

Attitude of Swiss general practitioners to mandatory training in assessing fitness to drive of older drivers

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Summary

AIMS OF THE STUDY: In Switzerland, drivers over the age of 75 must undergo a medical assessment of their fitness to drive every 2 years. This assessment is usually carried out by a general practitioner (GP). Since 2016, physicians require official accreditation (so-called level 1 competence) to perform these examinations. This can be obtained either by self-declaration of competence or by attending an accredited training course. Little is known about the Swiss GPs' views on this regulation. In this study, we investigated the attitude of GPs towards these modalities.

METHODS: A questionnaire was mailed to 2372 GPs in a large part of German-speaking Switzerland, 1198 of whom completed and returned the questionnaire. The anonymised data were analysed by descriptive statistics (frequencies, percentages) to summarise participant demographics and agreement with attitudinal statements.

RESULTS: The response rate was 50.5%. Sociodemographic data (age, gender, settlement area) of the participating GPs corresponded to those of the Swiss medical statistics. The majority (93.1%) of respondents worked in an outpatient setting, 6.9% in the inpatient sector. Overall, 34.4% of the GPs completed a training course and 47.7% submitted a self-declaration in order to acquire level 1 competence. Older and more experienced physicians had made more use of the self-declaration option. 58.1% of the respondents would like to retain the existing regulations. Of the respondents who had attended a training course, 51.7% considered themselves more competent in the assessment of older drivers after the training, and 76.1% would like to maintain the course duration of 1 day. Of the physicians surveyed, 70.8% were of the opinion that level 1 examinations are a useful screening tool for older drivers who are unfit to drive, and 78.4% agreed that MFTD (medical fitness to drive) examinations of older drivers should be performed by GPs.

CONCLUSIONS: In Switzerland, the currently existing regulation for acquiring level 1 competence is widely accepted by GPs. Almost all respondents considered that they have sufficient knowledge to assess MFTD. However,

the majority of GPs who had attended the training course indicated they have benefited from it. Periodic assessment of MFTD of older drivers was considered useful and should preferably be performed by GPs. These results show that the periodic assessment of older drivers' MFTD practised in Switzerland is well accepted.

Introduction

In industrialised countries, the proportion of the older population is continuously growing as a result of increased life expectancy and low birth rates. For example, by 2035 there will be more senior citizens than children in the United States of America [1]. Thus, an increase of older drivers can be expected. For the majority of today's older population, a private vehicle is essential for their mobility needs and to continue their accustomed lifestyle [2]. The proportion of individuals over the age of 65 holding a Swiss drivers licence increased from around 40% to 70% between 1994 and 2015 [3]. Driving exposure is also projected to increase, with the vehicle-miles driven by the baby boomer population projected to more than double compared with that of the current cohort of older drivers [2]. A reduction in mobility due to the loss of a driver's licence is often associated with a decrease in quality of life [4]. The ageing population is increasingly affected by chronic illnesses, which can have an adverse effect on MFTD (medical fitness to drive). Chronic diseases such as diabetes mellitus, cognitive impairment and cardiovascular diseases, as well as psychomotor slowing, are prevalent in this population [5]. Vernon et al. [6] reported in their study that people with self-declared medical problems had significantly more road traffic incidents than a control group. Therefore, in many countries the licensing of older drivers is regulated.

The fitness to drive regulations for older driver varies widely between countries [7]. Screening policies based on chronological age are widely used in European countries and many US and Australian states [8]. Whether screening of older drivers is appropriate and which examinations may identify license holders who are unfit for driving is the subject of lively discussion. So far, there is no test that

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can reliably predict fitness to drive [8]. In most EU member states, the fitness to drive examination is carried out by GPs, whereas in the UK, for instance, a self-declaration is sufficient.

