

# Long-Term Mental Health Consequences of Road Traffic Crashes: A Scoping Review

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## INTRODUCTION

The considerable number of road crashes resulting in death, injury and disability makes road safety a crucial issue worldwide [1], [2]. Preventing road deaths, addressing severe injuries in road traffic and their long-term effects, both mental and physical, remains a critical aspect of achieving a resilient and future-proof transportation system.

## AIMS

To summarize findings from longitudinal studies on mental health, psychological outcomes, and mental health-related quality of life (HRQoL) following road traffic crashes (RTCs) in order to suggest implications to improve recovery and rehabilitation.

## METHODS

Long-term consequences (LTCs), physical and mental health, quality of life, and road traffic crash were the keywords used to search the PubMed, Scopus, and Web of Science electronic databases. The initial search yielded 420 records, reduced to 390 after the removal of duplicates. Following the PRISMA 2020 guidelines, 50 observational studies published between 2010 and 2024 were identified as relevant, and one was found through citation searching. At the full-text reading 17 papers were excluded. As a result, 34 articles were included in the review. These studies investigated the long-term physical and psychological consequences of road crashes across all categories of adult road users. Seven papers showed a specific focus on mental health outcomes, including post-traumatic stress syndrome, pain-related psychological distress, depressive symptoms, mental HRQoL, and cognitive impairment.

## RESULTS

The reviewed studies consistently show that RTCs can lead to substantial long-term mental health consequences. A considerable number of individuals experience post-traumatic stress symptoms, with higher rates observed among those with more severe injuries. Persistent pain and residual physical or psychological symptoms are common even several months after the crash, often impairing daily functions and delaying return to work.

Depression and anxiety symptoms are associated with slower recovery, and negative expectations about recovery strongly predict persistent pain and emotional distress over time. Mental HRQoL, measured by means of standardized instruments, generally improves within the first year after the crash, but often remains below pre-injury levels, especially among those with longer hospital stays or more severe injuries.

Sociodemographic and clinical factors such as female sex, middle age, higher injury severity, and low physical or mental HRQoL scores are significantly associated with poorer mental health outcomes. In contrast, higher education levels, better physical functioning, and protective behaviors (such as the use of safety equipment) are associated with improved mental recovery and reintegration into daily life and work. Overall, these findings highlight the need for targeted mental health screening and supportive interventions in the post-injury care of RTC survivors. Characteristics of the included studies are summarized in Table 1.

## CONCLUSIONS

This review emphasizes the importance of early psychological screening, targeted intervention, and policy efforts to mitigate the mental health burden among RTC survivors.

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Table 1. Summary of findings from included studies

Study	Sample size	Country	Main outcomes
Hours et al., 2013	886	France	PTSD, pain, work absence
Hours et al., 2010	1168	France	PTSD, residual pain
Cassidy et al., 2014	1716	Canada	MTBI, CES-D
Edmed et al., 2018	177	Australia	PTSD; Pain expectations, anxiety
Giummarra et al., 2018	74,217	Australia	Mental health treatment, persistent pain
Doan et al., 2020	352	Vietnam	HRQoL (SF-12 MCS), return to work
Gopinath et al., 2020	1201	Australia	HRQoL (EQ-5D-3L, SF-12 MCS/PCS)

PTSD Post-traumatic stress disorder; MTBI Mild Traumatic Brain Injury; CES-D Centre for epidemiological studies-Depression Scale Symptoms; HRQoL Health-related quality of life; SF-12 Short Form-12 Health Survey; MCS Mental Component Score; PCS Physical Component Score; EQ-5D-3L EuroQol 5 Dimensions, 3 Levels