

## Research Article

### Assessment of Traffic Safety and Awareness Among Road Users in Salalah, Sultanate of Oman

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**Abstract:** Understanding essential role of the knowledge and awareness of traffic regulations and bad driving practices in reducing traffic accident, this study was carried out to investigate traffic regulations knowledge and awareness among drivers in Salalah, Sultanate of Oman. To achieve the objectives, a questionnaire was developed and distributed among road users in Salalah. The main findings showed that a very low percentage of participants fully complied with speed limits; the majority used mobile phone during driving and drove when feeling fatigued. Interestingly, some of participants lacked the knowledge of traffic signs and a high percentage of participants were knowledgeable of wrong driving practices, which could be the main reasons for the high rate of accidents in the region. Based on the findings of this study, serious efforts should be exerted on promoting traffic safety awareness and compliance with traffic regulations. Furthermore, authorities should escalate the efforts to enforce regulations especially offenses of speeding and the usage of mobile phones while driving.

**Keywords:** Salalah, Sultanate of Oman, traffic awareness, traffic safety, traffic survey, traffic accidents

## INTRODUCTION

Traffic Accidents are one of the major concerns worldwide, due to the severe health and economic impacts on any society. Fatalities due to traffic accidents are very high in the developing countries (Ali, 2010). Many studies concluded that public awareness and education campaigns and strict law enforcement strategies play important roles in the reduction of traffic accidents (Tamimi *et al.*, 1980; Badawi *et al.*, 1995; Al-Zahrani *et al.*, 1994; Al-Ghamdi, 2003; Bendak, 2005; Gharaibeh and Abu Abdo, 2011; Kulkarni *et al.*, 2013; Osuagwu *et al.*, 2013; Al-Atawi *et al.*, 2014). Al-Zahrani *et al.* (1994) argued that by utilizing the 3E's solutions; Engineering, Education and Enforcement, traffic accidents number and severity could be reduced.

It is predicted that, by the year 2030, fatalities resulting from road accidents would be the 5th leading cause of death globally and would be doubled in Sultanate of Oman, which is located on southeastern coast of the Arabian Peninsula with an area of 309, 501 km<sup>2</sup> and population of 3,632,000. It is also predicted by 2020 that road fatalities would be a 3rd leading cause of death and disability in Sultanate of Oman. Sultanate of Oman was reported to have the highest death rate from road accidents in the Arabian Gulf Co-operation Council

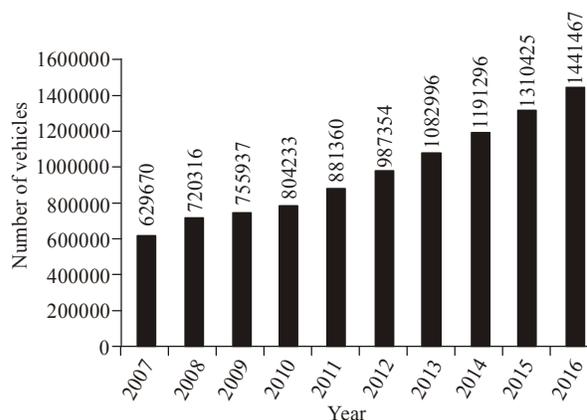


Fig. 1: Vehicles count from 2007 to 2016 in Sultanate of Oman

(GCC) and the 3rd highest in the Middle East (Mazharul and Hadhrami, 2012; WHO, 2013a, b; Farag *et al.*, 2014).

Due to its natural wealth, Sultanate of Oman has experienced rapid cultural and economic changes within the last decades; this development included an increase in number of vehicles and a growing road network. The latest traffic statistics published by the General

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Administration of Oman Royal Police (ROP, 2014) indicated that the number of vehicles in 2014 was 1,191,296, an increase of about 190% from the year 2007. Based on Fig. 1, the number of vehicles is increasing with an average of 10% every year, it is expected that number of vehicles would increase to be about 1, 441, 467 by the year 2016. Thus with the increase of vehicles, more vehicular accidents would occur.

