

## Scopus Based Analysis of Related Literature to Traffic Safety and Awareness in the Arab Countries

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### Abstract-

Traffic safety on roads have become one of the top priority worldwide. Many studies were conducted to promote traffic safety and awareness. This paper reviews and analyzes the traffic safety and awareness research status in the Arab countries using Scopus database. The results may be valuable to researchers, governmental agencies or decision makers to evaluate the contributions of the Arab countries in the field of traffic safety and awareness and how it compares to other countries. Scopus database was utilized to outline and identify the active Arab countries and institutions in the field of traffic safety and awareness. In terms of the largest contribution, Saudi Arabia has the highest research output with more than 21% of the published articles on traffic safety and 27% of published articles on traffic awareness. Even though the rate of fatalities caused by traffic accidents is very high in the Arab countries, gathered data showed the Arab countries falls behind when it comes to traffic safety and awareness research with only 1.3% and 3.1% of published articles worldwide on traffic safety and awareness, respectively.

**Keywords:** Traffic Safety, Traffic Awareness, Arab Countries, Scopus, Database.

### Introduction

Deaths caused by road accidents had exceeded 1.2 million per year, making traffic accident injuries the main cause of fatalities among youth worldwide [1]. Traffic accidents have massive economical and social impacts on every society [2-3]. Furthermore, traffic accidents resulted in a loss of 1.3% Gross Domestic Product (GDP) in developing countries. Therefore, calls for more preventive actions are on the rise globally. In 2010, a resolution by the United Nations General Assembly was issued and paved the road for establishing the Decade of Action for Road Safety (2011–2020). The resolution call to

take the necessary actions to ensure road safety, especially in road infrastructures, behavior of road users and awareness [1]. Traffic safety and injuries caused by traffic accidents have become one of the major concerns worldwide, especially in the Arab countries. It was reported that 19.9 Road traffic fatality rate per 100,000 population occur in the Middle East, which is higher when compared to world and Europe (17.4 and 9.3 Road traffic fatality rate per 100,000 population, respectively) [1]. Many Arab countries have initiated research funding programs on traffic safety, as an example, Oman Research Council (TRC) has set Road Safety as one of the main strategic research programs with different funding schemes [4].

Various studies addressed traffic safety and awareness in the Arab countries [2,3,5-10]. These studies pointed out that the majority of traffic accidents might be traced to road user characteristics. Nafee and Al-Saif [6] observed that drivers were directly responsible for about 85% of the total accidents in Saudi Arabia. Furthermore, Ansari et al. [8] emphasized that reasons of traffic accidents in Saudi Arabia were due to a large increase in vehicles, expansion of road networks, driver errors, excess speed, violation of traffic signals, and road and vehicle safety conditions. Recent studies conducted in the Arab countries concluded that public awareness and education campaigns, and strict law enforcement strategies are the key factors in the reduction of traffic accidents [2,3,11-15].

### Scope of the Study

The main purpose of this study was to evaluate research activities on traffic safety and awareness conducted in the Arab countries. In addition, to investigate peer-reviewed publications and their impact by examining number of citations and authorship patterns by utilizing Scopus database. The findings of this study will lead to a better understanding of the present status of research in the field of traffic safety and awareness in the Arab countries. In hope that the results

will benefit transportation policy makers, governmental agencies, and researchers to improve traffic safety and awareness in the Arab countries in order to find ways to reduce traffic accidents and injuries.

### Methodology

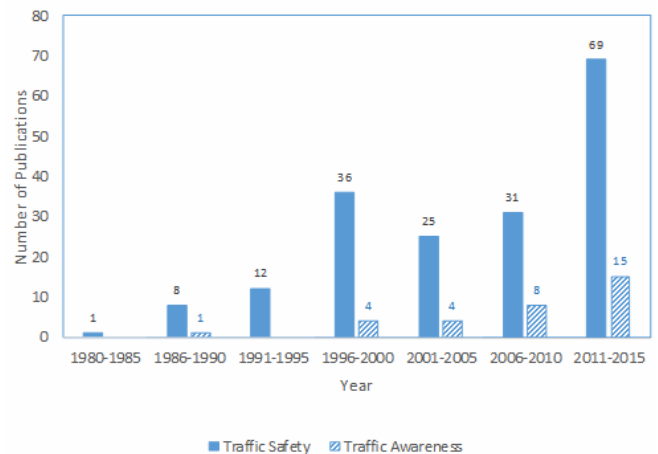
In this study, Scopus database was employed to retrieve and evaluate the status of traffic safety and awareness research in the Arab countries and compare it to research output of the world. An enormous source of information can be obtained from Scopus database that can give an insight to the research community. One of the advantages of using Scopus database is that the history, countries, affiliations, authors, published articles, abstracts, and number of citations can be exported and analyzed [16]. It includes a huge database of peer-reviewed literature: scientific journals, book chapters, and conference proceedings. Scopus data were used in number of publications in literature [17-20].

