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Experiences of Mobility Device Use over Time: A Multiple Case Study among Very Old Latvian Women

Running head: Mobility device use over time among very old women

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Abstract

Aim: To explore the experiences over time of using mobility devices (MDs) among very old women in the context of everyday life in Latvia. *Methods:* This study utilised a multiple case study design employing an explanatory mixed-methods approach. A combination of qualitative survey data on home and health and quantitative interview data for each participant were used to create three narratives to describe the experiences of MD use in everyday life over time, followed by a cross-case analysis. *Results:* The three cases illustrate that very old women accept and use MDs due to walking difficulties and related needs. Over time, functional decline combined with existing physical environmental barriers and changes in their social networks limited the supportive role that available MDs can offer for these women. *Conclusions:* The findings contribute to the understanding of the complexity of MD use in the everyday life among very old women in Latvia and the need for different kinds of MDs. The findings illustrate the importance of taking the interaction between the person in their everyday life situation and the environment into account for optimal use of MDs. This is important information for policy makers in order to optimize the services for old people in Latvia and support the need for occupational therapist's professional competence in the planning and development of MDs provision.

Key words: Ageing**,** assistive technology**,** mixed methods, everyday life, occupational therapy.

Introduction

Due to the steady growth of the oldest population segment in European societies, there is an increasing need to optimize the prerequisites to maintain and improve healthy and active ageing within the community (1). In order to achieve this, one important aspect is the support of mobility and mobility device use in everyday life among ageing people, when resources for adaptation to environmental demands become limited (2). Staying mobile is often essential to maintain everyday activities and independence. Despite a growing body of research on ageing, there is still very little known about how older people manage mobility and compensate for limitations by use of mobility devices (MDs) in the Eastern European countries. One of these countries is Latvia, with 17.4 % of the population aged > 65 years, and 3.9 % of those > 80 years (3). The future estimation of the population claims that those over 65 years of age will increase to include up to 21.4% of the population in 2031 and 26.5% in 2051 (4). Since very old age often imply mobility limitations (5) the older population and their needs constitute a highly relevant group to study in order to develop optimal support and services. Moreover, in 2011 there were almost twice as many older women (67.7%) in the age group > 65 years and almost three times higher proportion among those > 80 years (76.7%) as compared to men (6) in Latvia. As women are in the majority and also have a greater likelihood to be single living, in particular in the more vulnerable very old age (7), it is of great concern to support mobility and thus independence in everyday life.

Mobility devices such as canes, crutches, walking frames, rollators and wheelchairs, are widely used among very old adults (8, 9) to support independence, compensate for mobility limitations and environmental demands. In Latvia, as in other European countries, access to assistive devices (ADs) including MDs varies. Assistive devices can be purchased by the person in need for it or supported by professionals. That is, provided by the service delivery system (SDS) for ADs within the health care system (10). Latvian society has been engaged

in transforming their SDS for ADs. Assisted devices supporting activities related to self-care, work and overall integration in society are prioritized areas, rather than supporting aging people in their independence (10). In occupational therapy (OT), the transactional and dynamic relationship between the person, the environment and the persons occupation, here expressed as activities (P-E-O) (11), constitute an important theoretical base for many different occupational therapy models (12) in order to understand activity performance. Even if the ageing process differs among individuals, according to the models, the characteristics of a person, the unique environment in which the person functions and everyday activities need to be considered to optimize MD use (12).

Recent research acknowledges multiple factors related to mobility limitations and the use of MDs among older people. Beside showing that MDs are one of the most commonly used devices in very old age (13;14), these studies explored outcomes for using MDs (15, 16) as well as changes in the use of MDs over time during the ageing process (17, 18, 19, 20). Some studies illuminate individual experiences on the prescription process (8, 21) and users' attitudes towards the devices (8, 20, 22). The findings reflect that the use of MDs can be highly variable depending on a person's abilities, the activities performed, and the environment factors (19). Moreover, MDs are often used to compensate for functional limitations or for safety reasons, and their use increases with advancing age (18, 20).

The findings from studies on the use of MDs are mainly based on samples from Western European countries and North America, and there are no detailed information regarding older people's perceptions of the use and need for MDs in countries such as Latvia. One study, based on data from five European countries, including Latvia (13), showed that MDs were the second largest category of ADs used by the participants. Significantly smaller proportions of participants in Latvia and Hungary used this type of device as compared to those from Germany, Sweden and the United Kingdom (UK). Participants in Latvia expressed

a high unmet need for MDs, however, reasons for this were not explored, and still little is known concerning MDs use in Latvia.

In sum, since MDs are commonly used among older people and mobility is essential and often a prerequisite for maintaining independence in everyday life, there is a need to increase the understanding of how older single living people perceive the use of MDs in their daily life during the ageing process in order to offer optimal support and services. Therefore, the aim of this study was to explore very old Latvian women's experiences over time on their everyday use of MDs.

