

Basic Analysis of the Travel Behavior and Self-Consciousness of aged People for Safety Education System

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Synopsis

Recently, the aging has rapidly progressed in Japan, as a result, the half of traffic deaths were the aged people, 2007. In addition, the number of accidents in walking amounts to the half and more. Therefore, it should be important to consider the effective education system based on the features of travel behavior and consciousness for road safety of aged people.

In this study, the some characteristic findings for travel behavior and consciousness of aged people were obtained by the questionnaire survey and the actual condition of lecture courses for road safety were reviewed in Hyogo Prefecture. As a result, for the present, it must be concluded that the lecture course should be useful to prevent the accidents involved the aged people, and for the near future it may be necessary to increase not only the chances of lectures but also the number of staffs.

KEYWORDS: Aged people, Education Course for Road Safety, Behavior, Consciousness, Questionnaire survey

1. Introduction

According to the result of the 2005 National Population Census (NPC), the proportion of people aged over 65 years has reached up to 20 percent of the total. The aging in Japan may be more remarkable among developed countries. This trend will continue to expand rapidly and must be remarkable in local cities. With regard to the road safety of aged people, it accounted for about 50 percent of the all fatalities in 2007 and 25 percent of the fatal accidents occurred while they were walking. These statistics imply that much more attention will be needed to keep safer condition for elderly people. In general, to realize such condition it is important to consider the combination of "5 E's" approaches which include engineering, education, enforcement, evaluation, and encouragement. Before updating ordinal approach among them, we have to realize main causes of the accidents related with aged people.

In this study, we try to figure out the relationship between accident risk and travel behavior including self-consciousness for elder people. Then a questionnaire survey was

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carried out to analyze the relationship in corporation with Federation of Senior Citizens' club in Hyogo Prefecture.

2. Questionnaire survey

2.1 Outline of Survey

A questionnaire survey was conducted to aged people inhabited in 39 towns of Hyogo Prefecture in cooperation with the Hyogo Federation of Senior Citizens' club (HFSC). The number of responded questionnaire is 1045. The contents of questionnaire are summarized in **Table-1**, it consisted of four items, which include daily travel behavior, self-consciousness for road safety and learning experience for road safety.

Table-1 Major contents of questionnaire

item	contents
attribute	age / sex / district of residence / driver's license possession / health condition
trip situation	association with neighbors / frequency / purpose / means of daily trips
consciousness for road safety	accident experiences / degree of risky experience and aging influence / perception of accident and dangerous road conditions / degree of risk by location / use of reflector at night / use of senior drivers' mark
education for road safety	experience of education / kinds of education courses / evaluation of course / guidance and information of course / dialog between contents of course

2.2 Major results

2.2.1 Individual attributes

In fact, the HFSC has carried out the questionnaire survey every year concerned with health and mobility for aged people over 80 years old. In this year, in order to prevent the accidents involved aged people, the survey was carried out for aged people including less than 80 years old. As a result, 870 respondents of over 80 years old and 147 respondents under 80 years old were obtained.

2.2.2 Features according to age group

(1) Experience of road safety education

Here, respondents were asked if they experienced a course of road safety education, as shown in **Figure-1**. Some major features are summarized as follows;

- 1) It is clear that experience depends on the possession of driving license in both age groups.
- 2) The proportion of experiences of an under 80 years old group is slightly higher than the

group of an over 80 years old.

- 3) Thirty percent or more of aged people who do not have driving license have experienced to learn in course for road safety.

From these results, it may be concluded that the educational support to aged people without driving license should be necessary to prevent the accidents while walking.

(2) Mode for daily trips

The ratio of major mode for daily trips is shown as **Figure-2**. From this figure, some interesting results came out as follows;

- 1) In an under 80 years old group, the ratio of driving and cycling is remarkably high in comparison with an over 80 years old group,
- 2) On the other hand, in case of over 80 years group, the ratio of walking, bus & train, car use as fellow passengers are relatively high,

As a result, many aged people made daily trips in neighborhood by walking and cycling. However, many of under 80 years-old group may make longer trips by using private car and bicycle. These results show the purpose, trip length and mode may change by aging. Therefore, it should be important to let aged people less than 80 years people inform these result and give the trip support with safety education.

