Canadian Psychiatrists' Current Attitudes, Practices, and Knowledge Related to Fitness-to-Drive in Persons with Mental Illness

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PREFACE

The thesis was written as a collection of manuscripts submitted for publication. This dissertation consists of two papers of which the student is the first and corresponding author. As per McGill University requirements these papers have a cohesive, unitary character making them a report of a single program of research. The following paragraphs describe the requirements of a thesis by manuscript at McGill University:

1. Candidates have the option of including, as part of the thesis, the text of one or more papers submitted, or to be submitted, for publication, or the clearly-duplicated text (not the reprints) of one or more published papers. These texts must conform to the "Guidelines for Thesis Preparation" with respect to font size, line spacing and margin sizes and must be bound together as an integral part of the thesis. (Reprints of published papers can be included in the appendices at the end of the thesis.)

2. The thesis must be more than a collection of manuscripts. All components must be integrated into a cohesive unit with a logical progression from one chapter to the next. In order to ensure that the thesis has continuity, connecting texts that provide logical bridges preceding and following each manuscript are mandatory.

3. The thesis must conform to all other requirements of the "Guidelines for Thesis Preparation" in addition to the manuscripts. The thesis must include the following: a table of contents, a brief abstract in both English and French, an

introduction which clearly states the rational and objectives of the research; a comprehensive review of the literature, a final conclusion and summary, a thorough bibliography, appendix containing an ethics certificate in the case of research involving human or animal subjects, microorganisms, living cells, other biohazards and/or radioactive material.

4. As manuscripts for publication are frequently very concise documents, where appropriate, additional material must be provided (e.g., in appendices) in sufficient detail to allow a clear and precise judgement to be made of the importance and originality of the research reported in the thesis.

5. In general, when co-authored papers are included in a thesis the candidate must have made a substantial contribution to all papers included in the thesis. In addition, the candidate is required to make an explicit statement in the thesis as to who contributed to such work and to what extent. This statement should appear in a single section entitled "Contributions of Authors" as a preface to the thesis. The supervisor must attest to the accuracy of this statement at the doctoral oral defence. Since the task of the examiners is made more difficult in these cases, it is in the candidate's interest to clearly specify the responsibilities of all the authors of the co-authored papers.

6. When previously published copyright material is presented in a thesis, the candidate must include signed waivers from the publishers and submit these to the

Graduate and Postdoctoral Studies Office with the final deposition, if not submitted previously. The candidate must also include signed waivers from any co-authors of unpublished manuscripts.

Following these guidelines, I have included two manuscripts of papers soon to be sent for review. The first paper represents the literature review: "Fitness-to-Drive in Individuals with Mental Illness: A Systematic Review". The second paper describes a cross-Canada study of Canadian Psychiatrists: "Canadian Psychiatrists' Current Attitudes, Practices, and Knowledge regarding Fitness-to-Drive in persons with Mental Illness: A Cross-Canada Survey". The second article contains more details for the purpose of the thesis but will be subsequently shortened for publication.

ABSTRACT

Mental illness is characterized by alterations in thinking, mood and behavior and is associated with significant distress and impaired functioning. Many mental illnesses and medications used in their treatment, can in some way impair fitness-to-drive.

This thesis comprises two independent but complementary articles. In the first article, the authors review the most recent literature on fitness-to-drive amongst individuals with mental illness, including those using psychotropic medications. In the second article, the authors assess current attitudes, practices, and knowledge of Canadian psychiatrists concerning driving safety amongst individuals with mental illness using a nation wide cross-sectional survey based on a random sample of practicing Canadian psychiatrists.

RÉSUMÉ

Les troubles de santé mentale sont caractérisés par une altération au niveau de la pensée, de l'humeur et des comportements et très souvent affectent le niveau de fonctionnement de l'individu. Plusieurs troubles de santé mentale ainsi que la prise de médicaments utilisée fréquemment pour traiter ces troubles peuvent affecter l'aptitude à conduire un véhicule routier de façon sécuritaire.

Cette thèse par article comporte deux articles indépendants mais complémentaires. Dans le premier article, nous recensons la littérature portant sur l'aptitude à conduire des personnes ayant un trouble de santé mentale traitées avec ou sans médicaments psychotropes. Dans le deuxième article, nous évaluons à l'aide d'une étude transversale d'un échantillon aléatoire les attitudes, pratiques courantes et connaissances des psychiatres canadiens en ce qui concerne l'évaluation de l'aptitude à conduire des personnes ayant un trouble de santé mentale.

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Several people have made this research possible and it is with their knowledge, generosity, help and support that this process was both a positive and enriching experience. I would like to thank my committee members who have been so generous and forthcoming in sharing their knowledge and expertise. I would like to offer my first acknowledgement to my thesis supervisor, Dr. Nicol Korner-Bitensky, who has offered much more than instrumental methodological advice. Nicol has been a guide and mentor throughout the master's process. She has consistently given me constructive feedback in a very humanistic, empathetic and supportive way. Her encouragement and boundless patience throughout her teachings and the completion of this research project have helped me to grow both personally and professionally and have provided the basic foundation for my research career.

I would like to offer my gratitude to Dr. Philip Beck and Dr. Nicola Casacalenda who are two wonderful psychiatrists with whom I have had the priviledge and honour of working. I have gained tremendously from their knowledge and expertise in psychiatry, and appreciate their encouragement and moral support.

I would also like to thank Dr. Isabelle Gélinas, my co-supervisor who attended my research protocol presentation and first presentation on preliminary results from this study. A very special thank you to Dr. Bonnie Dobbs whose expertise and insight have been extremely valuable. I appreciate her time spent on reviewing my research protocol during a conference in Alberta in a busy time in her life as well. Many thanks to Dr. Gary

Naglie who has been generous in sharing with us the template of his questionnaire survey on Canadian family physicians' practices related to driving assessment of the elderly. Warm regards to Dr. Frank Molnar for his feedback regarding survey modifications required for the study population and for his help with the Canadian medical directory. I was very fortunate to have had a thesis committee whose commitment and support have helped me achieve my goals.

This research study was made possible in part by CanDRIVE, the Canadian Driving Research Initiative for Vehicular Safety in the Elderly. This is a national multidisciplinary collaborative research team funded by the CIHR that is dedicated to identifying, analyzing, and addressing issues pertaining to the safe operation of motor vehicles in older persons. Many thanks for their studentship and for all the financial support they provided me with throughout my thesis. A special thanks to Malcolm Man-Son-Hing, Angela Kennedy, Cassandra Crowder and Shawn Marshall.

This project would not have been possible without the precious assistance of the McGill research team. Thanks to Anita Menon, Marc-André Roy, Fariba Rahkhoodaee and Mat for their dedication and help with the phone calls and faxing. Thank you Julie Lamoureux for the statistical analysis and Lioudmila Khomenko for your help in creating a database.

I extend a special mention of appreciation to bosses and co-workers who have been so understanding and supportive throughout this master's thesis. I thank them for allowing a flexible work schedule without which the completion of this degree would not have been

possible. Thanks to all the psychiatrists at work who agreed to help me with piloting the questionnaire study. Of course, this research could not have been possible without the psychiatrists who have graciously given of their time to complete the interviews.

I would also like to acknowledge the support of Stephen, my boyfriend, throughout all the steps of this master completion. He always encouraged me in the ups and downs of this process. Thanks for all his emotional support, kindness, encouragement and trust in me and in my ability to complete this thesis. Last but certainly not least, I thank my family and friends for their understanding, support and encouragement throughout the MSc program, and special thanks to my mother, Sylvie Girard and Valmont Turcotte, her boyfriend, who have helped me so much in carrying out the research project. They have now graduated to research assistants.

CONTRIBUTION OF AUTHORS

The literature review of this thesis was, in part, a manuscript submitted for publication, entitled *"Fitness-to-Drive in Individuals with Mental Illness: A Systematic Review"*, co-authored by Dr. Nicol Korner-Bitensky and myself. I conducted the literature review on fitness-to-drive and mental illness under the supervision of Dr. Korner-Bitensky. Dr. Korner-Bitensky and I collaboratively reviewed the research articles that were found. The article was also written in collaboration. Dr. Korner-Bitensky gave insightful comments on the structure, content and clarity of the manuscript.

The second article of this thesis entitled *"Canadian Psychiatrists' Current Attitudes, Practices, and Knowledge regarding Fitness-to-Drive in persons with Mental Illness: A Cross-Canada Survey"* was mainly written by myself and Dr. Korner-Bitensky. Some comments and suggestions were provided by the other co-authors i.e. Dr. Isabelle Gelinas, Dr. Bonnie Dobbs, Dr. Gary Naglie, Dr. Philip R. Beck, Dr. Nicola Casacalenda and Dr. Frank Molnar.

1. INTRODUCTION

Mental illnesses affect the lives of most Canadians. They impact on relationships, education, productivity, and overall quality of life (1). Approximately 20% of individuals will experience a mental illness during their lifetime, and most of the remaining 80% will be affected by an illness in family members, friends, or colleagues (1). Mental illnesses are characterized by alterations in thinking, mood, behavior, or a combination and are associated with significant distress and impaired functioning (1). There is great concern about the fitness-to-drive of individuals with mental illnesses since it can potentially compromise driving competency. Of particular importance are the side effects of psychotropic medications that hinder psychomotor performance, mood and attention, all of which are required for driving safely. Given the heterogeneity of the population having mental illnesses, clients need to be assessed on an individual basis (2). As a central point of contact in the mental health system, psychiatrists play an important role in assessing their clients driving competency. The objective of this study is to estimate Canadian psychiatrists' current practices, knowledge, and attitudes toward driving safety assessment amongst persons with mental illness.

1.1 Prevalence of mental illnesses

Previous studies have estimated that nearly one in five Canadian adults will experience a mental illness during a 1-year period (3;4). In 1999-2000, Statistics Canada reported 199,308 hospitalizations for mental illnesses (5). In 1999, 3.8% of all admissions to general hospitals (1.5 million hospital days) involved mental disorders; the most common

diagnoses were bipolar disorder, schizophrenia, major depression, and personality disorder (1).

1.2 Impact of mental illnesses on daily activities

Most individuals with a mental illness have a disturbance in their usual level of functioning (6). The symptoms they experience such as alterations in attention, concentration, decision-making abilities, and energy level interfere with their ability to accomplish daily activities such as personal care, household chores, work, leisure activities, and parenting (6). Driving ability is also potentially affected. Driving is a complex activity that involves many cognitive systems (7) and mental illnesses are likely to impair some of the cognitive skills required for driving. Many of the psychological characteristics found to be related to accident proneness are likely to be accentuated in persons with mental illnesses (8). Those features resulting from mental illnesses that have been reported to impact negatively on driving competency are hyperactivity, antagonism, impulsivity, delusions and hallucinations, impaired reality testing and suicidal ideation (9).

1.3 Driving

In our society, driving is considered to be an important component of quality of life. It provides a sense of independence and competence (7), and enhances an adult's ability to pursue daily activities by facilitating social and leisure participation, work, and educational pursuits (10). Driving is a complex activity, one that is usually learned through practice at an early age. Controlling a vehicle is, however, only the beginning.

A driver has to be adept at information processing, and sustained attention or vigilance, concentration, and memory (11). Adequate visuo-spatial functioning including motor response latency, figure-background differentiation, shape perception, visuo-spatial analysis are reported to be of particular importance (11). Good impulse control, sound judgment, and the ability to assess risks, to predict and to anticipate, to perceive hazards and to solve problems are also essential (11). Because of the impact on cognitive function and functional behaviours, it can be appreciated that mental illness may seriously affect driving abilities (11).

1.4 Driving models

Several models, dating as far back as the 1960's, help us to understand the relation between human abilities, driving performance and accident involvement (12). Hierarchical models (using a cognitive approach) are probably the best models for portraying driving as a complex activity. One of the best recognized is the model proposed by John Michon in 1985 that describes driving as a hierarchical structured task involving three levels of cognitive control: strategic, tactical/manoeuvring, and operational/vehicle control (13). The *strategic level* involves general trip planning, selecting the mode of travel, and evaluating costs and risks associated with alternative trips or routes. This control level is memory driven (12). Therefore, one can appreciate how a depressed individual with impaired decision-making and difficulty thinking may be unable to select a mode of transportation or the routes to take. A person with schizophrenia who is disorganized may have tremendous difficulty in planning a car trip. The *tactical level* involves manoeuvering and negotiating common driving situations

such as curves and intersections, passing, entering traffic and avoiding obstacles. At this level of cognition, the driver must respond to other drivers and the surrounding traffic. Decisions and actions are based on the immediate driving environment and are, therefore, data driven; these decisions are made in a matter of seconds (12). A person in a manic phase is likely to enter traffic and take curves too fast and, as judgment is often impaired, to make imprudent decisions. The *operational level* of control consists of immediate vehicle control inputs such as changing gears, accelerating, braking, and steering. The operational level is largely comprised of automatic action patterns. Automatic visual scanning is postulated to be controlled at this level. Decisions are based on the immediate driving environment and are data driven (decisions are made in a matter of milliseconds) (12). Within the context of this model it would be postulated that a depressed person with an impaired attention span and psychomotor retardation as well as impaired coordination due to medication side effects would have difficulty steering the vehicle and reacting quickly to events. Michon's model provides a good framework for understanding driving as a complex activity involving several levels of cognitive control.

1.5 Literature review

In reviewing the literature pertaining to mental disorders and fitness-to-drive, only six literature reviews were found and none were systematic (2;14-18), or used a critical analysis process. The most up to date was published in 1996. Therefore, a literature review was undertaken to retrieve all research articles on the topic of mental illness and fitness-to-drive. Substance abuse disorders and dementia were not included in the literature review because it has been established that the use of alcohol and drugs as well

as dementia affect driving fitness (9). Of all the articles found, only fifteen were actual research studies. The first article of this thesis presents a systematic review of the literature examining the evidence on fitness-to-drive amongst people with mental illness, including the role of psychotropic medications. The article also presents a critical analysis of the literature.

1.5 Canadian Psychiatrist current practices

We did not find surveys looking at Canadian psychiatrists' practices related to driving assessment in people with mental illness. The second article of this thesis presents the Canadian legislation with regards to physicians' duties in fitness-to-drive assessment. It also reports results from surveys of psychiatrists in Great Britain. Finally, the results of a nation-wide cross-sectional survey based on a random sample of practicing Canadian psychiatrists are presented. The survey was conducted to assess the current attitudes, practices, and knowledge of Canadian psychiatrists regarding fitness-to-drive in individuals with mental illness.

2. STUDY RATIONALE AND CONTRIBUTION

This study is the first comprehensive investigation, to my knowledge, describing the attitudes, practices and knowledge of Canadian psychiatrists on issues pertaining to the assessment of driving competency amongst clients who are at risk because of mental illness, often in conjunction with the use of medications. This study represents the first step in establishing what is currently done in Canada around driving related issues.

This study provides valuable information about the level of confidence psychiatrists have in assessing fitness-to-drive, about variations in assessment practices across the country, and about the perceived impact of reporting an unsafe driver on the physician-patient relationship. We expect it will help to identify potential gaps in the health system related to referral and assessment of driving capacity of individuals with mental illnesses. Furthermore, the study explores whether different provincial regulations affect psychiatrists' attitudes, practices and knowledge. Hopefully, this information will facilitate the development of knowledge translation strategies to ensure that individuals with mental illnesses are systematically screened and adequately assessed for driving safety.

3. THESIS OBJECTIVES

3.1 Primary objectives

- To review the current literature on fitness-to-drive amongst individuals with mental illness and individuals using psychotropic medications.

- To assess current attitudes, practices, and knowledge of Canadian psychiatrists toward driving safety amongst persons with mental illness and using psychotropic medications.

3.2 Secondary objectives

- To critically appraise the literature on fitness-to-drive amongst people with mental illness and individuals using psychotropic medications in order to identify gaps in the literature and to guide future research.

- To explore whether psychiatrists' attitudes, practices and knowledge related to driving safety vary according to provincial legislation (i.e. mandatory versus discretionary reporting of potentially unsafe drivers).