Scopus provides a useful and powerful search engine that allows different search parameters such as “Document search”, “Author search”, “Affiliation search”, and “Advanced search” for many fields such as “Article Title, Abstract, Keywords”, “Source Title”, “Year of Publication”, etc. Keyword used in this study is simply “Traffic Safety” and “Traffic safety awareness” in document search [18]. Then results were refined to include only Arab countries with publications in those fields of research. The retrieved data was used to obtain the following facts: (a) Publication activities of the Arab countries and the World, (b) Top cited traffic safety and awareness related articles in the Arab countries, (c) traffic safety and awareness related publication distribution in the Arab countries, (d) and Top journal titles with traffic safety and awareness publications with the Arab institutions. Data for the year of 2016 was excluded since the analysis were conducted during the first two weeks of January of 2016.

### Discussion of Results

As per Scopus database, the first published document on traffic safety by an Arab country was in 1980 and 1988 for traffic safety awareness, as shown in Fig. 1. However, the first publications on traffic safety and awareness worldwide was in 1926 and 1966, respectively. Data shows (Table 1) that the Arab countries fall greatly behind when it comes to traffic safety research with only 198 documents on traffic safety and 37 documents on traffic safety awareness, making their contribution approximately 1.3% of traffic safety related publications and 3.1% of traffic safety awareness related documents of the total number of publications.

Table 2 illustrates the top 10 most cited documents in the Arab countries that addresses traffic safety and awareness. It presents article’s title, authors, contributing affiliation, journal’s title, and number of citations. It can be clearly observed that number of citations is low when compared to other topics. Also, it is interesting that the majority of articles were published in journals that cover the medical issues.



**Figure 1.** History Distribution of Traffic Safety and Awareness Related Publications for the Arab Countries

**Table 1.** Publication Activities of the Arab Countries and the World

Country/Region	Number of Publications on Traffic Safety	Number of Publications on Traffic Awareness
Saudi Arabia	42	10
Egypt	34	5
Jordan	30	4
Kuwait	26	4
Qatar	19	4
Oman	8	3
United Arab Emirates	8	3
Lebanon	7	2
Algeria	6	1
Iraq	5	1
Bahrain	3	0
Morocco	3	0
Tunisia	3	0
Libya	2	0
Sudan	1	0
Syria	1	0
Arab Countries	198	37
United States	4670	373
China	1432	102
United Kingdom	869	83
Canada	726	60
World	15,665	1,197

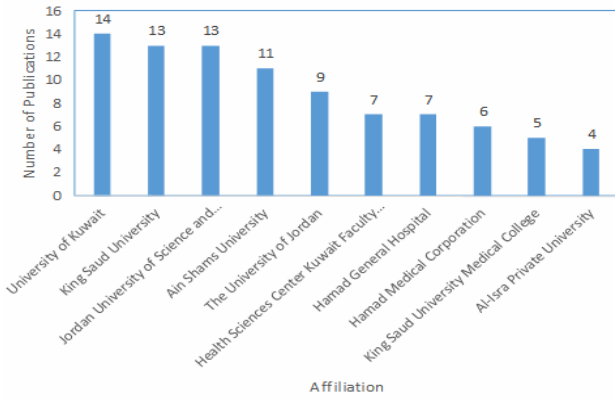
Fig. 2-a presents the top 10 productive Arab institutions in traffic safety related publication contributions, while Fig. 2-b presents top 10 productive Arab institutions in traffic awareness related publications. In traffic safety, University of Kuwait is the top institution in Arab countries with 14 publications, followed by King Saud University and University of Jordan with 13, and then Ain Shams University with 11 documents. As for traffic safety awareness, University of Jordan is the top institution in Arab countries with

publications, followed by King Saud University, King Saud University Medical College, University of Kuwait, Hamad General Hospital, and American University of Ras Al Khaimah with 2 documents.