In Switzerland, individuals aged 75 and older holding a driver's license for private cars have to undergo periodic medical examinations (so-called level 1 examination). The periodicity is by default 2 years, but can be shortened by the authorities if necessary. The task of the evaluating physician is to assess whether the person examined meets the legal minimum requirements, if necessary under certain conditions (e.g., wearing a visual aid). Minimum requirements include vision and hearing, use of alcohol, narcotics and psychotropic medications, mental disorders, level of cognitive functioning, neurological, cardiovascular and metabolic diseases, diseases of the respiratory and abdominal organs and pathologies of the spine and musculoskeletal system [9]. The focus is not on the actual medical diagnosis, but on the level of function. Visual acuity and all traffic relevant diseases and conditions must be recorded by the examining physician on a form defined by the legislature [9]. The result of this examination is the basis for the driver's licence authority decision whether to keep or revoke the driver's license. Depending on the case constellation – for example, in the case of unclear results – the authority may also order a more extensive examination.

Before 2016, any physician was allowed to perform this biennial mandatory examination; proof of qualification was not required. Since 2016, these level 1 examinations have to be carried out by a physician with a so-called level 1 qualification. Physicians can acquire accreditation either by self-declaration or by attending a course. Self-declaration is performed via an online form on the website of the Association of the Swiss Road Traffic Offices [10]. Courses are offered several times a year in different Swiss regions and their duration is 1 day. The organisation of the courses has been delegated to the Traffic Medicine Section of the Swiss Society for Forensic Medicine. The course teaches the legal and medical requirements for assessing the fitness to drive of drivers aged 75 years and older.

Little is known about the Swiss GPs' opinion on the new regulation. The aim of this study was to find out how physicians achieved their level 1 competence. Furthermore, the study investigated the acceptance of the modalities for achieving this accreditation (course, self-declaration) and how doctors who have attended a course assess this form of qualification. Finally, the study surveyed whether a GP's screening of senior drivers is accepted.

Materials and methods

The study was carried out by the Department of Traffic Sciences of the Institute of Forensic Medicine at the University of Bern, Switzerland, in 2018. Due to the study design as a written survey and in accordance with legal requirements, no approval of the responsible ethics committee (Cantonal Ethics Committee Bern) had to be obtained. A questionnaire was mailed to all board certified specialists in general internal medicine practising in the Swiss cantons of Basel-Stadt, Basel-Land, Berne (German-speaking part), Solothurn and Lucerne ($n = 2372$). The physicians contacted represent 28% of all specialists in general internal medicine in Switzerland ($n = 8308$)

[11]. Their addresses were acquired by a marketing company (Künzler Bachmann AG, St Gallen, Switzerland) and randomly verified using the official medical register of the Swiss Medical Association [12].

The questionnaire comprised of 20 questions divided into 3 groups: 13 questions on level 1 training, 3 general questions on the fitness to drive assessment, and 4 sociodemographic questions. This publication was based on the data of answers to 12 of those questions (all sociodemographic questions and 8 questions concerning level 1 training). Each question could be answered by checking the box next to the matching statement, i.e. "yes/agreement", "no/rejection" and for some questions also "partial agree". The questionnaire (in German) can be requested from the corresponding author. The questionnaire was subjected to a pre-test with physicians experienced in assessing fitness to drive. After implementing modifications based on this pre-test, the questionnaire was printed and mailed together with a cover letter.

In order to increase the response rate, a prepaid return envelope and personalisation via the cover letter using the GPs name was enclosed with the questionnaire. The survey was carried out anonymously. Participation in the study was not compensated financially. The questionnaires and envelopes were not tagged. Upon arrival, the return envelopes were opened and only the questionnaires were forwarded to the data analyst. The questionnaires were then numbered consecutively and the data entered into a statistics programme. Empty questionnaires were sorted out.

Statistical analysis

The statistical analysis was performed using SPSS Statistics 26 for Windows (SPSS Inc., Chicago, USA).

Nominal- and ordinal-scaled variables were compared using the chi-square test. The three not normally distributed independent samples of the interval scaled variable "number of MFTD tests per year" in table 3 were compared using Kruskal–Wallis H test. Normal distribution was tested by using Kolmogorov–Smirnov test. The significance level was set at $p < 0.05$.

