



Use of antidepressant medication after road traffic injury



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ABSTRACT

Objectives: Mental ill health after road traffic injury is common, as is the use of antidepressant medication after injury. Little is known about antidepressant use by injured people prior to their injury. The aim of this study is to describe the nature and extent of antidepressant use before and after road traffic injury.

Methods: Victorian residents who claimed Transport Accident Commission (TAC) compensation for a non-catastrophic injury that occurred between 2010 and 2012 and provided consent for Pharmaceutical Benefits Scheme (PBS) linkage were included ($n = 734$). PBS records dating from 12 months prior through to 12 months post injury were provided by the Department of Human Services (Canberra). PBS and TAC claims data were linked.

Results: Among participants, 12% used antidepressants before injury (84.4 Defined Daily Doses/1000 person-days) and 17% used antidepressants after injury (114.1 DDD/1000 p-d). Only 7.7% of the injured cohort commenced antidepressant treatment post injury. Thus, of all post-injury antidepressant use, 45% could potentially be related to the incident injury, with the remaining 55% most probably a continuation of pre-injury use. Pre-injury use was more common among women (109.4 vs. 54.6 DDD/1000 p-d, $p < 0.0001$), and those with whiplash injury (119.3 vs. 73.1, $p = 0.03$). Cyclists and motorcyclists were less likely to use antidepressants pre-injury than car drivers (18.3 vs. 16.9 vs. 109.3, respectively; $p < 0.001$).

Conclusions: Less than half of post-injury antidepressant use could potentially be attributable to the incident injury. These results highlight the importance of obtaining information on pre-injury health status before interpreting post-injury health service use to be an outcome of the injury in question.

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Introduction

The burden of injury that can be attributed to mental health consequences of an injury event is considerable [1]. Antidepressant medication is commonly prescribed to treat mental health conditions, which are not limited to major depressive disorder but also include anxiety disorder, obsessive compulsive disorder, eating disorder, sleep disorder; and less commonly neurological conditions such as migraine or neuropathic pain. Use of antidepressant medication can generally be considered as an indicator of poor mental health following traffic crash injury.

However, the assumption that antidepressant use post-injury can be attributed to the incident injury has not been adequately examined.

There is some evidence that pre-injury mental disorders are more prevalent among trauma patients than the general population. The strongest evidence comes from a large sample, population-based cohort study of a hospitalised injured group matched with a non-injured control group: the injured group was found to have higher rates of pre-injury mental health physician claims as well as mental health hospital admissions [2]. Whiplash specifically has also been associated with poor pre-injury mental health, in population based studies [3,4]. Another trauma population based study did not support poor pre-injury mental health among trauma patients [5]: in this study, pre-injury mental health scores (determined retrospectively after the injury) were compared with population norms, and the results indicated better mental health among trauma patients.

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Pre-injury mental illness has been shown to be a risk factor in developing mental illness after injury. In spinal cord injury patients, pre-injury history of depression is a risk factor for depression following spinal cord injury [6]. Pre-injury anxiety and depression increase the likelihood of incident self-reported whiplash [7]. Self-reported prior mental health problems have also been identified as a risk factor for developing depression after whiplash [8,9].

While mental health is the underlying issue of importance, antidepressant prescribing patterns can serve as a proxy in analyses of large population based data sets: prescribing details are reliably recorded and not subject to reporting bias. The aim of this study was to describe antidepressant use before and after road traffic injury, in order to examine the assumptions that all post injury antidepressant use can be attributed to the incident injury, and to highlight the need for further definitive studies to quantify the injury-attributable component of post injury mental health. We expect the prevalence of pre-injury mental health illness among injured individuals to be high and therefore we expect to find high rates of pre-injury antidepressant use in the injured population. Post-injury antidepressant use can be a continuation of pre-injury antidepressant use or a reflection of new onset injury-related therapy.

