BMJ Open

Determinants of seat belt use behaviour: a protocol for a systematic review

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To cite: Ghaffari M, Armoon B, Rakhshanderou S, *et al*. Determinants of seat belt use behaviour: a protocol for a systematic review. *BMJ Open* 2018;**8**:e020348. doi:10.1136/bmjopen-2017-020348

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2017-020348).

Received 31 October 2017
Revised 16 March 2018
Accepted 21 March 2018

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ABSTRACT

Introduction The use of seat belts could prevent severe collision damage to people in vehicle accidents and keep passengers safe from sustaining serious injuries; for instance, it could prevent passengers from being thrown out of a vehicle after the collision. The current systematic review will identify and analyse the determinants of seat belt use behaviour.

Methods and analysis We will include qualitative, quantitative and mixed methods studies reporting the acquired data from passengers aged more than 12 years and drivers, from both commercial and personal vehicles. Online databases including MEDLINE/PubMed, Scopus, Web of Science, Embase, Cochrane Database of Systematic Reviews and PsycINFO will be investigated in the current study. Published and available articles will be evaluated according to their titles and abstracts. Published papers conforming to the inclusion criteria will be organised for a complete review. Next, the full text of the remaining articles will be studied independently for eligibility by two authors. The quality of the selected studies will be assessed with appropriate tools. Based on the information obtained from the data extraction, the type of determinants of seat belt use will be classified.

Ethics and dissemination Ethics approval is not required, because this is a protocol for a systematic review and no primary data will be collected. The authors will ensure to maintain the rights of the used and included articles in the present systematic review. The findings of this review will be published in a relevant peer-reviewed journal.

PROSPERO registration number CRD42017067511.

Strengths and limitations of this study

- The protocol has been written according to the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols guidelines.
- The authors will use the number needed to read index for assessing a sufficient number of articles.
- Study screening, data extraction and risk of bias assessment of the current study will be independently conducted by two authors.
- Heterogeneity between studies may be an obstacle to perform meta-analyses.

INTRODUCTION

The WHO has been paying tremendous attention to the prevention of traffic injuries/accidents in its member countries and worldwide. In addition, in 2008, a meeting held by the United Nations General Assembly emphasised the importance of the prevention and/or reduction of road accidents and the implementation of enhancements in road safety according to globally confirmed standards.[1] Most of the road traffic-related deaths (more than 90%) occur in low/middle-income countries.[2] Road traffic-related injuries have a considerable effect on the economy of societies, individuals and their families, and considerable expenses may be associated with the treatment of injuries and disabilities and the support of family members who are affected by fatal collisions. Approximately 3% of the gross domestic product of countries around the world has been dedicated to the aftermath of road traffic collisions.[3]

The factors affecting road traffic collisions may be classified into three different categories: human, environmental and vehicle-related factors.[4] Human factors such as not using seat belts and helmets, ignoring traffic regulations and rules, illegal speeding, drug abuse, lack of knowledge and driving skills, and driving under the influence of alcohol are considered the most common behavioural factors exposing a person to traffic accident risk.[5–7]

The World Bank Global Report has considered actions such as the use of a seat belt as the safest way to reduce the burden of road collisions and to save lives in developed countries.[5] Studies have established that the use of a seat belt may prevent severe collision damage and keep passengers safe and secure from sustaining serious injury and from being thrown out of vehicles after the collision.[8–10]

Appropriate use of seat belts may reduce front-seat fatality rates by 60%. Based on a recent meta-analysis, passengers who do not use a seat belt are more likely to be injured in car collisions.[11]

To calculate a nationally representative estimate of constant seat belt use by passengers in each region, a surveillance system of behavioural risk factors was applied in a study in 2012; the results of that study indicated that the use of seat belts varied based on region.[12]

Despite the benefits related to seat belt use, its application in most low/middle-income countries, including Iran, is not as high as it should be.[13] Although there have been dramatic improvements in recent years, mostly resulting from strict driving laws and substantial cash penalties for persons who do not use seat belts, many drivers and passengers still take the risk of driving or travelling without the use of a seat belt.[14 15] Hence, we are faced with complex conditions that require a profound study to clarify the various factors that lead people to follow this behaviour. The results of such studies may help decision-makers focus their attention on priority areas.

Several studies have addressed the determinants of seat belt usage,[15–18] but most of these studies were not shared formally in scientific databases and therefore are not available to all researchers; and a considerable amount of time is thus needed to gather the main findings and identify the effective determinants of seat belt use.