Results

Of the 2372 questionnaires mailed to GPs in the German-speaking part of Switzerland, 1249 were returned. Fifty-one of them were empty. The remaining 1198 questionnaires were included in this study resulting in a response rate of 50.5% and represents approximately 14% of Swiss physicians with the specialist title in general internal medicine. The questionnaire was completed by 63.9% male and 36.1% female GPs, with male physicians being somewhat overrepresented compared with their proportion in the population of Swiss GPs (58.6% male, 41.4% female, $p = 0.002$). The age structure of the sample corresponds to that of the Swiss GP [13]. The survey covered physicians in both rural and urban regions, with 60.5% of the respondents reporting practising in urban areas. The sociodemographic characteristics of the respondents are shown in table 1.

Table 2 shows how the surveyed GPs had acquired their level 1 competence. Level 1 competence was achieved by 34.4% through completing a training course and by 47.7%

through self-declaration. Almost 1/5 had no level 1 competence. There are statistically relevant differences in gender, age and experience: female doctors more often attended the training course (35.3%, $p < 0.001$) and more often had no level 1 competence (23.1%, $p < 0.001$). Participants who worked in urban areas (22.0%, $p < 0.001$) were more often not trained to carry out the mandatory check-up for older drivers than physicians in rural areas (8.7%, $p < 0.001$). The majority of the surveyed physicians were in favour of maintaining the current regulation for acquiring level 1 competence (58.1%). Only 15.4% were in favour of abolishing the regulation; 22.1% would like to make taking a course compulsory, whereas only 4.4% were in favour of self-declaration without a course at all.

Data on the learning effect are presented in table 3. About half of the respondents who completed a training course stated they were more competent in assessing MFTD after completing a course; 41% only partially agreed. Self-assessed competence for MFTD examinations after attending a level 1 course did not differ statistically significantly between genders, age groups, location of practice and work-

ing sector (outpatient/inpatient). It was also not dependent on prior experience in MFTD assessment. Approximately three quarters of the surveyed course participants (76.1%) did not wish to change the duration of the course; 21.9% would like to see the course shortened.

The participants were asked if GPs should perform level 1 examinations on their own patients and whether a screening examination for MFTD is considered useful. The results of these questions are shown in tables 4 and 5. More than three quarters of all respondents (78.4%) believed that GPs should be allowed to perform level 1 examinations on their own patients. Significantly more male (82.9%) than female (70.0%) physicians agreed with this statement ($p < 0.001$). However, there was no significant difference between physicians working in rural areas and those working in urban areas. Overall, 828 (70.8%) study participants considered the mandatory MFTD test for older drivers to be a useful screening tool to identify unsuitable drivers (table 5). Agreement with this point increased with the age of the respondents. A statistically significant higher fraction of physicians working in an outpatient setting con-

Table 1:
Sociodemographic characteristics of respondents.

Total, n		1198
Response rate, %		50.5
Sex, % (n)	Male	63.9 (763)
	Female	36.1 (431)
Age, in years, % (n)	<35	4.9 (58)
	35–45	21.9 (262)
	46–55	29.3 (350)
	56–65	31.3 (374)
	>65	12.6 (151)
Location of practice, % (n)	Rural area	39.5 (461)
	Urban area	60.5 (706)
Experience in FTD tests, in years, % (n)	<10	37.5 (368)
	11–20	26.4 (259)
	21–30	25.4 (249)
	>30	10.7 (105)
Working sector, % (n)	Outpatient sector	93.1 (1105)
	Inpatient sector	6.9 (82)

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Table 2:
How did the general practitioners acquire their level 1 competence?