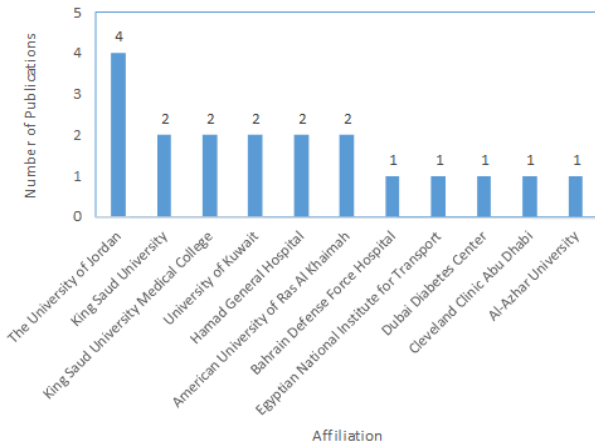
**Table 2.** Top 10 Cited Articles Based on Scopus Database produced by the Arab Countries

<b>Traffic Safety</b>			
Authors	Publication	Journal Title (Year)	Cited
Gibreel, G.M. et al.	State of the art of highway geometric design consistency	Journal of Transportation Engineering (1999)	71
Gibreel, G.M. et al.	Prediction of operating speed on three-dimensional highway alignments	Journal of Transportation Engineering (2001)	63
Ansari, S. et al.	Causes and effects of road traffic accidents in Saudi Arabia	Public Health (2000)	56
Shanks, N.J. et al.	Road traffic accidents in Saudi Arabia	Public Health (1994)	46
Bener, A. et al.	Strategy to improve road safety in developing countries	Saudi Medical Journal (2003)	37
Nofal, F.H., Saeed, A.A.W.	Seasonal variation and weather effects on road traffic accidents in Riyadh City	Public Health (1997)	19
Bener, A. et al.	Incidence and severity of head and neck injuries in victims of road traffic crashes: In an economically developed country	International Emergency Nursing (2009)	17
Salman, N. K., Al-Maita, K. J.	Safety evaluation at three-leg, unsignalized intersections by traffic conflict technique	Transportation Research Record (1995)	16
Abou-Raya, S., Elmeguid, L.A.	Road traffic accidents and the elderly	Geriatrics and Gerontology International (2009)	15
Abdelghany, A. et al.	Microsimulation assignment model for multidirectional pedestrian movement in congested facilities	Transportation Research Record (2005)	15
<b>Traffic Awareness</b>			
Authors	Publication	Journal Title (Year)	Cited
De Mello,	Sleep disorders as a	International	12

M.T. et al.	cause of motor vehicle collisions	Journal of Preventive Medicine (2013)	
McIlvenny, S. et al.	Rear seat belt use as an indicator of safe road behaviour in a rapidly developing country	Journal of The Royal Society for the Promotion of Health (2004)	8
Al-Rukaibi, F. et al.	Traffic safety attitudes and driving behavior of university students: Case study in Kuwait	Transportation Research Record (2006)	6
Hassan, N.A. et al.	Pattern of craniofacial injuries in patients admitted to Tanta University Hospital-Egypt	Journal of Forensic and Legal Medicine (2010)	5
Dittrich, K.C.	Rupture of the gravid uterus secondary to motor vehicle trauma	Journal of Emergency Medicine (1996)	5
Ahmed, A.A.	Hypoglycemia and safe driving	Annals of Saudi Medicine (2010)	3
Alani, M. et al.	All-Terrain Vehicle (ATV) crashes in an unregulated environment: A prospective study of 56 cases	Journal of Emergency Medicine, Trauma and Acute Care (2012)	2
Al Shimemeri, A., Arabi, Y.	A review of large animal vehicle accidents with special focus on Arabian camels	Journal of Emergency Medicine, Trauma and Acute Care (2012)	1
Musharrafi, U. et al.	Profile of injured patients presenting to a tertiary hospital in a developing country	Journal Medical Libanais (2011)	1
Al-Saleh, O.I., Koushki, P.A.	Assessment of urban traffic infractions in Kuwait	Transportation Research Record (2007)	1



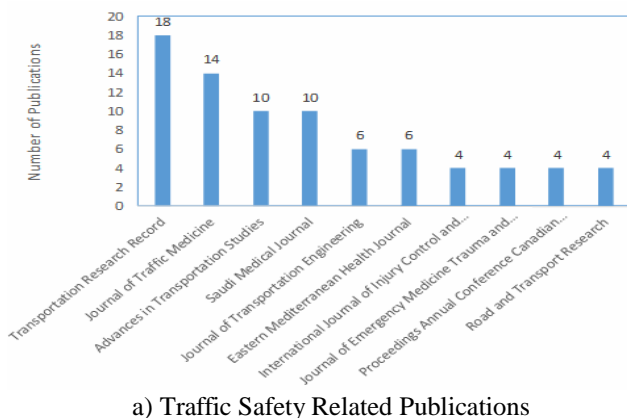
a) Traffic Safety Related Publications



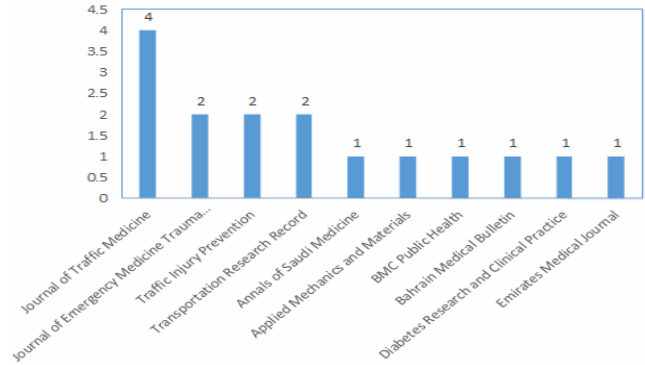
b) Traffic Safety Awareness Related Publications

