Review Article
http://mjiri.iums.ac.ir
Medical Journal of the Islamic Republic of Iran (MJIRI)

Med J Islam Repub Iran. 2022 (14 Mar);36.21. https://doi.org/10.47176/mjiri.36.21

A Systematic Literature Review of Driver's Sociocultural Factors Predisposing to Road Traffic Crashes

Zahra Haghdoust[1], Gholamreza Masoumi[1]*, Davoud Khorasani Zavareh[2], Abbas Ebadi[3,4], Shandiz Moslehi[1]

Received: 20 Jun 2021 Published: 14 Mar 2022

Abstract

Background: Various factors are involved in the occurrence and prediction of road traffic crashes (RTCs). The most important of these are human factors that can be influenced by the sociocultural characteristics of the drivers. This research aimed at identifying the socio-cultural factors (SCFs) in car drivers affecting the RTCs.

Methods: In the present study, Web of Science, PubMed, Scopus, ProQuest, Google Scholar, Cochran Library, Magiran, Irandoc, Noor magas, Islamic World Science Citation Center, and Scientific Information Database were searched from 1990 to August 20th, 2021; key journals, the reference lists of the included studies, gray literature, websites of relevant organizations were manually reviewed. Studies that reviewed the effect of SCFs related to car drivers in the incidence or prediction of road traffic crashes were included and analyzed using thematic content analysis. Results were expressed based on the PRISMA guideline. The quality of the included studies was assessed using related checklists.

Results: Eighty-four eligible studies were determined from a systematic search and entered into the analysis process. Studies are presented that SCFs affecting the occurrence of RTCs fall into four categories, including (1) sociodemographic characteristics, (2) personality traits, (3) driver behavior (driving style), (4) driver performance (driving skills).

Conclusion: In most studies, SCFs have been examined in frames of social-demographic characteristics and risky driving behaviors. While, the impact of personality traits and driver performance, which are very important factors on RTCs, has not been addressed. Therefore, investigating the impact of these factors in occurring RTCs is crucial.

Keywords: Road Traffic Crashes, Sociocultural Factors, Car Drivers

Conflicts of Interest: None declared
Funding: This study has been financially and officially supported by Iran University of Medical Sciences.

***This work has been published under CC BY-NC-SA 1.0 license.**
Copyright© Iran University of Medical Sciences

Cite this article as: Haghdoust Z, Masoumi Gh, Khorasani Zavareh D, Ebadi A, Moslehi Sh. A Systematic Literature Review of Driver's Sociocultural Factors Predisposing to Road Traffic Crashes. *Med J Islam Repub Iran.* 2022 (14 Mar);36:21. https://doi.org/10.47176/mjiri.36.21

Introduction

Road traffic crashes (RTCs) are persistent public health challenges that bring deaths and severe injuries to human societies annually. It has been estimated that road crashes account for approximately 1.35 million deaths each year, with more than 50 million injuries (1). Based on the prediction of the World Health Organization, mortality and

Corresponding author: Dr Gholamreza Masoumi, masoumi.gh@iums.ac.ir

1. Department of Health in Emergencies and Disasters, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran
2. Workplace Health Promotion Research Center, Department of Health in Emergencies and Disasters, School of Public Health and Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. Behavioral Sciences Research Center, Lifestyle institute, Baqiyatallah University of Medical Sciences, Tehran, Iran
4. Nursing Faculty, Baqiyatallah University of Medical Sciences, Tehran, Iran

↑What is "already known" in this topic:
Sociocultural factors are one of the most important factors in the occurrence of road traffic crashes. Despite the existence of different approaches and tools for identifying and evaluating sociocultural factors around the world, there is still no comprehensive and systematic review to identify the various dimensions of these influential factors.

→What this article adds:
This study analyzes the present documents to help policymakers and managers understand various aspects of sociocultural factors affecting the occurrence of road traffic crashes for promoting road safety. It is necessary to make more efforts in the form of research and operational measures to identify and control sociocultural factors.

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]
[DOI: 10.47176/mjiri.36.21]

morbidity of RTCs will grow to 60% in low-middle-income countries (LMICs) if a serious effort is not made to reduce them (2).

RTCs are caused by disorders in the systemic interaction between human, vehicle, road and environmental factors (3). In LMICs, the contribution of human factors is variable between 70-80% and it seems that to be the significant reason for RTCs (1). One of the effective human factors in the occurrence of RTCs is sociocultural factors (SCFs), because driving is a culture-related activity (4) and social behavior (5). SCFs have the main role in researches related to public health risks such as road safety (6). Adequate knowledge of these factors will enable countries to reduce the rate of RTCs. According to studies, SCFs are identified by a complex network of social characteristics (7); personality traits (5, 8); driver behaviors (9); and driver performances (10). The SCFs are important health determinants and vary from country to country (11-14).

The experiences of nations, especially LMICs, have shown that SCFs have the highest share in RTCs (1). These factors haven't been adequately addressed due to problems in the assessment, such as lack of visibility and clear boundaries (6). In addition, some countries don't have enough data about SCFs affecting in RTCs, due to the lack of valid registry systems and reliable data (3). Therefore, not only the accurate identification of RTCs isn't possible, but also evidence-based policy development will be affected.

Although research to identify SCFs was started many years ago, RTCs are still cited as one of the leading causes of injuries and deaths around the world. It seems that further studies are needed to identify the relationship between social characteristics, personality traits, driver behaviors and performances and RTCs to improve road safety. Identifying these risk factors helps that policymakers and managers find effective strategies to promote road safety and help reduce RTCs. Lack of information on these risk factors makes it difficult for countries to determine the nature of the problem and implement effective interventions to improve them (1). This systematic review was done to investigate the SCFs affecting the occurrence of RTCs.

Methods

Protocol and registration

Present systematic review protocol is registered in PROSPERO, ID 163439, dated 28 May 2020.

Eligibility criteria

This review included all studies conducted from 1990 to August 20th, 2021, in which SCFs have been an important role in the occurrence of RTCs.

We entered different types of quantitative and qualitative studies that reviewed the effect of car drivers' SCFs in the incidence or prediction of RTCs; drivers who drove with a valid driver's license; studies that didn't specify car type and status of the driving license were included in the study to prevent data missing, assuming that they met the entry criteria. we excluded unpublished papers and review studies; lack of abstract or full text, if after sending two emails to the corresponding author requesting the full text of the article, no response was received; articles that investigate two-wheel vehicles such as motorcycles, heavy vehicles such as trucks, buses, and minibusses, and semi-heavy vehicles such as pickup trucks and vans; those that pointed to the role of road, vehicle and environmental factors in causing the crashes; also articles that examined just the impact of SCF on the occurrence of high-risk behaviors and didn't explicitly address the impact of them on the incidence of RTCs.

Information sources

Search syntax was done using the combination of two main keywords, sociocultural factors, and road traffic crashes. Then, suitable synonyms were determined by Medical Subject Heading (MeSH), keywords in related articles, and experts.

Search strategy consisted of two stages: electronic and manual search. The electronic databases search was conducted in Persian (the formal language of our country) on national databases and in English on international databases; through PubMed, Web of Science, Scopus, ProQuest, Cochran Library for English publications; and Google Scholar, Magiran, Irandoc, Scientific Information Database (SID), Islamic World Science Citation Center (ISC), Noormagas for Persian publications. key journals based on Scopus search, references list of entered articles, gray literature, and website of related organizations were hand-searched to find more studies that are appropriate and to ensure comprehensiveness of the search. At first, the PubMed database was searched by the first author to develop a search pattern; then, the second author checked the pattern for completeness. PubMed search strategy is shown in Appendix 1. This search strategy was used as a pattern to do the searches in the other databases.

Study selection

All studies that appeared to be related to the topic were transferred to (EndNote X7™, Thomson Reuters) software. At first, duplicates were removed. Then, two authors (first and second authors) independently conducted the study selection process. They deleted articles with irrelevant titles and abstracts, respectively. Then, they reviewed the full text of related studies according to the inclusion criteria; and a list of included articles was prepared by each of them. Disagreements were fixed by consultation with the third author. Results were explained according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guideline (Fig. 1).

