Enhancing Road Safety Awareness: The Role of the Mobile Education Unit / Road Safety Awareness Unit of the National Highways and Motorway Police in the West Zone Balochistan

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Abstract

Road traffic accidents are a major cause of death and injuries in Balochistan. To highlight this problem, the national highways and motorway Police Pakistan have taken different steps to improve road safety through road safety education, enforcement and public awareness. This research paper examines the role of Mobile Education Unit / Road Safety Awareness Unit of the West Zone Balochistan in promoting safe defensive driving practices among the road commuters. It focuses on how targeted road safety awareness activates / programs, campaigns, and community engagement, help improve drivers / road commuters understanding of traffic rules and regulation and defensive driving techniques. The road safety educational efforts play an important role in reducing risky driving behavior and improving road safety awareness. This research highlights that continuous road safety education, along with strong enforcement, is essential for reducing road accidents and building a road safety culture of responsible road commuters in the region.

Keywords: *Balochistan; Motorway; Road Safety*

Introduction

Balochistan is the largest province of Pakistan by land area, and its extensive highway networks creates unique challenges for road safety. Major National Highways such as RCD N-25 (Hub to Chaman), N-10 (Makran Coastal Highway), and N-50 (Quetta to Zhob) connect rural areas with major cities and support the save moment of people and goods across the province. However, increasing traffic on these highways has also raised concern about road accidents and safety risks. To

address these challenges the National Highway and Motorway Police Pakistan, especially West Zone in Balochistan, has taken proactive steps to improve road safety. Among these efforts, the Mobile Education Unit / Road Safety Awareness Unit plays a key role in increasing road safety awareness among the road commuters. Passengers work as outreach platform to educate driver, passengers, local community and students about traffic rule and regulation, defensive driving techniques, and responsible road behavior. Improving highway safety is an important goal of the NHMP, aimed at reducing road crashes, injuries, and fatalities. The MEU / RSAU conduct regular awareness sessions in community engagement activities / programs to promote save driving practices. These efforts help build a stronger safety culture and contribute to safer highways across the West Zone Balochistan.

Literature Review

The establishment of the National Highways & Motorway Police (NHMP) is closely linked with the development of Pakistan's motorway network. The Government of Pakistan created the Pakistan Motorways Police (PMP) in 1997 to police the newly constructed M2 (Islamabad- Lahore) motorway. In June 2001, the responsibilities of the force were expanded to include patrolling national highways, beginning with the N5 (Lahore- Karachi), Pakistan's longest national highway, and the organization was subsequently renamed the National Highways & Motorway Police (NHMP). Later, in February 2007, the NHMP also assumed responsibility for policing the (N10) Makran Coastal Highway (Arain & Arain, 2015). Currently, NHMP West Zone is policing 820 KM of Highways. The West Zone is divided into four Sectors i.e. Gwadar, Uthal, Kalat and Killa Saifullah. Each Sector is headed by a SP rank officer while the zonal commander is a deputy inspector general rank officer. Sector is further divided into Beats, and each beat is supervised by a DSP rank officer. The area of responsibility of a Beat is almost 50 KM.

Road traffic accidents remain a major public safety concern in Pakistan due to rapid urbanization, population growth, and increased interprovincial mobility. Pakistan with a population of plus 221 million people, the countries road infrastructure faces significant challenges in managing increasing number of vehicles and ensuring adequate road safety standards. Highways are generally congested while limited compliance with traffic rules and regulations and road furniture further contributes to unsafe driving techniques. As Pakistan continues to pursue economic growth and sustainable development, improving road safety culture has become a pivotal priority (Arain & Arain, 2015). From the perspective of transportation engineering, highway and road safety are critical for efficient transport systems. However, developing countries such as Pakistan encounter

unique challenges in traffic management due to over speeding, increasing volume of vehicles on roads and law public awareness regarding road safety, (Arian & Arian, 2015). These factors necessitate the enforcement of detailed traffic safety management systems, strict law enforcement and continue evaluation of traffic safety performance.