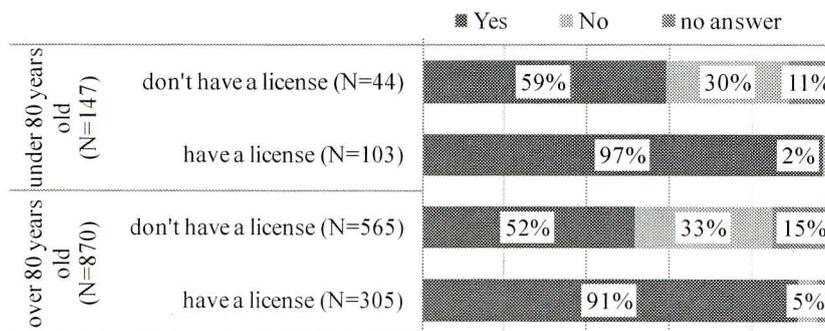


Figure-1 Have you experienced the road safety education?

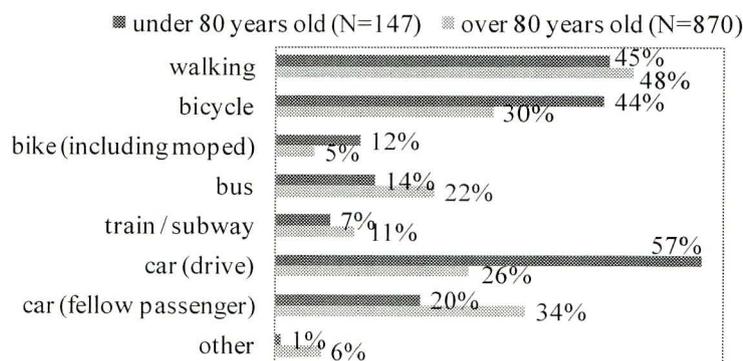


Figure-2 Major modes of daily trip according to aging

2.2.3 Comparison by area

In rural areas, as the infrastructure for public transportation should be not enough and the ratio of driver's license possession ratio is high, thus cars are often used. In urban area, on the other hand, public transportation is frequently used (**Figure-3**). For these reasons, it needs to introduce public transportation service or in the area where it is difficult to introduce this measure, hold the course to all age drivers in rural area, and hold the safety course for pedestrians and cyclists based on public transportation use in urban area.

Therefore, it must be important to introduce countermeasures according to different conditions in rural area and urban area. For example, some countermeasures for driving as well as introduction of public transport in rural area will be necessary and in urban area some countermeasures for pedestrian and cyclist will be important through the educational course for road safety.

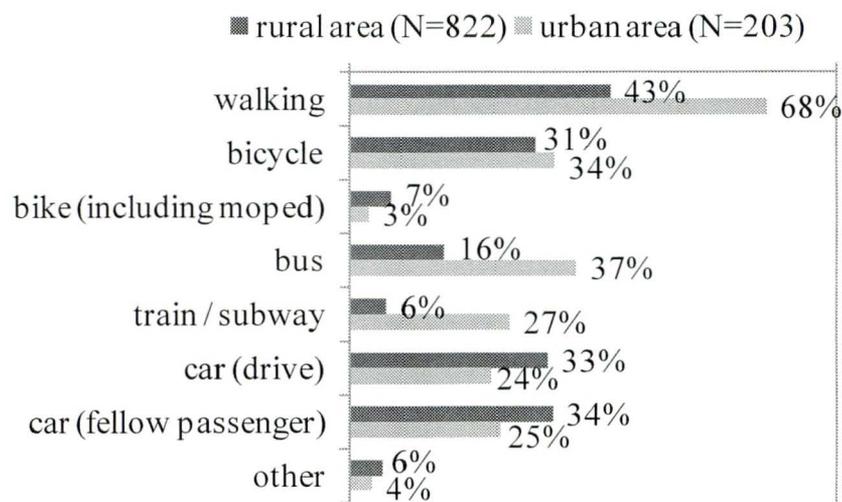


Figure-3 Modes of trip by area

2.2.4 Experience of accidental risk

Here, the influence factors to the frequency of experiences of accidental risk at daily trip were analyzed by using the discriminate analysis with major factors concerned with neighborhood activity, trip conditions, awareness for dangerous road condition, safety measures, and experience of educational course for road safety, as shown in Figure-4. Some major findings came out of this analysis, as follows.

- 1) The degree of daily activity may be concerned with the frequency of experiences of accidental risk.
- 2) The low frequent trip to public office, bank and so on may influence the risky condition to the aged people.

- 3) The use of bicycle may be a factor to cause the risky situation.
- 4) The awareness for dangerous road condition may be the most influence factor for the experience of accidental risk. This may depend on the experience of accident or threat for accident.
- 5) The experience of educational course for road safety may be slightly effect to reduce the accidental risk. Therefore, it must be important to encourage increasing the experiences for the aged people who do not possess the driving license, because the possessor of license ought to take the educational course in order to renew the license.