Data collection

To avoid bias, two authors (first and second author) performed data extraction and the process of analyzing data independently. If any disagreement was observed, a third researcher was asked for advice. The process of data formation and analysis was shared with the research team. In the lake of the full text, the first author contracted to the corresponding author via email. If no response was re-

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

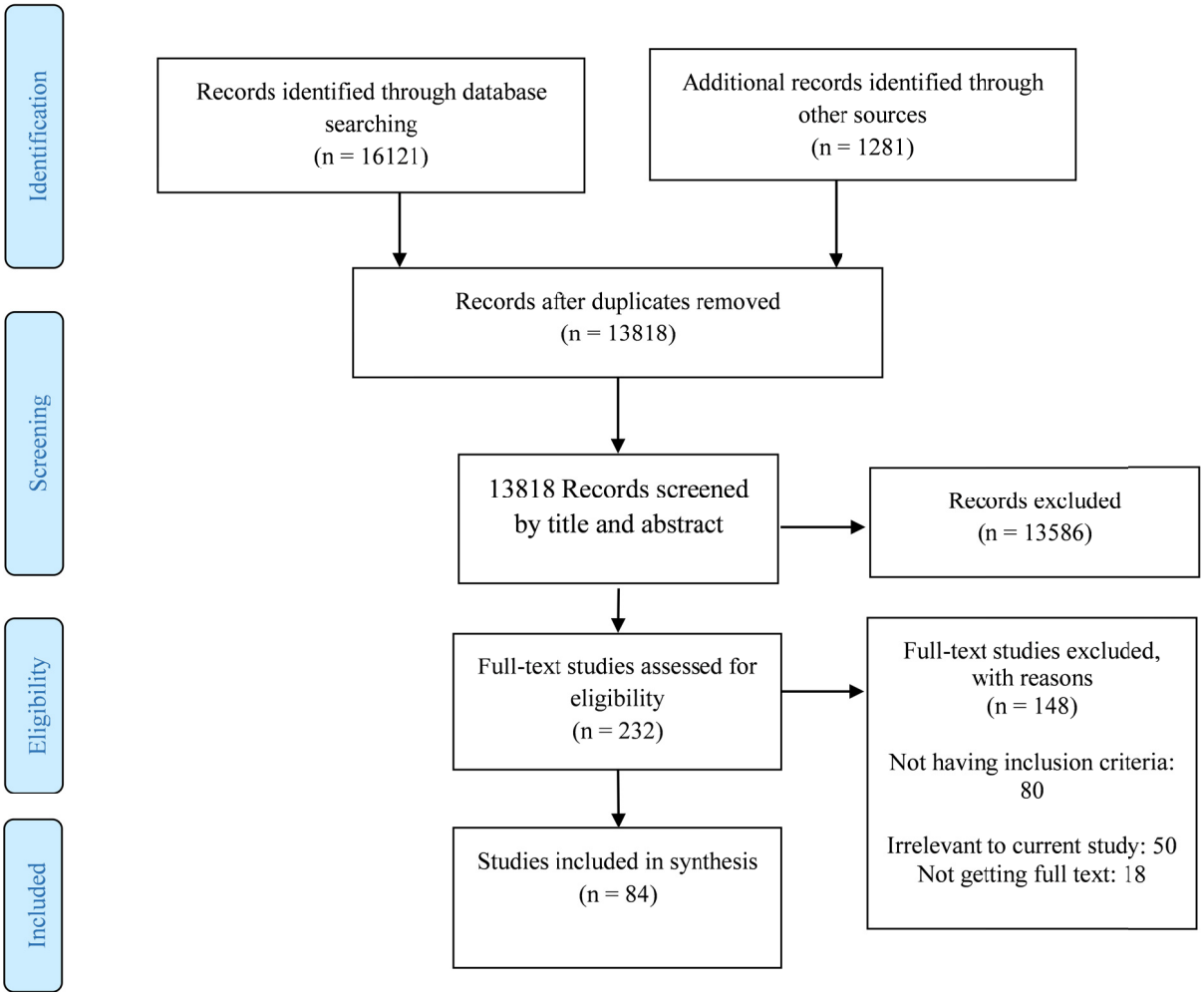

Fig. 1. Study search and selection procedures

ceived to the initial email, a second email was sent within a week.

Data extraction

The authors reviewed the final studies line by line and extracted data by a data extraction form. The extracted data contained study characteristics (i.e., authors, publication year, setting, article type, and study design) and results (Table 1).

Data synthesis was performed by the research team using the thematic content analysis method. In this way, after identifying the initial code, themes were formed and defined, and the manuscript was written.

Risk of bias in individual studies

Two reviewers (first and second authors) performed the risk of bias assessment independently. Lack of consensus among the authors was settled through consultation with the third author and reaching a consensus. Due to the high heterogeneity of studies, the CASP checklist was used to evaluate the quality of cohort, case-control, qualitative and randomized controlled trials studies (15), and the checklist introduced by the Center for Evidence-Based Management was used for the cross-sectional study (16).

The CASP checklist is structured around three main sections asking: Are the results of the study valid? (6 questions), What are the results? (3 questions), and Will the results help locally? (1 question). The answer to the questions is Yes, No and Can't Tell. To calculate the score, we assigned a score of 1 to Yes and a score of 0 to others. Therefore, the maximum score for each study was 10. Quality assessment team contractually classified studies into three groups based on quantitative scores: high quality (scores over 7), moderate quality (between 5-7) and low quality (below 5) (Appendix 2a). The quality assessment tool for the cross-sectional study consists of 12 questions. The method of answering and scoring is like a CASP checklist. The maximum score was 12. The quality assessment team on a contractual basis, declared studies with a score over 8, high; between 5-8, moderate and below 5, low qualities (Appendix 2b).

Results

Study Selection Process

In the initial search of various sources, 17402 studies were found, of which 3584 studies were deleted due to duplication. Reviewing the titles and abstracts, 232 studies were included. By assessing the full-texts, objectives, and

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]
[DOI: 10.47176/mjiri.36.21]

findings of the selected studies, only 84 studies (66 related studies in the world and 18 related studies in Iran) remained for analysis (Fig. 1).

Characteristics of included studies and quality assessment

A summary of the characteristics of 84 studies is given in Table 1. Among the included studies, there were 78 journal articles, 3 conference papers, 1 book section, 1 thesis and 1 Report. More than half of the studies (60.71%) were done between 2011- 2021, and conducted in Asian countries, followed by European and American countries. Quality evaluation based on the relevant checklists showed that there had no study with a low risk of bias; and the risk of bias was high in about 80% of the studies

The results of studies survey

Based on the results, SCFs affecting the occurrence of RTCs are identified by a complex network of different factors sociodemographic characteristics, personality traits, driver behaviors and performance (Table 2).

Table 1. Summary of characteristics of studies on Driver's Sociocultural Factors Predisposing to Road Traffic Crashes

Author(s)	Year	Setting	Type	Study Design	Effective and predictive factors of road traffic crashes	Study quality
Mengqiu Ye. et al (75)	2017	USA	Journal article	Logistic regression analysis	Secondary tasks	Moderate risk of bias
Chliaoutakis J El. et al (17)	2002	Greece	Journal article	Interviews/Principal components analysis/Multiple regression analysis	Joyriding, irritability, driving experience, age	High risk of bias
Suliman, M R. et al (13)	2003	Jordan	Conference paper	Survey	Aggressive driving.	Moderate risk of bias
Nordfjærn T. et al (54)	2015	Iran and 22 different countries	Journal article	Factor structure/Logistic regression analysis	Driving hours per day, emotional violations, driver errors, ordinary rule violations	High risk of bias
Haghi, A. et al (14)	2014	Iran	Journal article	Cross-sectional study	Aggressive violations, lapse, errors	High risk of bias
Peña-Suárez E. et al (76)	2016	UK	Journal article	Psychometric study	Attentional errors	High risk of bias
Laflamme L. et al (18)	2007	Sweden	Journal article	cohort study	Age, education, speed limit	High risk of bias
Măirean C. et al (24)	2017	Romania	Journal article	Psychometric study	Religiosity, other drivers, sex.	High risk of bias
Moran M . et al(33)	2010	Israel	Journal article	Qualitative (focus group discussion)	Discrimination, defiance, low socio-economic statues, ethnicity	Moderate risk of bias
Newnam Sh. et al (77)	2002	Queensland	Paper Conference	Survey	Vehicle ownership	High risk of bias
Gauld, C. S. et al (52)	2014	Australia	Journal article	Focus groups (content analysis)	Concealed Texting	Moderate risk of bias
McLaughlin Sh B. et al (78)	2009	Washington,	Report	Investigation	Distraction, Short following distances, fatigue/impairment, vehicle encroaching on the subject vehicle, low-speed maneuvering errors, late route selection, driving only with one hand	Moderate risk of bias
Sahebi S. et al (12)	2019	Iran	Journal article	Principal component analysis	*DBQ non-speeding violations, DBQ speeding violations, DBQ errors	High risk of bias
Warner, H. W. et al (19)	2011	Finland Sweden Greece Turkey	Journal article	Factor analysis/Principal component analysis	Age, gender, mileage driven, become angered by a certain type of driver, disregard the speed limit, overtake a slow driver, pull out of a junction so far that the driver with the right of way has to stop and let you out and get into the wrong lane approaching a roundabout or a junction	High risk of bias
Lajunen T. et al (31)	1998	Australia Finland	Journal article	Factor analyses	Driving experience, nationality, Safety skills	Moderate risk of bias
Özkan T. et al (20)	2006	Finland, Great Britain, Greece, Iran, Netherlands, Turkey	Journal article	Investigatigation	Aggressive violations, ordinary violations, errors, age, annual mileage	High risk of bias