Statistics by ROP showed that there was an increase in traffic offences in recent years, especially in speeding offences (Table 1), which is speculated to be the big contributor to the increasing rate of reported accidents. Speeding offences increased from 1,778,614 to 3,254,799 (+183%) since 2009. In 2014 there were 3,510 vehicle accidents caused by speeding, 428 reported fatalities and 1743 injuries due to traffic accidents. Failing to buckle up offences increased from 54,429 to 85,708 since 2009. Furthermore, right of way, dangerous overtaking, reckless driving, driving through a red light and usage of mobile phone while driving offences increased by 155, 295, 174, 72 and 200%, respectively from 2009 to 2013. This trend causes major concerns to all parties concerned.

Several Studies (Tamimi *et al.*, 1980; Nafee and Al-Saif, 1986; Jadaan *et al.*, 1992; Al-Ghamdi, 2003; Bendak, 2005; Koushki and Bustan, 2006; Chung and Wong, 2010; Gharaibeh and Abu Abdo, 2011) argued that drivers and road users characteristics and driving practices have an impact on the majority of traffic accidents. Thus, this study was initiated to evaluate road users' awareness in Salalah, Sultanate of Oman.

**Objectives:** Understanding the importance of traffic regulations knowledge, wrong driving practices and awareness in the reduction of traffic accidents, this study

was initiated to investigate and evaluate the traffic regulations knowledge and awareness of road users in Salalah, Sultanate of Oman.

## METHODOLOGY

To achieve the objective of this study a questionnaire was designed and distributed among road users in Salalah. The survey was developed to assess driving behaviors and practices, in addition to questions about participants' knowledge of traffic regulations.

To determine the sufficient number of sample to be surveyed, statistical analysis was utilized. The population of Salalah, which the survey covered, is about 100,000, with a confidence level of 90%, the minimum samples number should be 270 with a low margin of error, as shown in Table 2.

**Data analysis and discussion:** Road Safety is a broad concept of controls and devices, including traffic regulations and cautionary measures designed to stop or reduce traffic accidents. Figure 2 shows the participants' responses on the usage of seatbelts while driving. Result showed that 57% of the respondents rarely use seatbelt while 23% occasionally use it and only 20% always use the seatbelt while driving.

Seatbelts do not prevent the occurrence of accidents; however, wearing seatbelt can save lives. Seatbelt has been proven to reduce the amount of injuries a person may experience in a road accident. Most injuries to drivers and passengers are caused by contact with the interior of the vehicle. The main function of the seatbelt is to hold vehicle occupants in place to prevent them from flying forward as the car stops sharply in the case of an accident. Figure 3

Table 1: Reported traffic offences from 2009 to 2013 in Sultanate of Oman (ROP, 2014)

Type of offence	2009	2010	2011	2012	2013	Increase from 2009-2013
Dangerous overtaking	6675	8308	6224	13971	19722	295%
Right of way	2970	3356	2447	3581	4594	155%
Signal and lights	18711	21640	18722	43786	48778	261%
Reckless driving	52943	60764	42090	73519	92292	174%
Traffic directions	9566	12881	11811	13260	17733	185%
Speeding	1778614	1864280	2244168	2688615	3254799	183%
Vehicle defects	14371	19824	21160	59967	68220	475%
Driving under the influence	1294	1398	1203	1519	2044	158%
Not wearing a seat belt	54429	61409	49544	96280	85708	157%
Driving through traffic lights	1410	1498	1093	1234	1011	72%
Use of mobile phone	10229	12189	9778	16130	20494	200%

Table 2: Sample numbers and confidence levels (After Abu Abdo and Al-Ojaily, 2015)

Population	Margin of error			Confidence level		
	10%	5%	1%	90%	95%	99%
100	50	80	99	74	80	88
500	81	218	476	176	218	286
1000	88	278	906	215	278	400
10000	96	370	4900	264	370	623
100000	96	383	8763	270	383	660
+100000	97	384	9513	271	384	664