**Figure 2.** Top 10 Productive Arab Institutions

The top ten journal titles with most published articles are presented in Fig. 3. The top five journals with traffic safety related articles are Transportation Research Record, Journal of Traffic Medicine, Advances in Transportation Studies, Saudi Medical Journal, and Journal of Transportation Engineering with a total of publications of 18, 14, 10, 10, and 6, respectively. As for traffic safety awareness related journals; Journal of Traffic Medicine with 4 publications and Journal of Emergency Medicine Trauma and Acute Care, Traffic Injury Prevention, Transportation Research Record, Annals of Saudi Medicine with a total of 2 publications each.



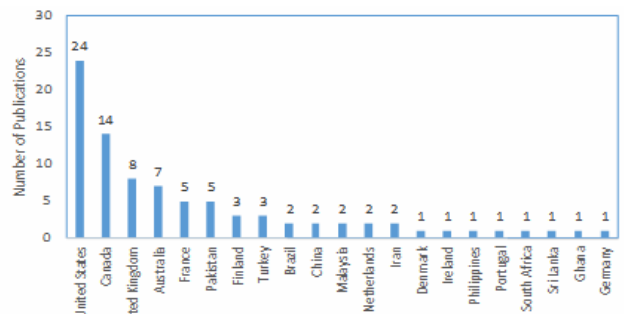
a) Traffic Safety Related Publications



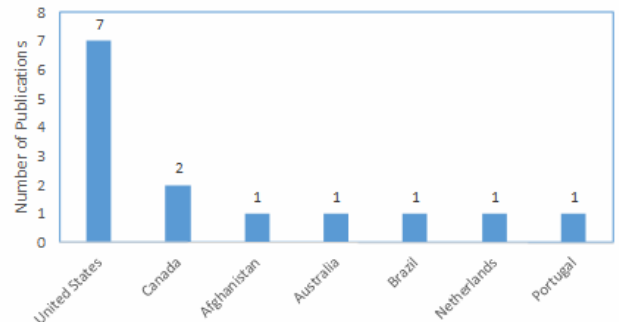
b) Traffic Safety Awareness Related Publications

**Figure 3.** Top 10 Journal Titles

The top collaborative countries with the Arab countries are shown in Fig. 4. USA has the highest score with a total of 24 and 7, followed by Canada with a total of 14 and 2 publications related to traffic safety and awareness, respectively. The reason is that these countries are active in traffic safety research and the Arab countries benefit from their experiences and working cooperatively with them on various projects. The top foreign collaborative institutions with the Arab countries are Lakehead University, Organisation Mondiale de la Sante, Weill Cornell Medical College, The University of British Columbia, Queensland University of Technology with a total of 4, 4, 3, 3, and 3 publications, respectively.



a) Traffic Safety Related Publications



b) Traffic Safety Awareness Related Publications

**Figure 4.** Top Collaborative Other Countries with Arab Countries

### Summary and Conclusions

Countries worldwide recognize that traffic safety has become one of the major concerns and there is a need to exert more efforts to develop preventive measure to reduce traffic accidents and promote traffic safety. During the past twenty years, the Arab countries began supporting scientific research on traffic safety and setting it as one of their strategic goals. Various studies were conducted to address aspects of traffic safety and road users' awareness. The results of these studies could be utilized by governmental agencies or legislators to adopt policies to increase traffic safety on roads.

Scopus Database was used to review research studies carried out throughout the Arab countries. Analysis showed that Saudi Arabia has the highest publication records in traffic safety and traffic awareness, with total numbers of scientific publications of 42 and 10, respectively. When compared to the rest of the world, data showed that the Arab countries falls behind, with a contribution of 1.3% of traffic safety related publications and 3.1% of traffic safety awareness related documents of the total number of publications worldwide. Furthermore, the majority of publications were found to address the medical aspects of traffic injuries. Thus, more studies should be conducted on developing preventive actions to increase and promote traffic safety.

### Acknowledgment

Authors would like to extend their gratitude to the American University of Ras Al Khaimah, UAE for the financial support provided.

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