

Assessment of a mass media campaign on giving way to ambulances in five cities of Pakistan

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Abstract

Objective: To determine the contribution of a mass media campaign towards encouraging more vehicles to give way to ambulances, and to identify the factors associated with higher likelihood of giving way to ambulances

Methods: The three-phase observational study was conducted from December 2017 to March 2018 in Karachi, Lahore, Rawalpindi, Islamabad and Peshawar cities of Pakistan. Six road sites in different areas of each city were selected for observation. The surveys in each city were supervised by academic partners, including APPNA Institute of Public Health, Karachi, University of Health Sciences, Lahore, Al-Nafees Medical College, Rawalpindi and Islamabad, and Khyber Medical University, Peshawar.

Three observation surveys were carried out before, during and after the media campaign on right of way for ambulances. Only those ambulances were observed which were rushing through and seeking space. The behaviour of only those vehicles was observed which had the space to change the lane when the space was sought from them. The association of the outcome of vehicles giving way to ambulances immediately or in a few seconds with the campaign was determined using logistic regression analysis.

Results: After adjustment for city of observation, timing of the day and type of vehicle, vehicles during and after the campaign were significantly more likely give space to ambulance ($p < 0.05$) compared to cars, buses and vans were significantly less likely to give space ($p < 0.05$).

Conclusion: Media campaign produced better results in encouraging vehicle-owners to give right of way to ambulances to ensure timely medical assistance.

Keywords: Emergency care, Ambulances, Delay in medical care.

(JPMA 70: 1510; 2020) DOI: <https://doi.org/10.5455/JPMA.18906>

Introduction

Mass media campaigns are a great source of increasing awareness and changing behaviours to improve health outcomes. They have been implemented in promoting different areas of public health, including nutrition, road safety and lifestyle changes like physical activity and smoking cessation, in many countries.¹⁻⁶ Campaigns focussing on changing behaviours that challenge tradition or require strong individual effort like changing lifestyle or quitting smoking have shown mixed results with improvement in some studies and stagnant results in others.^{7,8} However, campaigns aimed at promoting road safety have shown the greatest positive impact by reducing accidents from 9-13%.^{6,9}

In 2014, the Health Care in Danger (HCID) project was introduced in Karachi, Pakistan, by the International Committee of Red Cross (ICRC) in collaboration with

multiple partners, including hospitals, medical universities, local non-government organisations (NGOs), media and law-enforcing agencies. A baseline research investigated the types and determinants of violence faced by all cadres of healthcare workers in multiple work settings.¹⁰ Along with doctors working in emergency settings, ambulance workers were found to be the most vulnerable group of healthcare workers to face high burden of verbal and physical violence against them.¹⁰ Delay in care due to late arrival of ambulances in emergencies was identified as one of the major reasons of violence faced by ambulance workers.¹⁰ Apart from congestion due to traffic, people's behaviour of not giving way to ambulances on a priority due to their perception of misuse of ambulance sirens by ambulance drivers was reported as the main reason for the delay.¹⁰ Literature clearly emphasises that every second saved in emergency situations can make a difference between life and death.¹¹⁻¹⁴ Therefore, it is imperative that besides resolving traffic issues, people's behaviour of obstructing or not giving way to ambulance is changed. Realising the importance of this issue, a mass media campaign was conducted in 2016 in Karachi, the largest city of Pakistan, with the aim of increasing awareness among people on the importance of giving way to

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ambulances. The campaign involved public awareness messages on TV, radio, social media and billboards. The effectiveness of the campaign was also assessed through three observation surveys before, during and after the campaign by quantifying the proportion of vehicles giving way to ambulances on roads during the three phases. The assessment showed a 16.2-18.9% improvement in the proportion of vehicles giving way to ambulance from the baseline.¹⁵

In the light of encouraging results obtained in 2016, the project launched a new mass media campaign with new strategies in five large cities of the country in 2017. The campaign was launched in mid 2017 and continued for 3 months. The campaign, conducted in Urdu, the national language, intended to spread the message of giving way to ambulances on roads to save lives of people. The campaign strategies included awareness on TV and radio through programmes and commercials, promotion on print media through advertisements, creating platforms of major social networking sites on digital media, including pledge endorsements by 90 celebrities, road de-calling activities for distributing designed pledge stickers among motorists on busiest signals of the cities and engagement of religious leaders to spread the message in weekly religious sermons.