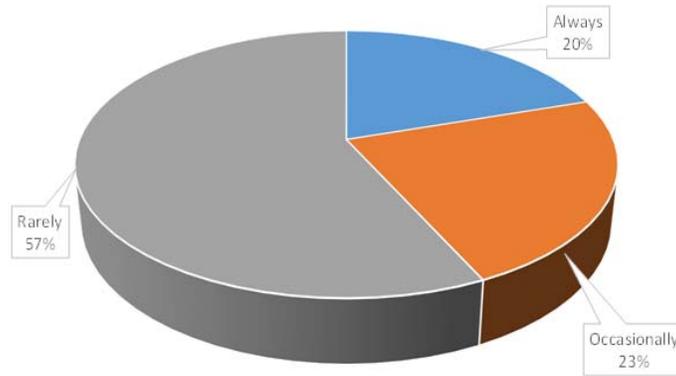


Fig. 2: Use of seatbelts

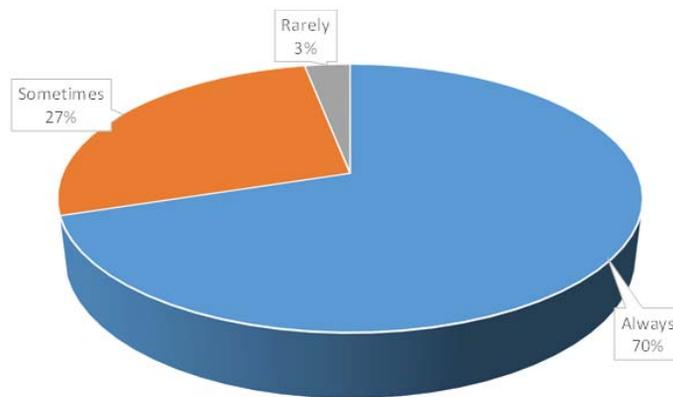


Fig. 3: Participants opinion whether seatbelts decrease accident injuries

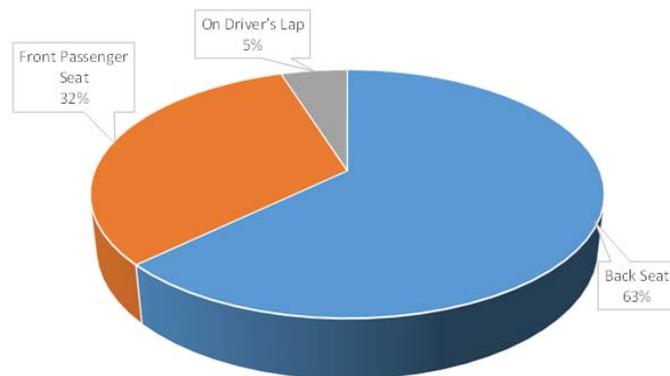


Fig. 4: Seating location of children in the vehicle

illustrates the result of the survey when the participants were asked if using seatbelts decrease accident injuries. Results showed that about 70% were well aware that buckling up decreases injuries during accidents and 3% stated seatbelts had no effect.

Children are most affected during vehicle accidents. The front seat is the most dangerous place for a child to be seated in a vehicle. In the event of an accident the child is likely to be thrown out of the seat hitting the dashboard or windshield or thrown out of the vehicle. In Salalah there is an alarming trend, at which drivers seat

their children on their laps while driving. Results showed that 63% of the participants seat their children on the back seat, 32% on the front seat, while 5% allow their children to sit on their laps (Fig. 4).

