Traffic experience and problems of elderly pedestrians in urban traffic

I. Papp; M. Papp
OCTAV
H-1021 Budapest, Volgy u. 15.
Tel: 36 1 345 0034; Fax: 36 1 345 0035
e-mail: papp@octav.hu

Abstract

The mobility and well-being of elderly people is clearly connected with their ability to cope with different traffic situations. Although there is general agreement that senior pedestrians should be protected on the road, their real needs seem to be often neglected. One reason for this may be an oversimplification of the safety targets, in which the spotlight tends to be directed rather on the young road users than on elderly traffic participants. Another explanation may be the lack of detailed knowledge about the everyday problems encountered by this road user group in urban traffic.

An analysis of these problems was made 1. by a questionnaire survey (n=335) assessing some attitudinal aspects as well as physical difficulties of traffic participation;.identifying some disturbing elements in the traffic environment; and problems in interactions with younger road users and drivers 2. by observing the behaviour of elderly people crossing the road on three signalised crossings (n=405).

Based on accident data and the above mentioned studies, further research needs were outlined. and ways to improve the quality of life of elderly pedestrians were recommended.

1 Safety situation of elderly pedestrians

Every fourth pedestrian accident in Hungary and every third in Budapest occurs to pedestrians over 60 years of age. As far as accident severity is concerned: according to a detailed analysis carried out for the year 1993, approximately 40% of the fatal pedestrian accidents in Hungary occurred to people over 60. The analysis of the data recorded on the accident registration forms shows that

- one third of the accidents occurring to elderly pedestrians in built-up areas happens on pedestrian crosswalks,
- a smaller proportion of the elderly pedestrians can be blamed for their accidents than of pedestrians belonging to other age groups (while 48% of the total number of pedestrian accidents is caused by the pedestrians themselves, this value is only 38% in the case of people over 60 years of age),
- the injuries of the elderly are more severe: while the accidents occurring to 7-14 year olds e.g. have a fatal outcome in 3% of the cases, this number is 18% for pedestrians over 60 years of age.

Using the terms of the accident registration form, we analysed pedestrian behaviour leading to a personal injury accident (N=416). These are:

Inattentively, abruptly stepping into the roadway (46%)
Crossing where prohibited (14%)
Crossing where visibility is obstructed (13%)
Crossing against red signal (11%)
Disturbing behaviour while crossing (10%)
Other (6%)

The major accident causes attributed to the pedestrian (38%) clearly show the deficiencies in the performance of the elderly, which may be due to deteriorating abilities, or sometimes also to not knowing the rules, not having experience as drivers etc. It is relatively rare that the elderly cause risky situations by intentionally violating the law. The statistical data are often misleading, because they state the „faulty" behaviour of the elderly pedestrians also in such cases, when they are simply not able to cope with a given traffic situation.

The majority of pedestrian accidents analysed (62%) was attributed to driver errors. Drivers endanger the elderly mainly by selecting inappropriate speeds, by breaking the priority rules, not giving priority to them and by being negligent. Further accident causes are illegal overtaking, illegal turning and reversing. Some further characteristics are:

- 8% of the elderly pedestrians causing their own accidents were under the influence of alcohol;
- 6% of the drivers hitting elderly pedestrians were under the influence of alcohol;

- the age of the majority of drivers causing pedestrian accidents under the influence was between 18 and 43 years.

It seems that the elderly are given the right of way at pedestrian crossings less often than are younger pedestrians. This observation would require and deserve further research.

2 Difficulties in urban traffic: a questionnaire survey

2.1 Method and objectives

In a questionnaire survey in 1994 we tried to reveal the general feelings of the elderly in urban traffic and the difficulties experienced by them as pedestrians. We wanted to gain insight into their attitudes to safety, as well as into the acceptance by them of different accident countermeasures.

The questionnaire was completed by 335 persons: 130 men (39%) and 205 women (61%). The average age of the respondents was 69,7 years. The questionnaires contained 23 groups of questions, and were completed by the elderly themselves, assisted partly by family doctors and partly by trained interviewers. Before the elaboration of the questionnaire, interviews were conducted with elderly pedestrians in downtown Budapest. The analysis of these and of written comments voluntarily added to the questionnaires are discussed below.