Pakistan approximately extends a network of road about 493,088 km, distributing over 14.6 million registered vehicles (NHA, 2020). The rising production and sales of vehicles; in 2020, around 242,852 cars were produced, while more than 2.23 million two and three wheelers were sold. On average, nearly 5,000 vehicles are added daily, placing substantial pressure on existing road infrastructure and traffic management systems. Balochistan highways network is approximately 4434 KM while NHMP covers only 820 KM. According to the Pakistan Bureau of Statistics (2020), 9701 road accidents occurred in 2020, resulting in 5,436 deaths and 12,317 injuries, translating to an average of 24 accidents and 15 fatalities per day. It is worth mentioning that 15 police departments with 450,000 officials managing 1974 police stations and approximately 950,000 FIRs per annum. The world Health Organization (2018) calculates that nearly 30,046 individuals die annually in Pakistan due to road accidents. The COVID 19 pandemic lockdown in 2020 led to a 35.6% reduction in fatalities, signifying the strong correlation between traffic volume and accident rates (Khurshid, Sohail, Khurshid, Shah, & jaffry, 2021)

The results of road accidents extend beyond fatalities, causing long term disabilities and substantial economic burdens. Zaman (2019) reports that over 50,000 individuals sustain permanent or temporary disabilities yearly, while the combined cost of vehicles damage, medical treatment, hospitalization and rehabilitation is calculated at approximately PKR 500 billion per year. These facts indicate that road accidents impose not only a social but also a considerable economic impact, reinforcing the need for targeted preventive measures awareness / defensive activities and policy making. The road safety officer of Mobile Education Unit / Road Safety Awareness Unit of National Highway and Motorway Police Pakistan tend to serve as a key initiative for behavior change and spreading public awareness on road safety. These units actively reach diverse audiences by visiting schools, corporate offices, bus/van terminals, Madaris, mosques, markets, and other public spaces to deliver seminars, workshops, and campaigns on traffic laws and safe driving practices.

In 2021, the NHMP's MEU sensitized approximately 17 million people on road safety regulations and traffic rules, aiming to protect lives and property. The program also involved collaboration with private driving schools to standardize training and integrate consistent safety standards across driver education levels

(NHMP sensitized 17m people on road safety, 2021; Imam, 2021). One could anticipate that in developing countries such as Pakistan, with limited resources and lack of political will, such factors are not able to be addressed quickly or easily. It is already acknowledged that there is limited investment in and understanding of road safety at government level, which is reflected in the low priority that is given to traffic safety. The current research has highlighted the importance of the knowledge, awareness and beliefs of those who make, use and enforce the "system", although it is important to note that education alone is not the only key to changing the attitudes and behaviors of road users. In countries such as Pakistan, which has extremely low literacy levels, it is expected that it will take a long time to address the critical road safety issues through education. Studies examined the effectiveness of public awareness and educational campaigns. In Mexico, an awareness campaign targeting seat belt and child restraint use was added in the second year of a project after a one-year law enforcement campaign. Similar to the evaluation results after the first year of the study, the public awareness campaign had a reduction in RTC but not in fatalities or injuries. Another study, in Brazil, performed a multifaceted public awareness/education intervention campaign focusing on educational training in health centers and schools/universities, and public awareness campaign with media distribution of videos, souvenirs, and pamphlets. Results showed small increases in outcomes such as crashes and injuries but also found a 26% decrease in deaths as well as moderate and severe trauma. Also, the same study reported a 25.6% decrease in ICU admissions due to RTI (Catherine Staton, 2016).

In Pakistan, road accidents typically result from a wide range of factors, with death and injury being viewed as an unusual occurrence. Aberrant driving habits by both regular and professional drivers (bus and taxi) are one of the main causes of traffic-related deaths and injuries. Each study that was previously evaluated has led to a finding that road safety is the cornerstone of any nation's development, no matter how big or small. The nation will undoubtedly advance and expand if its roads are safe. Traffic accidents and inadequate road safety systems can be caused by a variety of factors, including careless driving and the failure to enforce traffic rules.

Key functions include:

- Conducting interactive awareness sessions on highways, toll plazas, schools, colleges, universities, transport hubs, and community forums.
- Promoting defensive driving, licensing compliance, helmet/seatbelt use, fatigue management, lane discipline, adverse weather precautions, avoiding over speeding/overloading, and no dozing at the wheel.

- Distributing educational materials (pamphlets, leaflets, reflective stickers) and promoting the NHMP 130 helpline.
- Facilitating stakeholder collaboration (schools, transport unions, communities, and media) through seminars, workshops, awareness walks, stalls, and campaigns.
- Distributing anti-dozing devices to public service vehicle (PSV) drivers—technology using sensors (e.g., eye movement, steering analysis, lane departure warnings) to detect fatigue and provide alerts.