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

*Table 1.*Ctd

Author(s)	Year	Setting	Type	Study Design	Effective and predictive factors of road traffic crashes	Study quality
Qu W. et al (79)	2015	China	Journal article	Regression analysis	Reduced Morningness-Eveningness Questionnaire	High risk of bias
Dula CS. et al (80)	2003	USA	Journal article	Scale development	The Dula Dangerous Driving Index	Moderate risk of bias
Shen B. et al (45)	2018	China	Journal article	Survey	Aggressive driving behaviors	High risk of bias
Sullman M JM. et al (9)	2019	New Zealand	Journal article	Exploratory factor analysis/Confirmatory Factor Analysis	Errors, lapses, violations, aggressive violations	High risk of bias
Wickens Ch M. et al (21)	2016	Canada	Journal article	Cross-sectional survey	Age, sex, marital, education, incomes, weekly mileage, drinking and cannabis use, anxiety and mood disorder, place of residence, driver aggression	High risk of bias
Bener A. et al (57)	2008	Arab Gulf	Journal article	Cross-sectional studies	Errors, lapses, aggression-speeding factors	High risk of bias
Bazzaz MM. et al (53)	2015	Iran	Journal article	Cross-sectional studies	Smoking and alcohol drinking, owning a personal car, car price, stress, driving fines	Moderate risk of bias
McKay MP. P.et al (61)	2003	Pennsylvania	Journal article	Cross-sectional survey	Believes, moving violation	High risk of bias
Freeman J. et al (55)	2014	Queensland	Conference paper	Factor analytic	Annual kilometers driven, driver errors, self-reported offenses	High risk of bias
Parker, D.et al (81)	1995	UK	Journal article	Survey	Annual mileage, age, gender, DBQ violation	High risk of bias
Yang J.et al (44)	2013	China	Journal article	Multivariate regression analyses	Personality traits, altruism, normlessness	High risk of bias
Lefrancois, R. et al (26)	1997	Quebec	Journal article	Case-control survey	Kilometrage, city or suburban residents, marital, white-collar, age	High risk of bias
Bener A. et al (25)	2013	Qatar	Journal article	Cross-sectional survey	Gender, driving experience, violations, errors	High risk of bias
Zhan Y. et al (82)	2019	China	Journal article	Investigation	Human factors	High risk of bias
Bener A. et al (27)	2008	Qatar	Journal article	A comparison study	Age, marital, education, Place of living, driving experience, lapses, errors, aggression-speeding	High risk of bias
Chliaoutakis J EL. et al (62)	1999	Greece	Journal article	Factor analysis/Logistic regression analysis	Sex, culture, alcohol, religiousness, driving that had nothing to do with professional or amusement reasons.	High risk of bias
Vaez M.et al (83)	2005	Sweden	Journal article	Logistic regression	Impaired driving	High risk of bias
Alver Y. et al (38)	2014	Turkey	Journal article	Survey	Sex, driving while intoxicated, phone usage, self-stated speeding, high frequency per week, violate red lights, seatbelt violation, driving fast to impress peers, employed students, find seatbelt fines deterrent, driving under the influence of alcohol despite the objections of friends/relatives	High risk of bias

Sociodemographic characteristics

Some of the demographic risk factors for RTCs have been reported to be age (17-23), sex (19, 21, 24, 25), marital status (21-22, 26), level of education (18, 21, 27-30), driving experience (17, 29, 31, 32) and economic status (33-35). Moreover, nationality was reported as a risk factor in the Lajunen study (31). In social characteristics, important risk factors are social deviance and social influence. Social deviations such as park on double yellow lines were examined as risk factors only in West studies in the United Kingdom (36, 37). Social influence, in the form of influence of peers and other drivers, was reported as an effective factor in Shepherd et al. (7), Alver et al. (38) and Măirean et al. (24) studies.

Personality traits

According to the analysis of studies, personality traits are another effective factor for RTCs. The main ag-

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

*Table 1.*Ctd

Author(s)	Year	Setting	Type	Study Design	Effective and predictive factors of road traffic crashes	Study quality
Qu W. et al (40)	2016	China	Journal article	Survey	Aggression, hazard monitoring, fatigue	High risk of bias
Habibi E. et al (84)	2014	Iran	Journal article	Cross-sectional study	risky driving behaviors	Moderate risk of bias
Özkan T. et al (60)	2006	Turkey	Journal article	Cross-sectional study	Age, mileage, perceptual-motor, Safety skills, sex	High risk of bias
af Wåhlberg A E. et al (85)	2011	USA	Journal article	Cross-sectional studies	DBQ scale	High risk of bias
Rowe R. et al (23)	2015	UK	Journal article	Bifactor modeling	Ordinary violations, general factor, age, reported mileage	High risk of bias
Ledesma R D. et al (86)	2015	Argentina	Journal article	Confirmatory Factor Analysis	Attention-related errors	High risk of bias
Al Reesi H. et al (22)	2018	Oman	Journal article	Cross-sectional studies	Sex, age, marital status, vehicle ownership, their history of unsupervised driving prior to, early years of driving, distances driven, driving hours, distracted driving	High risk of bias
West R. et al (36)	1993	UK	Journal article	Survey	Annual mileage, faster driving, deviant driving, age, thoroughness, social deviance	High risk of bias
Kalyoncuoglu S. F. et al (46)	2008	Turkey	Journal article	Survey	scale of the traffic safety attitudes, risky driving behavior	Moderate risk of bias
de Winter, JCF. et al (50)	2016	Netherland	Journal article	Survey	Violations, non-speeding violations	High risk of bias
Chai J. et al (39)	2016	China	Journal article	Trial	dangerous drivers, negative biases.	Moderate risk of bias
Lucidi F. et al (69)	2019	Italy	Journal article	Variance based structural equation modeling	Age, violations, lapses, errors	High risk of bias
Trimpop R. et al (87)	1997	Canada	Journal article	Multiple regression analyses	Length of driving experience, moving violations	Moderate risk of bias
Iversen H. et al (8)	2002	Norway	Journal article	Survey	Risky driving, variable sensation seeking, normlessness, driver anger	High risk of bias
Atombo Ch. et al (48)	2017	Ghana	Journal article	Factor analysis/Correlation analysis	Number of driving hours, risky driving behavior	High risk of bias
Mohamadi Hezaveh A. et al (32)	2018	Iran	Journal article	Exploratory Factor Analysis	Driving experience, violations causing inattention, speeding, pushing violations.	High risk of bias
Sarma K.M. et al (47)	2013	Ireland	Journal article	Regression analyses	Speeding and rule violation, reckless driving	High risk of bias
Özkan T (59)	2006	-Southern European/Middle Eastern - Northern/Western European	thesis	Factor analysis/statistical analysis	Intrinsic and DBQ factors, gender-role, sex, perceptual-motor skills, safety skills, driving styles.	High risk of bias
Özkan T. et al (88)	2005	Turkey	Journal article	Hierarchical regression analysis	Femininity score	High risk of bias

gressive traits that increase the risk of RTCs by decreasing driving safety and efficiency include anxiety and sadness (8, 39), trait aggression (21, 40, 41), neuroticism and psychoticism (42), trait driver stress susceptibility (28). In the non-aggressive traits, studies showed that people with hazard-monitoring (40) and thoroughness (36, 43) experience low RTCs, due to greater caution and accuracy. Conversely, traits such as search of various emotions and experiences (8, 44-46) with increasing risky driving patterns; and external locus of control (47) with blaming external factors in the occurrence of accidents prepared a good opportunity for RTCs. Also, in the normlessness trait (48), people get more involved in RTCs due to a lack of respect for the norms.