The current study was planned to determine the impact of this mass media campaign in terms of increasing the number of vehicles giving way to ambulances, and to identify factors associated with higher likelihood of giving way to ambulances.

Subjects and Methods

The three-phase a quasi-experimental, observational study was conducted from December 2017 to March 2018 in Karachi, Lahore, Rawalpindi, Islamabad and Peshawar cities of Pakistan. Six road sites in different areas of each city were selected for observation. The surveys in each city were supervised by academic partners, including APPNA Institute of Public Health (AIPH), Karachi, University of Health Sciences (UHS), Lahore, Al-Nafees Medical College, Rawalpindi and Islamabad, and Khyber Medical University (KMU), Peshawar. Ethical approval was obtained from the institutional review boards of Jinnah Sind Medical University (JSMU), Isra University, KMU and UHS.

Operational definitions were decided at the outset. 'Not Giving Way' meant any vehicle not moving from the fast right lane to left when space to change the lane was available and the ambulance was seeking space and rushing through for more than 15 seconds or enough time so that ambulance had to change the lane. 'Obstructing the Ambulance' meant any vehicle in front of the ambulance

ANNEXURE-A: List of Sites of observation and hospitals routes covered in the 5 cities.

City	Site	Hospital Route to be Covered
KARACHI	Korangi	The Indus
	Liaquatabad	Abbasi Shaheed
	Times Medicos	Aga Khan University
	MA Jinnah Road	Civil Hospital
	Kalapul	Jinnah
	3 Talwar	South City
LAHORE	University Road	Shaikh Zaid
	Waris Road	Ganga Ram
	Jail Road	Services
	Ferozepur Road	Lahore General
	Shoukat Ali Road	Jinnah
	Mall Road	Myo
RAWALPINDI	Saidpur Road	Holy Family
	Muree Road	Benazir Bhutto
	Liaquat Road	DHQ
	Mall Road	AFIC
	Rawal Road	RIC
	GT Road	FUMC
ISLAMABAD	Expressway	PIMS
	Fazl-e-Haq Road	Polyclinic
	IJP Road	Social Security
	Pitras Bukhari Road	Shifa International
	Kashmir Highway	KRL
	Shaheed-e-Milat	CDA
PESHAWAR	Iqra Chowk	Khyber Teaching
	Bagh-e-Naran Chowk	HMC/RMI/NWGH
	GT Road	LRH
	Khyber Bazar Chowk	LRH
	Phase 5 Chowk	HMC/RMI/NWGH/PIMS/KM
	Ring Road	HMC/RMI/NWGH/PIMS/KM

from which ambulance is seeking space reduces the speed and stops due to which ambulance also has to stop when it could have continued moving forward or change the lane. The surveys were carried out before, during and after the media campaign intervention in the five cities. Six road sites in different areas of each city were selected to conduct the surveys. The road sites were chosen on the basis of connectivity of the roads with major hospitals of the cities (Annexure A).

The data was collected during morning (8:00-12:00 hrs), afternoon (13:00-17:00 hrs) and evening (17:00-21:00 hrs) for 5 days a week each before, during and after the campaign. Based on observational experience, it was expected that at least 50 ambulances will be observed on each road i.e. 300 ambulances in each city during one cycle.

Only those ambulances were observed which were rushing through and seeking space from vehicles in front of them through the buzzing siren. Vehicles in front that were assessed included cars, buses, bikes, rickshaws, vans or trucks. The behaviour of only those vehicles was observed which had the space to change the lane when the space was sought from them.

