Assessment tools predicting fitness-to-drive in the old taxi drivers: a screening measure for future road safety directions

Orapin Laosee [1], Cheerawit Rattanapan [1], Netchanok Sritoomma [2], Phanida Wamontree [3]

[1] ASEAN Institute for Health Development, Mahidol University, Nakorn Pathom, Thailand
[2] Ph.D. in Nursing Management and College of Nursing, Christian University of Thailand, Nakorn Pathom, Thailand
[3] School of Integrative Medicine, Mae Fah Luang University, Chiang Rai, Thailand

Summary

The number of older drivers is increasing as the world's population is ageing. Age-related factors impacting older adults' fitness to drive including the ability to control a vehicle. In addition, taxi drivers play an important role in the provision of public transportation service and security. However, little has been known on the fitness to drive among old taxi drivers. This study aims to investigate the fitness-to drive (FTD) of the old taxi drivers and determine factors associated with FTD. This study enrolled 299 male professional taxi drivers in Bangkok metropolitan areas. The participants were asked to complete the self-administrative questionnaire at their parking hot sport areas. The measurements included FTD, metacognition, medical history, and health risk behaviours. Logistic regression analysis was performed to identify factor associated with FTD which classified into low and high. Less than half (46%) were classified as good fitness to drive. The results highlighted that medical condition and cognition had the greatest influence on FTD. In fact, three-quarters of the old taxi drivers have been classified as overweight and obese which could be at risk other diseases. Regular physical and psychological check up to screening FTD among this group can be implemented to improve road safety and reduce injury, mortality and health care costs.

Introduction

The proportion of elderly has long been increasing, and will continue to grow in the oncoming decades[1]. The new generation of elderly differs from previous generations and more likely to keep their driving licenses, possess a car and travel more kilometers than previous generations[2]. The evidences has been shown that they are overrepresented in crashes per distance travelled, particularly with regard to serious injuries or death as a consequence of crash involvement[3]. Several studies have been reported various factors as predictors of crash involvement in older adult drivers; physical function and cognitive status factors have been played a crucial role of injury [4-8]. A systematic review revealed that due to the complexity of driving, there is no any single tool can address all factors required to plan for older adults with such diverse abilities and skill, including

adults with various medical conditions[9]. However, initial evidence has shown that the evaluation of fitness-to-drive (FTD) provide ratters with a faster and more efficient way to identify at-risk older drivers [10-13].

Taxi drivers play an important role in the provision of public transport services and security. Taxis mainly operate in urban areas, where the traffic environment is complex. Zhang et al [11] suggested that taxi drivers need to evaluate their existing problems and driving fitness including some certain characteristics of taxi drivers, such as weight, smoking, and sleepiness. Along with older age and role of drivers, they are more likely to be most vulnerable group on the road. However, little has been known on what and how to screen the fitness-to-drive among old taxi drivers. Therefore, this will be the first study to insert the body of knowledge fitness-to-drive screening for old taxi drivers.

Methodology

A total of 305 taxi drivers aged 60 and older were randomly sampled from different taxi parking areas in Bangkok metropolitan region during June - August 2021. After their consent, they were requested to fill self-administrative questionnaire instructed by research assistants under precaution measures of COVID-19. The measurements in this study were forward and backward translation by two professional staff at the institute for language of the university to ensure the accuracy and validity with the original content under local context. FTD which consisted of 17 items to measure technical driving skill, risk perceptions, and safety consciousness was measured based on the existing literatures to detects at-risk older drivers[13-15].

Results

A total of 305 were approached, and 300 respondents willing to participate in the study (the response rate of 99%). 299 completed data were used for analysis. Median age of the respondents was 64 (QD 2.5) with the range 60-84 years. Approximately three-quarters (73.9%) were classified as overweight to obese. Most of respondents (60%) currently under taken prescription drugs by health professional with common disease were diabetes, hypertension and cardiovascular. Over half (52%) were classified as poor metacognition. A total of 93 cases had experienced traffic injury during the prior 12 month which mainly accidental due to their parties and themselves (Table).

Regarding fitness to drive, less than half (46%) were classified as fitness to drive. Majority were grouped as low safety consciousness (64.5%), and over half classified as poor risk perception (Figure).