Driver behavior (driving style)

The results of our systemic review showed that risky driving behaviors are associated with RTCs in three subcategories of violations, errors, and lapses. Various studies have identified that violations in two groups of ordinary rule and aggressive/emotional violations are the most common behaviors affecting the occurrence of RTCs (20, 39, 49-51). The most common ordinary rule violations include speeding violations (30, 32, 38), phone usage (38, 52) and driving while intoxicated (21, 53). In aggressive/emotional violations, factors such as excessive use of

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

*Table 1.*Ctd

Author(s)	Year	Setting	Type	Study Design	Effective and predictive factors of road traffic crashes	Study quality
Üzümcüoğlu Y. et al (89)	2018	37 Countries	Journal article	Hierarchical regression analysis	Non-speeding violations	High risk of bias
Iversen H (71)	2004	Norway	Journal article	Cross-sectional studies	Violation of traffic rules and speeding, reckless driving/fun-riding, not using seat belts, drinking and driving and attentiveness towards children in traffic.	High risk of bias
Constantinou E. et al (63)	2011	Cyprus	Journal article	Factor analyses	Traffic offenses, sex, age, personality, total DBQ score, ordinary violations, mistakes	High risk of bias
Tabibi Z (58)	2012	Iran	Journal article	Cross-sectional studies	Accidents are predicted by all the four factors of DBQ, alongside self-report of driving skills, exposure rate.	High risk of bias
Fergusson D. et al (72)	2003	New Zealand	Journal article	Longitudinal study	Risky driving behavior	High risk of bias
Dobson A. et al (28)	1999	Australia	Journal article	Longitudinal Study	Age, lapses, Country of birth, area of residence, alcohol consumption, marital status, occupation, hours worked, years of driving, life satisfaction, education	High risk of bias
Bener A. et al (90)	2008	Qatar	Journal article	Cross-sectional studies	Sex	High risk of bias
West R. et al (37)	1997	UK	Journal article	Cross-sectional studies	Attitude to driving violations and level of social deviance	High risk of bias
Tao D. et al (42)	2017	Chinese	Journal article	Confirmatory factor analysis/Structural equation modeling	Driving experience, risky driving behaviors, number of traffic tickets	High risk of bias
Hatfield J. et al (91)	2008	Australia	Journal article	Survey	Age and sex	High risk of bias
Mohammadzadeh Moghaddam A. et al (29)	2016	Iran	Journal article	Modeling development	Age, gender, education level, years of active driving, exposure, and ordinary violations	High risk of bias
Kontogiannis T. et al (56)	2000	Greece	Journal article	Cross-sectional studies	Driving experience, gender, highway-code violations	High risk of bias
Moradi A. et al (92)	2017	Iran	Journal article	Case-control study	Road traffic injuries or deaths are correlated with gender, occupation, socioeconomic status, medical care status, health condition, communication between close friends, lifestyle, family conflict, drug abuse history, and religious attitude.	High risk of bias
Hennessy D. (5)	2011	USA	Book section	Brief examination	Personality factors	High risk of bias
Gras M E. et al (51)	2006	Spain	Journal article	Factor analysis/Regration method	Violations factor	High risk of bias

horns, tailgating, cursing and verbal insults to retaliate are associated with RTCs (13-14, 17, 19-20, 40).

Findings presented that errors are associated with RTCs (12, 54, 55). However, the Warner study presented a weak correlation between errors and RTCs (19); and several studies don't find no association between them (20, 56). In examining lapses, some studies identified a positive association between lapses and RTCs (9, 14, 27-28, 57). Although, lapses were less likely to be involved in RTCs in the Tabibi study (58).

Driver performance (driving skills)

There are three studies that examined the impact of driving skills in the occurrence of RTCs, with two subcategories of safety and perceptual-motor skills (31, 59, 60). Özkan (59) and Özkan et al. (60) showed that safety skills in the form of internal requirements were negatively associated with aberrant driver behaviors and RTCs, while perceptual-motor skills were positively associated with these events. Lajun et al. (31) stated that only safety skills are negatively associated with RTCs.

Discussion

Findings indicated that the most common demographic characteristics affecting RTCs are age, gender, and driving experience. According to results of earlier studies, young drivers are more likely to engage in RTCs for reasons such as lack of experience (61-63), high levels of confi-

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

Table 1. Ctd

Author(s)	Year	Setting	Type	Study Design	Effective and predictive factors of road traffic crashes	Study quality
Shepherd J. L. et al (7)	2011	USA	Journal article	Simulation study	Peer Pressure, sex.	High risk of bias
Hutchens L. et al (66)	2008	USA	Journal article	Survey	Smoking, driving alone while drowsy, length of licensure	High risk of bias
Chu W. et al (93)	2019	China	Journal article	Factor analysis/path analysis	Aberrant behaviors, external effective demand, internal requirement	High risk of bias
Ferdousi T. et al (94)	2010	Iran	Journal article	Causal-comparative study	Gender, age, driving experience	Moderate risk of bias
Ferdousi T (43)	2015	Iran	Journal article	Descriptive	Age, number of fines, thoroughness, distraction, continence	Moderate risk of bias
Alizadeh M. et al (95)	2011	Iran	Journal article	Case Study	Cultural lifestyle of drivers	Moderate risk of bias
Moradi A. et al (30)	2018	Iran	Journal article	Case-control study	Occupation, education, night driving habits, not wearing a seat belt, history of accidents and fines, daily driving time, place of residence, speed	High risk of bias
Ansari A. et al (35)	2013	Iran	Journal article	Survey	History of driving license, mental state, belief in driving regulations, socio-economic status, decisive confrontation of the police, driving violations, age	Moderate risk of bias
Ahmadzadeh GH. et al (96)	2017	Iran	Journal article	Analytical cross-sectional survey	Drug use, smoking, aggression	High risk of bias
Ofoghi R. et al (97)	2014	Iran	Journal article	Cross-sectional studies	Driving history	Moderate risk of bias
Farahbakhsh S. et al (34)	2018	Iran	Journal article	Cross-sectional studies	Speeding, talking and using mobile phones, eating and drinking, fatigue, overtaking, police presence, listening to music, disregarding rules and regulations, not wearing a seat belt, sudden change of route, consumption of Cigarettes and alcohol, visual impairment, medication use, illness, socio-economic status, disability, divorce, death of family members, other family problems, driving history	High risk of bias
Scott-Parker B.et al (98)	2011	Queensland	Journal article	Survey	Exposure, location, car ownership	High risk of bias
Sani SRH. et al (41)	2017	Iran	Journal article	Regression analyses	Errors, aggression, difficulties in emotion regulation	High risk of bias
Rezapur-Shahkolai F. et al (99)	2020	Iran	Journal article	Cross-sectional studies	unintentional violations, age, gender, educational level, driving experience, and driving hours during the day	High risk of bias
Lee S. et al (100)	2020	Korea	Journal article	Qualitative (In-depth interviews) and Artificial Neural Networks (ANN)	Age, living satisfaction, level of job satisfaction, amount of sleeping time, and working hours per week	High risk of bias
Lyon C. et al (101)	2020	CanadaUnited States Europe	Journal article	Survey	handheld phone while driving, using a hands-free phone while driving, and driving while fatigued	High risk of bias

*DBQ: Driver Behavior Questionnaire

dence-building (61), and overestimating abilities (64). Also, studies have shown that men are more involved in RTCs than women due to higher impulsivity, sensation-seeking, and perceptual-motor skills (32). In driving experience factors, some researchers have stated that increased driver's history increased the probability of RTCs due to higher exposure rate (29, 65, 66). However, some studies have proved that experienced drivers have a lower rate of RTCs due to less abnormal behaviors (29, 63, 64).