- To identify differences in the training and experience of psychiatrists, in patient demographics and in practice environments that influence the use of specific interventions related to driving assessment.

- To obtain suggestions from psychiatrists for improving training and process in this area.

- To further our understanding of fitness-to-drive amongst people with mental illness and persons using psychotropic medications in order to promote awareness of the importance of considering fitness-to-drive in clinical practice.

4. FIRST ARTICLE

March, 2005

Fitness-to-Drive in Individuals with Mental Illness: A Systematic Review

Authors: Ingrid Ménard, MSc. Student & Nicol Korner-Bitensky, PhD.

This manuscript represents original material, has not been published previously, is not considered for publication elsewhere and has been approved by each author. The authors have not entered into an agreement with a funding organization that limited their ability to publish the results.

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Fitness-to-Drive in Individuals with Mental Illness: A Systematic Review

Authors: Ingrid Ménard & Nicol Korner-Bitensky

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Implications:

- To provide a review of recent review on fitness-to-drive amongst persons with mental illness and individuals using psychotropic medications in order to identify the factors related to driving competencies amongst our clients.

- To enhance the understanding of fitness-to-drive amongst people with mental illness and individuals using psychotropic medications in order to promote awareness of the importance of considering fitness-to-drive in clinical practice.

- To critically appraise the literature on fitness-to-drive amongst people with mental illness and individuals using psychotropic in order to identify gaps in the literature and to guide future research needed in the area.

ABSTRACT

Background: Mental illnesses are characterized by alterations in thinking, mood and behavior and are associated with significant distress and impaired functioning. There is mounting concern that mental illnesses, and medications associated with their treatments, can affect fitness-to-drive.

Objective: To identify and appraise the scientific evidence on fitness-to-drive amongst people with mental illness and to appraise the role of psychotropic medications on fitness-to-drive.

Method: The literature from 1965 to 2004 on fitness-to-drive and mental illness and on fitness-to-drive and psychotropic medications was systematically reviewed.

Results: Sixteen publications representing 15 studies were retrieved. In ten, mental illness was linked to higher traffic accident rates. Psychotropic medications such as tricyclic medications have the potential to negatively affect fitness-to-drive, especially in the starting phase of treatment or when adjustments of dosage are made. Some of the newer antidepressants such as Paroxetine have been shown to improve specific pre-requisite skills for driving. Although newer antipsychotic medications such as Clozapine improve cognitive skills, these improvements do not translate into greater success at driving-related tasks.

Conclusion: Accident rates are higher among specific sub-groups of individuals with mental illness and individuals using specific psychotropic medications. There are still large gaps in our knowledge regarding fitness-to-drive in community dwelling individuals with psychiatric conditions.

KEY WORDS

Mental illness, mental disorders, driving, fitness-to-drive, traffic accidents, psychotropic medications

INTRODUCTION

Nearly one in five Canadian adults experience a mental illness during a 1-year period (1). Mental illnesses are characterized by alterations in thinking, attention, concentration, decision-making abilities, mood and behavior and as such, may impact on an individual's ability to drive safely. Current legislation indicates that physicians in Canada have a legal responsibility to know which medical conditions may impair driving ability; to assess these conditions in their patients; and, to discuss with them the implications of these conditions (2). However, physicians are often unclear as to which psychiatric conditions affect driving safety. The Canadian Medical Association (CMA) handbook *Determining Medical Fitness to Drive: A Guide for Physicians (2000)* contains only a brief summary on mental illnesses and driving (2). Although six reviews of the literature have been published on driving and mental illness (3-8), none were systematic, nor did any use a critical analysis process. In addition, as the latest was published in 1996, a current review was warranted. Therefore, a systematic review is presented that identifies the evidence on fitness-to-drive amongst people with mental illness and the role of psychotropic medications in this population.

Methodology of the Review Process

This review focuses on driving fitness of individuals with mental illness including affective, psychotic and personality disorders. Psychotropic medications (primarily antidepressants, antipsychotics, mood stabilizers and anxiolytics) and their effects on fitness-to-drive is an additional focus. Excluded are substance abuse disorders and

dementia, as each has its own extensive literature (3). Attention deficit disorder, hyperactivity disorder and sleep disorders are also excluded.

A comprehensive review of the literature from 1965 to 2005 was conducted using electronic bibliographic databases (PsycINFO, MEDLINE, CINAHL, Medline In-Process, CIRRIE and EMBASE) in search of articles related to driving / driving competency / driving assessment / driving performance / driving fitness / traffic accidents and mental illness / mental disorders / psychiatric illness / psychopathology. Only those presenting research findings were reviewed. The Ottawa Newcastle Scale for cohort and case-controls studies was used to guide the critical appraisal process (9). A second comprehensive review was performed with the same database with the keywords: psychotropic medications / psychotropic / antidepressant / neuroleptic / antipsychotic in combination with driving / driving competency / driving assessment / driving performance / driving fitness / traffic accidents and fitness-to-drive.

Findings on Driving and Mental Illness

Sixteen publications representing 15 studies were retrieved (6;10-24). In ten, mental illness was linked to higher traffic accident rates. These are reviewed first, followed by a review of those where there was no clear link. Many studies (10-13;16-18;24) have focused on investigating driving records of individuals hospitalized or declared patient with psychiatric disorders, presupposing a study sample of serious cases while few (15;19;23) have studied out-patients.

Waller reviewed the driving records of individuals whose chronic medical conditions had been reported to the California Department of Motor Vehicles (n=2,672) and compared their driving histories to a random sample (n=922) of drivers seeking licence renewal (24). Two hundred ninety-two individuals whose diagnoses were primarily schizophrenia and bipolar disorder constituted one of the subgroups. Those with mental illness drove somewhat fewer miles per year than the age-adjusted sample without known illness, but had twice the accident rate. The sub-groups were not matched for gender, an important variable in driving accidents. Moreover, as pointed out by Silverstone the patient group was highly selected; notification of mental illness to the driving authority depended entirely on the hospital or doctors concerned (7). Thus, it is likely that only those with the most serious symptoms were studied.

Selzer, Rogers and Kern compared serious psychopathology, social stress and acute pre-accident disturbances of 96 drivers responsible for fatal road traffic accidents over a three year period, to 96 control drivers who did not have accidents during that period, matched for age, gender, and home county (22). Some months later, information was elicited from the driver, if the driver had survived the accident, and from significant others. The control subjects and their significant others were also interviewed. The group responsible for fatal accidents showed more paranoid ideation, clinical depression and suicidal tendencies prior to their accident. As information on mental illness was based solely on the interview, and was not substantiated with medical information or physician report, these results need to be considered with caution. Rumination bias on the part of the

significant others in the fatal accident group, or other forms of information bias, may have contributed to the findings.

Using a similar design, Dumais et al. investigated the role of psychiatric disorders in motor vehicle accident (MVA) fatalities (14). Cases were 61 young male MVA fatalities in which the subject had been the driver and controls were 61 living male subjects matched for age. Significant others for the both groups and the controls were assessed using structured interviews and psychological autopsies. Participation rate for families of accident victims was 55,4%. The results suggested that borderline and (or) antisocial personality disorders and substance use disorders in the last 6 months increased the risk of young men dying in MVAs. No significant differences between MVA case subjects and control subjects for the presence of anxiety disorders, mood disorders, or schizophrenia (absent in both group) were found. Limitations of this study include bias from a proxy-based interview, potential refusal bias and selection bias.

Crancer and Quiring compared numbers of accidents, numbers of violations, and types of violations accumulated over a 69-month period by 271 individuals with schizophrenia (n=97), personality disorders (n=79), and psychoneurotic disorders (n=95), with the driving records of 687,228 currently licensed drivers in the same general driving environment, and having the same age and gender distribution (12). Violation rates were higher in all groups experiencing mental illness. Accident rates were higher in those with personality disorders and psychoneuroses but those with schizophrenia had a rate similar to that of the general driving population. No estimates were made of miles driven.

Eelkema, Brosseau, Koshnick and McGee compared traffic violations and traffic accidents of 238 patients discharged following a psychiatric admission for psychosis, psychoneurosis, personality disorder, chronic brain syndrome, or mental deficiency and 290 control subjects from the general population matched by age, gender, and county of residence chosen at random from records of the State Highway Department (16). The driving records of the two groups were compared for 5 years pre- and post-hospitalization to determine if treatment had an impact on the subsequent occurrence of traffic accidents and violations. The patient group had more traffic accidents and violations before and after hospitalisation. When the analysis was performed according to disorder, subjects with neurosis and psychosis also had statistically higher traffic accident rates as compared to controls before hospitalization, but lower rates than controls after discharge. Males with personality disorders had the highest rates before admission which remained high after discharge. This was the first study that looked at accident rates pre and post hospitalization. However, again, driving exposure i.e. frequency of driving was not accounted for.

In Denmark, Kastrup, Dupont, Bille and Lund analyzed the characteristics of traffic accidents in patients with psychiatric conditions versus controls (17). All persons hospitalized in a psychiatric ward during a 4-year period who, during the same period, had been involved in a traffic accident causing bodily injury (n= 2, 020) were compared to all reported traffic accidents causing bodily injury (n=18,242). The patient group was characterized by an over-representation of women and of persons between the ages of 25

to 54 years. Collisions with pedestrians and, to a lesser extent single-car accidents, were over represented in the psychiatric group and were more likely to require hospitalization. As outpatients were not included, the study group is once again likely to have consisted of those with more severe illness. Further analysis of this group revealed that those with psychiatric conditions were more likely to be involved in accidents occurring under special circumstances such as reduced mobility, tiredness as indicated by the police report, operating a stolen vehicle, driving without a valid driver's license, and driving while intoxicated, to name a few (18). Again, driving exposure was not accounted for and patients were included regardless of their role in the accident (some were only passengers).

Edlund, Conrad and Morris studied driving accidents in 103 patients with confirmed schizophrenia recruited from an outpatient psychiatric clinic who agreed to participate (20 refused) and 123 controls recruited among staff at a medical center (15). Patients and controls were interviewed using the same standardized questionnaire to elicit information on accidents. The number of drivers amongst persons with schizophrenia (70 of 103) was significantly less than amongst controls (122 of 123) ($p=0.00001$). The crude incidence of traffic accidents in the two groups was similar. However, drivers with schizophrenia drove significantly less than controls and reported more accidents per miles driven. The two major strengths of this study are that the miles driven were accounted for and that an outpatient population was sampled. Of concern is that the control group was not randomly selected and was likely different on the basis of socio-demographic characteristics. The study mentioned a different gender ratio in patients compared with

controls but did not provide the data. Given that gender is a potential confounder of accident incidence, this difference may have affected the results. Of additional interest, chart reviews on 15 of the 20 patients who refused to participate revealed that three had major vehicle accidents in the last year suggesting that, if those who refused were included, the differences between the groups would have been even larger.

Recently, St-Germain used a driving simulator to compare the driving skills of 12 daily drivers with a diagnosis of schizophrenia or schizo-affective disorder and 25 controls (23). Behavioral measures included driving speed, stopping distance, weaving behaviour, near-misses, and collisions. The patient group crossed the passenger side white line more often than controls ($p<0.05$), and trended to cross the centerline more often ($p=0.06$). Patients were approximately 2.5 times more likely to get into a collision ($p=0.09$). Limitations of this study include the use of a driving simulator which may not represent on-road driving and the small sample size .

In one population-based study, the number of deaths due to motor vehicle accidents was found to be higher in persons with mental illness. Schuckit and Gunderson reviewed the records of Navy men who died from accidental causes (n=4,752); more than half of the accidental deaths were automobile, motorcycle, or pedestrian accidents (n=2,632) (21). They found an increased traffic accident death rate among those hospitalized for psychiatric illness over a six-year period as compared to those who had never been hospitalized for a mental illness; 172 /100,000 versus 111 /100,000 per year.

Identification of psychiatric conditions was limited to hospitalized cases, again presupposing the most severe cases.

While the studies cited above all suggested higher accident rates for those with psychiatric conditions, especially in those with in-hospital stays, the following six studies did not.

Buttiglieri and Guenette compared the accidents and violations of patients (94% male) admitted to a neuropsychiatric ward (n=165) over a 12-month period, to the entire California male driving population (11). Records for the 3-year period preceding hospital admission were gathered from the California Department of Motor Vehicles. While they concluded that individuals with psychiatric disorders had accident and violation records similar to those of the general driving population, the study is not representative of females. This study also did not take into consideration driving exposure (14;18;24).

Mellbin as discussed by Noyes (6) and Kastrup (17) determined that, when individuals classified as alcoholics and persons referred to child-guidance clinics were excluded, a positive psychiatric history did not discriminate between those with and without, automobile accidents. Unfortunately, this study was published in a Swedish journal and could not be retrieved to examine its methodology.

In Finland, Maki and Linnoila sent a questionnaire to 1, 050 randomly selected psychiatric outpatients and to a control group (n=587) matched by age and living district

concerning their use of alcohol and drugs, driving habits and involvement in traffic accidents over a two-year period (19). The overall response rate was 70%. Fewer subjects from the psychiatric group possessed a driver's license. When miles driven were controlled for, the sub-group of patients who were not taking psychotropic medications were involved in the same number of accidents as the controls. Conversely, those taking psychotropic medications demonstrated an increased accident rate compared to controls. While the authors concluded that it was primarily the medication that induced impaired driving, it may also be that medication use was a proxy for severity of illness.

Armstrong and Whitlock compared rates of accidents and traffic infringements of 100 patients who had been admitted to a private psychiatric hospital with that of 100 patients receiving treatment for a variety of physical complaints in a private general hospital (10). Subjects were matched for age, gender, and social background and were interviewed about driving habits and experiences. Psychiatric illnesses included schizophrenia (n=12), bipolar disorders (n=34), neurotic disorders (n=28), personality disorders (n=8), alcoholism (n=15), drug abuse (n=2), and epilepsy (n=1). The specifics of the physical illnesses were not presented. Significantly more physically ill patients drove more than 15,000 miles per year, but the proportions driving less than 5000 miles, 5000 to 10, 000 miles, or 10, 000-to 15, 000 miles per year, were similar in the two groups. Aside from those classified as alcoholics and heavy drinkers, no psychiatric diagnosis was associated with increased accident rates. Two major limitation of this study were: the reliance on solely the memory and truthfulness of respondents and the small sample size for subgroup analysis.

Cushman, Good and States examined detailed accident and injury data from a large series of motor vehicle crashes (n=1,778) that included persons with a diagnosis of mental illnesses (13). Forty cases of individuals with past psychiatric diagnoses or symptoms were identified; 25 of these were drivers. When substance abuse disorders were excluded, 17 cases remained. When compared to a control group matched on gender, age and marital status, those with a psychiatric diagnosis and using psychotropic medications did not have more frequent single-car crashes, more violations for unsafe speed or failure to yield violations. Again, the sample is small, driving exposure was not controlled for, and mental illness was ascertained exclusively from medical records.

Schlosberg examined traffic violations and fines, 6 years pre- and post- hospitalization for a group with schizophrenia compared to controls (20). Those with schizophrenia did not accumulate more traffic violations or fines than the control group. This study was not reported in English and, therefore, its methodology could not be reviewed.

Psychotropic Medication and Driving Fitness

It is estimated that more than half of patients with psychiatric conditions for whom drugs have been prescribed are likely to drive (25). There is concern that psychotropic medications impair perception, vigilance, and psychomotor skills and are, thus, an important risk factor (26). A large body of literature exists on the adverse effects of hypnotics and sedatives but there is also interest in the effects of widely prescribed psychotropic medications including anxiolytics and antidepressants (27).

