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Short research communication

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Abstract

Background: The United Arab Emirates has set the goal to reduce traffic-related deaths to 3 per 100 000 people by 2021. To do this, authorities must assess the factors related to risky driving behaviour.

Aims: To verify if there are any correlations between driving behaviour and certain variables, including years of driving experience, daily hours of sleep, general markers of mental health, and symptoms of attention deficit hyperactivity disorder (ADHD).

Methods: Two hundred and seventy-five participants responded to a survey made up of the Manchester driver behaviour questionnaire, the general health questionnaire, the adult ADHD self-report scale, and 2 additional questions. Spearman's coefficient was calculated for correlations between these variables, at statistical significance level P

Results: Years of driving experience and hours of sleep had no correlations with driving performance. Markers of general mental health had a weak correlation with risky driving behaviour, and symptoms of ADHD had moderate correlation with risky driving behaviour.

Conclusion: Policymakers and public health officials should screen for ADHD during driver licensing examination.

Keywords: driving, mental health, United Arab Emirates, traffic safety, ADHD, students, university

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Introduction

Over the last few years, the United Arab Emirates has been making significant progress in road traffic injury prevention. Following the 725 traffic-related deaths and 6681 injuries in 2016, the Government of the United Arab Emirates made a deep commitment as part of its national agenda to reduce traffic-related deaths to 3 per 100 000 people by 2021 (1).

Research has provided much relevant information on this topic. Previous studies have suggested that mental health is associated with improved driving performance, and consequently, with increased traffic safety (2). However, it is not known which aspects of mental health are associated with driving performance. Since mental health is a broad category, policy-makers must focus on particular mental health markers and their relationship with particular dimensions of driving behaviour. This study addressed this question, and its correlations in the United Arab Emirates, because only few studies conducted on driving performance have paid attention to their relationship with mental health.

In this study we investigated whether 5 dimensions of mental health (social dysfunction, anxiety, loss of confidence, hours of sleep, attention deficit/hyperactivity) had any correlation with

dangerous driving behaviour in the United Arab Emirates.

Methods

This was a cross-sectional study that measured age, sex, hours of sleep, years of driving experience, mental health, driving behaviour and levels of attention deficit hyperactivity disorder (ADHD).

An integrated questionnaire of 27 items was approved by the research ethics committee of Ajman University, # M-H-F-31-May. The questionnaire was sent (via email) to students and alumni of the university who live permanently in the United Arab Emirates. Participants were recruited on the basis of convenient non-probability sampling, considering availability and willingness to answer questionnaires during the COVID-19 lockdowns.

Participants were informed about the nature of the study and that they could refuse to answer questions at any time. They were requested to sign consent and instructed to carefully complete all questions in the survey to avoid any potential loss of data. The survey was designed using software that would not allow the participant to go on to the next question without answering the previous one. This method ensured that the returned questionnaires would not have any missing data. Consequently, the level of missing data was 0. We sent out 350 questionnaires; 275 were returned, giving a response rate of 79%.

The survey gathered demographic information (age, sex). One question asked participants how many hours of sleep they got daily. Another question asked how many years of driving experience they had. The rest of the questions were made up of 3 questionnaires combined.

The first set of questions were taken from a 12-item version of the general health questionnaire (GHQ-12), which assesses 3 non-psychotic dimensions of mental health obtained from factor loading analyses: social dysfunction, anxiety and loss of confidence (3). Social dysfunction assesses individuals' capacity to properly function in society (e.g. Have you recently felt capable of making decisions?); anxiety assesses situations of stress and/or depression (e.g. Have you recently felt unhappy and depressed?); loss of confidence assesses situations in which the respondent does not feel they are functioning for optimal performance (e.g. Have you recently felt losing confidence?).

Participants were asked to rate how frequently they experienced particular situations expressed in the items. Responses were given on a Likert scale, from 0 (not at all) to 3 (more than usually), with higher scores indicating worse mental health.

The second set of questions were taken from a 9-item version of the Manchester driver behaviour questionnaire (Mini-DBQ). On the basis of previous factor loading analyses, the Mini-DBQ is structured around 3 dimensions: violations (e.g. I drive especially close or “flashing” the car in front as a signal for that driver to go faster), errors (e.g. I fail to notice, because lost in thought or distracted, someone waiting at a zebra crossing, or that a pelican crossing light has just turned red), and lapses (e.g. I forget where I left my car in a multi-level car park).

Participants responded by identifying how frequently they engaged in each of the habits expressed in the items, on a Likert scale from 0 (never) to 5 (nearly all the time), with higher scores indicating poorer driving performance. The Mini-DBQ has good reliability, with a Cronbach alpha = 0.9. It has been properly validated (4).

The third set of questions were taken from a 6-item version of the World Health Organization’s Adult ADHD self-report scale (ASRS), which assesses symptoms of ADHD among adults. Participants were asked about the frequency of particular situations (e.g. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?), and they respond on the basis of a Likert scale (1 = never; 5 = very often), with higher scores indicating greater levels of ADHD. The ASRS is considered to have good reliability (5), and it has been validated across various settings (6).

Given that most variables included an interval (rather than a ratio) level of measurement, Spearman’s test (instead of Pearson’s) was selected to establish correlation, in line with the recommendation of most statisticians for interval levels of measurement. Coefficients were calculated for correlations between driving behaviour (violations, lapses, errors) and general mental health (social dysfunction, anxiety, loss of confidence), years of driving experience and daily hours of sleep. Statistical significance was P

Results

We surveyed 275 participants: 64 males and 211 females. Mean age was 27.3 (standard deviation 7.24) years.

Spearman’s coefficients for correlations between dimensions of driving behaviour (violations,

errors and lapses) and symptoms of ADHD, years of driving experience and hours of sleep, are presented in Table 1 .

Results show that ASRS had a weak but statistically significant correlation with violations (r = 0.31; P

Spearman's coefficients for correlations between dimensions of driving behaviour (violations, errors and lapses) and dimensions of general mental health (social dysfunction, anxiety, loss of confidence) are presented in Table 2 .

Social dysfunction had a very weak but statistically significant correlation with violations (r = 0.15; P < 0.05) but no statistically significant correlation with errors or lapses. Anxiety had a weak but statistically significant correlation with violations (r = 0.25; P < 0.01), with errors (r = 0.27, P < 0.01) and with lapses (r = 0.29; P < 0.01). Loss of confidence had a weak but statistically significant correlation with violations (r = 0.21; P < 0.01), with errors (r = 0.27; P