		Training course	Self-declaration	No level 1 competence	p-value
Total, % (n)		34.4 (409)	47.7 (567)	17.9 (212)	---
Sex, % (n)	Male	34.1 (259)	51.1 (388)	14.8 (112)	$p < 0.001$
	Female	35.3 (150)	41.6 (177)	23.1 (98)	
Age, in years, % (n)	<35	20.7 (12)	31.0 (18)	48.3 (28)	$p < 0.001$
	36–45	33.2 (86)	40.9 (106)	25.9 (67)	
	46–55	40.2 (139)	46.8 (162)	13.0 (45)	
	56–65	36.1 (134)	53.1 (197)	10.8 (40)	
	>65	25.1 (38)	55.0 (83)	19.9 (30)	
Experience in FTD tests, in years, % (n)	<10	47.7 (174)	52.0 (190)	0.3 (1)	$p = 0.001$
	11–20	43.4 (112)	56.6 (146)	0.0 (0)	
	21–30	38.5 (95)	60.7 (150)	0.8 (2)	
	>30	24.0 (25)	76.0 (79)	0.0 (0)	
Location of practice, % (n)	Rural area	38.1 (175)	53.2 (244)	8.7 (40)	$p < 0.001$
	Urban area	33.0 (230)	45.0 (314)	22.0 (154)	
Working sector, % (n)	Outpatient	37.0 (405)	51.0 (559)	12.0 (132)	$p < 0.001$
	Inpatient	4.9 (4)	7.4 (6)	87.7 (71)	

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sider the MFTD test as a useful tool compared as with those working in an inpatient setting (73.4% vs 35.4%, $p < 0.001$). The vast majority of the respondents (98.3%) felt technically competent to carry out the level 1 examinations.

Discussion

The aim of the study was to obtain objective data on the acceptance of the new regulation for assessing MFTD of older drivers introduced in 2016. The study included the data from approximately 1/6 of the Swiss GPs.

Most GPs from our study felt sufficiently qualified to assess the driving fitness of older drivers. Obviously, there was a great interest of the GPs in carrying out this task and receiving further training in the field of MFTD assessment. In a Canadian study, the rate of GPs assessing MFTD was about 75% [14]. Here we found a similar value for a representative sample of the GPs in the German-speak-

ing part of Switzerland. In our survey, GPs practising in rural areas more frequently trained to perform MFTD assessments than physicians in urban areas. The rural population is more likely to rely on a motor vehicle to meet their mobility needs than individuals living in urban areas. Marshall and Gilbert [14] concluded that significantly more rural physicians than urban physicians believe the need to drive was greater for rural than for urban residents. A survey among seniors living in rural areas of Canada showed that finding an alternative mode of transportation other than a car for medical travel and shopping is most difficult [15]. Consequently, our results could be explained by the fact that the rural population is more dependent on a car. The discrepancy between the genders in terms of level 1 qualification and participation in a course was possibly due to the fact that women deal with the field less often.

The regulation in use since 2016 was widely accepted by Swiss GPs. For instance, only about 15 % were against proof of competence for MFTD assessment of senior drivers and 22 % were even in favour of the course attendance

Table 3:
Competence in assessing driving ability after attending the level 1 course.

		Full agreement	Partial agreement	No agreement	p-value
Total, % (n)		51.7 (211)	41.4 (169)	6.9 (28)	---
Sex, % (n)	Male	49.0 (127)	43.3 (112)	7.7 (20)	p = 0.314
	Female	56.4 (84)	38.2 (57)	5.4 (8)	
Age, in years, % (n)	<35	81.8 (9)	18.2 (2)	0.0 (0)	p = 0.128
	36–45	60.7 (51)	35.7 (30)	3.6 (3)	
	46–55	53.5 (76)	40.2 (57)	6.3 (9)	
	56–65	44.0 (59)	47.0 (63)	9.0 (12)	
	>65	43.2 (16)	46.0 (17)	10.8 (4)	
Number of FTD tests per year	Mean (95% CI)	54.7 (48.4–61.0)	54.5 (47.6–61.4)	60.4 (41.3–79.4)	p = 0.927
Experience in FTD tests, in years, % (n)	<10	58.6 (102)	35.6 (62)	5.8 (10)	p = 0.244
	11–20	48.3 (56)	42.2 (49)	9.5 (11)	
	21–30	45.1 (42)	48.4 (45)	6.5 (6)	
	>30	44.0 (11)	52.0 (13)	4.0 (1)	
Location of practice, % (n)	Rural area	51.1 (90)	39.2 (69)	9.7 (17)	p = 0.064
	Urban area	52.6 (120)	43.4 (99)	4.0 (9)	
Working sector, % (n)	Outpatient	52.0 (210)	41.3 (167)	6.7 (27)	p = 0.277
	Inpatient	25.0 (1)	50.0 (2)	25.0 (1)	