Numerous anxiolytic, hypnotic, and sedative medications such as barbiturates and benzodiazepines have functional effects similar to alcohol (28). Benzodiazepines are over-represented in drivers involved in road traffic accidents (29). Barbone and colleagues examined the association between the use of psychoactive drugs and road traffic accidents in a within-person study of drivers who experienced a first road traffic accident during a three-year period in which they had used a psychoactive drug during that time (30). For each driver, the risks of having a traffic accident while using a drug and not using were compared. Of the 19,386 drivers involved in a first road traffic accident, 1,731 were users of one or more of the study drugs. On the day of the accident, 189 drivers were taking tricyclic antidepressants (odd ratio 0.93), 84 were on selective serotonin-reuptake inhibitors (odd ratio 0.85), 235 were on benzodiazepines (odd ratio 1.62) and 47 were on other psychoactive drugs (odd ratio 0.88). A dose-response relation was evident with benzodiazepines. The increased risk with benzodiazepines was more significant for long-half-life drugs used as anxiolytics and for short-half-life hypnotics. Hemmelgarn, Suissa, Huang, Boivin and Pinard in a nested case-control study within a cohort of 224,734 drivers found that brief or extended periods of exposure to long-half-life benzodiazepines were associated with an increased risk of crashes in the elderly (31). No elevated risk was seen for short-half-life benzodiazepines.

Most studies of antidepressant medications and driving performance have used normal subjects (28). At the cognitive level, these medications may cause impairment of thought processing, attention deficits, and indecisiveness. A recent systematic review summarizes the major results of all studies published from 1983 to 2000 on the effects of

antidepressants on driving performance (32). Nine of these were cross-over, double-blind studies in healthy volunteers and one was a parallel, double-blind, randomized study in depressed outpatients. The antidepressants were broadly divided into sedating and non-sedating. A total of 14 antidepressants were included (three of which never entered the market). Changes were noted in standard deviation of lateral position (SDLP), a test measuring driving performance based on vehicular weaving, after acute doses of some sedating antidepressants (i.e. amitriptyline, imipramine, doxepin and mianserin). However, driving impairments were no longer present after one week of dosing, except with the use of mianserin. Nocturnal doses of some sedating antidepressants (i.e. dothiepin, mianserin, and mirtazapine) did not produce residual driving impairment when performance was measured the next day. Non-sedating antidepressants (i.e. moclobemide, fluoxetine, paroxetine, venlafaxine, and nefazodone) generally did not affect SDLP. However, SDLP rose substantially after administration of combinations of non-sedating antidepressants and benzodiazepines.

Recently, Ridout, Meadows, Johnsen & Hindmarch conducted a 4-way, double-blind randomized crossover study involving 12 healthy volunteers to assess the effects of paroxetine and mirtazapine versus a placebo (33). Psychometric assessments included laboratory measures of reaction time, on-road tests of attention and brake reaction time as well as three subjective line analogue rating scales measuring sedation, sleep and daytime drowsiness. Paroxetine (20mg mane for 5 days) was found to have no psychomotor or behavioral toxicity and no negative effect on brake reaction time. Although, some impairment of sleep latency and sleep quality as well as some increased sedation were

observed, recognition reaction time and central nervous system arousal performance were significantly improved with paroxetine. Mirtazapine (15mg *nocte* for 2 days followed by 30mg *nocte* for 2 days) impaired laboratory performance and some subjective tests of sedation and sleep. Mirtazapine (15 mg *mane* for 2 days followed by 15mg twice daily for 2 days then 15mg *mane* for 1 day) improved sleep, but significantly impaired all other measures. Because these studies employed healthy volunteers for predicting antidepressant effects in patients, it could be argued that depressed patients would not demonstrate similar effects (32).

The effects of psychotropics used to treat bipolar disorder are not well understood (27). Hatcher, Sims & Thompson studied the effects of chronic administration of Lithium (34). Using a computerized driving simulator, 16 outpatients who had been taking Lithium as their sole medication for at least three months, were compared to 22 healthy volunteers. The patient group had significantly slower reaction time, but no significant differences in the number of mistakes made. Linnoila, Saario & Maki studied the effects on psychomotor skills of Diazepam (5 mg three times daily) and Lithium in 20 healthy male volunteers (35). As this study was also interested in the interaction of drugs and alcohol, the drugs were administered either with alcohol or a placebo. Using a double blind cross-over design, six variations were studied: placebo group (no drug no alcohol); Diazepam and placebo drink; Lithium and placebo drink; placebo drug and alcohol; Diazepam and alcohol; and Lithium and alcohol. Psychomotor skills were measured by choice reaction, two coordination tests and an attention test. Alcohol impaired all the psychomotor factors tested. Diazepam improved choice reaction performance and slightly improved eye-hand

coordination while Lithium impaired both accuracy of response and reaction time. The authors concluded that Lithium might increase the risk of accidents. This study included healthy volunteers and it may be argued that the effect of Lithium could be different in bipolar patients. Also, it is unclear if the impairing effect of the medications would have decreased with time.

Neuroleptic medications have been shown to impair performance in tests correlated with poor driving and accident proneness (28). Linnoila, Dubovsky and Moskovitz summarized the neuroleptic side effects that may cause impaired driving (28). These are: motor dysfunction due to extrapyramidal symptoms (also called parkinsonian symptoms), akathisia, dystonia, and tardive dyskinesia that can impair coordination and response time; sedation; slowed response time and reduced attentiveness; reduction of visual accommodation and papillary reactivity (28). Crabe, Wolf, Grätz and Laux explored the psychomotor performance of inpatients with schizophrenia receiving antipsychotic medication and co-medication according to their clinical needs (n=28) (36). The hypothesis was that even under poly-medication, the clozapine-treated patients (n=10) would have a superior performance compared to the patients taking classical antipsychotics (n=28). Reaction time, vigilance, visual perception and stress tolerance were assessed. The authors observed better psychomotor test performance with the clozapine-treated patients, but found no differences between groups in terms of the number of individuals who passed all tests: driving ability was equally impaired in both treatment groups.

Recently, Kagerer, Winter, Moller and Soyka conducted a non-randomised study with 49 individuals with schizophrenia who were discharged following stabilization: 20 subject received conventional neuroleptics (haloperidol) and 29 received atypical antipsychotics (37). Psychomotor performance was assessed with a computerized reaction test. The findings demonstrated a significantly reduced psychomotor performance in the haloperidol-treated group compared with the atypical antipsychotic-treated group. Among patients treated with atypical antipsychotics, seven of 29 passed all test parameters and could be regarded as competent to drive while only one patient passed all subtests in the haloperidol group. The authors concluded that even after selection of comparatively well-stabilized patients, severe impairment of performance was noticed. A limitation of this study is that only patients with clear psychopathological improvement were able to participate and as the entire experimental procedure lasted 90 minutes, severely disturbed patients were excluded. A strength of this study is that patients were examined at discharge following antipsychotic treatment and psychopathological stabilization, a time when the performance on driving related tasks is particularly relevant.

DISCUSSION

The literature suggests that accident rates are higher amongst drivers with severe mental illnesses, albeit with some controversial and inconsistent findings across studies and across patient groups, especially where sample sizes are small. It is more difficult to draw conclusions for those experiencing milder or better-controlled mental illness where the literature is sometimes contradictory.

With regards to psychotropic medications, many studies used normal subjects, or followed patients for a relatively short period of time, and this may not reflect the impact of these medications over time, and during treatment of those with psychiatric conditions. However, the literature suggests some trends for the effect of medications including a greater impact at the onset of use of certain medications, such as tricyclics. This indicates that patients should be warned that in the early weeks of treatment or when medications are adjusted, the risk of impaired driving is higher (28). The literature strongly suggests that benzodiazepines impact on safe driving and that the newer antidepressants seem to have less of a negative impact. Lithium has also been shown to potentially affect driving abilities. With regards to antipsychotics, the studies indicated important psychomotor impairments even with the newer antipsychotics.

CONCLUSION

This review provides the latest information on the risks of driving for individuals with various mental illnesses and while using specific psychotropic medications. It is surprising to note that although there has been an interest in driving fitness and mental illness since the middle of the 20th century, few recent studies are available to help physicians clarify the role of psychiatric illness on driving safety. Yet on a daily basis psychiatrists are expected to make informed decisions and to counsel patients about fitness to drive. Further work is needed to determine driving safety in specific sub-groups; for example, community dwelling drivers with various psychiatric conditions who are using commonly prescribed medications.

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5. PREFACE TO THE SECOND ARTICLE

The literature review from the first article provides the latest information on the risks of driving for individuals with psychiatric illnesses and for those using specific psychotropic medications. Even though there has been growing interest on the topic of driving fitness and mental illness since the middle of the 20th century, few studies are currently available to help physicians determine the impact of psychiatric illness on driving safety. Yet on a daily basis psychiatrists are expected to make informed decisions and to counsel patients on their fitness-to-drive. Physicians in Canada have a responsibility to know which medical conditions may impair driving ability, to assess these conditions in their patients, and to discuss with them the implications of their conditions. Provincial and territorial legislation can require the attending physician to report patients at risk. In all except three provinces (Alberta, Nova Scotia and Quebec), physicians are mandated to report potentially unfit drivers (19). What is currently unknown is how psychiatrists in Canada are managing the issue of driving competence in their clinical practice. The second article of this thesis presents the results from a cross-Canada survey of Canadian psychiatrists' attitudes, practices and knowledge regarding fitness-to-drive assessment in individuals with mental illnesses.

6. SECOND ARTICLE

December 9th, 2005

Canadian Psychiatrists' Current Attitudes, Practices, and Knowledge regarding Fitness-to-Drive in persons with Mental Illness: A Cross-Canada Survey

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Canadian Psychiatrists' Current Attitudes, Practices, and Knowledge toward Fitness-to-Drive in persons with Mental Illness: A Cross-Canada Survey.

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Implications:

- Canadian psychiatrists' current practices, attitudes and knowledge regarding fitness-to-drive amongst people with mental illness are varying greatly between provinces with mandatory and discretionary reporting requirements suggesting an important role of legislation in guiding physicians' knowledge and reporting practices

- The study provides strong evidence that there is a need to promote awareness of the importance of assessing fitness-to-drive in a psychiatric clientele.

- Psychiatrists are expected to assess and report patients with potential to be unsafe drivers, yet a standardized assessment procedure is not in place at a national level to assist psychiatrists to validly assess driving competency in persons with mental illness and using psychotropic medications.

ABSTRACT

Background: There is mounting concern that mental illnesses, and the medications used to treat them, can affect fitness-to-drive. Psychiatrists therefore have an important role in assessing psychiatric conditions or medications that may impact on safe driving and that require further assessment of driving competency.

Objective: To assess the current attitudes, practices, and knowledge of Canadian psychiatrists regarding fitness-to-drive in persons with mental illness and to explore variations in these according to provincial legislation, demographic characteristics of the psychiatrists, patient populations, and practice environments.

Method: A national cross-sectional survey based on a random sample of practicing Canadian psychiatrists was conducted. Psychiatrists were randomly selected from the Canadian Medical Directory for the year 2004. The data were collected using mail survey methodology, with multiple follow-ups including telephone contacts to reach non-respondents. A structured questionnaire was used to elicit information.

Results: A total of 248 psychiatrists participated representing a response rate of 54.2% of traced subjects. The majority (64.1%) of the psychiatrists reported that they *strongly agreed/agreed* that addressing their patients' fitness-to-drive was an important issue in their practice. Yet only 18.0% were *always* aware of whether their patients were active drivers and only 9.0% *always* asked their patients if they had any driving difficulties. Only 25.7% *strongly agreed/agreed* that they were confident in their ability to evaluate fitness-to-drive. While 29.3% in discretionary and 14.6% in mandatory reporting provinces reported not knowing their provincial legislation, of those who responded, 54% and 2.8% from discretionary and mandatory provinces respectively, were incorrect about

their legislation. Also, 46.1% of psychiatrists were not aware of the Canadian Medical Association Handbook.

Discussion: Psychiatrists' responses to this survey demonstrate a broad range of attitudes, practices and knowledge when dealing with driving related issues. However, for the most part, there appears to be a large gap between the expectations placed on psychiatrists and their readiness and self-perceived ability to make informed clinical decisions related to the driving safety of their patients.

Conclusion: There is a clear need for education, guidelines that assist the psychiatrist in daily decision making, and enhanced communication between psychiatrists and driving authorities.

KEY WORDS

Mental illness, driving, fitness-to-drive, psychiatrists, current practices, driving assessment, survey

INTRODUCTION

Mental illnesses are characterized by alterations in thinking, mood and/or behavior and are associated with significant distress and impaired functioning in daily life (1). There is particular concern about the fitness-to-drive of individuals with mental illnesses because of these alterations and the additional side effects of psychotropic medications that can hinder psychomotor performance, responsiveness, mood and attention, which are required for safe driving. Currently in Canada there is no standardized assessment process in place for individuals with mental illnesses who drive a motor vehicle. Given the heterogeneity of this population, each client needs to be assessed individually (2). The responsibility for this assessment and referral for further evaluation and/or for recommendation of cessation of driving usually falls upon the patient's psychiatrist (2).

Psychiatrists' practices as related to driving

An extensive review of the literature using the search terms driving / driving fitness / driving performance with the terms psychiatrist / survey / mental illness / mental disorders using electronic databases (PsychINFO, MEDLINE and CINAHL) revealed four studies of psychiatrists' practices, all conducted in Great Britain (3-6). In Great Britain, it is mandatory for physicians to report potentially unfit drivers. Also, guidelines from the Driver and Vehicle Licensing Authority (DVLA) are quite explicit for each mental illness (7). For example, after an acute episode of psychosis requiring hospital admission, the patient is forbidden to drive for six months, except in cases of hypomania, where 6-12 months of driving cessation is required depending on the severity and the frequency of relapses (7).

Two of the above mentioned surveys (3;5) describe practices of psychiatrists regarding driving competency. Both assessed psychiatrists' awareness of the DVLA guidelines while asking for their views on the issues and what advice they gave to their patients regarding driving. Specifically, Humphreys and Roy sent a questionnaire to all psychiatrists in the Winchester and Basingstoke districts, obtaining a 100% response rate (n=31) using a non-specified methodology (3). Thompson and Nelson sent a questionnaire to all psychiatrists working in Lothian, Dundee, and Fife and had a 54% response rate (5). Again, the study methodology was not specified, nor was information provided regarding questionnaire development. Overall the results from these surveys indicated that psychiatrists' knowledge of the legislation was relatively poor and that they often neglected to advise patients about driving issues (3;5).

The third survey focused on patients on the acute ward of a psychiatric hospital (4). Using a cross-sectional design, patients were given a self-report questionnaire asking about their current driving practices and about advice they had received from their psychiatrist or general practitioner (GP) (4). Of the 42 patients completing the questionnaire, 16 (38%) held a driver's licence at the time of the survey. Six (26%) clients indicated having received advice from their GP and two (9%) indicated having received advice from their psychiatrist regarding the likely effects of their illness on driving. Seven (30%) recalled receiving advice from their GP and nine (39%) recalled receiving advice from their psychiatrist about the possible effects of medication on driving. Analysis of the care-notes revealed only one case where advice was documented (4).

Finally, in a prospective descriptive study, Elwood followed 10 psychiatrists over a four-week period (6) and asked them to record the diagnosis and the driving status of all patients encountered as well as whether they gave advice concordant with the DVLA guidelines and if not, to give the reasons for not doing so. Psychiatrists also recorded whether they informed patients of any side-effects of medications they considered relevant to driving performance. Of 297 patients, 123 (41%) were drivers. 19/123 (13%) failed to meet the DVLA criteria of fitness-to-drive. In 9/19 of these cases, psychiatrists did not advise the patient as per the DVLA guidelines. Side-effects of psychotropic medications were considered to have potential adverse effects on driving ability for 49% (60/123) of the drivers but 14 who were prescribed medications with potential to interfere with driving were not given the relevant advice (6).

The Canadian Picture

The Canadian Medical Association's (CMA) handbook on driving, *Determining Medical Fitness to Drive: A Guide for Physicians (2000)*, is a guide to help physicians to determine whether their patients are medically fit to drive a motor vehicle safely (8). The handbook contains a brief chapter on mental illnesses and how they can affect driving fitness. It provides relatively few recommendations for physicians on how to assess and to report potentially unsafe drivers. The handbook indicates that physicians in Canada have a legal responsibility to know which medical conditions may impair driving ability, to assess these conditions in their patients, and to discuss with patients the implications of these conditions. Provincial and territorial legislation can require the attending physician to report such patients. In all except three provinces (Alberta, Nova Scotia, and Quebec),

physicians are mandated to report unfit drivers (8). However, there is a small difference in British Columbia where physicians are mandated to report an unfit driver unless the patient accepts to stop driving. Physicians have faced legal action by victims of motor vehicle accidents (MVA) caused by their patients if the court deemed that the physician could have foreseen the danger of their patients' continuing to drive (9). In the United States, courts have been confronted with cases alleging that psychiatrists were liable for injuries in MVA involving their patients (10).