The Mobile Education Unit / Road Safety Awareness Unit plays an important role between authorities and the public, to change the drivers' behavior by applying multi-media tools, demonstration and media correspondence. Its operational pathway (Inputs → Activities → Awareness → Behavior Change → Accident Reduction) targets improved knowledge, safer attitudes, reduced violations, and long-term crash reduction in West Zone Balochistan, addressing widespread gaps in traffic education among drivers and students. Cultural differences between countries are generally considered one of the major challenges when introducing road safety strategies. Culture may be described as an anthropological item, with mobility behavior as a particular topic. Consequently, cultural aspects may result in large differences in traffic behavior. The challenge of developing and enforcing proper road safety culture among communities and the population at large may be considered as far more difficult as adopting best practices in principle and creating appropriate legislation (Ahmed Ksentini).

IMPACTS

Regular activities / programs by the MEU / RSAU West Zone Balochistan, on highways and toll plazas have improved public knowledge about helmet and seatbelt use, lane discipline, defensive driving, and safe practices during adverse weather. The provision of road safety stuffs and promotion of NHMP 130 helpline have enhanced public reach to safety information and emergency support. Overall, these efforts have strengthened safety attitudes, reduced traffic violations, and promoted a responsible driving culture across Balochistan. The impacts are as below:

The MEU /RSAU NHMP West Zone Balochistan has played an important coordinating role by connecting schools, transport hubs and local communities. This collaboration has developed collective responsibility for road safety and ensured that road safety / defensive awareness has reached divers groups, especially drivers and students who lack formal traffic education. By addressing knowledge gaps, the MEU / RSAU assisted reduced repeated driving mistakes, minimized risky behavior

and contributed to long term change in behavior connected with NHMP's road safety objectives

Through collaboration with print and electronic media, the Mobile Education Unit / Road Safety Awareness West Zone Balochistan has expanded the reach of road safety messages to a larger number of audiences. Setting up road safety stalls during public events has further enhanced public understanding of road safety and precautionary measures, reinforced safety awareness in society, and encouraged citizens to adopt safer road practices. The distribution of anti-dozing devise to Public Service Vehicle (PSV) drivers represented a proactive technological advancement to prevent fatigue related accidents. By detecting early signs of driver drowsiness and providing timely alerts, these devices significantly reduce the risk of crashes caused by sleep. This initiative has improved passenger safety, protected lives, and supported NHMP's broader mission of accident reduction on highways in West Zone Balochistan.

Study Design

This research paper employs a multisource quantitative research design to examine the role of the Mobile Education Unit / Road Safety Awareness Unit of the National Highways & Motorway Police in promoting road safety awareness across West Zone Balochistan. The research utilizes primary and secondary data obtained from official NHMP record covering the period 2021 to 2025. Primary data include driving license verification record from NHMP West Zone Balochistan surveys, capturing licensing status across three categories: valid license holders, expired license holders, and unlicensed drivers. Additionally, observational data on seat belt usage was collected through structured surveys stratified by age groups (18-25, 25-40 and 40-65 years) to assess compliance patterns. Secondary data were derived from two key sources: the NHMP 130 helpline database, documenting distress calls categorized by nature of compliant (mechanical issues, tire puncture/burst, starting problems/overheating, and accident reports), and official road accident registers providing annual accident statistics disaggregated by fatality outcomes, vehicle type involvement (cars/jeeps, LTVs, PSVs, HTVs), and temporal patterns. These multiple data sources were analyzed to address six research questions concerning the causes of rising accident rates despite existing traffic laws, the contribution of driver behavior to violations, accident trends across the five year period, the impact of professional training on violation reduction, the effectiveness of helmet and seat belt usage in mitigating injury severity, and the specific mechanisms through which the MUE / RSAU contributes to accident reduction. Descriptive statistical analysis was applied to calculate percentages, identify patterns across vehicle categories and time periods, and establish mutual connection between demographic variables and safety compliance indicators. This multidimensional approach enables a detailed

assessment of both enforcement gaps and educational intervention outcomes with the study region.

Results and Discussion

Table 1 Driving License Data (NHMP West Zone Balochistan Survey)

LICENSING CATEGORY	IMPLEMENTATION	PERCENTAGE
Valid License	65	65%
Expired License	30	30%
No License	20	20%