Regarding social characteristics, social influence is a very important factor for RTCs. Social psychology introduces two types of normative and informational social

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

Table 2. Sociocultural factors affecting and predicting road traffic crashes in car drivers

Category	Sub category	Examples from the code/data
Sociodemographic characteristics	Demographic characteristics	Age, sex, driving experience
	Social characteristics	Social deviance, social influence
Personality traits	Aggressive traits	Trait Aggression, Negative Emotions and Trait Anger
	Non- aggressive traits	Sensation seeking, Locus of Control, hazard monitoring
Driver behavior (driving style)	Violations	Ordinary rule violations Speeding and Pushing Violations phone usage Driving under the influence of alcohol/drugs Emotional/aggressive violations Horn honking Tailgating Yelling and verbal abuse
	Lapse	Misjudge speed of the oncoming vehicle Fail to check mirror Switch on one thing, meaning the other
	Errors	Misjudge your gap in a car park Miss ‘‘Give Way’’ signs Underestimate the speed of the oncoming vehicle when overtaking
Driver performance (driving skills)	Safety skills	Conforming to the traffic rules Avoiding competition in the traffic Obeying the traffic lights carefully
	Perceptual-motor skills	Control of the vehicle Fluent driving

influences. Normative social influence arises from a willingness to approve of others, while information influence arises from the need to be correct (67). Family, friends, passengers and peers in the form of normative social influence can encourage normative or risky driving by influencing observance of safety tips (7, 52). social deviance is another one so that people with high social deviation are more involved in violating behaviors and RTCs (37). In non-modifiable factors such as age and gender, by including educational programs in family and community; and modifiable risk factors such as experience and social influence, by enforcing strictly of law and periodic monitoring of drivers can be enhance safe behaviors and prevent RTCs.

The results of the present study showed that personality traits play an important role in the occurrence of RTCs. Personality includes a set of drivers' knowledge, behavior, and skill (42, 44, 48). Researchers found that personality traits as a distal predictor by influencing drivers' attitudes predict proximal factors including deviant driver behaviors and performance and RTCs (68). Lucidi et al. stated that at a distal level, anxiety positively predicts drivers' attitudes toward traffic safety, while excitement seeking and normlessness have been negatively reported them; and on a proximal level, negative attitudes create risky driving behaviors and performances and positive attitudes are associated with reducing them (69). To reduce RTCs, it is necessary to fundamentally modify the personality and attitudes of drivers by encouraging them to engage in safe behaviors, using advertisements, and continuing interventions.

The findings of the present study showed that high-risk driver behaviors are involved in the occurrence of RTCs. Driving behavior is associated with individual driving habits (70). Risky driving behaviors become a habit and are considered as significant parameters in causing RTCs (20, 48, 71). In support of this finding, Fergusson et al. reported that the rate of crashes in drivers with risky behaviors is six times more than others (72).

According to the results of the present study, violations are the most important high-risk behaviors for RTCs. Violations refer to deliberate and conscious deviation from those actions that are essential to hold the safe practice of a dangerous system (20-21) and originate from motivational sources and personal inclinations (70). The types of violations vary in different areas. For example, in developed countries, due to the high quality of road infrastructures, there is an opportunity for speeding violations (54). Whereas, in LMICs are frequently seen dangerous interactions between road users due to poor infrastructures, which leads to aggressive violations (73). In confirmation of this finding, Suliman et al. stated that one of the most dangerous aggressive violations in Jordan is getting angry under the influence behavior of other drivers (13). Considering that these risk factors are modifiable, RTCs can be prevented with periodic training programs for drivers. Also, strict enforcement of laws and environmental modification, such as the use of traffic enforcement cameras, are useful measures to reduce RTCs.

Driving skills have been reported to be a risk factor for RTCs. They emphasize the maximum level of driver performance (70) and include perceptual-motor skills to control vehicle and cognitive skills for risk assessment and decision-making. A comparative study suggests that perceptual-motor skills and safety skills are positively and negatively related to the number of accidents and fines, respectively (31). overestimation of perceptual-motor skills leads to high-risk driving behaviors, while safety skills reduce traffic hazards by taking precautions (74). Given that high levels of safety skills can reduce the impact of perceptual-motor skills on high-risk driving, safety skills should be integrated into general driving training in

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

society.

Conclusion

According to the evidence of the current review, it can be derived that in most studies, SCF was examined only in the forms of sociodemographic characteristics and risky driving behaviors, which indicates a lack of investigation on the impact of personality traits and driving skills in RTCs. Therefore, it is essential that researchers and policymakers pay particular attention to these factors in their research and policy makings. Also, more research examined the association between RTCs and SCF with quantitative approaches and there is a lack of a qualitative approach in this field. Since in many cases, SCF is a subjective situation, it is suggested that these components will be examined more with a qualitative approach, through interviews with drivers and with more focus on driving skills and their personality traits.

Acknowledgment

We acknowledge Dr. Fatemeh Nouri for her support as a scientific adviser in writing this article.

Conflict of Interests

The authors declare that they have no competing interests.