CI: confidence interval; FTD: fitness to drive

Table 4:
Should family doctors perform level 1 examinations on their own patients?

		Yes	No	No opinion	p-value
Total, % (n)		78.4 (927)	15.9 (189)	5.7 (67)	---
Sex, % (n)	Male	82.9 (631)	12.6 (96)	4.5 (34)	p < 0.001
	Female	70.0 (294)	22.1 (93)	7.9 (33)	
Age, in years, % (n)	<35	55.2 (32)	27.6 (16)	17.2 (10)	p < 0.001
	36–45	64.7 (167)	27.5 (71)	7.8 (20)	
	46–55	81.1 (279)	15.4 (53)	3.5 (12)	
	56–65	84.9 (316)	10.0 (37)	5.1 (19)	
	>65	88.0 (132)	8.0 (12)	4.0 (6)	
Experience in FTD tests, in years, % (n)	<10	76.4 (279)	17.8 (65)	5.8 (21)	p < 0.001
	11–20	88.7 (227)	9.8 (25)	1.5 (4)	
	21–30	91.2 (227)	6.0 (15)	2.8 (7)	
	>30	92.2 (96)	3.8 (4)	3.8 (4)	
Location of practice, % (n)	Rural area	81.9 (376)	14.0 (64)	4.1 (19)	p = 0.066
	Urban area	76.5 (533)	17.1 (119)	6.4 (45)	
Working sector, % (n)	Outpatient	81.2 (888)	14.1 (154)	4.7 (51)	p < 0.001
	Inpatient	43.8 (35)	36.2 (29)	20.0 (16)	

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being mandatory. Obviously, there is a need for further training on this subject. In contrast, Kahvedzic et al. [16] found that just under half of the Irish GPs considered a degree in traffic medicine useful in practice. However, they rated continuing education with CME Small Group Learning and online courses as helpful.

Of the course participants in our data set, more than 90% thought they had at least partially benefited from the course and more than three quarters were satisfied with the course duration. In one study [17], 80% of Irish GPs interviewed stated that they would benefit from further education on the evaluation of patients' MFTD and only 16% considered the received training to be adequate. In a study following the introduction of MFTD guidelines in Ireland in 2014, over 50% of the respondents said they had benefited from these new guidelines [16]. If physicians generally want information on MFTD issues, how is MFTD training taught in medical school? A study at medical universities in the United Kingdom on the subject of MFTD showed that a large proportion of the institutions provided knowledge on this subject in one way or another, but only 4 of the 32 participating universities were able to submit information on the scope of the courses offered. And only one university taught MFTD in the field of gerontology [18]. A qualification in traffic medicine can help to ensure the application of uniform standards in the examinations.

More than three quarters of the interviewees are in favour of GPs being allowed to assess MFTD of their own patients. Apparently, GPs consider this task to be part of the basic care they provide to their patients. In an Irish study, the majority agreed (55% strongly and 19% agreed) that a GP should be the initial person to assess MFTD [16]. A similar result in Ireland was obtained by Omer et al. [17]. In New South Wales (Australia), 98% of the GPs conduct driving fitness tests and 59% of them believe it is their duty [19]. In Switzerland, physicians are allowed to report to the licensing authority drivers who are no longer fit to drive for medical reasons. In the work of Eggert et al. [20], 40% of the physicians surveyed stated that they had previously made use of this right. The reasons given were the safety of all road users and the safety of their patient. GPs often have a comprehensive understanding of their patients