Methods

Study design and setting

An opt-in, fully consented data linkage study was conducted in the state of Victoria, Australia. The study sample comprised a subset of those people injured in road crashes in Victoria who subsequently made an injury compensation claim to the Transport Accident Commission (TAC), a comprehensive state-wide transport injury compensation scheme. In addition to the information obtained from the TAC claims database, data of prescription drugs subsidised through the Pharmaceutical Benefits Scheme (PBS) were provided by the Department of Human Services. PBS prescription drug data and TAC claims data were linked, resulting in a linked dataset of pharmaceutical records dating from one year prior to the injury incident through to one year following the incident. The study was approved by the Monash University Human Research Ethics Committee in Melbourne (Project number: CF12/0875 – 2012000398) as well as the External Request Evaluation Committee at the Department of Human Services in Canberra (Project number: SF4060116).

Data sources

Transport Accident Commission

The Transport Accident Commission (TAC) is a state-government organisation established to pay for treatment and benefits for people injured in traffic accidents in the state of Victoria, Australia [10]. The scheme is state-wide and funded from annual car registration payments by Victorian motorists. It is a no-fault scheme, i.e. the injured person is eligible for benefits regardless of who caused the accident. Income replacement, medical, rehabilitation and lifetime care costs resulting from transport injury are compensated by the scheme. A medical excess applies to medical and paramedical treatment costs: the initial AU\$564 (2012/13) of medical expenses is not reimbursed by the scheme. Ambulance and hospital services are exceptions and the medical excess does not apply to these services. For any patient admitted to hospital for at least one day, the medical excess does not apply.

Medicare and the pharmaceutical benefits scheme

Australia has a universal healthcare programme, Medicare, which is funded by the Australian government. Treatment by health professionals such as doctors and specialists is free or subsidised; allied health services are only subsidised under special circumstances. Prescription medication is subsidised through the Pharmaceutical Benefit Scheme (PBS). The Australian Government subsidises medicines that are necessary to maintain the health of the community in a way that is cost effective: these drugs are listed in the PBS [11]. PBS codes are specific with regard to the medication generic name (generic), form, strength and pack size.

Procedure

Residents of Victoria, Australia who successfully claimed TAC compensation for a road traffic injury that occurred between 17-JUL-2010 and 22-JUL-2012 were invited to participate. TAC clients aged less than 18 years and clients with a catastrophic injury were excluded. Clients who had recently been approached regarding TAC surveys or related research were also excluded. In total 10,998 TAC clients were invited to participate by paper mail. The study invitation included an explanatory statement from the investigators, consent form and reply envelope. Completed forms were returned to the investigators by reply envelope. Replies were collected and valid signed forms were forwarded to the Dept. of Human Services (Canberra) for provision of MBS and PBS records. The MBS and PBS records supplied by the Dept. of Human Services were linked to Transport Accident Commission claims and payment records by study ID. Study ID was then removed and replaced by a new identification number to create a research database that could no longer be linked back to the participant database containing contact details and other identifiers. The TAC was not informed about the participation status of clients.

Study variables and analysis

Antidepressants

Prescription drug payments in the TAC as well as the PBS data were provided with PBS codes and Anatomical Therapeutic Chemical (ATC) classification codes. Using the information system available at the PBS website [1], PBS codes were used to provide the medication generic name (generic), form, strength and pack size. Antidepressants were selected as prescriptions with ATC codes starting with 'N06A'. Antidepressants that were reimbursed by both the TAC and PBS (i.e. the drug was subsidised via the PBS and remaining out-of-pocket costs were paid by the TAC) were identified as duplicates and one of two items was removed. The supply date of the first recorded antidepressant in the data was used to determine the timing of the first prescription in relation to the accident date: this could range from 365 days before accident to 365 days after the accident onset. To determine the overall use of antidepressants within the sample, and to allow for future comparisons to other studies, use was expressed as the defined daily dose (DDD) per 1000 person-days. For each antidepressant, the corresponding DDD was obtained from the World Health Organization Collaborating Centre for Drug Statistics Methodology website [12]. The total amount prescribed for each person pre-injury and post-injury was determined using the form, strength and pack size or each prescription, and converted to DDD.

Pre-injury antidepressant use was further categorised as (1) 'Started' antidepressants in the second half of the pre-injury year (i.e., in the six months immediately preceding the injury); (2) 'Stopped' antidepressants if they were used in the first but not the second half of the pre-injury year; (3) 'Ongoing' antidepressants if they were used in the first as well as the second half of the pre-injury year; or (4) 'Never' used antidepressants in the pre-injury year.

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