References

1. Organization WHO. Global status report on road safety 2018: Summary. World Health Organization; 2018.
2. Evans L. Traffic fatality reductions: United States compared with 25 other countries. Am J Public Health. 2014;104(8):1501-7.
3. Bhalla K, Sharaz S, Abraham J, Bartels D, Yeh PH. Road Injuries in 18 Countries: Methods, data sources and estimates of the national incidence of road injuries. 2011.
4. Factor R, Mahalel D, Yair G. The social accident: A theoretical model and a research agenda for studying the influence of social and cultural characteristics on motor vehicle accidents. Accid Anal Prev. 2007;39(5):914-21.
5. Hennessy D. Social, personality, and affective constructs in driving. Handbook of traffic psychology: Elsevier; 2011. p. 149-63.
6. Kayani A, King M, Fleiter J. Socio-cultural beliefs and road use in a low income country: a qualitative investigation of superstition-related road use behaviour in Pakistan. Proceedings of the 2016 Australasian Road Safety Conference; 2016: Australasian College of Road Safety (ACRS), Australia, pp: 1-12.
7. Shepherd JL, Lane DJ, Tapscott RL, Gentile DA. Susceptible to Social Influence: Risky "Driving" in Response to Peer Pressure 1. J Appl Soc Psychol. 2011;41(4):773-97.
8. Iversen H, Rundmo T. Personality, risky driving and accident involvement among Norwegian drivers. Pers Individ Differ. 2002;33(8):1251-63.
9. Sullman MJ, Stephens AN, Taylor JE. Dimensions of aberrant driving behaviour and their relation to crash involvement for drivers in New Zealand. Transp Res Part F Traffic Psychol Behav. 2019;66:111-21.
10. Vingilis E, Beirness D, Boase P, Byrne P, Johnson J, Jonah B, et al. Coronavirus disease 2019: What could be the effects on Road safety? Accid Anal Prev. 2020;144:105687.
11. Jabbari M, Khodaparast E, Sadri K, Kavousi A. A survey on hazardous materials accidents during road transport in Iran. Iran Occup Health. 2014;11(5):30-42.
12. Sahebi S, Nassiri H, de Winter JC. Correlates of self-reported driving aberrations in Tehran: A study at the level of drivers and districts. Transp Res Part F Traffic Psychol Behav. 2019;63:309-22.
13. Suliman MR, Awad WeH. Aggressive driving is a major cause of traffic accidents and road rage in Jordan. Driving Assessment Conference. 2003.
14. Haghi A, Ketabi D, Ghanbari M, Rajabi H. Assessment of human errors in driving accidents; analysis of the causes based on aberrant behaviors. Life Sci J. 2014;11(9):414-20.
15. Critical Appraisal Skills Programme CASP Checklists. 2013. http://www. casp-uk.net/#!checklists/cb36. Accessed September 18, 2019.
16. Center for Evidence Based Management (July, 2014), Critical Appraisal Checklist for Cross-Sectional Study. Retrieved (month, day, year) from https://www.cebma.org.
17. Chliaoutakis JE, Demakakos P, Tzamalouka G, Bakou V, Koumaki M, Darviri C. Aggressive behavior while driving as predictor of self-reported car crashes. J Safety Res. 2002;33(4):431-43.
18. Laflamme L, Vaez M. Car crash and injury among young drivers: contribution of social, circumstantial and car attributes. Int J Inj Contr Saf Promot. 2007;14(1):5-10.
19. Warner HW, Özkan T, Lajunen T, Tzamalouka G. Cross-cultural comparison of drivers' tendency to commit different aberrant driving behaviours. Transp Res Part F Traffic Psychol Behav. 2011;14(5):390-9.
20. Özkan T, Lajunen T, Chliaoutakis JE, Parker D, Summala H. Cross-cultural differences in driving behaviours: A comparison of six countries. Transp Res Part F Traffic Psychol Behav. 2006;9(3):227-42.
21. Wickens CM, Mann RE, Ialomiteanu AR, Stoduto G. Do driver anger and aggression contribute to the odds of a crash? A population-level analysis. Transp Res Part F Traffic Psychol Behav. 2016;42:389-99.
22. Al Reesi H, Freeman J, Davey J, Al Adawi S, Al Maniri A. Measuring risky driving behaviours among young drivers: development of a scale for the Oman setting. Transp Res Part F Traffic Psychol Behav. 2018;55:78-89.
23. Rowe R, Roman GD, McKenna FP, Barker E, Poulter D. Measuring errors and violations on the road: A bifactor modeling approach to the Driver Behavior Questionnaire. Accid Anal Prev. 2015;74:118-25.
24. Măirean C, Havârneanu GM, Popușoi SA, Havarneanu CE. Traffic locus of control scale–Romanian version: psychometric properties and relations to the driver's personality, risk perception, and driving behavior. Transp Res Part F Traffic Psychol Behav. 2017;45:131-46.
25. Bener A, Dafeeah E, Verjee M, Yousafzai M, Al-Khatib H, Nema N, et al. Gender and age differences in risk taking behaviour in road traffic crashes. Adv Transport Stud. 2013;31:53-62.
26. Lefrançois R, D'Amours M. Exposure and risk factors among elderly drivers: a case-control study. Accid Anal Prev. 1997;29(3):267-75.
27. Bener A, Al Maadid MG, Özkan T, Al-Bast DA, Diyab KN, Lajunen T. The impact of four-wheel drive on risky driver behaviours and road traffic accidents. Transp Res Part F Traffic Psychol Behav. 2008;11(5):324-33.
28. Dobson A, Brown W, Ball J, Powers J, McFadden M. Women drivers' behaviour, socio-demographic characteristics and accidents. Accid Anal Prev. 1999;31(5):525-35.
29. Moghaddam AM, Tabibi Z, Sadeghi A, Ayati E, Ravandi AG. Screening out accident-prone Iranian drivers: Are their at-fault accidents related to driving behavior?. Transp Res Part F Traffic Psychol Behav. 2017;46:451-61.
30. Moradi A, Rahmani K, Hasani J, Gilasi H, Darabi F. Assessment of risk factors related to traffic crashes among drivers in Kashan. Saf Promot Injury Prev. 2018;6(2):55-64.
31. Lajunen T, Corry A, Summala H, Hartley L. Cross-cultural differences in drivers' self-assessments of their perceptual-motor and safety skills: Australians and Finns. Pers Individ Differ. 1998;24(4):539-50.
32. Mohamadi Hezaveh A, Nordfjærn T, Mamdoohi AR, Şimşekoğlu Ö. Predictors of self-reported crashes among Iranian drivers: Exploratory analysis of an extended driver behavior questionnaire. Promet Traffic Transport. 2018;30(1):35-43.
33. Moran M, Baron-Epel O, Assi N. Causes of road accidents as perceived by Arabs in Israel: A qualitative study. Transp Res Part F Traffic Psychol Behav. 2010;13(6):377-87.
34. Farahbakhsh S, Zare M, Bazrafshani A, Masinaei Nejad ME, Bazrafshani MS. Investigation of Road Accidents and Their Related Factors from the Perspective of Kerman Intercity Taxi Drivers during 2013-2015. J Birjand Univ Med Sci. 2018;25(1):81-93.
35. Ansari A, Mohammadi A, Saidi S. Investigation of social and cultural factors affecting intra-city driving accidents - a Case Study: Kohkilouyeh and Boyerahmad Province. Urban Sociol Stud. 2013;3(6):81-102.
36. West R, Elander J, French D. Mild social deviance, Type-A

