

ORIGINAL ARTICLE

Mental health services utilization and driving violations

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Abstract

Objective. The objective of this study was to determine whether there is a relationship between the past utilization of four mental health services (i.e. ever been seen by a psychiatrist, ever been in a psychiatric hospital, ever been in counseling, ever been on psychotropic medication) and different types of driving citations during one's lifetime. **Methods.** Using a consecutive, cross-sectional, primary care sample, we surveyed participants about their past use of four mental health services and lifetime incidence of 29 different types of driving citations (charges, not convictions). **Results.** The total number of different types of moving violations was statistically significantly related to a history of psychiatric hospitalization. The total number of different types of non-moving violations was statistically significantly related to all mental health services variables. **Conclusions.** In this study, general non-specific queries about the past utilization of mental health services were correlated with both moving violations (past psychiatric hospitalization) and non-moving violations (all mental health services variables). These findings suggest that patients who have received mental health treatment are at a higher risk for being cited for driving violations than those who have not received mental health treatment. However, among the mental health variables under study, only past psychiatric hospitalization was associated with moving violations.

Key Words: *Driving violations, driving citations, driving, mental healthcare utilization, mental disorders*

Introduction

Empirical studies indicate that a number of psychiatric disorders and/or psychotropic medications may be associated with an impaired ability to drive. Among the various psychiatric disorders, depressive illness is an exemplary disorder that has been empirically associated with driving impairment. For example, through driving simulations, Bulmash et al. [1] examined unmedicated patients with major depressive disorder and, compared to controls, found slower steering-reaction times and an increased number of crashes. In a large French sample, Parmentier et al. [2] found that depression in men was associated with a decrease in road mobility. In an Australian study, Hilton et al. [3] demonstrated that high levels of depression were associated with a greater likelihood of nearly or actually having had a motor vehicle accident in the past 28 days. In a Canadian study, Stoduto et al. [4] found that depression increased the likelihood of driving after

drinking, indicating that depression may be a mediating variable in alcohol use and in subsequently impaired driving ability.

Similar to the findings in major depression, researchers have found associations between other Axis I disorders and impaired driving ability. Examples of these psychiatric disorders include attention deficit hyperactivity disorder, both in children [5] and adults [6]; alcohol abuse [7]; substance abuse [8]; and schizophrenia [7,9,10].

In addition to research indicating that psychiatric disorders may contribute to impaired driving, a number of psychotropic medications have been implicated as having a negative effect on driving skills, as well. For example, tricyclic antidepressants have been associated with a greater relative risk for motor vehicle accidents [11,12]; significantly impaired road-tracking and car-following performance as well as somnolence and reduced vigilance [13]; and an increased risk of being in a traffic accident [14].

Non-tricyclic antidepressants have also been associated with driving impairment. For example, in a Spanish study, De las Cuevas and colleagues examined driving skills in patients taking predominantly selective serotonin reuptake inhibitors (SSRIs) or serotonin norepinephrine reuptake inhibitors (SNRIs) [15]. On assessment, 84% of participants failed at least one of the required driving skills and nearly 80% demonstrated impairment that would preclude obtaining a driver's license in Spain. Using a driving simulation test, Dannewitz and Petros studied 60 individuals in a US sample and found that participants on non-tricyclic antidepressants with *high* depression scores performed significantly worse than those on antidepressants with depression scores in the normal range [16]. Finally, Bramness et al. [14] reviewed the effects of non-sedating antidepressants on driving (e.g., SSRIs, venlafaxine) and found a slightly increased risk of being involved in an automobile accident.

In addition to antidepressants, other psychotropic medications have been implicated as potential risk factors for driving impairment. For example, Hatcher et al. [17] found that patients on lithium demonstrated significantly slower reaction times during driving simulation tests. Several studies have found that anti-psychotic medications, both typical and atypical, are associated with driving impairment [18–21]. Finally, benzodiazepines have consistently been associated with impaired driving — an observation that was robustly confirmed in a recent meta-analysis [22].