Annexure B:

Checklist for Observation

Date: _____	Time: _____				
Site: _____	Name of organization of the ambulance observed: _____				
Was the ambulance driver rushing through and seeking space	1. Yes, 2. No	If "NO", observe the next ambulance			
Was the ambulance siren buzzing?	1. Yes, 2. No				
Was the red light Flashing?	1. Yes, 2. No				
Was the driver asking for space through loud speaker?	1. Yes, 2. No				
Number of Vehicles in front of the Ambulance observed	3				
Did vehicles have space to change the lane	1. Yes, 2. No	If "NO", observe the next ambulance			
Type of Vehicles Observed and number giving space	Number	Obstructed the ambulance (stopped)	Did not make space	Attempted making space immediately	Attempted making space in a few seconds
	Cars				
	Buses				
	Bikes				
	Rickshaw				
	Any other				

Information recorded in the checklist after each observation included timing of the day, site of observation, and number of vehicles observed in front of the ambulance which had space to change the lane. Response of each vehicle observed to the call of ambulance was categorised into four possible reactions which included 'Obstruction of the ambulance', 'Did not give space', 'Gave space immediately' and 'Gave space after a few seconds' (Annexure B).

Data was collected by trained data collectors with minimum qualification of Intermediate and above. They were trained for 2 days. On day 1, they were oriented with objectives of the survey and checklist for observation was explained to them. They practised filling the checklists in different possible scenarios they were likely to encounter. Thereafter, they were sent to the field to fill at least three checklists. On day 2, the accuracy and completeness of the filled checklists was seen to ensure the clarity in understanding of all the data collectors. Six data collectors were hired to cover 6 locations in each city for five days before, during and after the campaign. Data collection was monitored by a data supervisor in each city who made surprise monitoring visits, collected data forms, checked them daily and transferred them to the central project office at the end of each cycle. The data was entered and analysed at the central project office at AIPH, Karachi.

The main outcome indicator was dichotomized into vehicle operator giving space to an ambulance immediately or in a few seconds as opposed to not giving space or obstructing it. Comparison of percentage of vehicles giving space was made between five major cities, three phases of observation, different timings of the day and different types of vehicles. Significance in the difference between percentages was determined using Chi Square Test

The association of the media campaign with likelihood of giving space was determined using logistic regression analysis, and odds ratios (Ors) with 95% confidence intervals (CIs) were reported. The relationship was adjusted for time of observation, city of observation and type of vehicle. All statistical analysis were performed using SPSS 20.

Results

of the 12187 vehicles observed, 4350(35.7%) were made before, 3900(32%) during and 3937(32.3%) after the media campaign intervention. Maximum number of observations were made in Karachi 4227(34.7%), followed by Lahore 3101(25.4%), Rawalpindi 1844(15.1%), Peshawar 1172(15.1%) and Islamabad 1172(9.6%) (Table 1). Overall, 5618(46.1%) vehicles gave space immediately to ambulances, while 3693(30.3%) gave space in a few seconds. Also, 2108(17.3%) vehicles did not give space to the ambulance or obstructed it 768(6.3%). There was significantly higher proportion of vehicles ($p < 0.001$) during and after the campaign giving space to ambulances compared to vehicles before the campaign (Figure 1).

Of the five cities, 4 showed progressive improvement in the behaviour of vehicles, while the behaviour remained stagnant in Islamabad (Figure 2).

After adjustment for city of observation, timing of the day and type of vehicle, vehicles during (OR=1.21; 95% CI=1.09-1.34) and after the campaign (OR=1.57; 95% CI=1.41-1.75) were significantly more likely give space to ambulance. With reference to morning timings, vehicles in the afternoon (OR=1.29; 95% CI=1.16-1.44) and evening (OR=1.13; 95% CI=1.02-1.26) were also significantly more likely to give space. Compared to Karachi, Lahore and Islamabad were significantly more likely to give space while vehicles in Peshawar were significantly less likely to give

Table-1: Descriptive Statistics of the Vehicles Observed (n=12187).