Systematic review is an effective methodology that can be useful to identify the determinants of seat belt use. To the authors' knowledge, no systematic review has been conducted to date regarding the effective determinants of seat belt use.[19]

The aim of the current systematic review is to identify the determinants of seat belt use behaviours. The current review study will be performed based on the following two questions for the reader:

1. What determinants are being described in the literature for seat belt use?
2. What are the individual and non-individual reasons for seat belt use?

OBJECTIVES

The objectives of the current review study are as follows:

1. Identification of the determinants of seat belt use.
2. Discovering the potential sources of heterogeneity in primary studies.

METHODS AND ANALYSIS

For this study, the protocol was registered in PROSPERO. After completing each stage, the status of the project will be tracked and dated in PROSPERO.

PATIENT AND PUBLIC INVOLVEMENT

There has been no patient and public involvement in this systematic review.

STUDY ELIGIBILITY CRITERIA

Studies will be selected according to the following criteria.

Population

In the current systematic review, we will include studies reporting data on seat belt use in commercial or personal vehicles for both drivers and passengers seated in front or rear.

Passengers aged more than 12 years will include, as the use of seat belts is recommended for people aged 12 years or older, and for passengers younger than 12 years, child restraints should be used.[20]

Studies on special populations such as pregnant women, people with health issues or with physical disabilities (eg, abdominal surgery) and those with limitations on seat belt use will also be included, but the results collected from these drivers or passengers will be treated separately in the present study.

Exposure

The authors will consider the studies those addressing the determinants of seat belt usage.

Comparators

The results for use of seat belts will be compared with those for not using seat belts.

Study design

The authors will include qualitative, quantitative and mixed methods studies in which the determinants of seat belt behaviour are described. Animal studies will not be considered in the present research.

Determinants

Genetic factors, income level, poverty rate, environmental factors, political situations, unemployment and homelessness rate, education levels, social and economic situations including social exclusion and deprivation, occupational stress, common ancient customs and type of activities are the determinants that may significantly influence on the health status of people, communities and societies.[21]

Determinants may be defined as personal and impersonal factors that have an effect on the wearing of seat belts in the transport system of a community. Personal determinants including age, gender, education level, knowledge, and attitude, and impersonal determinants such as the type of seat belt law (current traffic rules), time (day and/or night), location of passengers and geographical conditions will be considered for investigation in the present study. The aforementioned determinants are not exhaustive and complete, and additional determinants of seat belt usage could be included, categorised and discussed in the current or further systematic reviews.

Outcome

The achieved results will be used to distinguish all possible parameters that may determine the causes, times, conditions and ways in which individuals wear or do not wear seat belts. In addition to the frequency of wearing seat belts, the achieved results may either record self-reported seat belt use or seat belt use measured

objectively based on the vehicle type, seat location and type of seat belts.

Language

A comprehensive study of several databases will be performed regardless of language restrictions.

Setting

There will not be any restrictions due to the type of setting.

SEARCH METHODS FOR IDENTIFICATION OF STUDIES

Electronic search

In this systematic review, the authors will develop a comprehensive search strategy for finding appropriate scientific articles in the following databases:

- MEDLINE/PubMed.
- Scopus.
- Web of Science.
- Embase.
- PsycINFO.
- Cochrane Database of Systematic Reviews.

PubMed search strategy

The PubMed database search syntaxes are presented in online supplementary appendix 1. This syntax is a combination of MeSH terms, keywords and tags and will be adopted for other databases. The authors will use PubMed's email alert service to identify any newly or very recently published articles. If the authors identify additional relevant keywords through any of the applied electronic and other searches in the current study, they will modify and improve the electronic search strategies to combine these terms and documents with the alterations.

Searching other resources

The authors will search in Google Scholar search engine and check the reference lists of the relevant reviews and previously published similar systematic reviews. Grey literature, including published abstracts, conference proceedings, reports, and theses as well as dissertations, will be searched with the use of sources, including ProQuest, Dissertations and Theses, NHS Evidence, OpenGrey, WHO, Centers for Disease Control and Prevention and transportation research centres. Key journals are the other resources that will be used in this search. Finally, the authors will complete the search process by manual searching in Google.

In the published studies that appear to match our objectives, the authors will contact the corresponding author(s) for more information. Initially, the authors will contact the corresponding author(s) by email and request data. If a response is not received after three contact attempts, we will exclude the research from the review.