Given that a number of psychiatric conditions and psychotropic medications are associated with driving impairment, we wondered whether a brief query of mental health services utilization, which is typically undertaken during the routine psychiatric interview, would show correlations with self-reported histories of driving citations. Our hypothesis was that individuals with a history of using mental health services would have a greater number of different types of driving citations.

Method

Participants

Participants were males and females, between the ages of 18 and 65 years, who were being seen at an outpatient primary care clinic for non-emergent medical care. The outpatient clinic is staffed by both faculty and residents in the department of internal medicine, and is located in a mid-sized, mid-western city. For the year 2008, the characteristics for the clinic were as follows: 64% female and 36% male consultations; 30% of patients were between the ages of 15 and 44 years, 45% 45 and 64 years, and 25% age 65 or greater; 8% self-pay, 49% government insurance (Medicare/

Medicaid), and 43% private insurance. The most common diagnoses were hypertension (8.7%), hyperlipidemia (6.1%), diabetes (5.4%), allergies (4.7%), and hypothyroidism (2.3%).

We excluded participants who were unable to complete a brief survey — i.e. those with compromising medical (e.g., dementia, pain), intellectual (e.g., mental retardation), or psychiatric disorders (e.g., active psychosis). In this study, 492 individuals were approached and 419 agreed to participate, for a response rate of 85.2%.

Of the 419 respondents, 130 were male, 287 were female, and two failed to indicate sex. Respondents ranged in age from 18 to 65 years ($M=49.48$, $SD=15.26$). Most (358) participants were White/Caucasian (85.4%); 35 participants were African American, eight Native American, two Hispanic, four Asian, 11 “other”, and one failed to indicate race/ethnicity. With regard to educational attainment, most (92.1%) had at least graduated high school, with 159 (37.9%) having attended some college and 110 (26.3%) having earned at least a 4-year college degree.

Procedure

During clinic hours, one of the authors (C.L.) was positioned in the lobby of the outpatient clinic, approached consecutive incoming patients, and informally assessed exclusion criteria. She then reviewed with potential candidates the focus of the project and invited each to participate. Each participant was asked to complete a four-page survey, which took about 10 min. Following completion, participants were asked to place the surveys into sealed envelopes and then to place the envelopes into a collection box in the lobby.

The survey contained several sections. The first section consisted of a demographic query, in which we asked participants about their sex, age, marital status, racial/ethnic origin, and educational level.

The second section briefly queried participants about their mental health services history (i.e. past use of mental health services). Specifically, we queried participants about the following four items, allowing for yes/no responses: “Have you ever been seen by a psychiatrist?”, “Have you ever been hospitalized in a psychiatric hospital?”, “Have you ever been in counseling?”, and “Have you ever been on medication for your nerves?”

The third section of the survey contained the author-developed (R.A.S.) *Driving Questionnaire*, which consists of 29 yes/no queries about legal citations related to driving (charges, not convictions). Specifically, we inquired about 12 moving violations (e.g., speeding, reckless driving, going through a stop sign) and 11 non-moving violations (e.g., expired registration,

violating a muffler law, lack of proof of insurance). We also asked participants if they had ever been cited for an automobile/motorcycle accident, driving while intoxicated, vehicular manslaughter, or leaving the scene of an accident. Finally, we inquired if participants had ever had their driving privileges suspended or been refused a driver's license in any state.

There was no funding for this project. The cover page of the survey contained the elements of informed consent and completion of the survey was assumed to be implied consent. The project was approved by the institutional review boards of both the affiliated hospital and the university.

Results

Prevalence of mental health services utilization in the sample

Depending on the mental health services utilization item, between nine and 12 of the 419 respondents failed to respond to a given item. Of those who did respond, 42.9% indicated having been seen by a psychiatrist, 14.0% having been admitted to a psychiatric hospital, 52.1% having been in counseling, and 41.3% having been on psychotropic medication.

Mental health services utilization and driving violations

We noted that speeding was endorsed by two-thirds of participants, and deleted this item from the following analyses. With regard to potential relationships between mental health services utilization and driving violations, the total number of different types of moving and non-moving violations is presented in Table I as a function of participants' mental health services history. Note that the total number of different types of moving traffic violations was statistically related to having

been admitted to a psychiatric hospital, whereas the total number of different types of non-moving traffic violations was statistically related to all four forms of mental health services utilization.