2.2.5 Effect of the educational course for road safety

According to the respond for the direct question, it may be clear that most respondents recognize the effect of course. However, most respondent generally trend to reply such answer in case of the questionnaire survey. Then, in order to confirm the actual effect, other question, which ask if participants talked about the contents of course to family and acquaintances, was prepared. As a result, around 80% of participants talked to them as shown Figure-5. This result may show that not only they can review the contents but also the other party can be encouraged attending the course.

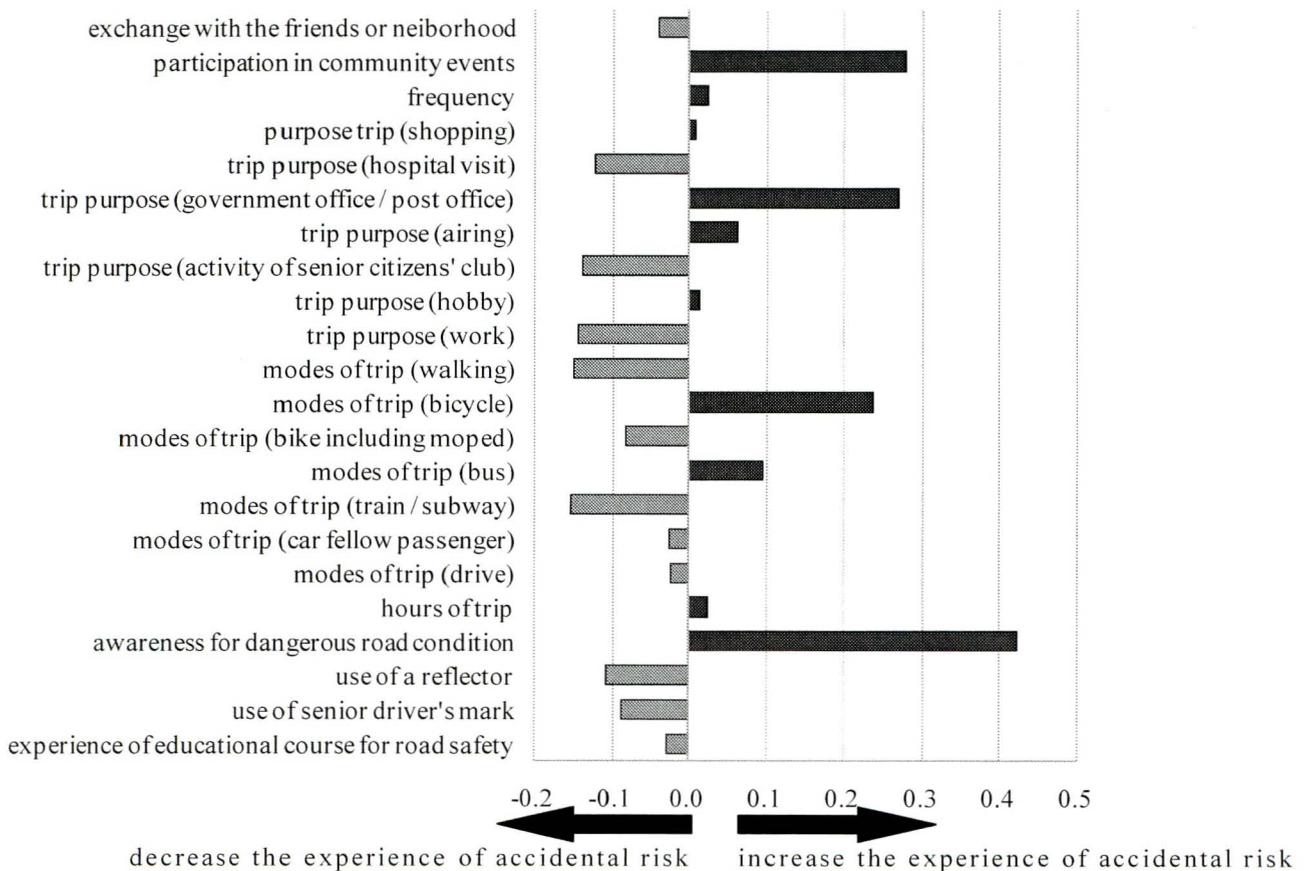


Figure-4 Discrimination analysis for experience of accidental risk

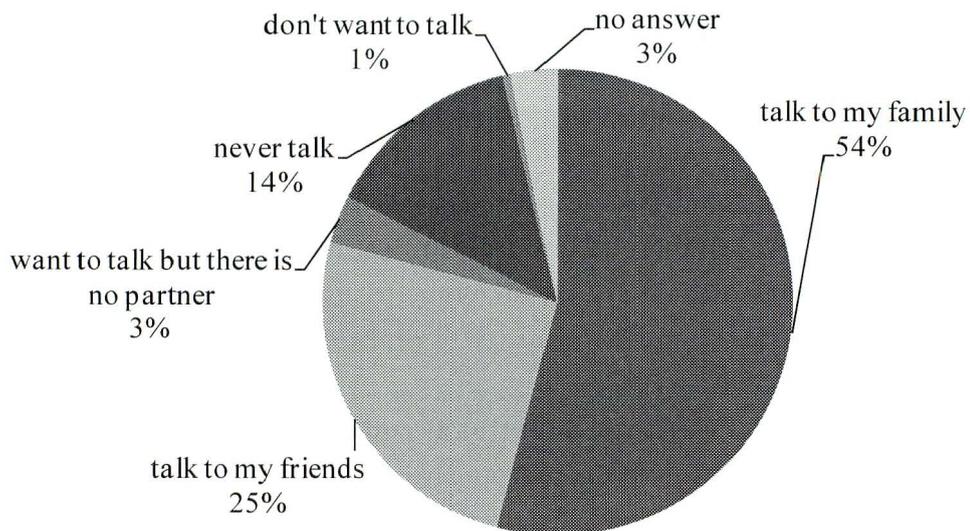


Figure-5 Talking about contents of educational course for road safety

3. Current situation of road safety course and remained tasks

3.1 Current situation of road safety course

Though there are some specific courses for aged people's daily life and safety as shown in Table-2, they may not have any directly cooperative relations. The representative course must be S.T.U.S (Safety Unit for Senior Citizens) to provide to the aged people in the local community, sponsored by the Hyogo Prefectural Police Head quarter. This course consists of lectures and experimental approaches by using the simulator.

Table-2 Summary of educational courses for road safety in Hyogo Prefecture

actor	means	target	responsibility
the Hyogo Prefectural Police Headquarters	S.T.U.S	senior citizen's club	Federation of Senior Citizens' club
		administrator of senior sitizen's club	Federation of Senior Citizens' club
		event by Nursing Association (Nursing day / Nursing Fair)	Hyogo Nursing Association
	lecture courses	facilitator	Federation of Senior Citizens'
		newly-appointed social worker	Hyogo Prefecture Aged Society Department
		caring class staff	Hyogo Nursing Association
		care attendant	Hyogo Nursing Association
local police station	program for road safety	healthcare room of town	Hyogo Nursing Association
	senior drivers' school	senior drivers	

3.2 Remained tasks

As mentioned above, it must be necessary to integrate the some courses as a system in cooperation with responsible organizations. In order to realize the suitable system, the activities of the committee for prevention of accidents involved aged people was organized by Hyogo Prefectural Police Headquarter, Hyogo Prefecture, Kobe City, Senior Citizen's Club, Hyogo Nursing Association and academic staffs. Therefore, the action plan that may be proposed by this committee in near future will be expected.