While psychiatrists are expected to assess and report potentially unfit drivers, currently there is no evidence-based or legal guidelines for what constitutes a necessary and sufficient "assessment battery" for determining driving fitness amongst persons with mental illness (11). Physicians are trained in many areas of preventive medicine. Unfortunately, the evaluation of medical fitness-to-drive is not an area in which Canadian family physicians feel a high level of competence (12). It is likely that Canadian psychiatrists have a similar concern regarding their competence.

What about Current Practices in Canada?

No survey of Canadian psychiatrists was found that explored clinical practices related to driving assessment of people with mental illness. Thus, the objective of this study was to assess Canadian psychiatrists' attitudes, practices, and knowledge regarding fitness-to-drive amongst persons with major mental illnesses and to explore variations according to provincial legislation (i.e. mandatory versus discretionary reporting of potentially unsafe

drivers), demographic characteristics of the psychiatrists, patient population, and practice environments.

METHOD

Research Design: A national cross-sectional survey of a random sample of Canadian psychiatrists was conducted using a structured questionnaire to elicit information. The study was administered through a mail survey. A second mailing was sent to non-respondents and one or more follow-up telephone contacts were used to encourage return of the questionnaire or to complete the survey by phone. Ethics approval for the study was provided by the Institutional Review Board of the Faculty of Medicine, McGill University.

Study Population and Sample Size Requirements: The target population was all practicing Canadian psychiatrists. The sample was collected from psychiatrists registered in the Canadian Medical Directory (CMD) for the year 2004. To verify that the CMD was representative of practicing clinicians, we compared the list of psychiatrists registered in the CMD for the Province of Quebec to the list of psychiatrists from the Quebec Provincial College of Physicians, to which Quebec psychiatrists are required to belong.

The primary outcome of interest was Canadian psychiatrists' responses about fitness-to-drive amongst persons with mental illness according to type of provincial legislation. A sample size of 237 per group was required to identify a minimum detectable difference between groups of 10%, using an alpha of 0.05 and power of 0.80. Assuming a 65-to-

70% response rate based on the recent Canadian study on family physicians (12), 742 surveys were mailed (383 from the seven provinces with mandatory legislation and 359 from the three provinces with discretionary legislation). Disproportional sampling was used to adequately represent psychiatrists from each province.

Psychiatrists were assigned sequential identification numbers and potential respondents were selected using a random numbers table. The inclusion criteria were: working a minimum of two days per week in clinical practice; seeing clients who are potential or actual drivers; and treating individuals with either mood disorders, psychotic disorders, and/or personality disorders.

Measurement of variables

A review of the literature indicated that no satisfactory measurement tool existed to assess psychiatrists' current practices. That is, previous questionnaires used to survey psychiatrists on driving issues were not rigorously developed (3;5). However, a recently completed Canadian study of family physicians' practices related to driving assessment of the elderly used a survey that was developed and validated through a rigorous procedure (Naglie G., 2005, personal communication). First, the authors conducted an extensive literature search on surveys of physicians about patients' fitness-to-drive. Based on this literature review, three emerging areas were identified (physicians' attitudes, practices, and knowledge) that were deemed to be relevant for assessing current practices in driving assessment. Using these domains as a foundation, a questionnaire was developed applying principles of cognitive design strategies presented in Dillman's Total

Design Method on writing questions and constructing questionnaires (13). Once the first draft was developed, the questionnaire was sent to physicians, occupational therapists, and geriatricians. Suggested modifications were made to improve the clarity and appropriateness of the content. Using the Delphi method, the questionnaire was further revised and then piloted. The questionnaire was subsequently used to survey 740 family physicians (12).

For the current study, the family physician questionnaire was slightly modified for our study population. The term "psychiatrists" replaced "physicians" and the term "persons with mental illness" replaced the term "older patients". Questions specific to the elderly were removed and questions pertinent to a psychiatric population were added. Possible explanatory variables were selected using a framework that classified potential factors affecting clinical practices into predisposing, enabling, and reinforcing factors (14). Predisposing factors include such things as the practitioner's knowledge and skills, attitudes, as well as socio-demographic characteristics including age, gender, and medical training. Enabling and reinforcing factors include elements such as the characteristics of the practice setting and the patient population. Two characteristics of a physician's practice setting have been consistently found to be associated with quality of care: type of practice and hospital affiliation (14). When creating new questions, Dillman's guidelines on writing questions were followed (13). The CANADIAN PSYCHIATRISTS' VIEWS ON DRIVING ASSESSMENT QUESTIONNAIRE was piloted and found to be acceptable, it was translated into French, using a rigorous forward and backwards translation technique (15).

Piloting of the Questionnaire for Validation

The newly created version of the questionnaire was reviewed for face validity by a group of professionals with an expertise in driving assessment and questionnaire methodology, and by psychiatrists. Revisions were made based on their suggestions. The questionnaire was then pre-tested on a convenience sample of eight psychiatrists in Montreal to ensure that instructions and the content of each question were clear and that no important issues had been omitted. Changes were made based on the feedback received. These psychiatrists were then removed from the sampling frame. Feedback from the pilot-testing phase was extremely positive. The general impression was that the questionnaire was easy and quick to complete (10-15 minutes) and that the content was of great interest to psychiatrists.

The final questionnaire is divided into six sections: A) attitudes toward driving assessment and reporting; B) frequency of practices/activities pertaining to driving assessment and reporting; C) specific components that psychiatrists include in their assessment of fitness-to-drive; D) knowledge about driving policies and programs in their province and current difficulties encountered in the process of assessing fitness-to-drive; E) demographic characteristics of the psychiatrists (age, gender, years in practices, and number of patients seen daily), patient population (main clientele and kind of service in which they work) and practice environments (province, work setting, and size of the community); and F) a comments section. Variables from the questionnaire are largely categorical, with most questions answered on an ordinal scale ranging from 1 to 6.

(1=always, 2=often, 3=sometimes, 4=rarely, 5=never, and 6=not applicable or 1=strongly agree, 2=agree, 3=neither agree/disagree, 4=disagree, 5=strongly disagree, and 6=no opinion). Some questions are answered on a nominal scale (e.g. yes, no, or don't know). Potential explanatory variables including psychiatrists' practice environment, patient population, training and experience, and socio-demographic data are represented on either a nominal, ordinal or continuous scale.

Procedures

Questionnaires were mailed and elements that have individually been shown to significantly improve response to mail surveys were used (13). Personalized correspondence signed by the researchers and stamped return envelopes were included. Each questionnaire included a unique code number, enabling identification of returned envelopes. Non-respondents received a reminder three-to-four weeks after the first mailing. Subsequently, a telephone contact to non-respondents was made to verify eligibility, to determine willingness to participate, and to offer questionnaire completion using a telephone interview by a trained interviewer if the subject preferred this method. Only one person preferred this method.

Rigorous tracing procedures were implemented using multiple sources to identify psychiatrists whose contact information was erroneous, as indicated by a returned envelope or through incorrect telephone numbers, and to identify non-respondents who may have never received the mailing. Specifically, where non-respondent psychiatrists were not reached during the first telephone contact and where a personalized voicemail

message indicated the correct person had been reached, the research assistant left information regarding coordinates, affiliation, and the best time to call. If a secretary answered, she was asked to forward the information to the psychiatrist. If the psychiatrist was not reached after three attempts, his or her work status within the organization was verified through the secretary. Attempts were then made to locate those who no longer worked within the organization. Further tracing methods included the use of local telephone directories, Internet 411 and Google websites.

Data Analysis

Descriptive statistics were used to identify frequencies of responses as well as characteristics of the sample as a whole and to describe the sample on those same characteristics according to the provincial legislation of the psychiatrists (mandatory versus discretionary reporting). To estimate Canadian psychiatrists' practices, knowledge, and attitudes, descriptive statistics are presented as the percentages of the total returned questionnaires. For ease of presentation, the possible response choices are grouped into categories: *agree* and *strongly agree*; *neither agree nor disagree* and *no opinion*; *strongly disagree* and *disagree;* and *not applicable*.

To explore whether psychiatrists' practices, knowledge, and attitudes vary according to provincial legislation on mandatory or discretionary reporting of potentially unsafe drivers, Chi-square tests were used (or t-tests on means, as appropriate) to compare responses to specific questions about attitudes, practices, and knowledge. The p-value was set at 0.01 using a Bonferroni correction (16). The response choices also were

grouped as mentioned above for comparison purposes. In addition, frequencies were also grouped into categories: *always* and *often; sometimes; rarely* and *never;* and *not applicable.*

Subsequently, univariate analyses were performed as appropriate to determine the possible effect of some of the demographic characteristics of the psychiatrists (age, gender, years in practices, and number of patient seen daily), patient population (main clientele) and practice environments (province, work setting, service and size of the community) on specific respondents' attitudes, practices and knowledge. Finally, psychiatrists' open-ended responses in the comments section were analyzed using qualitative methods i.e. content analysis (17). All the comments were first reviewed and then coded according to themes.

RESULTS

Directories comparison

When comparing the Quebec College of Physicians directory of psychiatrists with the last name starting with the first four letters of the alphabet for 2003-2004 to that of the CMD for 2004, 78.8% of the psychiatrists registered as a member in Quebec were represented in the CMD suggesting a valid sampling frame. A portion of those missing may have moved to another province, been new graduates or retired since the two directories were issued with a 9-month interval.

Response rate to Questionnaire

A total of 742 questionnaires were sent. Of these, 43 psychiatrists remained untraced in that repeated attempts at mail and telephone contacts indicated incorrect contact information. The eligibility of 258 psychiatrists was unknown, as they did not return the questionnaire or phone calls. It is assumed that the majority of these were passive refusals, that is, they did not choose to be in the study, or were ineligible and did not follow-up. Of the 441 contacted, 58 refused to participate mainly citing time constraints and 379 questionnaires were returned. Of these, 131 indicated the psychiatrist was not eligible and 248 were completed (only one was completed by a phone interview). A further 4 psychiatrists reported having completed the questionnaire but the questionnaires were never found. Thus the total response rate on traced subjects is 54.2%. The data are presented on those 248 questionnaires with complete data.

Demographics

Table 1 describes the demographic characteristics of the sample of psychiatrists who returned the questionnaires and subgroup characteristics according to whether the psychiatrist worked in a province with mandatory or discretionary reporting legislation. Overall, 63.7% of the total respondents were male, with an average age of 49.0 (SD=10.8) years, and an average of 16.3 (SD=10.7) years of clinical experience. Approximately half (51.2%) lived in cities with a population greater than 500, 000. There was no significant difference in response rates between psychiatrists living in provinces with mandatory versus discretionary reporting legislation (p=0.374). There were statistically significant differences in the number of primary work settings (p=0.010) and

number of services (p=0.008) indicated. Although psychiatrists in provinces with mandatory reporting were more likely to work in private practice according to responses on two questions (p=0.003 and p=0.005), no significant differences were found in the type of patient population followed.

Current attitudes, practices and knowledge

Attitudes

Table 2 provides information on the items related to psychiatrists' attitudes toward fitness-to-drive. Although 64.1% of psychiatrists reported that they *strongly agreed/agreed* that addressing their patients' fitness-to-drive was an important issue in their practice, only 25.1% *strongly agreed/agreed* that they were confident in their ability to evaluate fitness-to-drive. A high proportion, 84.9%, *strongly agreed/agreed* that a clinical screening instrument to identify at risk drivers would be useful, and 82.8% *strongly agreed/agreed* that they would benefit from education about fitness-to-drive assessment. Furthermore, although 61.7% of the psychiatrists *strongly agreed/agreed* that they should be legally required to report potentially unsafe drivers to the provincial Department of Motor Vehicles (DMV), most *strongly agreed/agreed* that they face a conflict of interest when reporting (66.0%) and *strongly agreed/agreed* that reporting a patient negatively impacts on the physician-patient relationship (67.3%). Only 12.2% *strongly agreed/agreed* that the provincial DMV evaluates potentially unsafe drivers in a timely fashion.

Figure 1 explores psychiatrists' perception of the risk of MVA associated with various specific mental illnesses. Overall, 47.5% of psychiatrists *strongly agreed/agreed* that those with mental illness are at higher risk of having a MVA as compared to the general population while 14.5% *strongly disagreed/disagreed.* Of the specific mental illnesses inquired about, bipolar disorders were perceived as the most likely to impact on driving safety, with 69.5% of respondents *strongly agreeing/agreeing* that these patients are at higher risk of having a MVA. When asked similar questions related to medications (Figure 2), 61.5% of psychiatrists *strongly agreed/agreed* that persons using psychotropic medications are at a higher risk of having a MVA than the general population, while 9.6% *strongly disagreed/disagreed.* Among the various medications inquired about, benzodiazepines were considered by far the most likely to affect fitness-to-drive while Selective Serotonin Reuptake Inhibitors (SSRIs) and Selective Noradrenaline Reuptake Inhibitors (SNRIs) were considered the least likely.

Practices

Table 3 provides information on the items related to psychiatrists' practice activities related to fitness-to-drive. Most (77.6%) psychiatrists said they are *always* or *often* aware of whether or not their patients are active drivers but fewer (44.5%) *always* or *often* ask their patients if they are experiencing any driving difficulties. Again, the majority (74.4%) of psychiatrists indicated that they *always* or *often* inform their patients about possible side effects of medications on driving while a smaller percentage (52.6%) indicated that they either *always* or *often* inform patients that their illness could impact on driving. Almost one half (46.1%) of psychiatrists were not aware of the Canadian

Medical Association Handbook Determining Medical Fitness-to-Drive – A Guide for Physician (8).

Knowledge / Resource Use

Table 4 provides information on the items related to psychiatrists' knowledge about fitness-to-drive. Twenty-two percent of psychiatrists reported having no idea whether it was mandatory or not to report potentially unsafe drivers in their province. Almost three-quarters (70.7%) of psychiatrists reported that they know the steps to take in reporting a driver whom they feel is unsafe. However, 62.0% indicated that the Provincial DMV's procedures for evaluating potentially unsafe drivers were not clear, 49.4% of psychiatrists reported not knowing whether centers or specialists that carry out road tests were available in their community, and 72% felt there is a lack of appropriate driving assessment tools to assess the competency of persons with mental illness.

Items included in fitness-to-drive assessment

Table 5 provides information on the elements that psychiatrists indicate they include in their assessment of fitness-to-drive. Psychiatrists were asked to indicate *not applicable* if they never performed a driving assessment. On average 18.3% of psychiatrists answered not applicable. Of those who had performed screening for driving fitness, the vast majority assess psychiatric, medical, medication and substance use history as well as compliance with treatment, current cognitive symptoms, cognitive status and level of insight. However, 16.8% indicated they never make a referral for a road test to the DMV,

27.9% never make a referral for a road test to another driving centre or specialist and only 49.8% *always or often* take a driving history from the patient.

Additionally, psychiatrists answered two questions related to assessment and reporting frequency. Psychiatrists reported having assessed the fitness-to-drive of an average of 5.5 (SD = 8.7) patients over the last year, while 36.7% (n=84) did not assess any. Psychiatrists reported an average of 1.4 (SD =3.2) patients to the provincial authority over the previous year, while 60.1% (n=149) did not report any.