through a long-standing doctor-patient relationship. They can recognise long-term changes better than other physicians. And last but not least, GPs also feel ethical responsibility towards their patients' road traffic safety. The agreement with regular, mandatory screening was high among our study participants. On the other hand, such a close relationship as between the GP and the patient may lead to a conflicting or nonobjective assessment. However, there is no evidence that renewing a driver's license, which involves a personal presentation to the authorities, is associated with a reduction in the traffic accident risk [21]. It should be further noted that the examiner is compensated by the candidate. The examination is not covered by health insurance. Furthermore, there is no scientifically accepted investigation procedure that can reliably determine MFTD. And even the recommended tests for assessing MFTD are not always consistently implemented [22].

In our study, almost all respondents (98.3%) stated that they have sufficient specialist knowledge to assess MFTD of senior citizens. In other studies, the reported confidence was lower. In the Australian survey mentioned above, only 41% of the participants reported feeling confident in assessing seniors' MFTD [19], whereas in Ireland 71% felt confident [16]. Age-related check-ups have been mandatory in Switzerland for many years. Hakamies-Blomqvist et al. [23] showed that the existence of an obligatory screening system contributed to an unrealistic confidence in GPs' own assessment skills. The study showed that Finnish physicians (with a mandatory MFTD screening system) believed that in the context of a medical assessment they can adequately assess MFTD. However, outside the mandatory assessment, they showed less activity in the field of MFTD than Swedish physicians (without a mandatory MFTD screening system) regarding possible impairment of their patients' fitness to drive (raising the issue, reporting to the authorities). Furthermore, the study showed that doctors with a long-standing doctor-patient relationship address the sensitive issue at an early stage.

Limitations

There are some limitations to the present study. For example, we surveyed only 28% of all Swiss specialists in

Table 5:
Acceptance of level 1 examination as screening instrument for unsuitable drivers.

		Suitable	Not suitable	No opinion	p-value
Total, % (n)		70.8 (828)	13.3 (155)	15.9 (186)	---
Sex, % (n)	Male	75.7 (570)	12.5 (94)	11.8 (89)	p < 0.001
	Female	62.1 (257)	14.5 (60)	23.4 (97)	
Age, in years, % (n)	<35	47.4 (27)	8.8 (5)	43.8 (25)	p < 0.001
	36–45	65.1 (166)	14.1 (36)	20.8 (53)	
	46–55	71.9 (246)	14.6 (50)	13.5 (46)	
	56–65	75.4 (276)	12.6 (46)	12.0 (44)	
	>65	75.6 (112)	12.2 (18)	12.2 (18)	
Experience in FTD tests, in years, % (n)	<10	75.6 (272)	15.0 (54)	9.4 (34)	p = 0.148
	11–20	77.1 (196)	14.6 (37)	8.3 (21)	
	21–30	77.8 (189)	14.8 (36)	7.4 (18)	
	>30	89.2 (91)	7.9 (8)	2.9 (3)	
Location of practice, % (n)	Rural area	77.1 (350)	14.3 (65)	8.6 (39)	p < 0.001
	Urban area	68.1 (496)	12.5 (86)	19.4 (134)	
Working sector, % (n)	Outpatient	73.4 (793)	14.3 (154)	12.3 (133)	p < 0.001
	Inpatient	35.4 (28)	1.3 (1)	63.3 (50)	

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general internal medicine and only in the German-speaking part of the country. In further studies, the attitude of the physicians in French- and Italian-speaking Switzerland should be investigated, since it cannot be excluded that the attitude of the physicians in these regions differs, partly owing to different implementation of national regulations. In terms of age and gender, however, the study population is likely to be representative. Also, only physicians specialising in general internal medicine were contacted. Although these doctors perform by far the largest proportion of level 1 examinations, they are not the only ones. Furthermore, a reporting bias cannot be excluded when using a self-completed questionnaire. For example, physicians with an interest in the topic may have answered more frequently. The results would then probably be more in favour of MFTD screening and the current regulation. The assessment of expertise is also based only on self-assessment – we did not check the information on knowledge. Finally, it must be mentioned that the corresponding author, as president of the Traffic Medicine Section of the Swiss Society of Forensic Medicine, is also responsible for the courses examined in this study. He receives no financial compensation for his work in the section. His participation as a speaker in these courses is remunerated to his employer, not to him personally. He does not receive any additional reward from his employer for this. The first author is also a member of the Swiss Society of Forensic Medicine, but is not involved in the organisation of the courses, nor is he a speaker.

