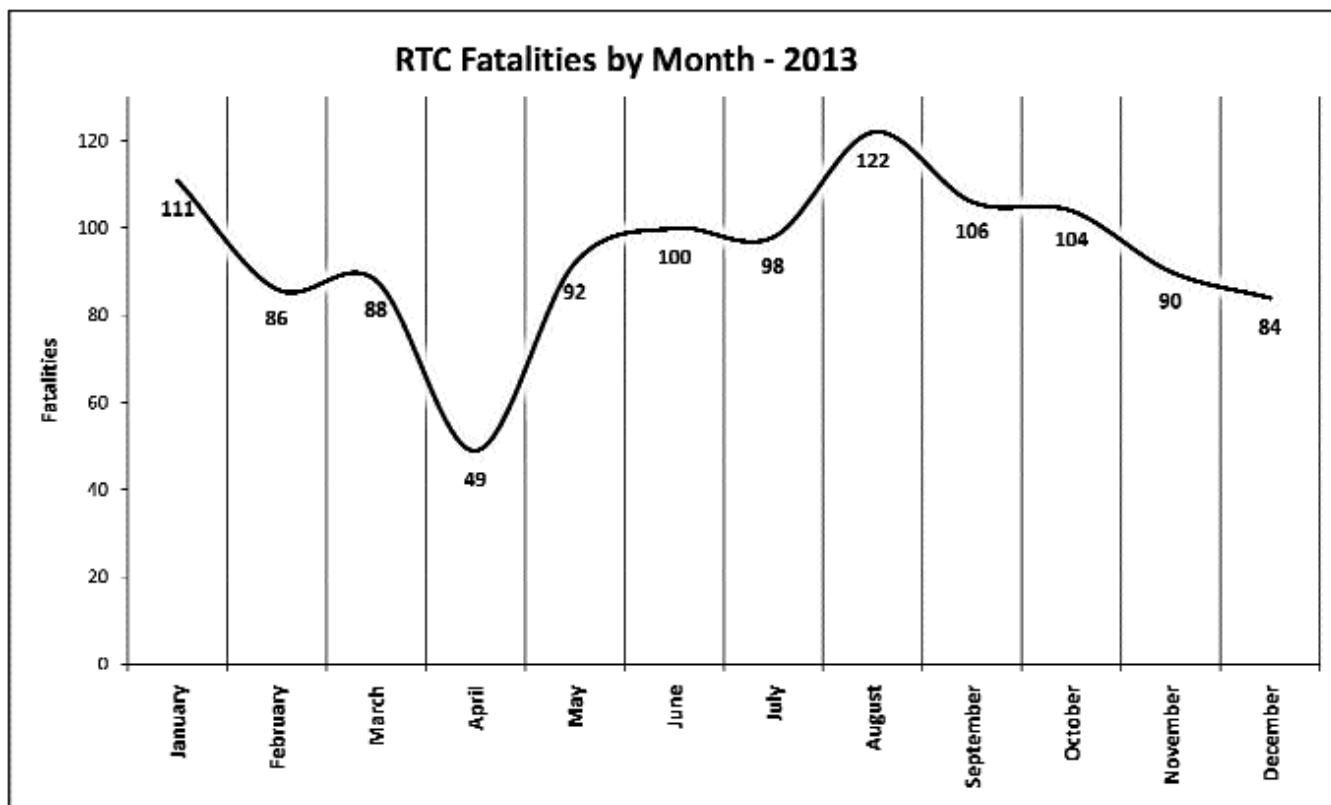


Figure-1: Road traffic crash fatalities in a twelve month period in year 2013.

group with highest mortality was male students, which accounted for 102 (10.4%) of male deaths; female students accounted for 22 (14.8%) female deaths. However, for 608 (53.8%) fatal RTC victims information regarding occupation was either unavailable or unclear.

In terms of involvement of vehicle type in fatalities; over half 577 (51.1%) of all fatalities involved motorbikes while the second most common type of vehicle involved were buses/coasters that accounted for 108 (9.6%) fatalities. Involvement of secondary vehicles in fatalities i.e. collisions with other vehicles such as cars and motorbikes were responsible for 84 (7.4%) crashes and 65 (5.7%) fatalities, respectively. Status of deceased in terms of either a driver or passenger of vehicle on the road revealed that 401 (35.4%) of all deaths were attributed to riders of motorbikes; these fatalities were exclusively among males. Pillion passengers were the second highest group with cumulatively 150 (13.3%) fatalities. Pedestrians with 379 (33.5%) fatalities bore a sizable brunt of road user's mortality. Among women, pedestrians were the largest group of fatalities with 66

(44.3%) deaths. In terms of type of collisions, rear-end collisions were the most frequent type involved in fatalities, being responsible for 188 (16.6%) deaths. However for 847 (75%) fatalities, this information was not available. Middle of blocks were the most frequent location where RTAs resulted in deaths, being responsible for cumulatively 721 (63.8%) fatalities, followed by intersections where cumulatively 188 (16.6%) fatalities were recorded; however, for 175 (15.5%) fatalities, this information was not available.

Figure-1 shows the number of fatalities by month. August and January registered as the two months with the highest number of fatalities with 122 (10.8%) and 111 (9.8%) deaths, while only 49 (4.3%) deaths were recorded in the month of April. Majority, 863 (76.4%) of RTCs fatal victims were brought to the emergency/trauma centers by ambulances; followed by private vehicles that ferried 110 (9.7%) of fatal victims. However, for 125 (11.1%) fatalities, this information was not available.

Conclusion

Males in their twenties and thirties were substantially

more likely to die from RTCs compared to women in 2013. This pattern is similar to what has been reported previously from years prior to 2013 using RTIRPC data.⁵⁻⁷ Although a previous study from Islamabad did not provide sex or age disaggregated data; however, in Karachi apparently many more fatal RTCs are reported compared to Islamabad which reported 250 fatal RTAs over a period of three years.⁴ Almost two-quarters of the recorded deaths were among the motorbike riders, and users of public transport like buses/coasters, reflecting the lower and middle class socioeconomic status of RTC fatal victims. This socioeconomic group's involvement in RTC fatalities is further reinforced by the fact that a quarter of fatalities were recorded for pedestrians; a findings that has been reported from Islamabad as well.⁴

Regarding crash sites, compared to previously reported high number of RTCs at U-turns in Karachi; results from RTIRPC reveal only 2 (0.2%) fatalities.⁸ Preponderance of rear-end collisions in conjunction with middle of the block RTCs resulting in deaths, points to the need for better training of drivers and use of health education to re-emphasize the importance of safe and careful driving. Such health education campaigns could further refine the educational messages by emphasizing the need for extra vigilance while driving during the morning and afternoon rush hours in the city. However, these results need to be interpreted with some caveats. Although RTIRPC data pertain to five

major hospitals in the city; nonetheless, these are not the only hospitals/emergency departments in the city. Hence results from RTIRPC data cannot purport to provide universal coverage of RTC fatalities for the City. Secondly, for select variables — as depicted in Table-1 — there is high percentage of missing information; hence rendering 'missing at random' assumption tenuous.

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