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Psychological distress following a motor vehicle crash: A systematic review of preventative interventions

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ABSTRACT

Introduction: Psychological distress following a motor vehicle crash (MVC) is prevalent, especially when the person sustains an associated physical injury. Psychological distress can exhibit as elevated anxiety and depressive mood, as well as presenting as mental disorders such as Post Traumatic Stress Disorder (PTSD) or Major Depressive Disorder (MDD). If unmanaged, psychological distress can contribute to, or exacerbate negative outcomes such as social disengagement (e.g., loss of employment) and poor health-related quality of life, as well as contribute to higher costs to insurers. This systematic review summarises current research concerning early psychological intervention strategies aimed at preventing elevated psychological distress occurring following a MVC.

Method: A systematic review of psychological preventative intervention studies was performed. Searches of Medline, Embase, PsychINFO, Web of Science and Cochrane Library were used to locate relevant studies published between 1985 and September 2015. Included studies were those investigating MVC survivors who had received an early psychological intervention aimed at preventing psychological distress, and which had employed pre- and post- measures of constructs such as depression, anxiety and disorders such as PTSD.

Results: Searches resulted in 2608 records. Only six studies investigated a psychological preventative intervention post-MVC. Interventions such as injury health education, physical activity and health promotion, and therapist-assisted problem solving did not result in significant treatment effects. Another six studies investigated psychological interventions given to MVC survivors who were assessed as sub-clinically psychologically distressed prior to their randomisation. Efficacy was varied, however three studies employing cognitive behaviour therapy (CBT) found significant reductions in psychological distress compared to wait-list controls.

Conclusion: Psychological interventions aimed at preventing psychological distress post-MVC are limited, often involving small samples, with subsequent poor statistical power and subsequent high risk of bias. These factors make it difficult to draw conclusions, however CBT appears encouraging and therefore worthy of consideration as a preventative intervention.

Introduction

Motor vehicle crashes (MVCs) constitute a leading cause of death and serious physical injury worldwide [1–3]. Extensive economic burden is associated with emergency services, vehicle damage, legal and administrative costs, as well as the medical treatments associated with both physical and psychological short and long-term rehabilitations [3]. Efforts to ameliorate the associated economic burden have attracted significant research activity predominantly focussed on preventing MVCs. A broad range of preventative strategies by governments have included strategies such as the development and management of road infrastructure, law enforcement targeting speed and alcohol consumption, and the provision of safer vehicles [4]. Despite these initiatives, death and injury rates from MVCs continue to rise, especially in developing countries [1,5]. While a declining trend exists in more developed countries, it is nevertheless concerning that costs associated with MVCs are significant [4]. For example, in Australia the cost of MVCs is approximately $17b or 2.3% of Gross Domestic Product [6]. Just as concerning is the knowledge that costs are significantly greater when psychological distress is experienced after a MVC. For example, costs have been found to

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double when a person is involved in compensation and also suffers psychological distress related to their MVC [7].

In response, considerable effort has been invested in studying MVC impacts, as well as psychological interventions employing, for instance, cognitive behaviour therapy (CBT), for those diagnosed with psychological disorders [2,4,8,9]. Typically, these psychological interventions are conducted months or years after the MVC [2] and conceivably, such a delay in treatment results in increased risk of psychological distress developing into psychological disorders like post-traumatic stress disorder (PTSD). Less emphasis however, has been placed on conducting psychological interventions delivered soon after the MVC, with the goal of preventing the development of psychological distress and disorder.

The prevalence of psychological distress following a MVC is high [8,10,11] and appears to be independent of physical injury severity [8,12,13]. Common psychological impacts include clinically elevated anxiety and depressive mood, as well as mental disorders such as PTSD, major depressive disorder (MDD), acute stress disorder (ASD) and adjustment disorder (AD) [8,14]. Left untreated, sub-clinically elevated psychological distress is associated with increased risk of psychological disorder requiring lengthy and expensive treatment interventions [8,14,15]. This suggests there is a need for early interventions aimed at preventing the worsening of psychological symptoms following a MVC.