Implications for further research

Physicians' knowledge regarding MFTD should be characterised in detail. It would also be worth investigating whether mandatory continuing education for the assessment of MFTD has led to standardisation of testing and thus harmonized interpretations of findings.

Conclusions

In Switzerland, the currently existing regulation for acquiring level 1 competence was widely accepted by GPs. Almost all respondents considered that they have sufficient knowledge to assess MFTD. However, the majority of GPs who have attended the training course indicated they have benefited from it. Periodic assessment of MFTD of older drivers was considered useful and should preferably be performed by GPs. These results show that the periodic assessment of older drivers' MFTD in older drivers practised in Switzerland is well accepted.

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Conflict of interest

Both authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflict of interest was disclosed.

Data availability statement

The data of this study are available from the corresponding author (MP) upon reasonable request.

References

- Vespa J, Armstrong DM, Medina L. Demographic Turning Points for the United States: Population Projections for 2020 to 2060. Current Population Reports. Washington, DC: U.S. Census Bureau, 2018 2018/03. Report No.: P25-1144.
- Dobbs BM. Aging baby boomers—a blessing or challenge for driver licensing authorities. *Traffic Inj Prev.* 2008 Aug;9(4):379–86. <http://dx.doi.org/10.1080/15389580802045823>. PubMed. 1538-957X
- Führerausweisbesitz nach Geschlecht und Alter (Daten zu G2.1.1.1 des MZMV-Berichts 2015) [Internet]. Neuchâtel, Switzerland: Federal Statistical Office. 2017 [cited 2018 May 02]. Available from: <https://www.bfs.admin.ch/bfs/de/home/statistiken/mobilitaet-verkehr/personenverkehr/verkehrsverhalten/besitz-fahrzeuge-fahrausweise.asset-detail.2480142.html>
- Musselwhite CB, Shergold I. Examining the process of driving cessation in later life. *Eur J Ageing.* 2012 Nov;10(2):89–100. <http://dx.doi.org/10.1007/s10433-012-0252-6>. PubMed. 1613-9372
- Zhao C, Wong L, Zhu Q, Yang H. Prevalence and correlates of chronic diseases in an elderly population: A community-based survey in Haikou. *PLoS One.* 2018 Jun;13(6):e0199006. <http://dx.doi.org/10.1371/journal.pone.0199006>. PubMed. 1932-6203
- Vernon DD, Diller EM, Cook LJ, Reading JC, Suruda AJ, Dean JM. Evaluating the crash and citation rates of Utah drivers licensed with medical conditions, 1992-1996. *Accid Anal Prev.* 2002 Mar;34(2):237–46. [http://dx.doi.org/10.1016/S0001-4575\(01\)00019-7](http://dx.doi.org/10.1016/S0001-4575(01)00019-7). PubMed. 0001-4575
- Kereszty ÉM, Julesz M. Medical fitness to drive in the EU with special reference to the age factor. *Rechtsmedizin.* 2018;28(4):288–94. <http://dx.doi.org/10.1007/s00194-018-0247-5>. 0937-9819
- Siren A, Haustein S. Driving licences and medical screening in old age: review of literature and European licensing policies. *J Transp Health.* 2015;2(1):68–78. <http://dx.doi.org/10.1016/j.jth.2014.09.003>. 2214-1405