Mandatory versus discretionary reporting

Tables 6 presents the results of the comparisons of psychiatrists' responses from provinces with mandatory versus discretionary reporting on items related to attitudes, practices, and knowledge that a priori had been identified as possibly being influenced by provincial legislation. Significant differences were found on two practice questions. Psychiatrists who practice in areas with mandatory legislation were more likely to *strongly agree/agree* that they would report a patient who they consider unsafe and who agrees to stop driving (p=0.000). For this question, British Columbia was considered in the discretionary group as psychiatrists in this province are not mandated to report patients who agree to stop driving. Psychiatrists in mandatory reporting provinces also indicated that the DMV informed them more often of their decision with regard to a patient's driving status (p=0.01). Significant differences also were found for two knowledge questions. While 29.3% in discretionary and 14.6% in mandatory reporting provinces reported not knowing their provincial legislation, of those who did respond, a

significant difference was found: 54% and 2.8% from discretionary and mandatory provinces respectively, were incorrect about their legislation ($p<0.0001$). Also, psychiatrists in mandatory reporting provinces were significantly more likely to indicate that they know the steps to take in reporting a patient ($p=0.000$). There were no differences in numbers of patient assessed and reported by legislation.

Determinants of practices

Analyses were done to determine if there was a difference in two attitudes and two practice questions as well as in the average number of patients assessed and reported over the last year for size of the community (less than 500, 000 or more than 500, 000), and for *yes* versus *no* to working in a teaching hospital, having an in-patient clientele and having a psycho-geriatric clientele. Psychiatrists working in a teaching hospital had assessed fitness-to-drive on an average of 6.7 (SD=10.4) patients over the last year compared to 4.4 (SD=6.2) for psychiatrists not working in a teaching hospital ($p=0.002$) and had reported an average of 2.0 (SD=4.3) patients compared to 0.8 (SD=1.5) ($p=0.000$). Psychiatrists having a psycho-geriatric clientele assessed on average 9.9 (SD=11.0) patients over the last year in this regard compared to 3.7 (SD=6.4) for psychiatrists not following this clientele ($p=0.000$) and reported on average, 3.2 (SD=5.2) patients compared to 0.6 (SD=1.2) ($p=0.000$). No significant difference was found for those having versus not having an in-patient clientele.

Open questions

Almost one third (30.6%) of the psychiatrists who filled out the surveys added comments. From these, a number of themes emerged. About one-fifth of the comments were about driving being an important clinical issue and psychiatrists expressed appreciation that the survey was being conducted. A number of psychiatrists added that completing the survey had already increased their awareness of the issue. One-fifth expressed a need for more specific guidelines from the provincial authorities and a number expressed their responsibility to report and inform but not to carry out fitness-to-drive assessments, the latter being the responsibility of the DMV. Another 20% of the comments were about a need for a screening tool and more education. One in ten comments pointed out difficulties with the availability and affordability of the driving assessment. Finally, a number of respondents mentioned the difficulty of assessing driving fitness with this clientele or answering our questions regarding the impact of specific conditions such as schizophrenia given the variability of each individual, the varying phases of illness, and the variability in treatment.

DISCUSSION

Psychiatrists' responses to this survey demonstrate a broad range of attitudes, practices, and knowledge when dealing with driving related issues. This study suggests that Canadian psychiatrists perceive that a patient's fitness-to-drive is an important issue in clinical practice but only one-quarter of the respondents perceived themselves as being the most qualified professionals to identify patients with mental illness who are unsafe to drive. Also, about two-thirds of respondents thought they faced a conflict of interest if

they report and about the same percentage felt that reporting has a negative impact on the patient-physician relationship. These findings are similar to those of other recent studies (18;19) and may explain to some extent why psychiatrists' frequency of assessing and reporting is rather low.

Half of the psychiatrists surveyed in this study work in provinces in which they are delegated by law to report potentially unfit drivers and indeed the study results suggest that psychiatrists, for the most part, think they should be legally required to report patients who are potentially unsafe. Although psychiatrists' attitudes show they have a sense of legal responsibility regarding fitness-to-drive assessment, psychiatrists are largely unfamiliar with the Canadian Medical Association Handbook (8). This finding is similar to that found in the recently conducted survey of Canadian physicians (12). One of the most compelling findings of this study is that almost half of the psychiatrists were unaware of or incorrect about their province's legislation.

The majority of psychiatrists reported that they would benefit from further education on the topic of driving. This is similar to a survey of physicians in Saskatchewan regarding their attitudes and knowledge on assessment of medical fitness to drive (19) that indicated a lack of sufficient education and resources to aid physicians in their role. About four-fifths of the psychiatrists reported that a clinical screening instrument to help identify drivers who should be referred for a more comprehensive driving assessment would be useful. The study results clearly indicate that psychiatrists need further training and resources to deal with driving related issues.

With regard to the impact of mental illness and psychotropic medications on driving fitness, about half of psychiatrists believed that individuals with mental illness have a higher risk than the general driving population of having a MVA. Roughly two-thirds indicated that individuals using psychotropic medications were at a higher risk. However, psychiatrists' practice activities did not reflect these beliefs in that many were unaware of whether their patients were active drivers or had had recent driving difficulties. Indeed many responded that they do not inform their patients that their condition or medications could influence ability to drive. The literature on psychotropic medications and driving suggests some trends, including greater impact on driving at onset of use of certain medications such as tricyclic antidepressants. These results indicate that patients should be warned that in the early weeks of treatment or when medications are adjusted, the risk of impaired driving is higher (20). The literature also strongly suggests that benzodiazepines negatively impact on safe driving and that the newer antidepressants seem to have less of a negative impact on psychomotor skills than the tricyclics (20-25). Lithium also has been shown to potentially affect reaction time and therefore driving abilities (26;27). With regard to antipsychotics, the studies indicate important psychomotor impairment even with the newer antipsychotics (24;28;29). Psychiatrists' answers as to whether or not having certain medications could increase the risk of having a motor vehicle accident showed a trend that corresponded to the evidence in the literature, in that those medications with the clearest evidence of a potentially negative impact were those that psychiatrists indicated had the greatest impact. For example, psychiatrists were more likely to indicate *strongly agree/agree* regarding the negative

impact of benzodiazepines on safe driving than any other of the medications (21-24). In contrast, psychiatrists were less concerned with the impact of medications such as SSRIs and SNRIs. This reduced concern is supported by the literature (20;25). Interestingly, psychiatrists were more likely to advise patients regarding the possible impact of medications on driving than the impact of their psychiatric condition. It is possible that providing information when prescribing a medication is a professional responsibility to which physicians are accustomed. While there is literature that suggests that accident rates are higher amongst drivers with severe mental illnesses, controversial and inconsistent findings across studies and across patient groups may in part explain why psychiatrists may not be inclined to provide information about driving in relation to specific psychiatric conditions (2;30-42).

Regarding the process and structures in place to deal with driving issues, most psychiatrists did not feel that the various provincial DMVs evaluate potentially unsafe drivers in a timely fashion. Furthermore, almost two-thirds of psychiatrists who had dealings with the DMV reported that the DMV *rarely or never* informs them of their decisions about the patient's driving status. Indeed, in some provinces such as Ontario, it is the policy not to inform the patient's physician of the DMV's decision regarding driving as it is felt that this would be a breech of privacy. However, if psychiatrists lack confidence or are unhappy with the existing procedures for evaluating medical unsafe drivers, it is likely to decrease their reporting behaviors. Indeed, several of the written comments were about difficulties encountered with the DMV, the lack of availability and

affordability of driving assessments for individuals with a mental illness, or with the lack of clear scientifically-based guidelines for assessment of this clientele.

For the analysis by legislation, we originally considered excluding those who were incorrect about the legislation in their province or who indicated they were unaware of their legislation. However, analysis indicated that those who were incorrect /unaware of their provincial legislation were significantly more likely to be from discretionary reporting as compared to mandatory reporting provinces. Not only were psychiatrists working in the mandatory legislation provinces significantly more aware of their current legislation, they also reported being significantly more knowledgeable about the steps to take in reporting a patient to the DMV. It also appears that psychiatrists in provinces with mandatory reporting would be more inclined to report a patient who they considered unsafe even if the patient agreed to stop driving. Our research may indicate a positive role for legislation even though that legislation has a limited ability to affect psychiatrists reporting behaviors. With regard to determinants of practices, the findings indicate that psychiatrists treating a psycho-geriatric population and psychiatrists working in a teaching hospital are more likely to assess and to report than are psychiatrists not having this clientele and not working in a teaching hospital.

There were several limitations to this study. Although the response rate of 54.2% is a limiting factor, it is comparable to the response rate reported in similar surveys of physicians (18-19;43-46). In terms of refusal bias, many psychiatrists refused to participate, citing time constraints or indicating they generally refused to participate in

any kind of survey. Those two major refusal reasons appear to be general and not specifically associated with driving related issues. In terms of response validity, the answers to the survey suggest that psychiatrists were honest in their responses. For example, some psychiatrists reported that they rarely or never ask their patients about driving or inform them about possible medication effects on driving. Thus, the wide range of answers to questions with a potential for social desirability bias tends to support the response validity. Indeed, the use of a mail survey without personal identifiers generally results in less social desirability bias as compared to telephone or face-to-face interviewing (47). Little is known about non-respondents: it is possible that respondents may have had more of an interest in driving related issues, and therefore some estimates, for example the need for further education, may be higher than in the general population of psychiatrists. Conversely, if psychiatrists with greater interest in the topic of fitness-to-drive were more likely to be respondents then this could have decreased the concerning or negative findings encountered in this study as such psychiatrists should also be more likely to have a better than average attitude, knowledge and approach to the topic. Consequently, the concerns raised in this study may be more prevalent or severe than was measured. Sample sizes were smaller than desired for the subgroup analyses and this may have resulted in some Type II errors. However, the findings still likely reflect the practice patterns of a substantial proportion of Canadian psychiatrists.

Our findings have implications for public safety. Psychiatrists are the frontline professionals providing care to patients with mental illness. However, many noted to us that they do not feel that they are the professionals who are the most qualified to

determine fitness-to-drive. While some psychiatrists are willing to intervene, many indicated that they rarely inquire about driving. Also, most psychiatrists' patients are seen by their General practitioners (GPs) and we have no idea if results of such a survey would be similar or different with GPs versus psychiatrists. This study also may indicate a positive role for mandatory legislation although this is said with caution as the findings suggest there is an unexpectedly large percentage of psychiatrists who never report potentially unsafe drivers, despite being in provinces with mandatory reporting requirements.

CONCLUSION

This study indicates that, for the most part, there is a large gap between the expectations placed on psychiatrists and their readiness and self-perceived ability to make informed clinical decisions related to the driving safety of their clients. There is a clear need for more education in this area; guidelines that assist the psychiatrist in daily decision making; empirically derived screening tools; and enhanced communication between psychiatrists and driving authorities is evident.

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Table 1: Characteristics of the Sample as a Whole and by Legislation (n=248)

Variables	Mandatory Reporting n = 125		Discretionary Reporting n = 123		Total n = 248	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Age (years)	51.1	(11.4)	47.0	(9.9)	49.0	(10.8)
Years in practices	17.4	(11.2)	15.2	(10.2)	16.3	(10.7)
Patients seen daily	9.7	(4.5)	10.6	(5.2)	10.2	(4.9)
	n	(%)	n	(%)	N	(%)
Gender						
Male	81	(64.8)	77	(62.6)	158	(63.7)
Provinces						
British Columbia	29	(23.2)	-	-	29	(11.7)
Manitoba	18	(14.4)	-	-	18	(7.3)
New Brunswick	6	(4.8)	-	-	6	(2.4)
Newfoundland	2	(1.6)	-	-	2	(0.8)
Northwest Territories	1	(0.8)	-	-	1	(0.4)
Ontario	59	(47.2)	-	-	59	(23.8)
Prince Edward Island	2	(1.6)	-	-	2	(0.8)
Saskatchewan	8	(6.4)	-	-	8	(3.2)
Alberta	-	-	38	(30.9)	38	(15.3)
Quebec	-	-	65	(52.8)	65	(26.2)
Nova Scotia	-	-	20	(16.3)	20	(8.1)
Size of community (n=246)[a]						
<10 000	2	(1.6)	4	(3.3)	6	(2.4)
10 000 – 50 000	13	(10.5)	12	(9.8)	25	(10.2)
50 001 – 100 000	7	(5.6)	12	(9.8)	19	(7.7)
100 001 - 500 000	37	(28.9)	33	(27.0)	70	(28.5)
> 500 000	65	(52.4)	61	(50.0)	126	(51.2)
Number primary work settings (n=234) [ab*]						
one	87	(75.7)	102	(85.7)	189	(80.8)
two	28	(24.3)	14	(11.8)	42	(17.9)
three	0	-	3	(2.5)	3	(1.3)
Primary work setting(s) [b]						
teaching hospital	54	(47.0)	71	(59.7)	125	(53.4)
non-teaching hospital	22	(19.1)	28	(23.5)	50	(21.4)
private practice*	50	(43.5)	31	(26.1)	81	(34.6)
mixed setting	16	(13.9)	9	(7.6)	25	(10.7)
others	1	(0.9)	0	(0)	1	(0.4)
Number of service(s) (n= 241) [ab *]						
one	52	(43.7)	49	(40.2)	101	(41.9)
two	34	(28.6)	48	(39.3)	82	(34.0)
three or more	33	(27.7)	25	(20.5)	58	(24.1)
Service(s)[b]						
in-patient	57	(47.9)	67	(54.9)	124	(51.5)
out-patient	94	(79.0)	100	(82.0)	194	(80.5)
day hospital	14	(11.8)	15	(12.3)	29	(12.0)
rehabilitation	5	(4.2)	13	(10.7)	18	(7.5)
private practice*	56	(47.1)	35	(28.7)	91	(37.8)
Primary clientele (s) (n=227)[ab]						
psycho-geriatric	37	(33.0)	36	(31.3)	73	(32.2)
psychotic disorders	63	(56.3)	79	(68.7)	142	(62.6)
affective disorders	87	(77.7)	98	(85.2)	185	(81.5)

substance abuse disorders	46	(41.1)		47	(40.9)	93	(41.0)
personality disorders	66	(58.9)		77	(67.0)	143	(63.0)
anxiety disorders	77	(68.8)		82	(71.3)	159	(70.0)

* significant difference between mandatory and discretionary legislation ($p<0.05$)

[a] n's vary slightly due to missing data

[b] While asked to indicate primary work setting(s), service(s) and main clientele(s) some indicated 2 or more

Table 2: Psychiatrists' Attitudes Regarding Driving and Mental Illness (n=248)

Questions	Strongly agree n(%)	Agree n(%)	Neither agree/ disagree n(%)	Disagree n(%)	Strongly disagree n(%)	No opinion/ don't know n(%)
Addressing my patients' fitness to drive is an important issue in my practice.	57 (23.3)	100 (40.8)	47 (19.2)	28 (11.4)	11 (4.5)	2 (0.8)
Psychiatrists should inquire about the driving ability of their patients.	68 (27.8)	140 (57.1)	26 (10.6)	9 (3.7)	0 (0)	2 (0.8)
I am confident in my ability to evaluate the driving fitness of my patients.	5 (2.1)	56 (23.0)	72 (29.6)	76 (31.3)	29 (11.9)	5 (2.1)
Psychiatrists are the most qualified professionals to identify patients with mental illness who are unsafe to drive.	14 (5.7)	49 (20.1)	70 (28.7)	70 (28.7)	33 (13.5)	8 (3.3)
A clinical screening instrument that helps identify drivers at increased risk for accidents would be useful to my practice.	66 (26.8)	143 (58.1)	15 (6.1)	12 (4.9)	5 (2.0)	5 (2.0)
I would benefit from education about the evaluation of fitness to drive.	52 (21.2)	151 (61.6)	26 (10.6)	7 (2.9)	5 (2.0)	4 (1.6)
Psychiatrists should be legally required to report unsafe drivers to the provincial Department of Motor Vehicles.	46 (18.8)	105 (42.9)	51 (20.8)	23 (9.4)	13 (5.3)	7 (2.9)
Psychiatrists face a conflict of interest (patient confidentiality vs. public safety) when they report.	53 (21.7)	108 (44.3)	24 (9.8)	40 (16.4)	17 (7.0)	2 (0.8)
Reporting a patient who I consider to be an unsafe driver negatively impacts on the physician-patient relationship.	51 (20.8)	114 (46.5)	56 (22.9)	17 (6.9)	6 (2.4)	1 (0.4)
The Provincial Department of Motor Vehicles evaluates potentially unsafe drivers in a timely fashion.	6 (2.4)	24 (9.8)	59 (24.1)	58 (23.7)	45 (18.4)	53 (21.6)

n's vary slightly due to missing data

Figure 1: Psychiatrists' Perceptions of Risk of Motor Vehicle Accidents by Mental Illness

