



**A Study into Supporting Safe Driving and Active Life for the Elderly (1)**  
 Purpose of car use and self-awareness of age limit for safe driving


 Kiyoko Jikumaru <sup>1)</sup> Junko Torii <sup>2)</sup> Tamami Shiba <sup>2)</sup> Yoko Nakahira <sup>2)</sup>  
 Mie Okuda <sup>2)</sup> Kiyoko Makimoto <sup>3)</sup> Michie Nomura <sup>2)</sup>

<sup>1)</sup> Faculty of Nursing, School of Medicine, Nara Medical University  
<sup>2)</sup> Department of Nursing, Ehime Prefectural University of Health Sciences  
<sup>3)</sup> Department of Nursing, Graduate School of Medicine, Osaka University

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**Introduction**  
 The number of car accidents caused by elderly drivers has been rising. Between 1997 and 2007, it has more than doubled (National Police Agency, 2008), and it will continue to increase in the future due to the increasing number of elderly drivers. Aging is associated with decreased functions such as motor ability, kinetic visual acuity, cognitive and recognitional capacity. These changes place elderly drivers at an elevated risk of accident (Ikeda, 2008). However, the elderly people often feel the need to drive car for day-to-day activities where there is no public transportation. It is necessary to create a system to provide transportation for outings, which will prevent elderly from social withdrawal. Needs assessment is necessary to obtain more information about means and purpose of use of transportation in the elderly.

**Purpose**  
 To identify the purpose of car use and self-awareness of limitations of age for safe driving among the elderly.

**Methods**  
**Survey period:** This survey was conducted in November 2010. **Subjects:** Members of a senior citizens' club living in 'A' town of 22,000 inhabitants located in a hilly and mountainous area in Shikoku, Japan were recruited. **Data collection:** Three hundred fifty copies of self-administered anonymous questionnaire were distributed to 207 elderly club members (male 60.4%, female 39.6%, average age 74.8 ± 5.2). Two hundred nineteen copies (62.6%) were returned, with 207 (94.5%) valid responses. **Data analyses:** Chi-square tests and the Kruskal-Wallis test with the Bonferroni correction were used for statistical test. **Ethical Consideration:** This study was approved by the Ethical Review Board of the author's organization.

**Results**  
**Result1:** Frequently used means of transportation in everyday life (multiple answers)

The most frequently used means of transportation in everyday life was driving by themselves (63.3%), followed by public bus (30.4%), driven by a family member (26.1%), bicycle (20.8%), motorcycle (14.0%), taxi (13.5%), electrical tricycle or quadricycle "MYPIA" (4.8%), and shuttles bus services to hospitals and hot spas (1.4%). Gender differences in the means of transportation is displayed in Figure 1. Males were more than twice likely than females to drive by themselves.



Shikoku 四国  
 Ehime 愛媛  
 'A' town  
 : town of pottery, orange, firefly and beautiful natural streams




Figure 1. Frequently used means of transportation everyday life (multiple answers)

**Result2: The purpose of car use (multiple answers)**  
 The major purposes of car use by the respondent or by their family member were as follows: shopping (76.8%), doctor/hospital visit (63.3%), leisure (52.7%), commutes to work (34.3%), attending meeting (32.4%), giving ride to their family members (6.8%), and commutes to daycare or other facilities (1.0%). Younger respondents used their car for shopping significantly frequently as compared with older ones (Figure 2).




Figure 2 The purpose of car use (multiple answers)

**Result3: Driving age limit for seniors**  
 "At what age do you think elderly people give up driving?" The answer ranged from 65 years old to 90 years old (Figure 3). The median year of the difference between the current age and driving age limit was 6 (range: -19 to +21) years. It was 7 years (range: -9 to +21) for current drivers (n=128, mean age 73.5 ± 4.9 years old). The difference was significantly greater than that of those who had stopped driving (16, mean age 76.9 ± 5.0 years old) or had never driven (24, mean age 76.9 ± 6.5 years old) with the median ages of 2 (-10 to +10) and 2.5 (-19 to +11) years, respectively (p < .01) (Figure 4). Furthermore, a positive correlation was observed between current age of the drivers who are still driving and the age 'still capable of safe driving' (r = .63) (Figure 5).




Figure 3 The age "still capable of safe driving"

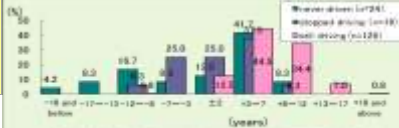


Figure 4 The difference between the current and the age "still capable of safe driving"

**Discussion**  
 This survey revealed that private cars a major means of transportation. It is essential for day-to-day for the elderly in this rural area. Furthermore, the elderly drivers thought the age 'still capable of safe driving' about 7 years older than their current age. This result indicates that their self-efficacy in driving is high. This self-efficacy was deeply associated with self-reliance and self-esteem (Endo, 2001); therefore, the self-efficacy was a critically important factor for active and healthy life and maintenance and improvement of QOL in the elderly. On the other hand, more experienced elderly drivers had a tendency to attach more importance to their own experience than traffic rules. Especially, this tendency was strong in offense of stop at stop signs (Watanabe *et al.*, 2008). Additional studies on relevance between self-efficacy in driving and medical evaluation of driving capability in elderly drivers, as well as individual supports for car driving are required in the future.

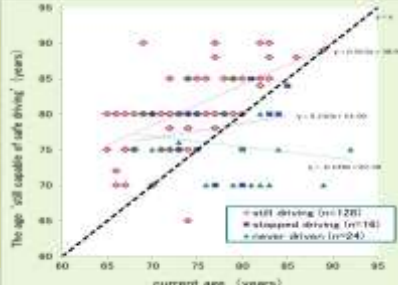


Figure 5 Relation between current age and the age "still capable of safe driving"