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

behaviour pattern and decision-making style as predictors of self-reported driving style and traffic accident risk. Br J Psychol. 1993;84(2):207-19.
37. West R, Hall J. The role of personality and attitudes in traffic accident risk. Applied Psychology. 1997; 46(3): 253-64.
38. Alver Y, Demirel M, Mutlu M. Interaction between socio-demographic characteristics: Traffic rule violations and traffic crash history for young drivers. Accid Anal Prev. 2014;72:95-104.
39. Chai J, Qu W, Sun X, Zhang K, Ge Y. Negativity bias in dangerous drivers. PloS One. 2016;11(1):e0147083.
40. Qu W, Zhang Q, Zhao W, Zhang K, Ge Y. Validation of the Driver Stress Inventory in China: Relationship with dangerous driving behaviors. Accid Anal Prev. 2016;87:50-8.
41. Sani SRH, Tabibi Z, Fadardi JS, Stavrinos D. Aggression, emotional self-regulation, attentional bias, and cognitive inhibition predict risky driving behavior. Accid Anal Prev. 2017;109:78-88.
42. Tao D, Zhang R, Qu X. The role of personality traits and driving experience in self-reported risky driving behaviors and accident risk among Chinese drivers. Accid Anal Prev. 2017;99:228-35.
43. Ferdousi T. Psychological factors affecting traffic accidents. Rahvar. 2015;4(12):11-31.
44. Yang J, Du F, Qu W, Gong Z, Sun X. Effects of personality on risky driving behavior and accident involvement for Chinese drivers. Traffic Inj Prev. 2013;14(6):565-71.
45. Shen B, Ge Y, Qu W, Sun X, Zhang K. The different effects of personality on prosocial and aggressive driving behaviour in a Chinese sample. Transp Res Part F Traffic Psychol Behav. 2018;56:268-79.
46. Kalyoncuoglu S, Tigdemir M, editors. Modelling of personality, attitudes and risky driving. Proceedings of the Institution of Civil Engineers-Transport; 2008: Thomas Telford Ltd.
47. Sarma KM, Carey RN, Kervick AA, Bimpeh Y. Psychological factors associated with indices of risky, reckless and cautious driving in a national sample of drivers in the Republic of Ireland. Accid Anal Prev. 2013;50:1226-35.
48. Atombo C, Wu C, Tettehfio EO, Agbo AA. Personality, socioeconomic status, attitude, intention and risky driving behavior. Cogent Psychol. 2017;4(1):1376424.
49. Bener A. The psychological distress and aggressive driving: age and gender differences in voluntary risk-taking behavior in road traffic crashes. Eur Psychiatry. 2013;28(S1):1.
50. de Winter JC, Dodou D. National correlates of self-reported traffic violations across 41 countries. Pers Individ Differ. 2016;98:145-52.
51. Gras ME, Sullman MJ, Cunill M, Planes M, Aymerich M, Font-Mayolas S. Spanish drivers and their aberrant driving behaviours. Transp Res Part F Traffic Psychol Behav. 2006;9(2):129-37.
52. Gauld CS, Lewis I, White KM. Concealed texting while driving: What are young people's beliefs about this risky behaviour? Saf Sci. 2014;65:63-9.
53. Bazzaz MM, Zarifian A, Emadzadeh M, Vakili V. Driving behaviors in Iran: a descriptive study among drivers of Mashhad City in 2014. Glob J Health Sci. 2015;7(7):39.
54. Nordfjærn T, Hezaveh AM, Mamdoohi AR. An analysis of reported driver behaviour in samples of domestic and expatriate Iranians. J Risk Res. 2015;18(5):566-80.
55. Freeman J, Barraclough P, Wishart D, Rowland B. Using the Driver Behaviour Questionnaire to predict crashes and demerit point loss: Does it get better with larger sample sizes? Proceedings of the 2nd Occupational Safety in Transport Conference; 2014: CARRS-Q, Queensland University of Technology.
56. Kontogiannis T, Kossiavelou Z, Marmaras N. Self-reports of aberrant behaviour on the roads: errors and violations in a sample of Greek drivers. Accid Anal Prev. 2002;34(3):381-99.
57. Bener A, Özkan T, Lajunen T. The driver behaviour questionnaire in Arab gulf countries: Qatar and United Arab Emirates. Accid Anal Prev. 2008;40(4):1411-7.
58. Tabibi Z. Risky driving behavior relating to accident involvement: Investigating some identified factors in an Iranian sample. Int J Psychol. 2011;5(1):51-72.
59. Özkan T. The regional differences between countries in traffic safety: A cross-cultural study and Turkish Case. 2006.
60. Özkan T, Lajunen T. What causes the differences in driving between young men and women? The effects of gender roles and sex on young drivers' driving behaviour and self-assessment of skills. Transp Res Part F Traffic Psychol Behav. 2006;9(4):269-77.
61. McKay MP, Coben JH, Larkin GL, editors. Driving beliefs and behaviors of novice teen drivers and their parents: implications for teen driver crash risk. Annual Proceedings/Association for the Advancement of Automotive Medicine; 2003: Association for the Advancement of Automotive Medicine.
62. Chliaoutakis JE, Darviri C, Demakakos PT. The impact of young drivers' lifestyle on their road traffic accident risk in greater Athens area. Accid Anal Prev. 1999;31(6):771-80.
63. Constantinou E, Panayiotou G, Konstantinou N, Loutsiou-Ladd A, Kapardis A. Risky and aggressive driving in young adults: Personality matters. Accid Anal Prev. 2011;43(4):1323-31.
64. Lawton R, Parker D, Stradling SG, Manstead AS. Predicting road traffic accidents: The role of social deviance and violations. Br J Psychol. 1997;88(2):249-62.
65. Farahbakhsh S, Zare M, Bazrafshani A, Masinaei Nejad ME, Bazrafshani MS. Investigation of Road Accidents and Their Related Factors from the Perspective of Kerman Intercity Taxi Drivers during 2013-2015. J Birjand Univ Med Sci. 2018;25(1):81-93.
66. Hutchens L, Senserrick TM, Jamieson PE, Romer D, Winston FK. Teen driver crash risk and associations with smoking and drowsy driving. Accid Anal Prev. 2008;40(3):869-76.
67. Deutsch M, Gerard HB. A study of normative and informational social influences upon individual judgment. J Abnorm Soc Psychol. 1955;51(3):629.
68. Jovanović D, Lipovac K, Stanojević P, Stanojević D. The effects of personality traits on driving-related anger and aggressive behaviour in traffic among Serbian drivers. Transp Res Part F Traffic Psychol Behav. 2011;14(1):43-53.
69. Lucidi F, Girelli L, Chirico A, Alivernini F, Cozzolino M, Violani C, et al. Personality traits and attitudes toward traffic safety predict risky behavior across young, adult, and older drivers. Front Psychol. 2019;10:536.
70. Elander J, West R, French D. Behavioral correlates of individual differences in road-traffic crash risk: an examination of methods and findings. Psychol Bull. 1993;113(2):279.
71. Iversen H. Risk-taking attitudes and risky driving behaviour. Transp Res Part F Traffic Psychol Behav. 2004;7(3):135-50.
72. Fergusson D, Swain-Campbell N, Horwood J. Risky driving behaviour in young people: prevalence, personal characteristics and traffic accidents. Aust N Z J Public Health. 2003;27(3):337-42.
73. Shinar D, Compton R. Aggressive driving: an observational study of driver, vehicle, and situational variables. Accid Anal Prev. 2004;36(3):429-37.
74. Sümer N, Özkan T, Lajunen T. Asymmetric relationship between driving and safety skills. Accid Anal Prev. 2006;38(4):703-11.
75. Ye M, Osman OA, Ishak S. Accounting for Driver Distraction and Socioeconomic Characteristics in a Crash Risk Index: Naturalistic Driving Study. Transp Res Rec. 2017;2659(1):204-11.
76. Peña-Suárez E, Padilla JL, Ventsislavova P, Gugliotta A, Roca J, Lopez-Ramón MF, et al. Assessment of proneness to distraction: English adaptation and validation of the Attention-Related Driving Errors Scale (ARDES) and cross-cultural equivalence. Transp Res Part F Traffic Psychol Behav. 2016;43:357-65.
77. Newnam S, Watson B, Murray W. A comparison of the factors influencing the safety of work-related drivers in work and personal vehicles. Research, Policing and Education. 2002:179-86.
78. McLaughlin SB, Hankey JM, Klauer SG, Dingus TA. Contributing factors to run-off-road crashes and near-crashes. 2009.
79. Qu W, Ge Y, Xiong Y, Carciofo R, Zhao W, Zhang K. Dangerous driving in a Chinese sample: Associations with morningness-eveningness preference and personality. PloS One. 2015;10(1):e0116717.
80. Dula CS, Ballard ME. Development and evaluation of a measure of dangerous, aggressive, negative emotional, and risky driving 1. J Appl Soc Psychol. 2003;33(2):263-82.
81. Parker D, Reason JT, Manstead AS, Stradling SG. Driving errors, driving violations and accident involvement. Ergonomics. 1995;38(5):1036-48.
82. Zhang Y, Jing L, Sun C, Fang J, Feng Y. Human factors related to major road traffic accidents in China. Traffic Inj Prev. 2019;20(8):796-800.
83. Vaez M, Laflamme L. Impaired driving and motor vehicle crashes among Swedish youth: an investigation into drivers' sociodemographic characteristics. Accid Anal Prev. 2005;37(4):605-11.
84. Habibi E, Haghi A, Maracy MR. Investigating the predictive of risk-taking attitudes and behaviors among Iranian drivers. J Educ Health

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

Promot. 2014;3.
85. af Wåhlberg A, Dorn L, Kline T. The Manchester Driver Behaviour Questionnaire as a predictor of road traffic accidents. Theor Issues Ergon Sci. 2011;12(1):66-86.
86. Ledesma RD, Montes SA, Poó FM, López-Ramón MF. Measuring individual differences in driver inattention: Further validation of the attention-related driving errors scale. Human factors. 2015;57(2):193-207.
87. Trimpop R, Kirkcaldy B. Personality predictors of driving accidents. Pers Individ Differ. 1997;23(1):147-52.
88. Özkan T, Lajunen T. Why are there sex differences in risky driving? The relationship between sex and gender-role on aggressive driving, traffic offences, and accident involvement among young Turkish drivers. Aggress Behav. 2005;31(6):547-58.
89. Uzumcuoglu Y, Özkan T, Lajunen TJ. The relationships between cultural variables, law enforcements and driver behaviours across 37 nations. 2018.
90. Bener A, Crundall D. Role of gender and driver behaviour in road traffic crashes. Int J Crashworthiness. 2008;13(3):331-6.
91. Hatfield J, Fernandes R. The role of risk-propensity in the risky driving of younger drivers. Accid Anal Prev. 2009;41(1):25-35.
92. Moradi A, Salamati P, Vahabzadeh E. The social determinants of risky driving on the intercity roads of Tehran province, Iran: a case-cohort study. Arch Trauma Res. 2017;6(1):e36490.
93. Chu W, Wu C, Atombo C, Zhang H, Özkan T. Traffic climate, driver behaviour, and accidents involvement in China. Accid Anal Prev. 2019;122:119-26.
94. Ferdousi T, Sarami G, Rostami A. A comparative study of the psychological factors influencing driving accidents according to the driver's gender. Woman Develop Polit (Womens Research). 2010;8(4):141-57.
95. Alizadeh M, Salehi Z. Drivers' Cultural Lifestyle A Tool to Explain Their Traffic Behavior (Case Study: Tabriz Domestic Drivers). Rahvar. 2011;8(15):21-40.
96. Ahmadzadeh GH, Mousavi SG, Kiani M, Mahaki B. The relationship between the frequency and severity of traffic accidents and aggression, smoking, and substance abuse. J Isfahan Med School. 2017;34(415):1666-1673.
97. Ofoghi R, Rahmati E, SHarifi B. The effect of a person's driving history and whether she is right-handed or left-handed on the number of her/his driving accidents. Insurance J. 2014;29(2(114)):1-18.
98. Scott-Parker B, Watson B, King M, Hyde M. Mileage, car ownership, experience of punishment avoidance, and the risky driving of young drivers. Traffic Inj Prev. 2011;12(6):559-67.
99. Rezapur-Shahkolai F, Taheri M, Etesamifard T, Roshanaei G, Shirahmadi S. Dimensions of aberrant driving behaviors and their association with road traffic injuries among drivers. PLoS One. 2020;15(9):e0238728.
100. Lee S, Kim JH, Park J, Oh C, Lee G. Deep-learning-based prediction of high-risk taxi drivers using wellness data. Int J Environ Res Public Health. 2020;17(24):9505.
101. Lyon C, Mayhew D, Granie MA, Robertson R, Vanlaar W, Woods-Fry H, et all. Age and road safety performance: focusing on elderly and young drivers. IATSS Res. 2020;44(3):212-9.

