Driver Perception toward Road Traffic Accidents in Babylon City

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Abstract

Babylon has one of the highest road traffic accident (RTA) related fatality rates in Iraq. Yet, still little is known about the factors contributing to the high number of RTAs. For the first objective, identification of the main human factors that contribute to the occurrence of RTAs in Babylon, the study on human factors conducted by Gründl (2005) was replicated. The results revealed three human factors that significantly increase the risk of causing an RTA in Babylon. These factors are according to the strength of their impact: namely the human (inappropriate speed, fatigue and having a conversation with the passenger), the vehicle and the road environment. Objective this study aimed to identify the main human factors that contribute to the occurrence of RTAs in Babylon and to investigate the human road interaction as a contributing factor to the occurrence of RTAs in Babylon.

Keywords: RTAs, Human, Inappropriate speed, Fatigue, Having a conversation with the passenger, the vehicle and the road environment.

Introduction

Research on RTAs has a long tradition in Western countries (USA, Europe, and Australia). Basically, there has been research ever since there have been motorized vehicles. In low and middle income countries, road safety research is still in its infancy and researchers argue whether or not it is possible to apply road safety measures from Western high income countries in low and middle income countries [1].

Traffic accidents are extremely confusing events. How they occur, who or what caused them, and why they occurred are facts that police must determine. Every peace officer must know the fundamentals of traffic accident investigation and know how to prepare traffic accident reports. Traffic accidents, resulting in personal injury, fatality, and property damage in the amount of $1,000 or greater require an on scene investigation [2].

Traffic control is essential at the accident scene to prevent further accidents or injury. Rerouting vehicles around the accident scene is the most common procedure used. Spectators or unnecessary personnel should be cleared from the accident area [3-4].

Additional support personnel should be requested, if necessary, such as power line repair; road repair; water pipe repair; portable lighting, signal personnel (for telephone repair or photography), medical personnel (for ambulance, special medical equipment), and civilian police personnel within their jurisdiction [5].

Evidence from research conducted in other countries suggests that the human factor and the interaction between the human factor and the road environment are among the most frequent contributors to the occurrence of RTAs.

Methodology

A total of 298 accidents were conducted from the hospitals with road users who were involved in RTAs. The data collection took place between April 2016 and May 2017. Road and environmental information were collected by visiting the RTA locations. In addition, road data for each RTA location was requested and provided.

For the first objective, identification of the main human factors that contribute to the occurrence of RTAs in Babylon
The second objective, investigation of the human road interaction as a contributing factor to the occurrence of RTAs, was split into four specific objectives. These objectives addressed the extent to which roads in Oman can be considered self-explaining, the subjective perceived safety of roads, road design elements that affect driving speed and the prevalence of selected human factors according to road design elements.

For the first specific objective, the extent to which the Omani road design corresponds to the recommendation on self-explaining roads suggested by Matena [6] was investigated.

Results
It was found that none of three recommendations are met and concluded that this discrepancy may add to the occurrence of the human factor inappropriate speed. For the second specific objective, a logistic regression analysis was calculated with the dependent variable subjectively perceived safety of a road and various design elements as independent variables. The results indicate that the number of carriageways is the only design element that predicts subjectively perceived safety of a road (Fig.1).

The data showed that speed as a dependent variable and various road design elements as independent variables. It was found that speed is significantly higher in rural environments. The effects of lane and shoulder width on speed differ between rural and urban environments. Interestingly, driving speed did not correlate with the number of carriageways (Fig.2).

Which of the three contributing factors should be considered for research and which of the three areas from the tripe E approach should be covered? As the main contributing factor, it would be recommended to focus on human factors. Only few studies on human factors have been conducted in low and middle income countries in general and in Oman in particular [7]. When focusing on human factors it would be of high value to take into account a second factor. Such an approach would not only yield research results of two contributing factors, but also allow the investigation of the extent to which these factors interact.

There are large parts of the populations are able to afford, the benefits of investigating the human – vehicle interaction which would result in recommendations on how to improve vehicle safety, would only be limited.
Roads on the other hand are built and financed by the government. The road design in current and future layouts therefore appears to be the more valuable option. The importance of investigating road design as a contributing factor has also been emphasized by the road inventory survey carried out in 2005. The result indicated that the road traffic accidents is between 50 to 67 case in months, these accident are divided in to 60% A death case and 40% injure and or dangerous fractures.

The mean death case are approximately 48 in the months, 12 injure case and 40 fractures case as a result of traffic accidents in Babylon (Fig. 3).

Discussion

According to the results of these research, the occurrence of RTAs can be ascribed to various contributing factors, namely the human (inappropriate speed, fatigue, and having a conversation with the passenger), the vehicle and the road environment. As shown in Figure 1, the factors (human, vehicle and road environment) as well as their interactions vary in the strengths of their contribution. The strongest factor is the human (75%) followed by the environment and the vehicle with 15% and 10%, respectively.

Since the speed contributes to 90% of all RTAs, This measure would be in line with an approach known as the person approach or the accident prone individual approach [9]. Both approaches, however, are controversial and won’t lead to an improvement in road safety. First of all, there is statistical evidence that excluding accident prone drivers from road traffic wouldn't yield the desired outcome [8-9].

The police officer, however, points to a stop sign telling the driver that he or she should have seen the stop sign. Followers of the system approach, on the other hand, would investigate the pre-crash phase of the collision. The first question they would most likely ask is why didn’t the driver perceive the stop sign? It is well documented in human factor research that a driver’s attention is often captured by those objects that pose the greatest threat at a given moment [10].

With regard to the three factors the system road traffic consists of, each factor can be considered a potential safeguard. Ideally, each layer would be intact. If one of these layers is not intact (has a hole), a RTA is likely to occur.

With regard to the previous mentioned example, the safety layers environment and human were not intact. The extent to which each layer was not intact requires a close examination of the situation that lead to the RTA.

Recommendations

Based on a discussion of the findings, the suggested recommendations focus on the following aspects:

Applying basic design standards on road design reducing speed and restricting affordances at T-intersections.
References