Speed is one of the major factors contributing to accidents in Sultanate of Oman roads. Speeding reduces the time drivers have to avoid crashes, their ability to control the vehicle and prolong stopping distances, increasing both the likelihood of crashing and the severity of the crash. Results showed (Fig. 5) that the majority of participants (54%) occasionally comply with

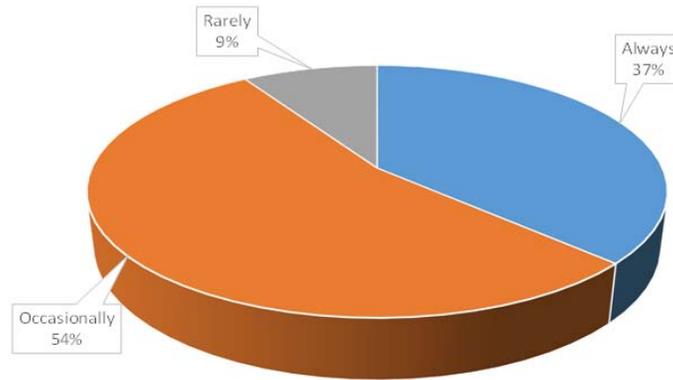


Fig. 5: Compliance with road speed limits

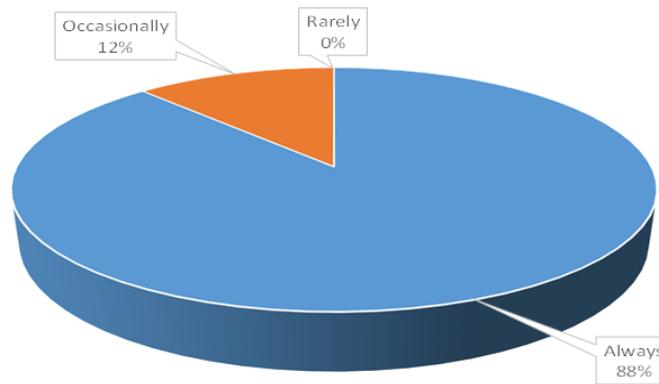


Fig. 6: Compliance with traffic lights

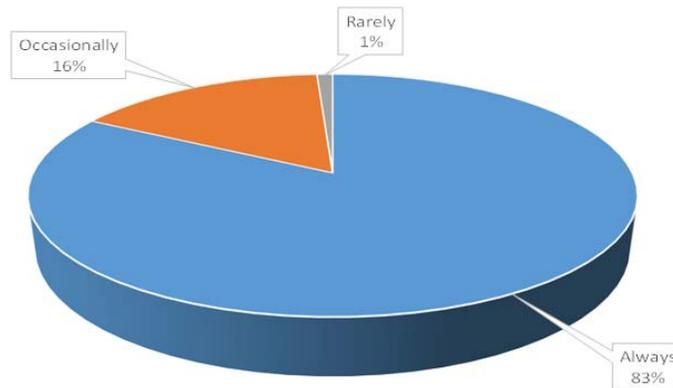


Fig. 7: Usage of mobile phones while driving

the fixed speed limits. About 37% always comply with the required speed limits and 9% rarely comply with speed limits.

Traffic signals are very important since these are designed to control flow of traffic through intersections and avoid road accidents. When asked if the participants obeyed and followed traffic signals, results showed that 88% always obey traffic lights. Interestingly, collected data showed that 12% occasionally obey traffic lights, which may contribute to high vehicular accident (Fig. 6).

The use of mobile phone while driving may require different actions: initiating or receiving a call, holding the phone, texting, picking it up if dropped and so on, which causes drivers to lose attention to their surroundings. Although the use of a hands-free mobile phone devices, are universally recommended and permitted, calls can be a distraction, since conversation may consumes mental energy, thus losing concentration while driving leading to potentially complications and may result in an accident (Walter, 2010). Even though that the Omani Laws are