- The Federal Authorities of the Swiss Confederation. Appendix of the ordinance of 27 October 1976 on the admission of persons and vehicles to road traffic (Verkehrszulassungsverordnung, VZV), 741.51 (01.01.2021). Available from: https://www.fedlex.admin.ch/eli/cc/1976/2423_2423_2423/de
- www.medtraffic.ch. [Web Page]. [cited 22.03.2021]. Available from: <https://medtraffic.ch/>
- Hostettler S, Kraft E. FMH-Ärztstatistik 2018. *Schweiz Arztsztg.* 2019;100(12):411–6. <http://dx.doi.org/10.4414/saez.2019.17687>. 0036-7486
- Online database of Swiss Physicians [Internet]. FMH. 2018 [cited 02.05.2018]. Available from: <https://www.doctorfmh.ch/>
- FMH-Ärztstatistik [Internet]. FMH. 2018 [cited 22.03.2019]. Available from: <https://aerztstatistik.myfmh2.fmh.ch/>
- Marshall SC, Gilbert N. Saskatchewan physicians' attitudes and knowledge regarding assessment of medical fitness to drive. *CMAJ.* 1999 Jun;160(12):1701–4. PubMed. 0820-3946
- Hanson TR, Hildebrand ED. Can rural older drivers meet their needs without a car? Stated adaptation responses from a GPS travel diary survey. *Transportation.* 2011;38(6):975–92. <http://dx.doi.org/10.1007/s11116-011-9323-3>. 0049-4488
- Kahvedžić A, Mcfadden R, Cummins G, Carr D, O'Neill D. Impact of new guidelines and educational program on awareness of medical fitness to drive among general practitioners in Ireland. *Traffic Inj Prev.* 2015;16(6):593–8. <http://dx.doi.org/10.1080/15389588.2014.979408>. PubMed. 1538-957X
- Omer S, Dolan C, Dimitrov BD, Langan C, McCarthy G. General practitioners' opinions and attitudes towards medical assessment of fitness to drive of older adults in Ireland. *Australas J Ageing.* 2014 Sep;33(3):E33–6. <http://dx.doi.org/10.1111/ajag.12045>. PubMed. 1741-6612
- Hawley CA, Galbraith ND, deSouza VA. Medical education on fitness to drive: a survey of all UK medical schools. *Postgrad Med J.* 2008 Dec;84(998):635–8. <http://dx.doi.org/10.1136/pgmj.2008.067959>. PubMed. 1469-0756
- Lipski PS. A survey of general practitioners' attitudes to older drivers on the New South Wales Central Coast. *Australas J Ageing.* 2002;21(2):98–100. <http://dx.doi.org/10.1111/j.1741-6612.2002.tb00425.x>. 1440-6381
- Eggert S, Thali MJ, Pfäffli M. Discretionary medical reporting of potentially unfit drivers: a questionnaire-based survey in southeast Switzerland. *Int J Legal Med.* 2012 Jan;126(1):71–8. <http://dx.doi.org/10.1007/s00414-011-0574-5>. PubMed. 1437-1596
- Koppel S, Bugeja L, Stephens A, Cartwright A, Osborne R, Williams G, et al. The safety benefits of older drivers attending an in-person licence renewal. *J Transp Health.* 2020;17:100845. <http://dx.doi.org/10.1016/j.jth.2020.100845>. 2214-1405

- 22 Sebo P, Haller DM, Favrat B, Huber P, Mueller Y, Vaucher P. Adherence to guidelines when evaluating fitness-to-drive in the elderly: a practice review of Swiss physicians. *Swiss Med Wkly*. 2018 Jul;148:w14632. <http://dx.doi.org/10.4414/smw.2018.14632>. PubMed. 1424-3997
- 23 Hakamies-Blomqvist L, Henriksson P, Falkmer T, Lundberg C, Braekhus A. Attitudes of Primary Care Physicians Toward Older Drivers: A Finnish-Swedish Comparison. *J Appl Gerontol*. 2002;21(1):58–69. <http://dx.doi.org/10.1177/073346480201001005.0733-4648>