Three groups of search terms relevant to the population (occupant), the outcome (seat belt use) and terms relevant to determinants (determinants OR factor OR predictor) will be used. The authors will include articles that are available between January 1990 and December 2017, and will use the number needed to read index to ensure a sufficient number of selected articles.[22] All the identified articles will be imported into EndNote (reference manager) software. The current protocol follows the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) checklist and will report the review articles according to the PRISMA statement.[23]

DATA COLLECTION AND ANALYSIS

Study selection

In the first step, two reviewers (JH and MG) will test the screening questions based on the inclusion and exclusion criteria; then the results obtained from the search method will be screened for possible duplications, and any possible duplications will be removed. Next, the same two reviewers will independently evaluate the articles according to their titles and abstracts. Conflicts will be resolved by discussion until a consensus is reached. If a consensus cannot be reached, a third reviewer (BA) will be invited to act as a referee or arbitrator. The inclusion criteria include articles published between 1990 and 2017, and the study population will include people travelling in different types of vehicles (both drivers and passengers). Studies on booster seats or child restraints will be excluded.

Scientific papers that match the inclusion criteria will be ordered for a full and complete review. Finally, to review eligibility criteria, the full texts of the remaining articles will be studied independently by two authors (JH and MG) (figure 1).

DATA EXTRACTION

The specific data of the studies, including the studied population, the applied design, the selected country, the achieved outcomes and other necessary data, will be extracted independently by two reviewers (JH and BA) by using a quantitative data extraction form. Based on the data extraction approach, the type of determinant of seat belt usage will be classified (figure 1).

Assessment of risk of bias of included studies

Assessment of the risk of bias and methodological quality within the included studies will be conducted by two reviewers (JH and SR) independently, considering the items according to the Effective Public Health Practice Project tool, Quality assessment tool for the assessment of the quantitative studies[24] and the Newcastle-Ottawa Scale for the evaluation of the quality of non-randomised studies in the current review.[25] We will also use the Joanna Briggs checklist for qualitative research for the qualitative studies.[26] According to the scores achieved, the studies will be classified into three different categories including high quality, fair quality and poor quality.

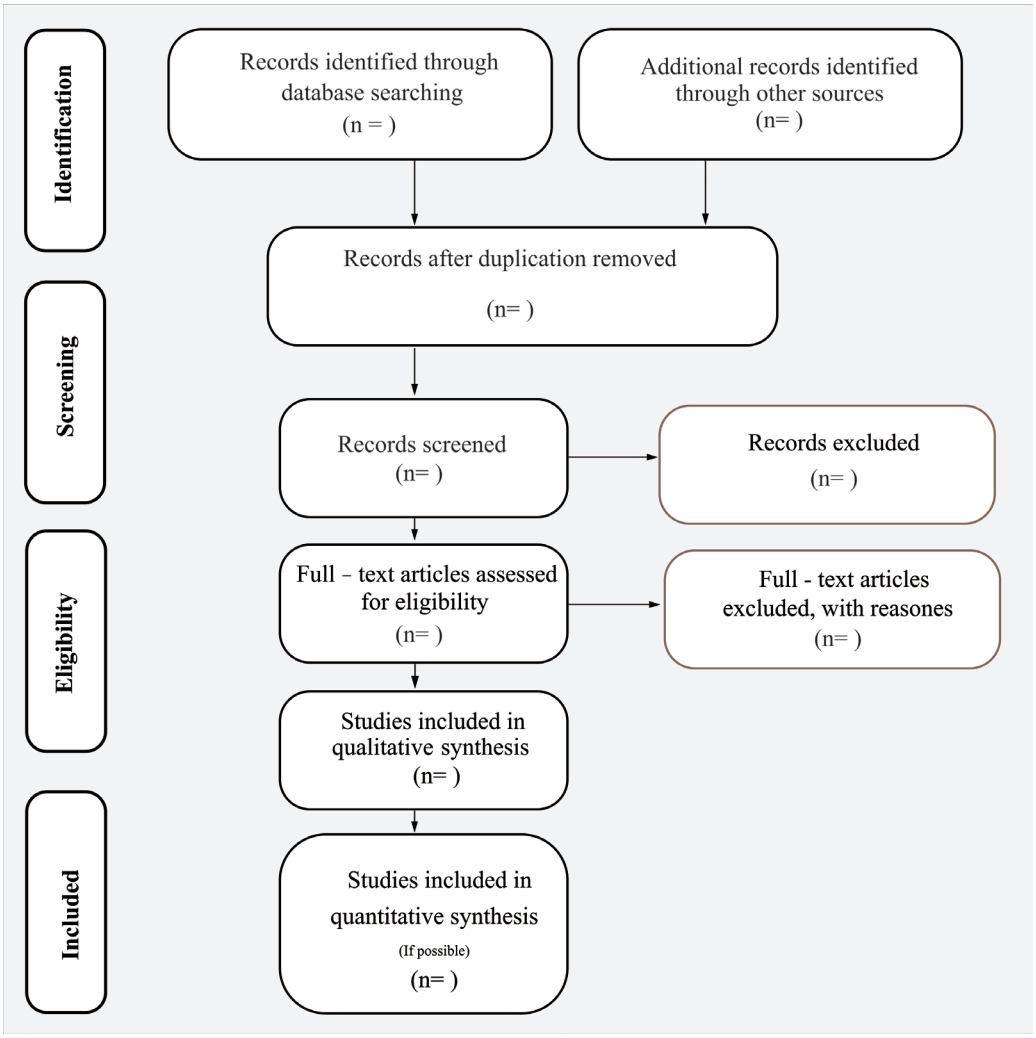

Figure 1 Flow chart presenting an overview of the search results.