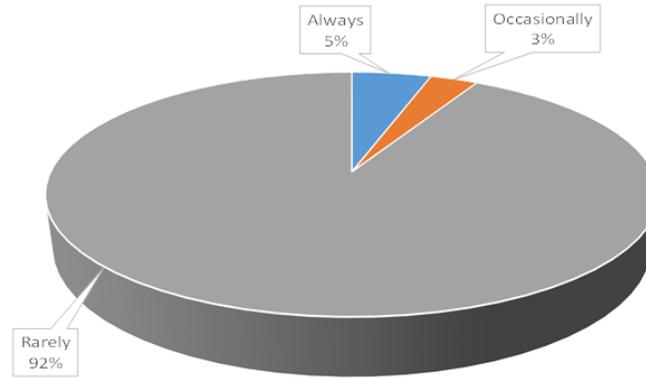


Fig. 8 : Driving Under the Influence

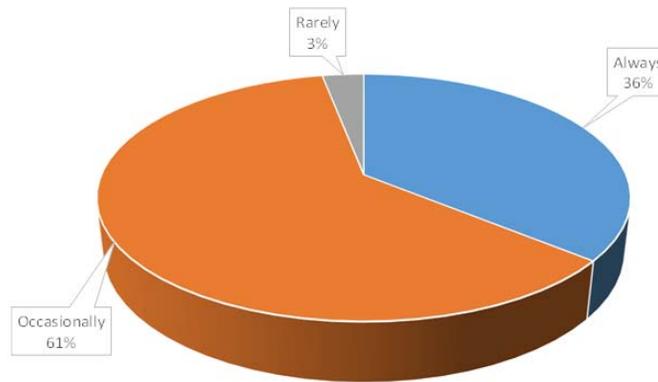


Fig. 9: Driving While Feeling Fatigued



Fig. 10: Participants' Knowledge of Traffic Signs

very restrict to the usage of mobile phones while driving (incarceration for 10 days), data showed that the percentages of drivers using mobile phones while driving was very high, 83% always used the mobile phone while driving and 16% occasionally used it (Fig. 7).

Driving under the Influence (DUI) is one of the causes of accidents injuries and fatalities. Results showed (Fig. 8) that the majority of participants (92%) of never drove under the influence and 3% occasionally

drove while intoxicated, while 5% always drove under the influence. While the percentage of drivers, who did not drive under the influence was high, the percentage of whom occasionally and always drives under the influence is alarming, since these drivers are putting theirs and others at risk.

Figure 9 illustrates the results of the survey when participants were questioned about driving when feeling fatigue. Fatigue is caused by not enough rest over a period of time whether from mental or physical reasons