2.2 Discussion

The circumstances (inconvenience or comfort) experienced on the road by elderly people seem to have a decisive influence on their mobility. If they often have to face situations with which they find it difficult to cope, they will more and more avoid participation in traffic. (This was confirmed by the above mentioned series of interviews.) One should not forget that this 'automatic' decrease in mobility deteriorates the quality of life of the elderly at the same time.

Fundamentally, the elderly seem to be very tolerant towards drivers, young people and also towards the difficulties they have to face in traffic. Most of them are satisfied with what they are still able to do in terms of traffic participation, even if many of them voluntarily restrict their mobility.

Based on their experiences, some of the respondents are inclined to generalise their negative judgements with regard to young people. They mention examples which show the intolerance of many young drivers towards the elderly and even their rude behaviour and lack of empathy. The impoliteness and rude manners of young people is hurting the elderly in many cases, particularly if it takes the form of verbal abuse.

33% of the respondents have fears that they won't be able to cross the road during the green phase of the traffic signal. A higher proportion of women have those fears than men. More than a quarter of the respondents had been involved in an accident or serious conflict before. If we analyse the fears according to this, we see the following picture. In the non-accident group the women are anxious because of the short green phase twice as often as are the men (39%/20%). While women have these fears

independently of whether they are accident-free or not (39%/39%), the accident history seems to be decisive in the case of men. 20% of the men belonging to the non-accident group and 30% of the men in the accident-group have fears of not being able to complete the crossing on green signal.

The vehicles parked on the pavement cause further difficulties, especially when the pedestrians need to use the roadway because of them. The elderly would like to retain the pavement for the pedestrians. Cyclists, skateboard riders, roller skaters on the pavement are felt to be threatening by them.

Every fifth respondent objects that the kerbs are not well visible, not painted. Some of the elderly have problems with using the escalators. Slippery roads are perceived to be extraordinarily dangerous. The elderly would like to see more benches in the streets, enabling them to have a rest during their trips.

Half of the respondents think that the police enforcement is not strict enough. They stress that traffic education should begin in early childhood and express their opinion that the education for considerate behaviour seems to be missing nowadays.

The attitude of the elderly towards speed is different from that of younger people, as so is their relationship to 'time'. They don't always understand the haste and hurry, which they are well able to associate with 'risk'. Interestingly, some of them are worried not only about their own safety, but about the drivers, who endanger themselves by selecting high speeds or getting in trouble when hitting an (old) pedestrian.

Many elderly pedestrians report to have difficulties while crossing the road at signalised crossings. Some of them expressed: they would welcome if additional acoustic signals would help them and others with visual impairment in crossing the road more comfortably and safely.

It seems justified to say that the quality of the relationship and of the communication going on between the young and the old, as well as the quality of the road environment itself are key factors in the safety and well-being of elderly pedestrians.

For the elderly or handicapped people the quality of the road and its environment is extremely important. It would be of much value for them, if the difficulties inherent in the environment and sometimes due to the behaviour of other road users could be eliminated. They try to compensate for their deficiencies by devoting more time to traffic participation and/or avoiding this in darkness, in rush hours etc.

The majority of the elderly seem trying to do their best by compensating for their deficiencies, by being overcautious, keeping to the rules etc., but they simply fail because of the limits of their physical abilities. The responsibility - of traffic experts in general and of other traffic participants on the road in particular - to help overcome these difficulties is great.

3 Behaviour at signalised crossings: an observation study

3.1 Method and objectives

It is a well established fact that the elderly are at an increased risk in traffic. The high number of their accidents on pedestrian crossings is an indication for their handicaps even in „protected" situations.

An observation study of the behaviour of elderly pedestrians (n=405) at three signalised crossings in Budapest was carried out, during three hours of observation time on each site. The subjects were elderly pedestrians beginning to cross the road with the green phase of the signal. Intentionally violent behaviour (e.g. beginning to cross on red) has been excluded from our study. We wanted to gain insight into the difficulties experienced by this group of pedestrians in situations which are thought to be relatively the safest. We concentrated on the characteristics connected with the age factor, determining to some extent the pace of movements and the circumstances of traffic participation.

Using an observation sheet, we focused our attention on the pace of movement, on eventual handicaps (including heavy bags) and on the characteristics of behaviour before, and during the crossing. Based on the behaviour, facial changes, movements and gestures, --- where it was possible -- we also recorded our impressions of the observed persons' general feelings in traffic.