Variable	n (%)
Phases	
Before Media Campaign	4350 (35.7)
During Media Campaign	3900 (32)
After Media Campaign	3937 (32.3)
Timings	
Morning (8:00-12:00)	3695 (30.3)
Afternoon (12:01-16:49)	4085 (33.5)
Evening (17:00-21:00)	4407 (36.2)
Number of Vehicles in one observation	
1-2	5816 (47.7)
3-4	4866 (39.9)
5-6	1505 (12.3)
City of Observation	
Karachi	4227 (34.7)
Lahore	3101 (25.4)
Rawalpindi	1844 (15.1)
Islamabad	1172 (9.6)
Peshawar	1843 (15.1)
Type of Vehicle observed	
Cars	6158 (50.5)
Buses and Trucks	1290 (10.6)
Bikes	2421 (19.9)
Rickshaws	1538 (12.6)
Vans	780 (6.4)

space ($p < 0.05$). Also, compared to cars, bikes and rickshaws were significantly more likely to give space, while buses and vans were significantly less likely to give space (Table 2).

Discussion

The campaign overall showed a significant effect and positive trends ranging from 5-11% in likelihood of giving space to ambulance. This effect is lower than the one observed between 16-18% one year before the campaign

Table-2: Unadjusted and adjusted relationship of factors associated with a vehicle giving space to ambulance (n=12187).

Variable	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Phases				
Before Media Campaign (n=4350)	1.00		1.00	
During Media Campaign (n=3900)	1.21 (1.10-1.34)	<0.001	1.21 (1.09-1.34)	<0.001
After Media Campaign (n=3937)	1.63 (1.47-1.81)	<0.001	1.57 (1.41-1.75)	<0.001
Timings				
Morning (n=3695)	1.00		1.00	
Afternoon (n=4085)	1.28 (1.16-1.42)	<0.001	1.29 (1.16-1.44)	<0.001
Evening (n=4407)	1.23 (1.11-1.37)	<0.001	1.13 (1.02-1.26)	0.020
City of Observation				
Karachi (n=4227)	1.00		1.00	
Lahore (n=3101)	2.14 (1.89-2.42)	<0.001	1.79 (1.57-2.04)	<0.001
Islamabad (n=1172)	1.11 (0.95-1.28)	0.174	1.24 (1.06-1.46)	0.006
Rawalpindi (n=1844)	1.37 (1.20-1.56)	<0.001	1.11 (0.97-1.29)	0.112
Peshawar (n=1843)	0.64 (0.57-0.72)	<0.001	0.61 (0.54-0.70)	<0.001
Type of Vehicle				
Car (n=6158)	1.00		1.00	
Bus or Truck (n=1290)	0.28 (0.25-0.32)	<0.001	0.29 (0.26-0.34)	<0.001
Bike (n=2421)	3.06 (2.63-3.56)	<0.001	3.06 (2.62-3.56)	<0.001
Rickshaw (n=1538)	1.16 (1.01-1.33)	0.028	1.22 (1.06-1.41)	0.004
Van (n=780)	0.76 (0.64-0.89)	0.001	0.76 (0.64-0.90)	0.002

OR: Odds ratio; CI: Confidence interval

that focussed on one large city, Karachi.¹⁵ This may be due to the fact that a more focussed campaign on a smaller scale yields more benefits. Moreover, the operational definitions for not giving way and obstructing the ambulance were not clearly defined in the first assessment which could have overestimated the effect. However, the overall effect is close to the range of 9-13% generally produced in road behaviour change interventions.⁹