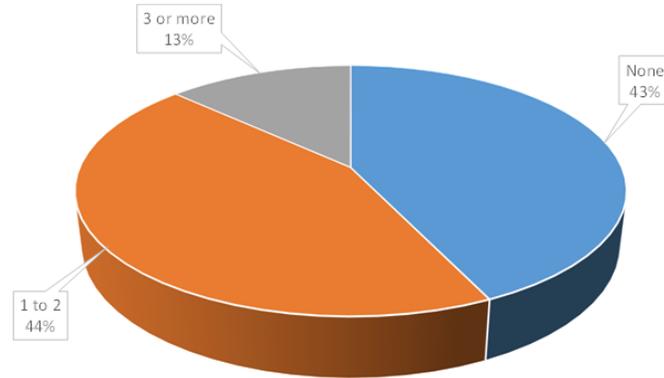


Fig. 11: Involvement in vehicle accidents

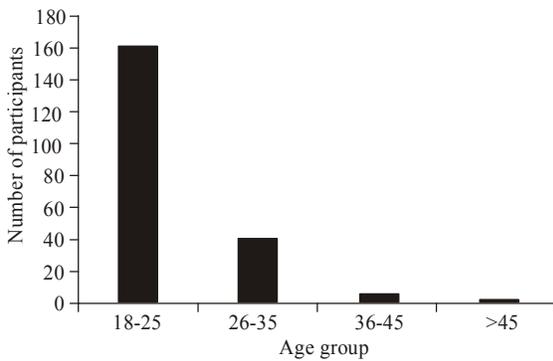


Fig. 12: Age Group at First Accident as a Driver

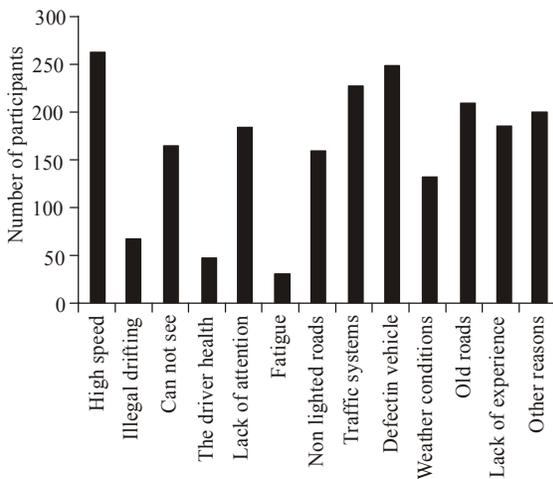


Fig. 13: Participants' feedback on main causes for accidents

or illness or lack of sleep. Fatigue can weaken the perception-reaction time and may increase the risk of being involved in an accident. Results showed that 61% of the participants occasionally drove when feeling fatigued, 36% always drove when feeling fatigued and only 3% rarely do. In spite of being tired and fatigued, participants still got behind the wheel and drove. If a driver falls asleep for just 5 sec while travelling at a speed of 60 km/hr, the vehicle will travel 83.3 m with

no control. At high speed, a crash is likely to happen with a high risk of death or injury.

In Fig. 10, all participants had very good knowledge of the Stop, Speed Limit and Pedestrians Crossing signs. Moreover, 32.2% of the participants did not know what the Yield sign means and about 6.7% did not know the Two Directional Road sign and 5.9% did not know the Merging into a Main Street sign. Combining this information with the low percentage of compliance with the speed limit could be the main cause of the high rate of traffic accidents and fatalities in Salalah.

Figure 11 presents the results of the survey when participants were asked on number of accidents they were involved in. 43% of the participants were not involved in any vehicular accidents, while 44% were involved in one or two vehicular accidents, while 13% were involved in 3 or more vehicular accidents. Figure 12 shows the age of the participants when they had their first accident as a driver, most of the participants (59.3%) had their first accident as drivers at a young age (18-25 years old).

Data from the awareness section of the survey showed that a high percentage of participants were practicing of wrong driving practices. When asked to rank the main causes of accidents, high speed came first and then defect in vehicle, lack of attention, traffic system, old roads, lack of experience and finally weather conditions as the seven main reasons (Fig. 13).

## SUMMARY AND CONCLUSION

Due to the importance of knowledge and awareness of traffic regulations and bad driving practices in reducing traffic accidents, this study was conducted to evaluate traffic regulations knowledge and awareness among drivers in Salalah, Sultanate of Oman. To meet the objectives of this study a questionnaire was developed and distributed among road users in Salalah. The survey was designed to have three main sections; participant information, driving practices and finally traffic regulations knowledge and awareness assessment.

Data had shown that a very low percentage of 37% of participants fully complied with speed limits, 88%

fully complied with traffic signals and only 20% always used seatbelts, a high percentage of 83% used mobile phone during driving, 8% drove while intoxicated and 97% drove when feeling fatigued. Surprisingly, some of participants lacked the knowledge of important traffic signs (Give Way and Two Directional Roads), which could be one of the major reasons for high rate of accidents in the region. Data from the awareness section of the survey showed that a high percentage of participants were knowledgeable of wrong driving practices, high speed was ranked as the first cause, then defect in vehicle, old roads and lack of experience. Furthermore, 57% of participants were involved in at least one vehicular accidents as drivers and were 18-25 years old when they were involved in an accident as drivers.

In conclusion, this study showed that the participants had the knowledge of wrong driving practices and lacked it in traffic regulations and signs. Based on this study's findings, it is recommended to increase the traffic safety awareness and intensify promoting compliance with traffic regulations and the tragic consequences of not doing so. In addition and since most participants were knowledgeable of wrong driving behaviors, authorities should increase the efforts to enforce regulations especially speeding and the usage of mobile phones while driving.

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