Psychological distress is even more common for MVC survivors who are also involved in compensation [14,16–20]. The compensation system itself appears to generate additional stress for those involved as they navigate their way through an often stressful medico-legal process [17,21–23]. For example, large differences in perceived fairness have been found between fault-based versus no-fault compensation systems, with lower perceived fairness experienced by those in the at-fault system, and further, perceived fairness was shown to be positively correlated with better health outcomes after adjusting for demographic and injury variables [24]. This strengthens earlier research that found claimants who were not at fault, or attributed fault to others, were found to experience poorer recovery outcomes than those who were at fault [25]. Procedural justice is another compensation-related systemic factor with potential influence on health outcomes, with one study finding claimants' interactions with insurance companies were perceived as less fair than their interactions with lawyers [26]. Furthermore, significantly greater costs are incurred when a claim involves a psychological disorder in addition to the claimant's physical injury [27,28]. A psychological disorder can have extensive consequences for the MVC survivor and their family, including severe emotional dysregulation, poor coping strategies, delayed return to work, and financial strain, in addition to elevated costs for insurance companies [14,28,29]. Arguably, an effective intervention program delivered soon after the MVC aimed at preventing the development of psychological distress would be beneficial for addressing these consequences. For example, such an intervention could improve the MVC survivor's capacity for coping with the potentially stressful processes they experience post-MVC, resulting in reduced risk of psychological disorder and its negative impacts.

Evidence suggests that psychological distress is somewhat independent of physical injury severity. For example, elevated psychological distress has been shown to be associated with both catastrophic MVC-related injuries such as spinal cord injury (SCI) [14,30,31], and non-catastrophic physical injuries such as whiplash injury [8,14,32]. A systematic review investigating psychological distress following a MVC found 21% to 67% of MVC survivors suffered depressive mood states, while anxiety and driving phobia was experienced by up to 47%, and over 40% suffered symptoms consistent with PTSD [33]. Similar rates of psychological distress have also been found by other researchers [8,11,12,15,34]. These high rates of psychological distress suggests preventative measures are required soon after the MVC to improve resilience and reduce the risk of elevated distress developing into severe psychological disorders such as MDD, ASD and PTSD [14,35]. Greater resilience experienced by people with physical disabilities appears to equip them with greater capacity for coping with their physical disability, compared to those with lower resilience, suggesting resilience is an appropriate target of change [35].

There is a growing body of evidence aimed at identifying the predictors of poor recovery post-MVC [36–39]. Research suggests that involvement in compensation is one such predictor [16,17]. Therefore a potential target for change is to identify factors that reduce stress in the compensation process [17]. Accordingly, based on their findings, Murgatroyd, Cameron and Harris (2011) suggest policy review and legislative change may positively influence the experience of the claims process, thereby reducing the risk of poor recovery for claimants.

An alternative strategy for reducing risk of psychological distress developing post-MVC would involve psychological interventions delivered soon after the MVC, designed to equip survivors with skills and strategies needed for successfully dealing with the many stressors faced in relation to their MVC. Stressors could include impairment following physical injury, chronic pain, disrupted sleep, financial and familial strain, and reduced social and physical activity participation. Consequently, the inclusion of lifestyle skills, directed at improving sleep, diet, and exercise incorporated into early psychological interventions also has potential. As mentioned, there is extensive research focussed on treating psychological distress associated with MVCs when a person has been diagnosed with psychological disorder [2,9,40–43], and to a much lesser degree when involved in compensation [27,44]. Very little attention however, has been given to investigating the prevention of psychological distress for MVC survivors. Therefore, the aim of this study was to identify studies that investigated psychological interventions delivered soon after the MVC and determine their efficacy in preventing the development of psychological distress.

Method

Search strategy

To conduct a thorough systematic review on studies that investigated interventions aimed at preventing psychological distress following a MVC using pre- and post-intervention psychometrics for such conditions as anxiety, depression and PTSD. A high yield search strategy was employed. We searched Ovid Medline, Cochrane Library, PsychINFO, Web of Science and Embase databases for studies published from 1985 to September 2015, accessed via OvidSP interface using subject terms such as motor vehicle accidents, motor vehicle crash, MVC, prevention and psychological injury or distress, as well as specific psychological terms such as anxiety, depression, PTSD and driving phobia. It was decided to contain the searching to only peer-reviewed papers and not databases focussed on methodology or protocol as these would only report preliminary results.

Search terms were mapped to Medical Subject Heading (MeSH) terms and synonyms were grouped together using Boolean operators. Guidelines of the Cochrane Collaboration, together with the assistance of a librarian, were used to develop a search strategy that would identify all studies relevant to the research. With the assistance of Librarian database experts, minor modifications to the search strategy were necessary to take into consideration the different search and index terms used by the different databases. Additional searching was employed using Google Scholar for prominent authors in the field. Reference lists of