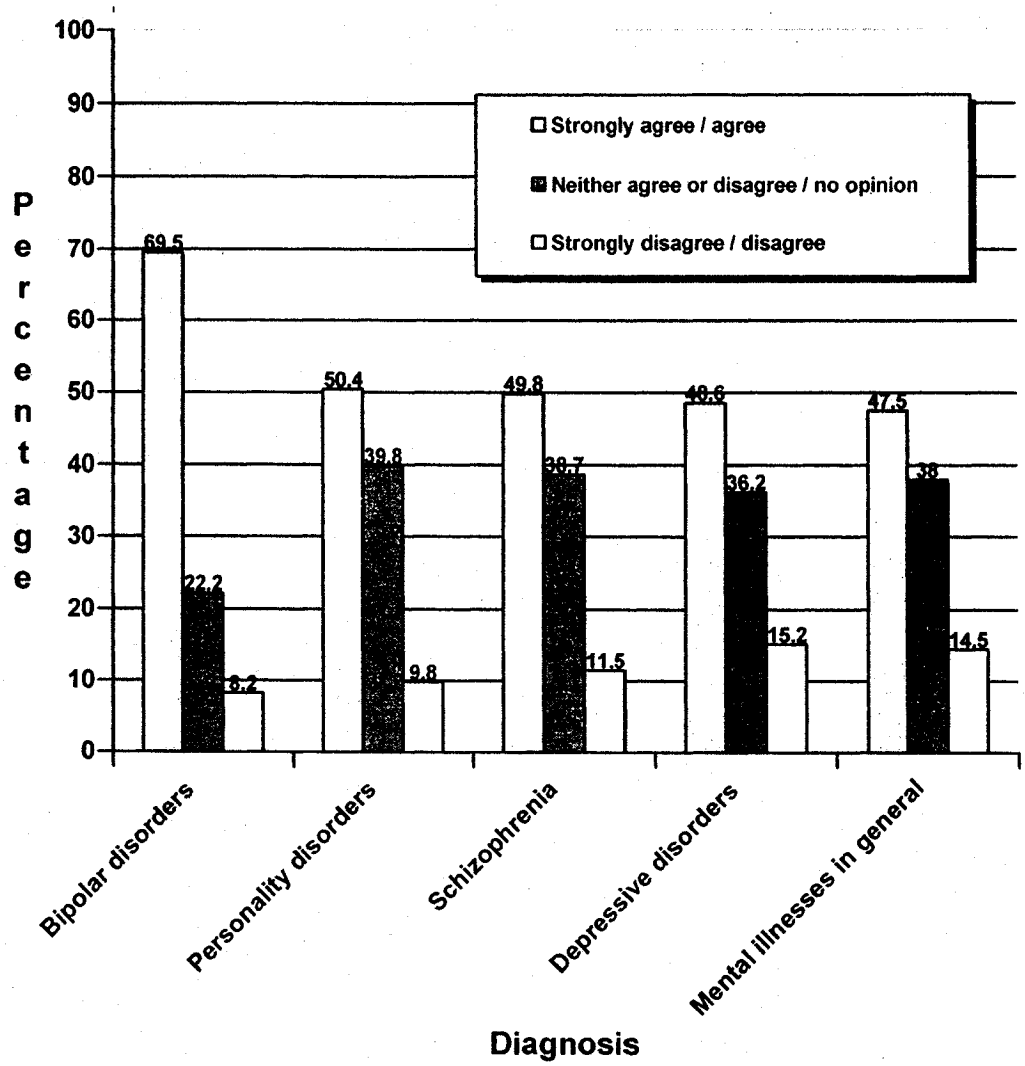
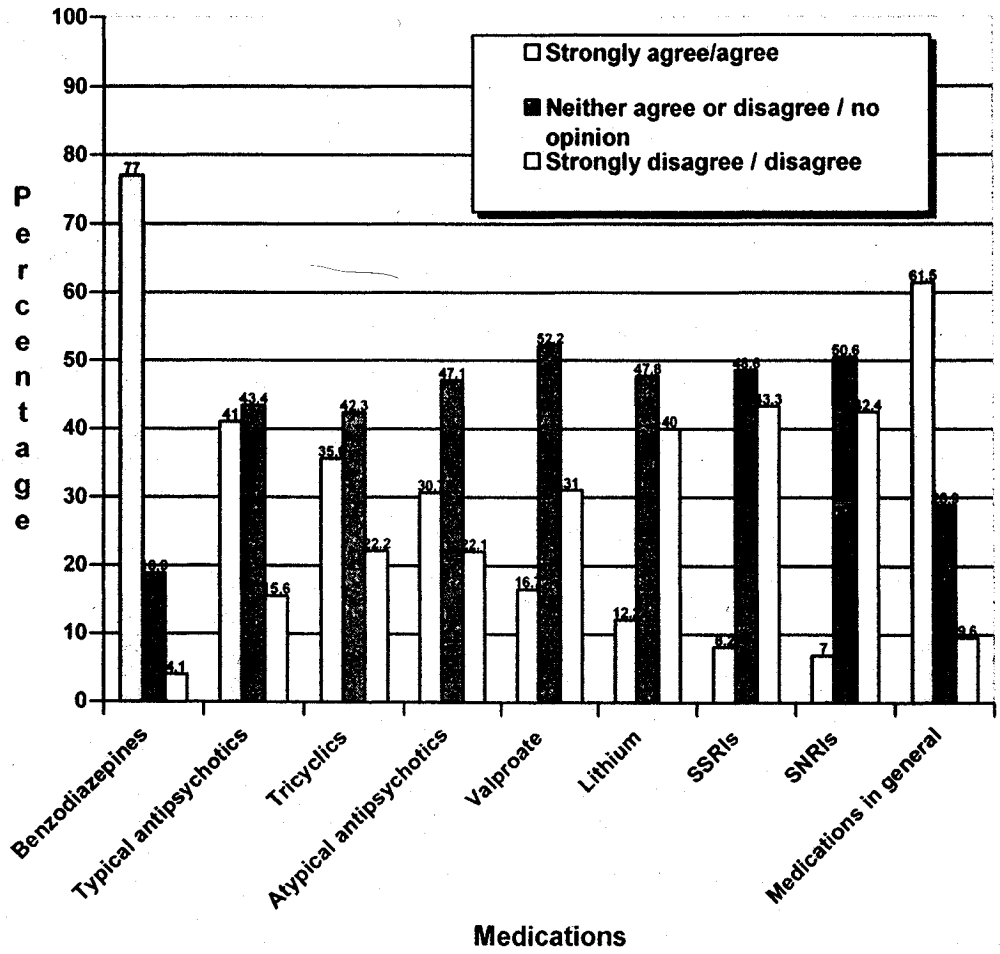


Figure 2: Psychiatrists' Perception of Risk of Motor Vehicle Accidents by Medications



SSRIs: Selective Serotonin Reuptake Inhibitors

SNRIs: Selective Neurodrenaline Reuptake Inhibitors

Table 3: Psychiatrists' Practices Regarding Driving and Mental Illness (n = 248)

Questions	Always n (%)	Often n (%)	Some-times n (%)	Rarely n (%)	Never n (%)	Not Appli-cable n (%)
I am aware of whether my patients are active drivers.	44 (18.0)	146 (59.6)	49 (20.0)	6 (2.4)	0 (0)	0 (0)
I ask my patients about whether they have had any driving difficulties.	22 (9.0)	87 (35.5)	95 (38.8)	37 (15.1)	3 (1.2)	1 (0.4)
When I prescribe medications, I inform my patients about possible effects on driving.	90 (37.0)	91 (37.4)	42 (17.3)	14 (5.8)	3 (1.2)	3 (1.2)
I inform my patients that their illness could impact on their driving ability.	42 (17.1)	87 (35.5)	73 (29.8)	33 (13.5)	5 (2.0)	5 (2.0)
My assessment of a patient's fitness to drive is triggered by a family member's concern.	2 (0.8)	49 (20.0)	125 (51.0)	39 (15.9)	15 (6.1)	15 (6.1)
I use the Canadian Medical Association handbook Determining Medical Fitness to Drive – A Guide for Physicians when assessing my patients' fitness to drive. (**Note:** If you are not aware of this handbook, please circle "Not Applicable".)	5 (2.0)	21 (8.6)	42 (17.1)	36 (14.7)	28 (11.4)	113 (46.1)
Patients that I deem to be unsafe drivers accept my recommendation to stop driving.	10 (4.1)	77 (31.6)	100 (41.0)	24 (9.8)	1 (0.4)	32 (13.1)
I report a patient to the provincial Department of Motor Vehicles:						
a) when I am uncertain of his/her ability to drive safely	16 (6.6)	48 (19.8)	67 (27.6)	49 (20.2)	34 (14.0)	29 (11.9)
b) who I consider to be unsafe and who refuses to stop driving.	127 (52.0)	39 (16.0)	23 (9.4)	9 (3.7)	7 (2.9)	39 (16.0)
c) who I consider to be unsafe and who agrees to stop driving.	23 (9.4)	37 (15.2)	48 (19.7)	57 (23.4)	48 (19.7)	31 (12.7)
I counsel patients that I report about alternative modes of transportation.	32 (13.2)	50 (20.7)	72 (29.8)	31 (12.8)	20 (8.3)	37 (15.3)
For patients that I report, the Department of Motor Vehicles informs me of their decisions about the patient's driving status.	16 (6.6)	18 (7.4)	26 (10.7)	40 (16.4)	76 (31.1)	68 (27.9)
I have felt pressured by patients to reconsider my decision to report.	17 (6.9)	56 (22.9)	65 (26.5)	30 (12.2)	26 (10.6)	51 (20.8)
Patients who I have reported have left my practice.	2 (0.8)	13 (5.3)	60 (24.5)	47 (19.2)	46 (18.8)	77 (31.4)

n's vary slightly due to missing data

Table 4: Psychiatrists' Knowledge / Resource Use Regarding Driving and Mental Illness (n=248)

Questions	Yes n (%)	No n (%)	Don't Know n (%)
In my province, it is mandatory for physicians to report medically unsafe drivers to the licensing authority.	149 (60.6)	43 (17.5)	54 (22.0)
I know the steps to take in reporting patients who I feel are unsafe to drive.	174 (70.7)	45 (18.3)	27 (11.0)
Legislation in my province regarding reporting unsafe drivers protects me from being sued.	61 (24.9)	24 (9.8)	160 (65.3)
The Provincial Department of Motor Vehicles' procedures for evaluating potentially unsafe drivers are clear to me.	42 (17.1)	152 (62.0)	51 (20.8)
Centers/specialists that carry out road tests, other than the Provincial Department of Motor Vehicles, are available in my community.	89 (36.3)	35 (14.3)	121 (49.4)
I have encountered difficulty finding a center/specialist to assess my patient's ability to drive.	81 (33.2)	73 (29.9)	90 (36.9)
I feel there is a lack of appropriate driving assessment tool(s) to assess the driving competency of persons with mental illness.	177 (72.0)	15 (6.1)	54 (22.0)

n's vary slightly due to missing data

Table 5: Psychiatrists' Responses To: *"how frequently do you include the following in your assessment of fitness-to-drive"* (n=248)

Items	Always n (%)	Often n (%)	Sometimes n (%)	Rarely n (%)	Never n(%)	Not applicable n(%)
Driving history from the client	71 (28.7)	52 (21.1)	54 (22.0)	25 (10.2)	5 (2.0)	39 (15.9)
Driving history from relatives	30 (12.2)	60 (24.4)	66 (26.8)	39 (15.9)	11 (4.5)	40 (16.3)
Medical history	103 (42.0)	55 (22.4)	35 (14.3)	7 (2.9)	3 (1.2)	42 (17.1)
Psychiatric history	133 (53.8)	45 (18.2)	25 (10.1)	1 (0.4)	3 (1.2)	40 (16.2)
Medications	147 (59.5)	47 (19.0)	13 (5.3)	2 (0.8)	1 (0.4)	37 (15.0)
Alcohol / drug use	152 (61.5)	45 (18.2)	8 (3.2)	3 (1.2)	0 (0)	39 (15.9)
Current psychiatric symptoms	141 (57.6)	45 (18.4)	18 (7.3)	3 (1.2)	0 (0)	38 (15.5)
Current cognitive status	144 (58.5)	52 (21.1)	11 (4.5)	1 (0.4)	0 (0)	38 (15.4)
Patient's insight	117 (47.6)	57 (23.2)	22 (8.9)	9 (3.7)	2 (0.8)	39 (15.9)
Compliance with medication and other treatments	103 (42.0)	70 (28.6)	28 (11.4)	3 (1.2)	1 (0.4)	40 (16.3)
Referral for a road test to the provincial Department of Motor Vehicles	5 (2.0)	21 (8.6)	60 (24.6)	51 (20.9)	41(16.8)	66 (27.0)
Referral for a road test to a driving centre/specialist other than the provincial Department of Motor Vehicles	3 (1.2)	21 (8.6)	39 (16.0)	31 (12.7)	68 (27.9)	82 (33.6)

n' s vary slightly due to missing data

Table 6: Comparison of Attitudes, Practices and Knowledge/ Resource Use according to Provincial Legislation (mandatory versus discretionary reporting)

Attitudes Questions	Strongly agree or agree n(%) Mandatory	n (%) Discretionary	P value
Addressing my patients' fitness to drive is an important issue in my practice.	88 (71.0)	69 (57.0)	0.051
Psychiatrists should inquire about the driving ability of their patients.	103 (83.1)	105 (86.8)	0.570
In general, individuals with psychiatric conditions are at a higher risk of having a motor vehicle accident than the general population.	61 (49.6)	54 (45.4)	0.734
In general, individuals using psychotropic medications are at a higher risk of having a motor vehicle accident than the general population.	75 (61.5)	72 (61.5)	0.834
Psychiatrists should be legally required to report unsafe drivers to the provincial Department of Motor Vehicles unsafe drivers.	85 (69.1)	66 (54.1)	0.045
Reporting a patient who I consider to be an unsafe driver negatively impacts on the physician-patient relationship.	92 (74.8)	73 (59.8)	0.040
Practices Questions	**Always or often n (%) Mandatory**	**n (%) Discretionary**	**P value**
I am aware of whether my patients are active drivers.	98 (79.7)	92 (75.4)	0.596
I ask my patients about whether they have had any driving difficulties.	59 (48.4)	50 (41.0)	0.507
When I prescribe medications, I inform my patients about possible effects on driving.	72 (60.5)	57 (47.1)	0.772
I use the Canadian Medical Association handbook Determining Medical Fitness to Drive – A Guide for Physicians when assessing my patients' fitness to drive.	19 (26.4)	7 (11.7)	0.030
I report a patient to the provincial Department of Motor Vehicles:			
a) when I am uncertain of his/her ability to drive safely	36 (32.1)	28 (27.5)	0.755
b) who I consider to be unsafe and who refuses to stop driving.	95 (87.2)	71 (74.0)	0.029
c) Who I consider to be unsafe and who agrees to stop driving[a].	36 (40.9)	24 (19.2)	0.000*
For patients that I report, the Department of Motor Vehicles informs me of their decisions about the patient's driving status.	24 (25.8)	10 (12.0)	0.012*
Referral for a road test to the provincial Department of Motor Vehicles	10 (10.9)	16 (18.6)	0.337
Referral for a road test to a driving centre/specialist other than the provincial Department of Motor Vehicles	9 (11.0)	15 (18.8)	0.231
	Mean (SD) Mandatory	**Discretionary**	**P value**
Number of patients assessed for fitness to drive over the last year	5.6 (9.3)	5.3 (8.1)	0.534
Number of patients reported to the provincial department of Motor Vehicles over the last year	1.7 (3.9)	1.1 (2.4)	0.056

Knowledge / Resource Use Questions	Incorrect n (%) Mandatory	Discretionary	P value
In my province, it is mandatory for physicians to report medically unsafe drivers to the licensing authority (don't know remove in the percentage)	3 (2.8%)	47 (54.0%)	0.000*
	Yes n (%) Mandatory	**Discretionary**	
I know the steps to take in reporting patients who I feel are unsafe to drive.	102 (82.9)	72 (58.5)	0.000*
The Provincial Department of Motor Vehicles' procedures for evaluating potentially unsafe drivers are clear to me.	28 (22.8)	14 (11.5)	0.053
Centers/specialists that carry out road tests, other than the Provincial Department of Motor Vehicles, are available in my community.	44 (36.1)	45 (36.6)	0.629
I have encountered difficulty finding a center/specialist to assess my patient's ability to drive.	37 (30.3)	44 (36.1)	0.528

n` s vary slightly due to missing data
T tests were performed on means and Chi-square tests on percentages (only one category is presented for the chi-square test)
*Significant differences p<0.01
[a] for this question, British Columbia was considered in the discretionary group

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7. THESIS SUMMARY

In spite of controversial and sometimes inconsistent findings across studies, the literature suggests that accident rates may be higher amongst drivers with certain mental illnesses. The majority of studies reviewed were retrospective and based on people who had been reported to driving authorities or who had been hospitalized for mental illness. Therefore it is difficult to generalize those findings to individuals experiencing milder forms of mental illness. Control groups were not always adequate, and were not always matched for age and gender. Moreover, many of the studies identified only a small number of drivers with psychiatric histories. Furthermore, alcohol and substance abuse disorders were confounded with other psychiatric diagnoses. Driving exposure was often not considered and if miles driven would have been accounted for, outcomes in many of the studies that showed no difference between those with and without psychiatric conditions may have been different. The first paper reviews the latest information on the risks of driving with various psychiatric illnesses and while using specific psychotropic medications. Despite a growing interest in driving fitness and mental illness since the middle of the 20th century, few studies are currently available to help physicians determine the impact of psychiatric illness on driving. The studies suggest that most mental illness can affect driving fitness, especially with the most severely disturbed and medicated patients. Much of the subgroup analysis was performed with patients with schizophrenia. Research examining driving impairment in individuals with mental illness is warranted.