An analysis of driving license records obtained from NHMP West Zone Balochistan surveys reveals patterns regarding driver compliance with licensing regulation. The data indicate the 65% of drivers possess valid licenses, reflecting a moderate level of adherence to legal licensing requirements. However, many drivers 30% were found operating vehicles with expired licenses, representing a significant legal violation and safety concern. Furthermore, 20% of drivers were observed driving without any license whatsoever, identifying a high-risk population segment with no formal verification of driving competency. The collective impact of these figures is particularly noteworthy: when combined, drivers with expired licenses (30%) and those with no license (20%) constitute 50% of the driving population surveyed. This means that one out of every two drivers on the roads of West Zone Balochistan are operating a vehicle without valid license. This finding exposes critical gaps in both enforcement mechanisms and public awareness regarding licensing compliance. The substantial presence of unlicensed and expired license drivers suggests that existing regulatory efforts have not sufficiently deterred noncompliance, nor have awareness campaigns adequately communicated the legal and safety imperatives of maintaining valid driving license. These data underscore the necessity of targeted educational measures, such as those delivered by the Mobile Education Unit / Road Safety Awareness Unit to address knowledge deficits and promote voluntary compliance, alongside strengthened enforcement to discourage violations. (Table 1)

Table 2 NHMP 130 Helpline Data (2021–2025) Nature of Complaints Reported

NATURE OF COMPLAINT	NUMBER OF CALLS
Mechanical issues	304
Tire Puncture / Tire Burst	142
Starting Problem / Overheating	107
Accident Reports	83

An assessment of distress calls received by the NHMP 130 helpline between 2021 and 2025 provides valuable understanding into the nature of roadside

emergencies encountered by motorists in the region. The data reveals that mechanical issues compose the most frequently reported category of distress, with 304 calls recorded, accounting for approximately 47.8% of all helpline contacts. Tire related issues, including punctures and bursts, represent the second most common compliant with 142 calls, followed by starting problems and overheating issues with 107 calls. Accident reports account for 83 calls during the five-year period.

A synthesis of the categories generates a particularly meaningful finding: vehicle maintenance related issues comprising mechanical problems, tire punctures or bursts, and staring or overheating difficulties collectively account for 553 calls, representing 87% of total complaints recorded with the helpline. On opposite, accident reports compose merely 13% of all distress calls. Indicating that the significant majority of roadside emergencies stem from controllable vehicle conditions rather than collision events. This distribution presents significant implications for road safety management. Most maintenance related distress calls suggest that many drivers are operating vehicles in unsatisfactory mechanical condition, whether due to inadequate pre-trip inspections, delayed maintenance, or limited awareness of vehicle safety requirements. The data show that systematic efforts to promote regular vehicle checks and driver education regarding mechanical preparation could strongly reduce the burden on emergency helpline services while at the same time preventing many of the breakdown situations that expose motorists to secondary risks on highways. The data identify poor vehicles maintenance as the dominant preventable risk factor in roadside emergencies, underscoring the importance of educational interventions, such as those organized by the MEU / RSAU that emphasize vehicle safety awareness alongside driver behavior modification. (Table 2)

Table 3 Road Accident Data (2021–2025)

YEAR	ACCIDENTS	FATAL	NONFATAL
2021	68	32	36
2022	41	17	24
2023	42	17	25
2024	77	21	56
2025	61	24	37

Road Accident Data Analysis

The research paper on road accident data analysis record from West Zone, Balochistan (2021-2025) shows that accident numbers changed from year to year. 68 accidents were recorded in 2021. This number dropped 41 in 2022, and 42 accidents remain almost the same in 2023. The accidents increased rapidly to 77 in 2024; this record was the highest in the last five years periods. The accident

decreased again to 61in 2025. The fatality data illustrate changes in how serious the accidents were. 32 out of 68 accidents (47%) were fatal in 2021, which was the highest fatality rate in this study. The number of fatal accidents dropped to 17 each year in 2022 and 2023, with fatality rates of 41% and 40%. In 2024, even though total accidents increased a lot, fatal accidents rose only slightly to 21, and the fatality dropped to about 27%. In 2025, fatal accidents increased a little to 24 out of 61, giving a fatality rate of 39%.

Overall, accident numbers to up and down from year to year, showing fragile pattern. The drop in fatality rate in 2024 may suggest better emergency response, improve medical health, or safety measures like education and awareness. Even though accidents still happen, fewer of them are becoming fatal compared to 2021. This demonstrate that preventing accidents is still very important, improving response system and safety practices (like fasten seat belt, wearing helmet, and vehicle safety) can help reduce death when accidents do occur. (Table 3)

Table 4 Vehicle Involvement in Accidents (2021–2025)

Vehicle Category	No. of Vehicles	Frequent Accident Involvement time
Car/Jeeps	98	Night
LTVs	34	Night
PSVs	57	Night
HTVs	53	Night

Vehicle Involvement in Accidents Analysis

According to vehicle involvement an accident analysis in West Zone Balochistan from 2021 to 2025 shows that the categorized vehicles, i.e. cars and jeeps, were involved in the highest number of accidents, with 98 cases (40.5% of all vehicles involved). Passenger Service Vehicle (PSVs) were involved in 57 accidents, Heavy Transport Vehicles (HTVs) in 53, and Light Transport Vehicles (LTVs) in 34. When PSVs and HTVs are combined, they account for 110 accident-involved vehicles, or 45.5% of the total, however, these vehicles are larger, heavier, and often carry more passengers, road accidents involving them can lead to more serious injuries, fatalities, and property damage. This highlights the need for greater attention to commercial and public transport safety.