The following items were recorded: pattern of accompaniment, apparent difficulties because of some „extra load", making it difficult to move (or indicating handicaps), attention paid to traffic (or the lack of it), pace of movement and whether the pedestrian was able to reach the opposite kerb on green (or flashing green) signal or on red. Only the pedestrians starting to cross with green or flashing green were dealt with.

We recorded the accompaniment patterns (if the pedestrian was taking part in traffic alone, with a contemporary, accompanying a child or accompanied by someone assisting him).

The characteristics of interactions between drivers and pedestrians could not be observed, because in the investigated situation there were no interactions at all, except for some 'almost critical' situations.

3.2 Discussion

74% of the observed elderly were walking alone, 23% were in the company of contemporaries. Assistance in walking was needed by 2%, and only 1% were taking part in traffic with a child.

93% of the persons observed were starting to cross on green signal, and 7% on flashing green. 57% of them were walking at a normal space. 20% were walking slowly and 23% had apparent handicaps. Only 15% of the observed pedestrians were able to complete their crossing on green or flashing green, 85% had to do so on red signal.

The differences between elderly men and women with regard to visual attention and crossing behaviour have been analysed. Elderly men were found to be less uncertain during the crossing, and showing less apparent fear reactions and handicaps of movement (26%/17%)..

In our sample, men were more often accompanied by contemporaries, than women (26%/20%). A somewhat higher ratio of women were characterised by moving slowly (23%/17%).

There was a considerable difference in the pattern of attention paid to traffic: while 44% of men looked to the left before beginning to cross the road, this number was only 31% for women.

28% of the men and 38% of the women did not pay any attention to traffic while crossing.
13% of the women and 17% of the men were able to complete their crossing on green signal. Consequently, 87% of the women and 83% of the men were „forced" to complete their crossing on red.

There are some apparent signs of difficulties experienced by the elderly pedestrians, indicated by:

- very slow movement, physical handicap,
- the use of a walking stick,
- carrying heavy bags or using shopping carts.

A consequence of the stress they are exposed to may be illogical, irrational behaviour (e.g. running over the road unexpectedly, or crossing diagonally.)

The apparent lack of attention is characteristic for many of the elderly pedestrians, the causes of which may be of mental, physical or 'social' origin, or the combination of these, e.g.:

1. The pedestrian is involved in some activity while crossing (conversation, having an ice-cream etc.)
2. Walking itself requires the full attention of the pedestrian. He/she focuses on how to keep on proceeding and not falling over and no capacity of his/her attention remains

free for observing traffic. In such cases the bad condition of the pavement means extra difficulties.

3. In those cases when two elderly pedestrians are walking together, one of them is usually leading the other, trying to pay attention to traffic. The problem of slowness is there also in such cases, even if some attention will be devoted to the vehicles.

Further characteristics are:

- cutting the way, trying to shorten it according to the direction of destination,
- going about dreamily, sleep walking,
- walking with head hung down,
- looking in the wrong direction (opposite to traffic),
- looking in both directions several times one after the other,
- apparent effort to hurry up when the signal turns red,
- emergence of risky situations because of slow pedestrians on the road.

In the „safe" situations investigated, signs of scare, getting frightened of engine-notes were observed in a number of cases. These negative feelings may partly explain the irrational actions, as running over the road, or the repeated ritual trials of orientation. The inconvenience felt by the elderly could be detected from the movements and facial expressions of the persons observed, similarly to the apparent release experienced when reaching the other side of the road.

In the crossing situation which has been selected for the survey, it was practically unnecessary that the pedestrians establish communication with the drivers. This would have been difficult or even impossible in most cases, because of the difficulties of the pedestrians. It is not known, whether using a signalised crossing is a conscious decision on the part of the elderly, by which they are trying to diminish he risk of crossing. Most probably it is, as in another investigation it became clear that when getting on a bus, the elderly tended to choose the door nearest to the bus driver for their safety. ...% report on this behaviour.

4 Conclusions

The most important findings of the surveys are as follows:
- about half of the pedestrians are moving slowly and have some mobility handicaps (heavy shopping, using walking sticks, pulling shopping carts etc.);
- the majority of them are trying to compensate for their deficiencies and to cope with traffic;
- the signalised crossings don't offer sufficient protection for the elderly; often they don't make an anxiety-free, comfortable crossing possible for them
- the elderly make errors in the investigated situations, the causes of which may be the deficiencies due to the normal ageing process, a lack of attention or knowledge, or the intention to shorten the length of way;
- their traffic participation and well-being (general feelings) are apparently deteriorated by traffic related pressures, such as being forced to act under time pressure and this can be seen from their movements, facial expression and behaviour;
- the bad condition of the crosswalk itself may cause further problems, generating fears of falling down;
- the accumulation of negative experiences in traffic may lead to a gradual narrowing of the mobility of the elderly, the consequences of which will appear as problems to be solved in health care and other forms of social care about the elderly.