With regard to psychotropic medications, the literature suggests that some medications, such as tricyclic antidepressants are especially potent in the early phase of treatment and may increase the risk of impaired driving in this period. In contrast, newer antidepressants are better tolerated and may be less hazardous to driving ability even though careful evaluation is warranted. Benzodiazepines on the other hand represent a significant threat to driving. Mood stabilizers, such as Lithium, are potentially harmful to driving by slowing down reaction time. Patients using antipsychotic medications displayed important psychomotor impairments and most studies suggested that individual assessments of patients' fitness-to-drive should be performed. Although newer antipsychotic medications interfered less with cognitive functioning, two studies failed to show improved fitness-to-drive. When prescribing psychotropic medications, one should be aware of any medication that could affect driving ability and a discussion of the risks and benefits with the patient is recommended. Generally, driving during the initial titration period of most treatments should be avoided. The same rule applies in the days following dosage adjustments (20).

This research was conducted in order to assess what is currently done in Canada around issues pertaining to fitness-to-drive assessment in persons with mental illness. This survey was done as a partial requirement for the completion of this thesis and represents to my knowledge, the first comprehensive investigation of the practices of Canadian psychiatrists in regards to the assessment of driving competency amongst mentally ill and medicated individuals. The results provide valuable information about Canadian

psychiatrists' current practices, attitudes and knowledge pertaining to driving competency.

Our survey results demonstrate a broad range of attitudes, practices and knowledge amongst psychiatrists. In general, Canadian psychiatrists consider a patient's fitness-to-drive an important issue in clinical practice. Most psychiatrists believe they have a legal responsibility to assess driving ability but exhibit uncertainty as to how to assess driving competence. Our research reinforces the role of legislation. However, legislation showed a limited influence on psychiatrists' reporting behaviour.

This study demonstrated a discrepancy between the expectations placed on psychiatrists and their readiness and self-perceived ability to make informed decisions with clients concerning driving safety. Our results clearly indicated a need to develop more specific guidelines for psychiatrists and their clients and to improve communication between health professionals and driving authorities.

8. CONCLUSION

Results derived from this survey offer valuable information about how our system addresses issues pertaining to fitness-to-drive and driving competency amongst individuals with mental illnesses. Based on our findings, we propose several recommendations. First and foremost, more precise guidelines need to be established with regards to screening and reporting of potentially unsafe drivers, especially involving individuals with mental illness. For example, when psychosis is a risk factor, the degree of insight, compliance with medication and the nature of the psychopathology should be considered (21). It would be ideal that once a patient is reported, a well-defined course of action be undertaken by the DMV and assessment resources be available and affordable to ensure a comprehensive driving assessment. Establishing clear and systematic guidelines could help physicians with the doctor-patient confidentiality and public safety issues (22).

More extensive research is required to provide psychiatrists with more refined skills and instruments necessary to accurately assess driving competency in persons with mental illness. We need to clarify the interactions between psychiatric conditions and specific symptoms as well as cognitive impairments on actual driving performance. Better screening tools would allow us to identify unsafe drivers. The next hurdle would be identifying the components of an "assessment battery" for determining driving fitness amongst persons with mental illness, a battery that is clearly needed but missing. This will have considerable social implications by reinforcing personal and public safety. Until further objective evidence is available on the specific impairments impacting on driving

ability, we feel strongly that effective measures can be developed via "consensus amongst experts" (22). Our goal is to develop and promote specific guidelines fostering driving safety and competency among patients with mental illness and using psychotropic medications.

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9. APPENDICES

Appendice A- English cover letter (Slightly modified format for thesis requirement)

McGill

CanDRIVE
Keeping Safe Older Drivers Driving

CANADIAN PSYCHIATRISTS' VIEWS ON DRIVING ASSESSMENT

Dear Dr.

We are interested in Canadian psychiatrists' views regarding driving safety and mental illness. We are conducting a national study based at McGill University. Your name was drawn from the Canadian Medical Directory.

WE ARE ASKING YOU:

We are asking that you take 10 minutes to complete and return the enclosed survey. Your participation will help increase our understanding of driving related issues in those with mental illness. This information will identify existing flaws in the system and will enable the development of practice recommendations.

CONFIDENTIALITY

The survey is confidential. Your comments and answers will remain anonymous. We will insure that your name is deleted from the database and that only numeric identifiers are used.

IMPORTANT CONSIDERATIONS

The validity of the study relies on a high response rate from psychiatrists across Canada. We greatly appreciate your time and contribution to this serious concern to Canadian society and to psychiatrists who are potentially liable when their clients experience driving accidents.

ELIGIBILITY	**YES**	**NO**
-Are you in an active psychiatric practice (minimum of two clinical days per week)?	☐	☐
-Do some of your patients hold driver's licenses?	☐	☐
-Do you treat individuals with mental illness including any of the following affective disorders, psychotic disorders, or personality disorders?	☐	☐

- ***If you answered YES to all of the above questions, you are eligible. Please complete the rest of the survey and return it in the pre-addressed, pre-stamped envelope.***

- **If you answered NO to one of the questions, you are not eligible. Do not complete the rest of the survey, but please return the survey to insure completeness and quality of the study findings. Thank you very much.**

If you have any questions or comments about this study or your participation, please contact the principal investigator, Dr. Korner-Bitensky at 514-398-5919. If we do not hear from you in two weeks we will contact you to insure that you have received this letter.

Thank you very much for taking the time to participate in this important project.Sincerely,

Nicol Korner-Bitensky, PhD
Associate Professor
McGill University
Canadian Driving Research Initiative For Vehicular Safety in the Elderly
nicol.korner-bitensky@mcgill.ca

Ingrid Menard
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Appendice B- English questionnaire survey (Slightly modified format for thesis requirement)

A The following questions ask about your ***attitudes and opinions*** toward determining fitness to drive. **Your replies are confidential.** ***Please indicate your single best response:***

		Strongly Agree	Agree	Neither Agree/ Disagree	Disagree	Strongly Disagree	No Opinion/ don't know
1	Addressing my patients' fitness to drive is an important issue in my practice.	☐	☐	☐	☐	☐	☐
2	Psychiatrists should inquire about the driving ability of their patients.	☐	☐	☐	☐	☐	☐
3	In general, individuals with psychiatric conditions are at a higher risk of having a motor vehicle accident than the general population.	☐	☐	☐	☐	☐	☐
4	Persons with the following conditions are at a higher risk of having a motor vehicle accident than the general population:						
	a) Schizophrenia	☐	☐	☐	☐	☐	☐
	b) Depressive disorders	☐	☐	☐	☐	☐	☐
	c) Bipolar disorders	☐	☐	☐	☐	☐	☐
	d) Personality disorders	☐	☐	☐	☐	☐	☐
5	In general, individuals using psychotropic medications are at a higher risk of having a motor vehicle accident than the general population.	☐	☐	☐	☐	☐	☐
6	Persons using the following medications are at higher risk of having a motor vehicle accident:						
	a) Conventional antipsychotics (typical)	☐	☐	☐	☐	☐	☐
	b) Novel antipsychotics (atypical)	☐	☐	☐	☐	☐	☐
	c) Benzodiazepines	☐	☐	☐	☐	☐	☐
	d) Lithium	☐	☐	☐	☐	☐	☐
	e) Valproate	☐	☐	☐	☐	☐	☐
	f) Selective Serotonin Reuptake Inhibitors (SSRIs)	☐	☐	☐	☐	☐	☐
	g) Selective Neuroadrenaline Reuptake Inhibitors (SNRIs)	☐	☐	☐	☐	☐	☐
	h) Tricyclic antidepressants	☐	☐	☐	☐	☐	☐
7	I am confident in my ability to evaluate the driving fitness of my patients.	☐	☐	☐	☐	☐	☐
8	Psychiatrists are the most qualified professionals to identify patients with mental illness who are unsafe to drive.	☐	☐	☐	☐	☐	☐

		Strongly Agree	Agree	Neither Agree/ Disagree	Disagree	Strongly Disagree	No Opinion/ don't know
9	A clinical screening instrument that helps identify drivers at increased risk for accidents would be useful to my practice.	☐	☐	☐	☐	☐	☐
10	I would benefit from education about the evaluation of fitness to drive.	☐	☐	☐	☐	☐	☐
11	Psychiatrists should be legally required to report unsafe drivers to the provincial Department of Motor Vehicles unsafe drivers.	☐	☐	☐	☐	☐	☐
12	Psychiatrists face a conflict of interest (patient confidentiality vs. public safety) when they report.	☐	☐	☐	☐	☐	☐
13	Reporting a patient who I consider to be an unsafe driver negatively impacts on the physician-patient relationship.	☐	☐	☐	☐	☐	☐
14	The Provincial Department of Motor Vehicles evaluates potentially unsafe drivers in a timely fashion.	☐	☐	☐	☐	☐	☐

B The following questions ask about the frequency of your ***practices/activities*** pertaining to driving assessment. ***Please indicate the <u>single</u> response that best reflects your clinical behaviours:***

		Always	Often	Some-times	Rarely	Never	Not Applica-ble
1	I am aware of whether my patients are active drivers.	☐	☐	☐	☐	☐	☐
2	I ask my patients about whether they have had any driving difficulties.	☐	☐	☐	☐	☐	☐
3	When I prescribe medications, I inform my patients about possible effects on driving.	☐	☐	☐	☐	☐	☐
4	I inform my patients that their illness could impact on their driving ability.	☐	☐	☐	☐	☐	☐
5	My assessment of a patient's fitness to drive is triggered by a family member's concern.	☐	☐	☐	☐	☐	☐
6	I use the Canadian Medical Association handbook <u>Determining Medical Fitness to Drive – A Guide for Physicians</u> when assessing my patients' fitness to drive. (**<u>Note:</u>** If you are not aware of this handbook, please circle "Not Applicable".)	☐	☐	☐	☐	☐	☐
7	Patients that I deem to be unsafe drivers accept my recommendation to stop driving.	☐	☐	☐	☐	☐	☐
8	I report a patient to the provincial Department of Motor Vehicles:	☐	☐	☐	☐	☐	☐
	a) when I am uncertain of his/her ability to drive safely	☐	☐	☐	☐	☐	☐

		Always	Often	Some-times	Rarely	Never	Not Applica-ble
	b) who I consider to be unsafe and who refuses to stop driving.	☐	☐	☐	☐	☐	☐
	c) Who I consider to be unsafe and who agrees to stop driving.	☐	☐	☐	☐	☐	☐
9	I counsel patients that I report about alternative modes of transportation.	☐	☐	☐	☐	☐	☐
10	For patients that I report, the Department of Motor Vehicles informs me of their decisions about the patient's driving status.	☐	☐	☐	☐	☐	☐
11	I have felt pressured by patients to reconsider my decision to report.	☐	☐	☐	☐	☐	☐
12	Patients who I have reported have left my practice.	☐	☐	☐	☐	☐	☐

C The following questions ask about **driving policies and programs** in your province and the current gaps in the health system. ***Please indicate your response***:

		Yes	No	Don't Know
1	In my province, it is mandatory for physicians to report medically unsafe drivers to the licensing authority.	☐	☐	☐
2	I know the steps to take in reporting patients who I feel are unsafe to drive.	☐	☐	☐
3	Legislation in my province regarding reporting unsafe drivers protects me from being sued.	☐	☐	☐
4	The Provincial Department of Motor Vehicles' procedures for evaluating potentially unsafe drivers are clear to me.	☐	☐	☐
5	Centres/specialists that carry out road tests, other than the Provincial Department of Motor Vehicles, are available in my community.	☐	☐	☐
6	I have encountered difficulty finding a center/specialist to assess my patient's ability to drive.	☐	☐	☐
7	I feel there is a lack of appropriate driving assessment tool(s) to assess the driving competency of persons with mental illness.	☐	☐	☐

D How frequently do you include the following in your assessment of fitness to drive? Please indicate your single best response: *(Note: If you have never assessed a patient's fitness to drive, please indicate "Not Applicable to each question in this section".)*

		Always	Often	Some-times	Rarely	Never	Not Applicable
1	Driving history from the client	☐	☐	☐	☐	☐	☐
2	Driving history from relatives	☐	☐	☐	☐	☐	☐
3	Medical history	☐	☐	☐	☐	☐	☐
4	Psychiatric history	☐	☐	☐	☐	☐	☐
5	Medications	☐	☐	☐	☐	☐	☐
6	Alcohol / drug use	☐	☐	☐	☐	☐	☐
7	Current psychiatric symptoms	☐	☐	☐	☐	☐	☐
8	Current cognitive status	☐	☐	☐	☐	☐	☐
9	Patient's insight	☐	☐	☐	☐	☐	☐
10	Compliance with medication and other treatments	☐	☐	☐	☐	☐	☐
11	Referral for a road test to the provincial Department of Motor Vehicles	☐	☐	☐	☐	☐	☐
12	Referral for a road test to a driving centre/specialist other than the provincial Department of Motor Vehicles	☐	☐	☐	☐	☐	☐

E The following questions ask about you and your practice.

1.	What is your gender? ☐ Male ☐ Female
2.	How old are you? _____ years old.
3.	How many years have you been in psychiatric practice (after completing postgraduate training)? _____ years.
4.	In which province do you practice? _____.
5.	What is the approximate size of the community in which you practice? ☐<10,000 ☐10,000-50,000 ☐ 50,001-100,000 ☐100,001-500,000 ☐>500,000
6.	What is your primary work setting? (Please indicate all that apply) ☐ Teaching hospital ☐ Non-teaching hospital ☐ Private practice ☐ Mixed setting, specify_____ ☐Other, specify_____
7.	In which kind of service are you working? (Please indicate all that apply) ☐In-patients ☐ Out-patients ☐ Day hospital ☐ Rehabilitation service ☐ Private practice ☐ Others, specify _____
8.	Approximately how many patients with psychiatric conditions do you see during an average day? _____
9.	What is your main clientele? (Please indicate all that apply) ☐ Psycho-geriatrics ☐ Affective disorders ☐ Psychotic disorders ☐ Substance abuse disorders ☐ Personality disorder ☐ Anxiety disorders ☐ Others, specify_____
10.	Approximately how many patients did you assess for fitness to drive in the last year? _____ ☐ Check here if 0
11.	How many patients did you report to the Provincial Department of Motor Vehicles in the last year? _____ ☐ Check here if 0

Please provide us with any additional ***comments*** that you would like to make about any of the topics raised or the survey itself.