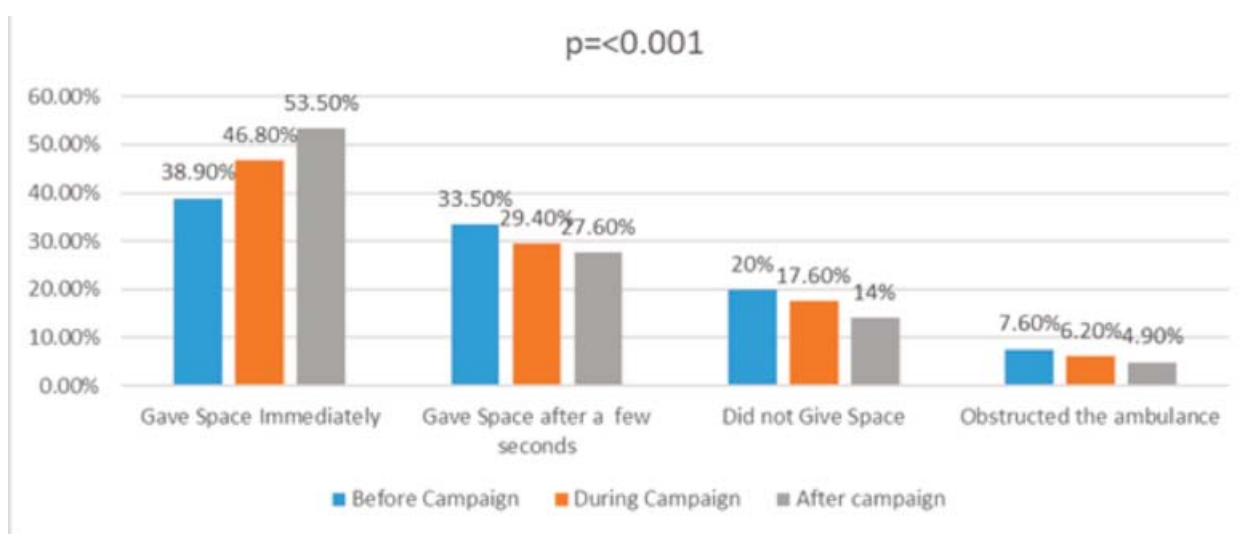


Figure-1: Response of Vehicles before, during and after the campaign (n=12,187).