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

Appendix 1

Search strategy PubMed:

((Socio* [Title/Abstract]) OR (Sociocultural* [Title/Abstract]) OR ("Sociological Factor" [Title/Abstract]) OR (Factor* [Title/Abstract]) AND Sociological [Title/Abstract]) OR ("Sociological Phenomena" [Title/Abstract]) OR (Phenomena [Title/Abstract] AND Sociological [Title/Abstract]) OR ("Social Characteristics"[Title/Abstract]) OR (Characteristics [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Trait" [Title/Abstract]) OR (Trait* [Title/Abstract] AND Social [Title/Abstract]) OR ("Sociological Characteristic" [Title/Abstract]) OR (Characteristic* [Title/Abstract] AND Sociological [Title/Abstract]) OR ("Social Attribute" [Title/Abstract]) OR (Attribute* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Norm" [Title/Abstract]) OR (Norm* [Title/Abstract] AND Social [Title/Abstract]) OR ("Societal Norm" [Title/Abstract]) OR (Norm* [Title/Abstract] AND Societal [Title/Abstract]) OR ("Social Value" [Title/Abstract]) OR (Value* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Class" [Title/Abstract]) OR (Class* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Perception" [Title/Abstract]) OR (Perception* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Environment" [Title/Abstract]) OR (Environment* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Behavior Disorder" [Title/Abstract]) OR ("Behavior Disorder" [Title/Abstract] AND Social [Title/Abstract]) OR (Disorder [Title/Abstract] AND "Social Behavior" [Title/Abstract]) OR ("Social Skill" [Title/Abstract]) OR (Skill* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Ability" [Title/Abstract]) OR (Abilit* [Title/Abstract] AND Social [Title/Abstract]) OR ("Interpersonal Skill" [Title/Abstract]) OR (Skill* [Title/Abstract] AND Interpersonal [Title/Abstract]) OR ("Social Competence" [Title/Abstract]) OR (Competence [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Problem" [Title/Abstract]) OR (Problem* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Change" [Title/Abstract]) OR (Change* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Impact" [Title/Abstract]) OR (Impact* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Development" [Title/Abstract]) OR (Development* [Title/Abstract] AND Social [Title/Abstract]) OR ("Social Behavior" [Title/Abstract]) OR (Behavior* [Title/Abstract] AND Social [Title/Abstract]) OR (Culture* [Title/Abstract]) OR (Custom* [Title/Abstract]) OR (Belief* [Title/Abstract]) OR ("Cultural Background" [Title/Abstract]) OR (Background* AND Cultural) OR ("Cultural Diversity" [Title/Abstract]) OR (Diversit* AND Cultural) OR ("Cultural Evolution" [Title/Abstract]) OR (Evolution* AND Cultural) OR ("Cultural Deprivation" [Title/Abstract]) OR (Deprivation* AND Cultural) OR ("Cultural Disadvantagement" [Title/Abstract]) OR (Disadvantagement* AND Cultural) OR ("Cultural Characteristic" [Title/Abstract]) OR (Characteristic* AND Cultural) OR ("Cross-Cultural Comparison") OR (Comparison* AND Cross-Cultural) OR ("Cross Cultural Comparison" [Title/Abstract]) OR ("Transcultural Study" [Title/Abstract]) OR (Stud* AND Transcultur*)) AND ((Accident* [Title/Abstract] AND Traffic [Title/Abstract]) OR ("Traffic Accident" [Title/Abstract]) OR ("Road Traffic" [Title/Abstract]) OR ("Road Accident" [Title/Abstract]) OR ("Road collision" [Title/Abstract]) OR ("Road crash" [Title/Abstract]) OR ("Road Injury" [Title/Abstract]) OR ("Road casual" [Title/Abstract]) OR (Road AND casual*) OR ("Road safety" [Title/Abstract]) OR ("Traffic accident" [Title/Abstract]) OR ("Traffic collision" [Title/Abstract]) OR ("Traffic crash" [Title/Abstract]) OR ("Traffic Injury" [Title/Abstract]) OR ("Traffic casual") OR (Traffic AND casual*) OR ("Traffic risk") OR ("Traffic climate") OR ("Traffic violation" [Title/Abstract]) OR ("Traffic safety" [Title/Abstract]) OR (Trans* AND accident*) OR (Trans* [Title/Abstract] AND collision* [Title/Abstract]) OR (Trans* AND crash*) OR (Trans*[Title/Abstract] AND Injur*[Title/Abstract]) OR (Trans* AND casual*) OR (Trans* AND safety[Title/Abstract]) OR ("Automobile crash" [Title/Abstract]) OR ("vehicle accident" [Title/Abstract]) OR ("vehicle crash" [Title/Abstract]) OR ("vehicle collision" [Title/Abstract]) OR ("vehicle casual") OR (vehicle AND casual*) OR ("Car collision") OR ("Car casual") OR (Car AND casual*) OR ("Crash injury" [Title/Abstract]) OR ("Crash risk") OR ("Accident risk" [Title/Abstract]) OR (Risky [Title/Abstract] AND driv* [Title/Abstract]) OR ("Risky driving" [Title/Abstract]) OR ("Dangerous driving" [Title/Abstract]) OR (Dangerous AND driv*) OR ("Road Rage" [Title/Abstract])) AND ("1990/01/01"[Date - Completion] : "2019/12/12"[Date - Completion])

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]

Appendix 2a. The Critical Appraisal Skills Programme (CASP) checklist

Major Components	Response options		
Section A: Are the results of the study valid?			
1. Did the study address a clearly focused issue?	Yes	No	Can't Tell
2. Did the authors use an appropriate method?	Yes	No	Can't Tell
Is it worth continuing?			
3. Was the research design appropriate to address the aims of the research?	Yes	No	Can't Tell
4. Was the recruitment strategy appropriate to the aims of the research?	Yes	No	Can't Tell
5. Have the authors identified all important confounding factors and biases?	Yes	No	Can't Tell
6. Is it possible to reflect, expand results and achievements?	Yes	No	Can't Tell
Section B: What are the results?			
7. Have ethical issues been taken into consideration?			
8. Was the data analysis sufficiently rigorous?			
9. Is there a clear statement of findings?	Yes	No	Can't Tell
Section C: Will the results help locally?			
10. How valuable is the research?	Yes	No	Can't Tell

Appendix 2b. Critical Appraisal checklist of a Cross-Sectional Study (Survey)

Appraisal questions	Yes	Can't tell	No
1. Did the study address a clearly focused question / issue?			
2. Is the research method (study design) appropriate for answering the research question?			
3. Is the method of selection of the subjects (employees, teams, divisions, organizations) clearly described?			
4. Could the way the sample was obtained introduce (selection)bias?			
5. Was the sample of subjects representative with regard to the population to which the findings will be referred?			
6. Was the sample size based on pre-study considerations of statistical power			
7. Was a satisfactory response rate achieved?			
8. Are the measurements (questionnaires) likely to be valid and reliable?			
9. Was the statistical significance assessed?			
10. Are confidence intervals given for the main results?			
11. Could there be confounding factors that haven't been accounted for?			
12. Can the results be applied to your organization?			

[Downloaded from mjiri.iums.ac.ir on 2026-11-16]

[DOI: 10.47176/mjiri.36.21]