_____

_____

_____

_____

_____

_____

_____

_____

Thanks very much for your participation!
Please return your completed survey in the enclosed envelope.

NOTE: Your participation is voluntary. By completing and returning the questionnaire you are indicating that you agree to have your answers included in the publication of this Canada-wide survey.

Appendice C- French cover letter (Slightly modified format for thesis requirement)

McGill

CanDRIVE
Keeping Safe Older Drivers Driving

OPINION DES PSYCHIATRES CANADIENS SUR L'ÉVALUATION DE L'APTITUDE À CONDUIRE DES PERSONNES AYANT UN TROUBLE DE SANTÉ MENTALE.

Madame, Monsieur,

Nous souhaitons recueillir l'opinion des psychiatres canadiens en ce qui concerne la conduite automobile sécuritaire et la maladie mentale. À cette fin, nous menons une enquête à l'Université McGill. Votre nom a été tiré du répertoire canadien des médecins.

CE QUE NOUS VOUS DEMANDONS : Nous vous demandons de prendre 10 minutes de votre temps pour remplir le questionnaire ci-joint et nous le retourner. Votre participation nous permettra de mieux comprendre les enjeux liés à la conduite automobile pour les personnes ayant un trouble de santé mentale. L'information recueillie permettra d'identifier les lacunes du système actuel et de formuler des recommandations en vue de l'améliorer.

CONFIDENTIALITÉ: Notre enquête est confidentielle. Vos réponses et vos commentaires resteront anonymes. Votre nom sera effacé de la base de données contenant votre questionnaire et remplacé par un code numérique.

CONSIDÉRATIONS IMPORTANTES : Le succès de notre étude dépend principalement du taux de réponse que nous obtiendrons des psychiatres dans l'ensemble du Canada. Nous apprécions grandement votre participation à cette étude qui traite d'un sujet affectant la société canadienne, ainsi que les psychiatres qui peuvent être tenus responsables lorsque leurs patients ont un accident d'automobile.

ADMISSIBILITÉ :	OUI	NON
-Êtes-vous un psychiatre clinicien actif (minimum de deux jours/semaine) ?	☐	☐
-Certains de vos patients détiennent-ils un permis de conduire ?	☐	☐
-Est-ce que vous traitez des patients atteints d'au moins un des troubles suivants :		
troubles affectifs, troubles psychotiques ou encore troubles de la personnalité?	☐	☐

- ***Si vous avez répondu OUI à toutes les questions précédentes, vous êtes admissible. Veuillez remplir le questionnaire et le retourner dans l'enveloppe pré-adressée, pré-affranchie.***
- **Si vous avez répondu NON à une des questions, vous n'êtes pas admissible. Ne remplissez pas le questionnaire mais veuillez tout de même nous le retourner afin d'assurer l'intégrité et la qualité des résultats de notre étude. Merci beaucoup.**

Si vous avez des questions ou des commentaires sur cette étude ou sur votre participation, veuillez communiquer avec l'investigateur principal, Dr. Nicol Korner-Bitensky au 514-398-5919. Si nous ne recevons pas votre questionnaire dans les deux prochaines semaines, nous vous contacterons pour nous assurer que vous avez reçu cette lettre.

Nous vous remercions de votre participation à ce projet d'envergure. Veuillez agréer, Madame, Monsieur, nos salutations distinguées,

Nicol Korner-Bitensky, Ph. D.
Professeur associé, University McGill
Initiative canadienne sur la conduite automobile pour les aînés (CanDRIVE)
(514) 398-5457, nicol.korner-bitensky@mcgill.ca

Ingrid Ménard
Associée CanDRIVE / CHIRI
University McGill
ingrid.menard@mail.mcgill.ca

Appendice D- French questionnaire survey (Slightly modified format for thesis requirement)

A Cette section porte sur vos **attitudes** concernant l'évaluation des patients quant à leur aptitude à la conduite automobile. Vos réponses sont confidentielles.
Veuillez cocher une seule réponse :

		Fortement en accord	En accord	Ni en accord ni en désaccord	En désaccord	Fortement en désaccord	Sans opinion
1	Établir l'aptitude de mes patients à conduire est un aspect important de mon intervention clinique.	☐	☐	☐	☐	☐	☐
2	Les psychiatres devraient s'informer sur l'aptitude à conduire de leurs patients.	☐	☐	☐	☐	☐	☐
3	En général, les personnes atteintes de troubles psychiatriques ont plus de risques d'avoir un accident d'automobile que le reste de la population.	☐	☐	☐	☐	☐	☐
4	Les personnes atteintes des troubles suivants ont plus de risque d'avoir un accident d'automobile que le reste de la population :						
	a) Schizophrenie	☐	☐	☐	☐	☐	☐
	b) Troubles affectifs	☐	☐	☐	☐	☐	☐
	c) Troubles bipolaires	☐	☐	☐	☐	☐	☐
	d) Troubles de la personnalité	☐	☐	☐	☐	☐	☐
5	En général, les personnes qui prennent des psychotropes ont plus de risques d'avoir un accident d'automobile que le reste de la population.	☐	☐	☐	☐	☐	☐
6	Les personnes qui prennent les médicaments suivants ont plus de risques d'avoir un accident d'automobile que le reste de la population.						
	a) Antipsychotiques classiques (typiques)	☐	☐	☐	☐	☐	☐
	b) Antipsychotiques atypiques	☐	☐	☐	☐	☐	☐
	c) Benzodiazépines	☐	☐	☐	☐	☐	☐
	d) Lithium	☐	☐	☐	☐	☐	☐
	e) Valproate	☐	☐	☐	☐	☐	☐
	f) Inhibiteurs sélectifs de la recapture de la sérotonine (ISRS)	☐	☐	☐	☐	☐	☐
	g) Inhibiteurs sélectifs de la recapture de la neuroadrénaline (ISRN)	☐	☐	☐	☐	☐	☐
	h) Antidépresseurs tricycliques	☐	☐	☐	☐	☐	☐
7	J'ai confiance dans ma capacité à évaluer l'aptitude à conduire de mes patients.	☐	☐	☐	☐	☐	☐

		Fortement en accord	En accord	Ni en accord ni en désaccord	En désaccord	Fortement en désaccord	Sans opinion
8	Les psychiatres sont les professionnels les mieux qualifiés pour reconnaître les patients atteints de maladies mentales qui ne sont pas aptes à conduire.	☐	☐	☐	☐	☐	☐
9	Un outil de dépistage clinique permettant de repérer les patients qui courent un risque accru d'avoir un accident d'automobile serait utile dans mon intervention clinique.	☐	☐	☐	☐	☐	☐
10	Il me serait utile d'avoir une formation plus poussée sur l'évaluation de l'aptitude à conduire.	☐	☐	☐	☐	☐	☐
11	Les psychiatres devraient avoir l'obligation légale de signaler au bureau d'enregistrement des véhicules de la province les conducteurs inaptes.	☐	☐	☐	☐	☐	☐
12	Les psychiatres font face à un conflit d'éthique (confidentialité des dossiers médicaux contre sécurité du public) lorsqu'ils signalent un patient.	☐	☐	☐	☐	☐	☐
13	Le fait de signaler un patient que je considère comme un conducteur inapte a une incidence négative sur la relation médecin-patient.	☐	☐	☐	☐	☐	☐
14	Le bureau d'enregistrement des véhicules de la province évalue les patients potentiellement inaptes à conduire avec une promptitude suffisante.	☐	☐	☐	☐	☐	☐

B Cette section porte sur la fréquence de vos interventions ayant trait à l'évaluation de la conduite automobile. ***Veuillez cocher la réponse qui reflète le mieux vos comportements cliniques :***

		Toujours	Souvent	Parfois	Rarement	Jamais	Ne s'applique pas
1	Je sais si un patient est un conducteur actif ou non.	☐	☐	☐	☐	☐	☐
2	Je demande à mes patients s'ils ont récemment eu des difficultés à conduire.	☐	☐	☐	☐	☐	☐
3	Lorsque je prescris un médicament, j'informe mes patients des effets potentiels sur leur aptitude à conduire.	☐	☐	☐	☐	☐	☐
4	J'informe mes patients que leur maladie pourrait avoir un effet sur leur aptitude à conduire.	☐	☐	☐	☐	☐	☐
5	Mon évaluation de l'aptitude à conduire d'un patient découle d'une demande provenant d'un membre de la famille.	☐	☐	☐	☐	☐	☐

		Toujours	Souvent	Parfois	Rarement	Jamais	Ne s'applique pas
6	J'utilise le guide intitulé Déterminer l'aptitude médicale à conduire – Guide du médecin de l'Association médicale canadienne lorsque j'évalue l'aptitude à conduire d'un patient. (**Remarque :** Si vous ne connaissez pas l'existence de ce guide, encerclez « Ne s'applique pas ».)	☐	☐	☐	☐	☐	☐
7	Les patients que je juge inaptes à conduire acceptent ma recommandation de cesser de conduire.	☐	☐	☐	☐	☐	☐
8	Je signale au bureau d'enregistrement des véhicules de la province les patients suivants:						
	a) Ceux dont je doute de la capacité à conduire de manière sécuritaire.	☐	☐	☐	☐	☐	☐
	b) Ceux que je juge inaptes à conduire et qui refusent de cesser de conduire.	☐	☐	☐	☐	☐	☐
	c) Ceux que je juge inaptes à conduire et qui acceptent de cesser de conduire.	☐	☐	☐	☐	☐	☐
9	Je donne des conseils aux patients que je signale sur les autres modes de transport.	☐	☐	☐	☐	☐	☐
10	Le bureau d'enregistrement des véhicules de la province me tient informé(e) du statut de conducteur des patients que je signale.	☐	☐	☐	☐	☐	☐
11	J'ai subi une pression indue de la part de certains patients pour me faire changer ma décision de les signaler.	☐	☐	☐	☐	☐	☐
12	Certains patients que j'ai signalés ont quitté ma clientèle.	☐	☐	☐	☐	☐	☐

C

Cette section concerne les politiques et les programmes relatifs à la conduite automobile dans votre province et les lacunes actuelles du système de santé.
Veuillez cocher la case appropriée.

		Oui	Non	Je ne sais pas
1.	Dans ma province, il est obligatoire de signaler les conducteurs médicalement inaptes à conduire à l'organisme chargé de la délivrance des permis.	☐	☐	☐
2.	Je connais la marche à suivre pour signaler un patient que je juge inapte à conduire.	☐	☐	☐
3.	La législation de ma province en matière de signalement des conducteurs jugés inaptes à conduire me protège contre d'éventuelles poursuites.	☐	☐	☐
4.	Les procédures du bureau d'enregistrement des véhicules de ma province pour l'évaluation des conducteurs potentiellement inaptes à conduire sont claires pour moi.	☐	☐	☐
5.	Des centres spécialisés en évaluation de la conduite, autres que le bureau provincial d'enregistrement des véhicules, existent dans ma collectivité.	☐	☐	☐

6.	J'éprouve de la difficulté à trouver un centre spécialisé en évaluation de la conduite qui accepte d'évaluer l'aptitude à conduire de mes patients.	☐	☐	☐
7.	Il semble qu'il y ait un manque d'outils d'évaluation appropriés pour évaluer l'aptitude à conduire des personnes atteintes de maladies mentales.	☐	☐	☐

D À quelle fréquence incluez-vous les aspects suivants dans votre évaluation de l'aptitude à conduire de vos patients ? ***Veuillez cocher une seule réponse :***
*(**Remarque** : Si vous n'avez jamais évalué l'aptitude à conduire d'un patient, veuillez cocher « Ne s'applique pas » à chacune des questions de cette section.)*

		Toujours	Souvent	Parfois	Rarement	Jamais	Ne s'applique pas
1	Antécédents de conduite relatés par le patient.	☐	☐	☐	☐	☐	☐
2	Antécédents de conduite relatés par la famille du patient.	☐	☐	☐	☐	☐	☐
3	Antécédents médicaux.	☐	☐	☐	☐	☐	☐
4	Histoire psychiatrique.	☐	☐	☐	☐	☐	☐
5	Médicaments.	☐	☐	☐	☐	☐	☐
6	Utilisation d'alcool ou de drogue.	☐	☐	☐	☐	☐	☐
7	Symptômes psychiatriques actuels.	☐	☐	☐	☐	☐	☐
8	État cognitif actuel.	☐	☐	☐	☐	☐	☐
9	Introspection du patient.	☐	☐	☐	☐	☐	☐
10	Respect de la prise des médicaments et des autres traitements.	☐	☐	☐	☐	☐	☐
11	Renvoi ou référence au bureau d'enregistrement des véhicules de la province pour un essai routier.	☐	☐	☐	☐	☐	☐
12	Renvoi ou référence à un centre spécialisé en évaluation de la conduite autre que le bureau d'enregistrement des véhicules de la province pour un essai routier.	☐	☐	☐	☐	☐	☐

E La section suivante porte sur vous et votre clientèle.

1.	***De quel sexe êtes-vous ?*** ☐ ***Homme*** ☐ ***Femme***
2.	***Quel âge avez-vous ?*** _____ ***ans.***
3.	***Depuis combien d'années exercez-vous comme psychiatre clinicien (sans inclure la formation postdoctorale) ?*** _____ ***années***
4.	***Dans quelle province exercez-vous ?*** _____
5.	**Quelle est la taille approximative de la collectivité où vous exercez ?** ☐ < 10 000 ☐ 10 000 - 50 000 ☐ 50 001 - 100 000 ☐ 100 001- 500 000 ☐ > 500 000
6.	***Dans quel contexte exercez-vous principalement ?*** **(Cochez toutes les réponses qui s'appliquent.)** ☐ Hôpital universitaire ☐ Hôpital sans enseignement ☐ Clinique privée ☐ Contexte mixte (précisez) _____ ☐ Autre (précisez) _____
7.	***Quel type de service offrez-vous ?*** **(Cochez toutes les réponses qui s'appliquent.)** ☐ Soins hospitaliers ☐ Consultations externes ☐ Hôpital de jour ☐ Réadaptation ☐ Clinique privée ☐ Autres (précisez) _____
8.	***En moyenne combien de patients atteints de troubles psychiatriques voyez-vous chaque jour ?*** _____
9.	***Quelle est votre clientèle ?*** **(Cochez toutes les réponses qui s'appliquent.)** ☐ Psychogériatrie ☐ Troubles affectifs ☐ Troubles psychotiques ☐ Toxicomanie ☐ Troubles de la personnalité ☐ Troubles anxieux ☐ Autres (précisez) _____
10.	***Au cours de la dernière année, combien de patients environ avez-vous évalués quant à leur aptitude à conduire ?*** _____ ☐ Si aucun, cochez ici.
11.	***Au cours de la dernière année, combien de patients environ avez-vous signalés au bureau d'enregistrement des véhicules de votre province ?*** _____ ☐ Si aucun, cochez ici.

Veuillez nous faire part de tous **commentaires** additionnels que vous souhaiteriez faire sur les sujets abordés dans cette enquête ou sur l'enquête elle-même.

_____

_____

_____

_____

_____

_____

_____

Nous vous remercions de votre participation !
Veuillez nous retourner le questionnaire rempli dans l'enveloppe fournie à cette fin.

REMARQUE : La participation à cette étude est volontaire. En remplissant et en retournant ce questionnaire, vous acceptez que vos réponses figurent dans la publication des résultats de cette étude pancanadienne.