The data also show that accidents are more common at night across all vehicle types. Poor visibility, driver fatigue, and over speeding are likely reasons for the higher number of nighttime road accidents. Overall, nighttime driving is the most dangerous for all vehicle categories in West Zone Balochistan. Road Safety

Awareness activities / Programs focus on safe night driving practices, including managing fatigue, controlling over speeding and ensuring proper vehicle lighting (Head and taillights). (Table 4)

Table 5 Seat Belt Usage Data

Age Group	Survey in 100s	Implementation	Percentage
18 to 25	100	25	25%
25 to 40	100	50	50%
40 to 65	100	75	75%

Seat Belt Usage Data Analysis

As per the data analysis of seat belt survey conducted in highway, West Zone, Balochistan that highlights the seat belt use increased with age factor. Almost driver / road commuters aged from 18-25 years, only 25 out of 100 were observed wearing seat belts, giving a compliance rate of 25%. However, in the 25-40 years age group of road commuters, 50 out of 100 use seat belts (50% compliance). The highest usage was found among drivers aged 40-65 years, where 75 out of 100 road commuters wore seat belts, resulting in a 75% compliance rate. The analysis shows a clear link between age and seat belt use, with older road commuters being more likely to wear seat belts. Younger commuters may have lower awareness of road safety risks, be less concerned about traffic rules and regulations, or have developed unsafe driving habits. Older drivers are likely to have more driving experience and a better understanding of the consequences of road accidents.

Among the young drivers, very low seat belt usage is a major road safety concern. This age group is already more likely to engage in risky behaviors such as over speeding distracted driving, and non-fastening seat belts further increases their chances of serious injury in a road accident. Almost, these results highlight the need for targeted awareness activities and campaigns, especially for young commuters. The road safety educational activities / programs by the MEU / RSAU shall help improve seat belt use through school and college outreach, underscoring the importance of seat belt in saving lives and reducing injuries. (Table 5)

Conclusion

The Mobile Education Unit / Road Safety Awareness Unit of the National Highway & Motorway Police in West Zone Balochistan plays an important role in improving road safety through education, community engagement, and behavior change activities / programs. Its efforts have helped increase public awareness, promote safer driving habits, and reduced traffic violations. However, challenges

such as unlicensed driving, poor vehicle condition, and low safety compliance among young drivers remain. The consequences show that the continuous Road Safety Education, along with strict enforcement, is necessary to bring long-term behavioral change. Strengthening the work of the Mobile Education Unit / Road Safety Awareness Unit shall help reduce road accidents and improve safety across the NHMP in West Zone Balochistan.

Recommendation

Targeted Road Safety Awareness activities / programs should be strengthened for young drivers, unlicensed motorists, and commercial vehicles hubs. These activities / programs must focus on seat belt use, proper licensing, and the risk of driving at night. The MEU / RSAU should also include training / sessions on vehicle maintenance and regular safety checks to reduce breakdown and roadside emergencies. In addition, coordination between education and enforcement should be improved Mobile Education Unit / Road Safety Awareness Unit outreach should be expanded though media and community activities / programs, and traffic rules and regulations should be enforced more strictly. These steps are important to bring long term improvement in driver behavior and road safety.

Road Safety and Development (RS&D)

The Mobile Education Unit / Road Safety Awareness Unit of NHMP in West Zone Balochistan should move toward a more data driving and risk base approach. Future road safety programs and campaigns should focus on high-risk groups, especially young drivers, non-licensed road commuters, and heavy transport vehicle hubs with special attention to nighttime driving when accidents are most dangerous. Outreach methods should be modernized by using digital platforms, simulation-based training, and new technologies such as detection systems for fatigue. Gradually, more practical training is needed on vehicle maintenance, defensive driving techniques, and emergency response handling. For long-term impact, there must be better coordination between education, enforcement, and engineering agencies. Regular monitoring of driver behavior should also be carried out to ensure lasting improvements and a continuous reduction in road accidents.

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