Logistic regression was used to identify the association between each independent variable and FTD. The analysis revealed that being elderly adult, no medical condition and good metacognition were more likely to have good FTD. In addition, multiple logistic regression analysis identified significant factor associated with FTD in elderly taxi drivers. Being elderly adults or age 60-64 (AOR: 1.55; 95% CI: .97, 2.28), without any medical condition (AOR: 1.45; 95% CI: .90, 2.34), and good level of metacognition (AOR: 1.84; 95% CI: 1.15, 2.93) tended to have high fitness to drive. Among those significant predictors, good level of cognitive function is the strongest predictor of FTD while age is the second predictor.

Table Characteristics of the respondents (n=299)

Characteristics	Number	Percentage
Age (years): Median 64, QD. 2.5, Range 60-84		
Education level: Primary school	177	59.2
BMI: Obese type I and II	157	52.5
Mean 25.4, SD. 4.13, Range 16.1-50.0 kg/m²		
Vision: Not clear/eye disease	70	23.4
Chronic disease: Yes*	181	60.5
Alcohol: Regular drinker	39	13.0
Metacognition: Poor	158	52.8
Road traffic injury last 12 months: Yes	93	31.1

Diabetes with Hypertension, Hypertension, and Cardiovascular diseases
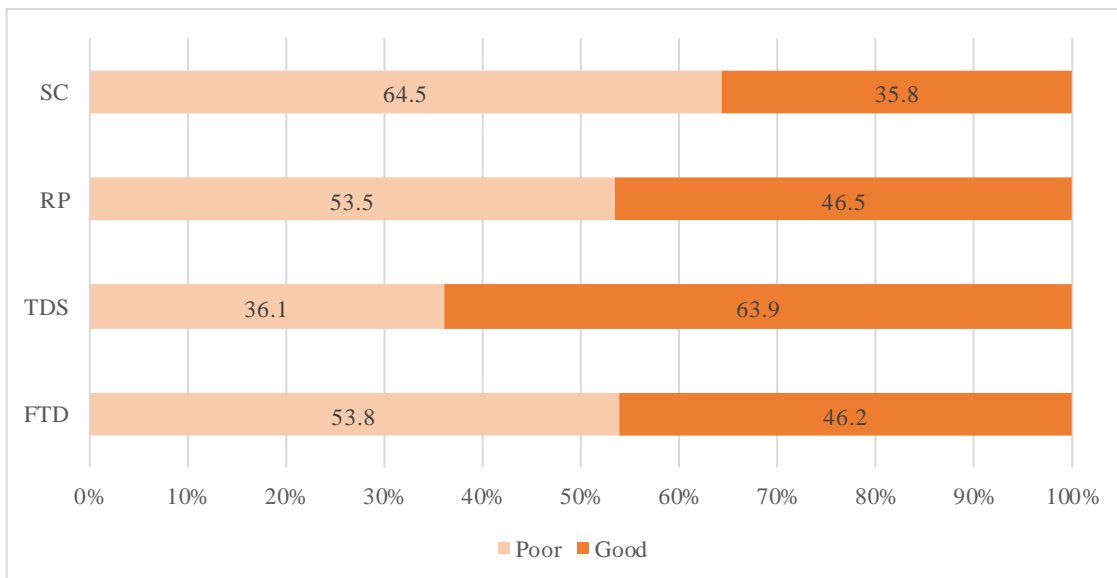
FTD Fitness-To-Drive, TDS Technical Driving skills, RP Risk Perception, SC Safety Consciousness

Figure: Distribution of fitness-to-drive and three domains

Future areas to take note

This study investigated the driving skills of older taxi driver using a self-report questionnaire. Over half (53%) of the respondents was classified as low level of fitness-to-drive. Among three components of FTD, safety consciousness was the most critical concern; e.g. they reported some difficulty to stay focused on driving when there are distractions, avoid dangerous situations, and drive when upset. Emotional management strategies and safety awareness program could be implemented to enhance safety in regular basis. In addition, the results showed that individual cognitive function is identified as a key predictor of fitness to drive. Introducing of the lifestyle interventions with assessment of the cognition function could be made to reduce risk of cognitive decline.

Means of official announcement of research report

- Cognitive functions are of the higher importance in fitness to drive evaluation in old taxi drivers.

- Safety concern is the most critical concern among professional older drivers.

- Emotional management strategies and safety awareness program should be introduced to enhance safety in regular basis.

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