Last, we examined whether the incidence of specific serious driving offenses varied as a function of mental health services utilization. No participant admitted to vehicular homicide, and too few participants reported leaving the scene of an accident ($n=8$) or having been denied a driver's license ($n=7$) to warrant analyses with those variables. However, several statistically significant relationships emerged among the remaining driving violations. Compared to those respondents who had never been in counseling, those with counseling experience were more likely to have been cited for a vehicular accident (41.5 vs. 30.4%, Chi-square=5.28, $P < 0.02$) as well as more likely to have had their driving privileges suspended (21.2 vs. 13.7%, Chi-square=3.82, $P < 0.04$). Similarly, compared to those respondents who had never seen a psychiatrist, those who had were more likely to have been cited for a vehicular accident (42.7 vs. 30.8%, Chi-square=5.95, $P < 0.01$) as well as more likely to have had their driving privileges suspended (22.5 vs. 14.1%, Chi-square=4.80, $P < 0.02$). Having been prescribed psychiatric medication was not statistically significantly related to any of the specific driving violations. However, having been admitted to a psychiatric hospital was related to greater incidence of having been cited for a vehicular accident (48.1 vs. 33.9%, Chi-square=4.11, $P < 0.04$) and having been cited for driving while intoxicated (15.1 vs. 5.9%, Chi-square=5.80, $P < 0.03$).

Discussion

These data reveal several important findings. First, the only mental health services variable related to

Table I. Total number of different types of driving violations as a function of history of mental health services utilization.

| | Did not indicate this mental health service | | Indicated this health service | | <i>F</i> | <i>P</i> |
|-------------------------------------|---|---------------|-------------------------------|---------------|----------|----------|
| | <i>M</i> | (<i>SD</i>) | <i>M</i> | (<i>SD</i>) | | |
| Mean number of different | | | | | | |
| Types of moving violations | | | | | | |
| Ever seen a psychiatrist | 0.50 | (0.85) | 0.69 | (1.20) | 3.63 | <0.06 |
| Ever been in a psychiatric hospital | 0.50 | (0.85) | 1.04 | (1.61) | 14.19 | <0.001 |
| Ever been in counseling | 0.49 | (0.85) | 0.67 | (1.15) | 2.91 | <0.10 |
| Ever taken meds for "nerves" | 0.52 | (0.90) | 0.67 | (1.18) | 2.24 | <0.14 |
| Types of non-moving violations | | | | | | |
| Ever seen a psychiatrist | 0.32 | (0.78) | 0.72 | (1.26) | 15.69 | <0.001 |
| Ever been in a psychiatric hospital | 0.44 | (0.94) | 0.77 | (1.43) | 5.12 | <0.03 |
| Ever been in counseling | 0.30 | (0.66) | 0.66 | (1.24) | 12.48 | <0.001 |
| Ever taken meds for "nerves" | 0.38 | (0.87) | 0.63 | (1.19) | 5.79 | <0.02 |

moving violations was psychiatric hospitalization, whereas all of the mental health service variables were related to non-moving violations. This suggests that severely psychiatrically impaired individuals who are behind the wheel of a vehicle are at a greater risk for driving violations both when the vehicle is moving (e.g., reckless driving, careless driving, going through a stop sign, running a traffic light, following too closely, failure to yield) and when not moving. With regard to moving violations, this finding may be explained by a general lack of attentiveness to driving that may be partially attributable to the psychiatric illness, itself; the use of psychotropic medications (e.g., psychomotor and cognitive effects); and alcohol and/or substance abuse. Importantly, the other forms of mental health service utilization were *not* associated with moving violations, indicating that most individuals who seek mental health treatment are not at-risk for moving traffic violations.

That various forms of mental health services utilization are consistently linked with non-moving violations (e.g., expired registration, certificate of registration not in vehicle, driving an unregistered vehicle, lights required on the vehicle, violating a muffler law, driver's license not on person, expired driver's license) suggests that psychiatric illness may result in an inattentiveness to the "paperwork" required in life. In other words, individuals suffering from emotional illness may experience a general inner distraction that precludes them from completing the required maintenance tasks associated with driving. We suspect that this general level of inattentiveness to life's tasks may extend to other functional areas, as well – i.e. to the broader life-maintenance tasks that are required of all of us (e.g., completing a will, paying taxes, monitoring one's checking account). Only additional research will clarify the latter presumption.