The results of the observational study allow us to conclude on the difficulties of the group in question in other crossing situations as well. As it is clear from accident statistics, the crossings without pedestrian facilities are not less critical sites with regard to the safety of the elderly. At these sites, there is no feeling of safety given by the signal: communication with the driver and an overview of the situation is needed. This is – similarly to the observed difficulties on signalised crossings - a task difficult to cope with for pedestrians moving at a slow pace or having other handicaps.

The investigations have confirmed our assumption that the elderly are in a disadvantaged position even in the 'best protected' crossing situations. The improvement of their safety can be reached first of all by the modification of environmental conditions, an important element of which are: timing of signals better adjusted to the needs of the elderly, acoustical signals, better lighting conditions after dark as well as the better quality of the road surface, especially of the crosswalks. As the elderly are not always able to identify hazards, another approach might be the introduction of risk perception exercises already used in some countries. A part of the elderly who are still open to take part in group activities may benefit from these. The application of intensive techniques of mass communications to influence the behaviour of the elderly pedestrians seems equally important. Younger road users should be made aware of the typical reaction patterns of the elderly, their problems experienced on the road and of their increased risk of severe injuries. Safety publicity efforts should focus on improving the relationship between the young and the old, aiming at a better communication between these two groups in general and on the road, too.

Acknowledgement
Thanks are due to the Ministry of Transport and the Institute for Transport Sciences for funding this research.

LITERATURE

1. Chaloupka, Ch.; Fous, R.; Risser, R.; Lehner, U.: Erhöhung der Sicherheit der Seniorinnen und Senioren im Strassenverkehr. Wien, 1993.

2. Evans, A.V.: Transport Accidents and Other Accidents. Older Road Users. The Role of Government and the Professions. Proceedings of a one-day conference held at the Royal Society of Arts, 19 November 1993, London.

3. Nagayama, Y.: Traffic Accidents and the Elderly in Japan. Wheel Extended, 1992/03.

4. Papp I.: Idös gyalogosok biztonságának javítása (Safety improvement of elderly pedestrians). KTI/OCTAV, Budapest, 1994.37 p. (Konzulens:dr. Holló Péter)

5. Papp I.: Idős gyalogosok átkelési magatartásának helyszíni vizsgálata jelzőlámpás gyalogátkelőhelyeken (Crossing behaviour of elderly pedestrians on signalised crossings) Budapest, 1995. 25p. (Konzulens: dr Holló Péter)

6. Draskóczy, M.; Hydén, Ch.: Pedestrian Safety Measures - Past and Future. Lund, 1994.

7. Wilde, G.J.S.: Mass Media Communications for Pedestrian Safety. Kingston, Ontario, Canada, 1976.

8. The SKANDIA Report III. Unprotected Road Users. A behavioural study by Stina Sandels. Stockholm, 1979.

9. Elderly Road Users - A Synthesis, June 1987. U.S. Dept. of Transportation.

10. Schlag, B.: Europaischer Kongress zur Verkehrssicherheit alterer Menschen. Zeitschrift für Verkehrssicherheit 40 (1994) 2 .

11. Mütze, M.; Rehberg, H.: Der altere Mensch im Strassenverkehr. Forschungshefte zur Verkehrssicherheit, Heft 14, 1984. Hochschule für Verkehrswesen 'Friedrich List', Dresden

12. Van-Schlangen, I.; Maring, W.: Problem analysis of Older Traffic Participants. Rijksuniversiteit Groningen, 1992 (VK 91-09).

13. Gunnarsson, S.O.: The Problems of the Pedestrians. Conferenza Internazionale Vivere e Camminare in Citta....Urbano. 1994/06.

14. Papp I.: Az idős gyalogosok tapasztalatai és problémái a városi közlekedésben (Experiences and problems of elderly pedestrians in urban traffic). KTI/OCTAV, Budapest, 1994. 34 p. (Konzulens: dr. Holló Péter. Közreműködött: Papp Miklós.)