Assessment of publication bias

To explore the possibility of small study bias, the authors will assess funnel plots (ie, constructed plots of the achieved results vs precision) and Begg's and Egger's tests, when there are 10 or more included studies.[27]

DATA SYNTHESIS

Descriptive analysis

We will apply the narrative analysis method,[28] and the results obtained from the study will be descriptively reported in a summary table presenting complete information on the study population, study design, sitting patterns, quality of the performed study, behavioural patterns and the results of seat belt usage.

The authors expect that in the present systematic review, articles will be included from various study designs that are not appropriate to analyse the obtained data by using the meta-analysis approach. It should be noted that in the existence of conditions the authors will use meta-analysis and subgroup analyses to explore any possible sources of heterogeneity based on drivers versus passengers, passenger's location (front seats vs back seats), commercial versus passenger (personal) vehicles and men versus women.

Summary of the findings

The authors will systematically and comprehensively describe the results obtained from each study, highlighting the important characteristics of the study including important similarities or differences (eg, study design, selected population, intervention or other elements); then the patterns in the data will be explored and described. The reasons for the occurrence of both similarities and differences of the outcomes found in the current study will be systematically explored, and possible explanations for the pattern of results will be considered and described or reported in a logical manner for each of the included studies.

The guidelines of the Cochrane narrative synthesis will be employed as the framework for data synthesis. These guidelines describe the following four main steps for the narrative synthesis:

1. Developing a theory of how the intervention (exposer) works, why and for whom.
2. Developing a preliminary synthesis of the findings of the included studies.

3. Exploring the relationships in the accumulated data within and between the performed studies.
4. Assessing the robustness of the synthesis.[29]

Ethics and dissemination

Because no primary and experimental data will be collected in the present study, adherence to formal ethical guidelines in the current study is not necessary. The authors will conduct a full and comprehensive search in various electronic databases; additionally, study selection and data extraction will be performed. The strategy mentioned in the method and the analysis section will be performed by two independent reviewers, and the authors will try to maintain the rights of the authors of the current research and the cited articles in the present systematic review. The findings of the current review will be published in a relevant peer-reviewed journal.

DISCUSSION

The use of seat belts is the most logical way to reduce collision leading to death and serious injuries.[30] Although a seat belt by itself cannot prevent collisions, it has an effective role in reducing the injuries' intensity and in preventing possible damage to passengers and drivers.[8]

Thus far, few systematic reviews, meta-analyses and protocols have been published on the use of seat belts.[11 31 32] However, none of them comprehensively studied the determinants of the behaviour of seat belt use. We found only one meta-analysis that reviewed factors influencing the rate of seat belt use in the USA.[33] Hence, a systematic review is required to comprehensively identify the determinants of seat belt use.

The present study will clarify unknown aspects of the reasons why some people use or do not use seat belts. Studies on the determinants of the behaviour of seat belt use may help identify the determinants that contribute mostly to seat belt use by car occupants and provide a comprehensive framework of factors that significantly affect this behaviour. Additionally, the current study will provide important information for researchers, stakeholders in public health and policymakers, as well as for designing intervention programmes to increase seat belt use. Moreover, implications for future research may be drawn from the results obtained from the present study.

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Acknowledgements The authors acknowledge the efforts of Abbas Ali Keshtkar and Aatefeh Aboutorabi for their assistance during this protocol. The authors also particularly dedicate their sincere thanks to the reviewers for their valuable comments, which helped considerably in the improvement of the quality of the manuscript. Also, we would like to appreciate Iran's road maintenance and transportation organisation for their kind assistance.

Contributors JH, MG, BA, SR, OS, YM and HS conceived and designed the study. JH, MG, BA and SR developed the search strategies. JH, BA and MG were responsible for the initial drafting, editing of the manuscript, and approved the manuscript for submission. OS, HS and YM revised the manuscript. JH and MG will also screen potential studies, extract data and assess their quality. Any discrepancies will be resolved by consensus between JH and MG. When consensus is not reached, BA will act as an arbitrator to make a final decision.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

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