In keeping with the proposed theory of inattentiveness, note that having been in counseling, seen a psychiatrist, and undergone a psychiatric hospitalization were each associated with vehicular accidents. Two of these mental health services utilization variables (having been in counseling and having seen a psychiatrist) were also associated with having one's driving privileges suspended – the likely result of multiple driving infractions. Again, these findings seem to suggest a lack of focus or attentiveness with driving. Interestingly, having undergone a psychiatric hospitalization was associated with driving while intoxicated, perhaps indicating that severe psychiatric illness and alcohol abuse/intoxication are linked.

Another interesting finding was that psychotropic medication was not associated with any of the more serious driving offenses. Given the findings in the introduction of this paper, this observation in a community sample is reassuring for both patients and

clinicians. It appears that while psychotropic medication has the potential to cause impairment, according to these data, this does not generally result in a greater likelihood of serious driving incidents.

To summarize, these data clinically indicate that for the most part, mental health services utilization has no meaningful relationship to moving traffic violations (i.e. the traffic violations that potentially place others at-risk), with the exception of the small subsample of participants (14%) who reported being hospitalized in a psychiatric facility. However, there was an association between the majority of endorsed mental health services and vehicular accidents, with the exception being the use of psychotropic medication. The nature of these vehicular accidents is important to explore in future research. If such accidents do not entail other vehicles/persons, then we can safely conclude that mental health service use is unrelated to driving risks to others. If such accidents do entail other vehicles and drivers, then we can conclude that most forms of mental health service use are associated with a higher risk of driving incidents involving others.

This study has a number of potential limitations including the use of self-report measures; the assessment of driving citations through an author-developed questionnaire rather than a previously validated measure (we were unable to locate such a measure); the lack of definition of some terms (e.g., "nerve medications"); and the very general, non-specific nature of the mental health services utilization items inquired about (e.g., we did not specify extent of usage). However, this is the only study that we are aware of that has examined the possible relationships between general mental health services utilization and driving citations. The sample was consecutive and reasonably large, and the findings reveal interesting correlations that lead to some general conclusions, which are useful for clinicians in their queries and overall management of psychiatric patients.

Key points

- Past empirical findings suggest that both psychiatric disorders and psychotropic medications may be associated with impaired driving
- After excluding speeding in this study, we found that the total number of different types of moving violations was statistically significantly only associated with a history of psychiatric hospitalization
- In this study, we found that the total number of different types of non-moving violations was statistically significantly associated with all four variables representing mental health services utilization (i.e. ever been seen by a psychiatrist, been in a psychiatric hospital, been in counseling, been on psychotropic medication)

- The past use of psychotropic medications was not associated with vehicular accidents, although the other forms of mental health utilization were. The nature of these accidents (e.g., risk to others) warrants further research
- The data from this study suggest that there is a relationship between the past use of mental health services and the total number of different types of driving citations/violations. However, these data do not indicate the overall risk to others

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Statement of interest

The authors have no conflict of interest with any commercial or other associations in connection with the submitted article.