As for the S.T.U.S, it may be expected that the contents may be improved according to local features which were shown in this analysis, and the simulator also be improved to reappear the risk experiments. As the total number of participants was around 15,000 every year, which is 1 % of the number of aged people in Hyogo prefecture, it must be necessary to increase the number of courses. Therefore, it also must be important to bring up staffs as the lecturer.

4. Summary

In this paper, the contents of questionnaire were mainly analyzed to investigate the educational course for preventing the accidents involved the aged people. In addition, the current situation of educational courses conducted in Hyogo Prefecture was summarized and the remained tasks were referred. Some major findings came out of this analysis were summarized as follows.

- 1) It may be concluded that the educational support to aged people without driving license should be necessary to prevent the accidents while walking.
- 2) As the purpose, trip length and mode of daily activity may change by aging, it should be important to let aged people under 80 years people inform these result and give the trip support with safety education.
- 3) It must be important to introduce countermeasures according to different conditions in rural area and urban area. For example, some countermeasures for driving as well as introduction of public transport in rural area will be necessary, and in urban area, some countermeasures for pedestrian and cyclist will be important through the educational course for road safety.
- 4) It must be important to encourage increasing the experiences for the aged people who do not possess the driving license, because possessors of license ought to take the educational course in order to renew the license.
- 5) To talk the contents of course should be important, because not only participants can review the contents but also the other party can be encouraged attending the course.

- 6) It must be necessary to integrate the some courses for aged people as a system in cooperation with responsible organizations. In addition, it may be expected that the contents may be improved according to local features which were shown in this analysis.
- 7) Finally, it must be necessary to not only increase the number of courses, but also bring up staffs as the lecturer.

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