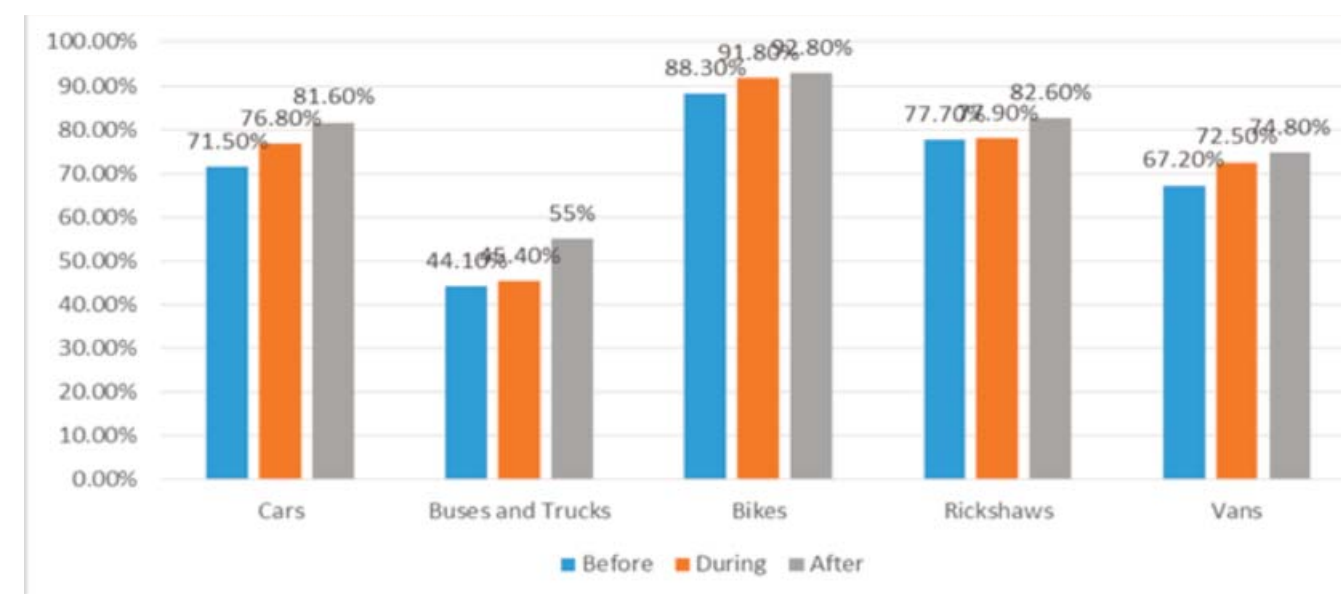


Figure-2: Comparison of Vehicles giving space to ambulances between cities before, during and after the campaign (n=12187).

The results showed consistent positive trends at 80% of sites of observation. The effect was more prominent at sites where road de-calling activities took place. This suggests that focused promotional activities tend to produce better results than more generic efforts. Previous literature also suggests that campaigns using roadside media as part of a campaign delivery strategy for driving behaviours positively effects the behaviour change.⁹

Results obtained on observations after the campaign showed a more prominent effect compared to results obtained during the campaign. This can be explained by the fact that campaign activities were slow to start off, gradually gaining momentum and reaching their peak towards the end. Four out of five cities showed an improvement in the range of 7-11% while the Federal Capital Islamabad showed stagnant trend. This could be due to a much better road infrastructure of the federal capital where ambulances tend to find their own way through middle lanes comfortably. Compared to the biggest city Karachi, vehicles in Lahore and Islamabad were significantly more likely to give space, while vehicles in Peshawar were significantly less likely to give space. These results can also be explained by better road infrastructure in Lahore and Islamabad and a relatively under-developed infrastructure in Peshawar. Vehicles in the afternoon and evening were more likely to give space possibly due to effect of mind pre-consumed with thoughts of reaching the destination points at the earliest in the mornings.

Overall, response of all types of vehicles showed improvement which confirms the general approval of the message by the masses because it calls for adopting a

generic humanitarian behaviour of contributing towards saving lives. It has been observed that mass media interventions in which societal values are challenged or require more sustained individual efforts tend to be less effective.¹⁶ However, with reference to cars, motorbikes and rickshaws were significantly more likely to give space while buses and vans were significantly less likely to give space as heavier vehicles tend to find it more difficult to change the lane. This reflects that mass media campaigns tend to be more effective among vehicle operators who are more likely to be exposed to media messages. This calls for more focused and targeted campaigns with operators of public transport.

The obvious limitation of the current study is its quasi-experimental nature, but it is practically impossible to design randomised control trial (RCT) for evaluating a mass media campaign with multiple strategies targeting population as a whole. The strength of this study includes its large scale and consistency in results. The assessment is based on spontaneous random observations due to which self-reporting bias is reduced. Relationship of the campaign with the outcome has also been adjusted for possible confounding effects of time of observation, city of observation and type of vehicle.

Implementing a mass multi-media campaign can have a variety of challenges from financial constraints to mobilising multiple partners. The experience of this mass media campaign offers lessons for future which include focussed interventions like road de-calling activities engaging civil society organisations and focussing on target population to be more effective. Literature also

suggests that for a sustained behaviour change, intermittent mass media campaigns should be supported by friendly environments and law for effective implementation.^{17,18} Therefore, it is imperative to introduce traffic rules that facilitate ambulances to pass through emergency lanes and does not bind them to follow protocols of high security movement. Engaging lawmakers and traffic department could be the way forward for restricting the resistance to ambulances on roads. While social media has emerged as a more cost-effective method for media campaigns,¹⁹ its reach is only limited to internet users. Therefore, finding partner organisations, especially media organisations supportive of spreading public welfare messages periodically as social corporate responsibility, will be essential to maintain sustained effect of such interventions.

Conclusions

Media campaign produced better results in encouraging vehicle-owners to give right of way to ambulances to ensure timely medical assistance.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: The International Committee of Red Cross as part of HCID Project.

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