References

- [1] Bulmash EL, Moller HJ, Kayumov L, Shen J, Wang X, Shapiro CM. Psychomotor disturbance in depression: Assessment using a driving simulator paradigm. *J Affect Disord* 2006;93:213–8.
- [2] Parmentier G, Chastang JF, Nabi H, Chiron M, Lafont S, Lagarde E. Road mobility and the risk of road traffic accident as a driver. The impact of medical conditions and lifetime events. *Accid Anal Prev* 2005;37:1121–34.
- [3] Hilton MF, Staddon Z, Sheridan J, Whiteford HA. The impact of mental health symptoms on heavy goods vehicle drivers' performance. *Accid Anal Prev* 2009;41:453–461.
- [4] Stoduto G, Dill P, Mann RE, Wells-Parker E, Toneatto T, Shuggi R. Examining the link between drinking-driving and depressed mood. *J Stud Alcohol Drugs* 2008;69:777–80.
- [5] Barkley RA. Driving impairments in teens and adults with attention-deficit/hyperactivity disorder. *Psychiatr Clin North Am* 2004;27:233–60.
- [6] Barkley RA, Murphy KR, Dupaul GI, Bush T. Driving in young adults with attention deficit hyperactivity disorder: Knowledge, performance, adverse outcomes, and the role of executive functioning. *J Int Neuropsychol Soc* 2002;8:655–72.
- [7] Marshall SC. The role of reduced fitness to drive due to medical impairments in explaining crashes involving older drivers. *Traffic Inj Prev* 2008;9:291–8.
- [8] Vassallo S, Smart D, Sanson A, Cockfield S, Harris A, McIntyre A, et al. Risky driving among young Australian drivers II: Co-occurrence with other problem behaviours. *Accid Anal Prev* 2008;40:376–86.
- [9] St. Germain SA, Kurtz MM, Pearlson GD, Astur RS. Driving simulator performance in schizophrenia. *Schizophr Res* 2005;74:121–2.
- [10] Edlund MJ, Conrad C, Morris P. Accidents among schizophrenic outpatients. *Compr Psychiatry* 1989;30:522–6.
- [11] Ray WA, Fought RL, Decker MD. Psychoactive drugs and the risk of injurious motor vehicle crashes in elderly drivers. *Am J Epidemiol* 1992;136:873–83.
- [12] Leveille SG, Buchner DM, Koepsell TD, McCloskey LW, Wolf ME, Wagner EH. Psychoactive medications and injurious motor vehicle collisions involving older drivers. *Epidemiology* 1994;5:591–8.
- [13] Iwamoto K, Takahashi M, Nakamura Y, Kawamura Y, Ishihara R, Uchiyama Y, et al. The effects of acute treatment with paroxetine, amitriptyline, and placebo on driving performance and cognitive function in healthy Japanese subjects: A double-blind crossover trial. *Hum Psychopharmacol* 2008;23:399–407.
- [14] Bramness JG, Skurtveit S, Neutel CI, Morland J, Engeland A. Minor increase in risk of road traffic accidents after prescriptions of antidepressants: A study of population registry data in Norway. *J Clin Psychiatry* 2008;69:1099–103.
- [15] De las Cuevas C, Sanz EJ. Fitness to drive of psychiatric patients. *Prim Care Companion* 2008;10:384–90.
- [16] Dannewitz H, Petros T. Use of antidepressants may impair driving ability. *Neuropsychiatry Rev* 2008; October; p. 20–1.
- [17] Hatcher S, Sims R, Thompson D. The effects of chronic lithium treatment on psychomotor performance related to driving. *Br J Psychiatry* 1990;157:275–8.
- [18] Grabe HJ, Wolf T, Gratz S, Laux G. The influence of clozapine and typical neuroleptics on information processing of the central nervous system under clinical conditions in schizophrenic disorders: Implications for fitness to drive. *Neuropsychobiology* 1999;40:196–201.
- [19] Kagerer S, Winter C, Moller HJ, Soyka M. Effects of haloperidol and atypical neuroleptics on psychomotor performance and driving ability in schizophrenic patients. Results from an experimental study. *Neuropsychobiology* 2003;47:212–8.
- [20] Brunnauer A, Laux G, Geiger E, Moller HJ. The impact of antipsychotics on psychomotor performance with regards to car driving skills. *J Clin Psychopharmacol* 2004;24:155–60.
- [21] Soyka M, Winter C, Kargerer S, Brunnauer M, Laux G, Moller HJ. Effects of haloperidol and risperidone on psychomotor performance related to driving ability in schizophrenic patients compared to healthy controls. *J Psychiatr Res* 2005;39:101–8.
- [22] Rapoport MJ, Lanctot KL, Streiner DL, Bedard M, Vingilis E, Murray B, et al. Benzodiazepine use and driving: A meta-analysis. *J Clin Psychiatry* [Epub ahead of print 21 April 2009].