Materials and Methods

Study context and design

This study is an extension of the Latvian part of the cross-national European project "Enabling Autonomy, Participation, and Well-being in Old Age: The Home Environment as a Determinant for Healthy Ageing (ENABLE-AGE, 2002- 2004). A total of 1,918 very old single-living persons were included in the ENABLE-AGE Survey Study; in Latvia 303 persons. In the ENABLE-AGE In-Depth Study 189 persons were enrolled, in Latvia 40 persons (23). For the present study a multiple case study design (24) employing an explanatory mixed-methods approach (25) was used. That is, we utilized a combination of qualitative and quantitative data sources for each participant, in order to select, contextualize and explore the multifaceted phenomenon from a retrospective and over time perspective (24, 25). The quantitative data constituted a sub-set of Latvian data from the Survey Study, gathered on three different occasions over a period of nine years (2002, 2004, 2011). The quantitative data set was used to select and describe participants and moreover to enrich the descriptions of the home and health situation over time among the cases selected for the present study. Additional in-depth interviews were performed in 2011, eight years after the

first in-depth interviews by the first author, who had experience from the ENABLE-AGE Project data collection in Latvia. This qualitative data set added information on MDs use and experiences of use over time and was used to enrich the descriptions in an integrated manner and contextualizing the findings in the narratives of the three cases. Core issues on MD use were in a last step explored in a cross-case analysis.

The study was approved by the Ethical Commission of Riga Stradins University (2011).

Sampling procedure

Participants for this study were selected among those 59 persons that took part in the nine year follow-up of the ENABLE-AGE Survey Study in Latvia 2011. The participants possible to additionally interview for this study, were 84-93 years old and lived alone in ordinary housing in urban area of Riga, Latvia. Following the methodology, which was developed in previous studies (19, 20), our ambition was to purposefully select information-rich women representing different experiences of use of MDs over time, in different environments. The sampling strategy therefore also strived to include women having different housing situations and social backgrounds. Among the 59 persons who had given their consent to be contacted for additional data collection, 13 participants used MDs indoors and 23 used outdoors. A cane was the most commonly used MD both indoors (n=11) and outdoors (n=23), and walking frames and rollators were used by only two ~~individuals~~persons; no one used a wheelchair. Four women met the inclusion criteria regarding having the experience of using a variety of MDs over time in different environments, and three of these women agreed to be interviewed.

Data collection and Procedure

Survey data used for this study, which guided the selection procedure and enriched the participant profiles (Table 1), included detailed information collected by means of a comprehensive questionnaire including well-proven self-report scales and observational

formats, along with project-specific questions on housing, health and MDs (see http://www.enableage.arb.lu.se). The data collection engaged trained interviewers (experienced occupational therapists), administering the questionnaire at home visits (23). Information concerning in-and outdoor use of MDs was collected by means study-specific questions regarding different ADs, ordered according to the International Organizational for Standardization (ISO) 9999 classification (26). For this study, the ISO class 12, personal mobility was used. For each MD listed in the questionnaire, the participants were asked to answer whether they had or had and used the respective type of MD.

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Perceived health was assessed by the question ''*In general would you say your health is?*" from the SF-36 questionnaire (27), The scale has five response alternatives ranging from 1 (excellent) to 5 (poor). Using the same response alternatives, perceived mobility was assessed by asking, "*How would you rate your physical mobility at the moment?*"

Perceived functional independence (28), was assessed by the question "*All in all, how would you evaluate your own independence, i.e. in performing activities of daily living*?" rated on a scale from 0 (completely dependent) to 10 (completely independent).
The ADL Staircase (29) was used to assess independence/dependence in Activities of daily living (ADL). Five items represents personal activities of daily living (P-ADL; feeding, transfer, toileting, dressing, bathing) and four instrumental ADL items (I-ADL; cooking, transportation, shopping, cleaning). The instrument is administrated using a combination of interview and observation. A three-point scale is used to assess whether the participant is independent, partly dependent or dependent. Directly after a participant was assessed as independent in an ADL Staircase item, the participant was asked whether he or she performed the specific task with or without difficulty (30).

For data collection on functional limitations and magnitude of accessibility problems the Housing Enabler instrument (HE) was used (31). The instrument is administrated in three

steps. *Step 1 (personal component)* of the HE concerns functional limitations (13 items) and dependence on mobility devices (2 items) (difficulty in interpreting information, visual impairment, blindness, loss of hearing, poor balance, incoordination, limitations of stamina, difficulties in moving head, reduced upper extremity function, reduced fine motor skill, loss of upper extremity skills, reduced spine and/or lower extremity function, extremes of size and weight, and dependence on walking aids/wheelchair). All items are dichotomously assessed as present/not present. In this study the number and type of functional limitations within the personal component were used to illustrate type of and change in functional limitations over time. *Step 2 (environmental component)* is based on professional dichotomous assessment of 188 environmental barriers in the actual environment. In *Step 3 (analysis)* a total score is calculated representing the magnitude of accessibility problems (MAP); the higher the score, the greater the accessibility problems. Regardless of number of existing environmental barriers, the total score is always 0 if the individual has no functional limitations/dependence on mobility devices.

How often the participants went outdoors were captured in one single question *"In general, how often do you go outdoors these days?"* The question had four response alternatives, Every day; Once/twice a week; Once/twice a month; Nearly never; Never. In addition, they were asked if they needed help or not.

Table 1 in here

Qualitative data constitutes in-depth interviews based on questions including the following themes: 'experiences on everyday activities and MDs use at home', 'everyday activities and MDs use outside home', and 'changes in MDs use over time'. The in-depth interviews were conducted by the first author at home visits during the summer of 2011. The

interviews lasted 1-1½ hour, and concluded with a short walk around the flat to observe the participants´ mobility in the context of the home where their everyday activities were performed. Each interview was audiotaped and the information obtained from the natural observation and the interview as well as the author's impressions and reflections were registered in field notes written directly after each interview. They were used to summarise the interview and helped to complement the data analysis later on.

Data analysis

~~Both q~~Quantitative and qualitative data sources were ~~analysed and~~ integrated to contextualize the findings and to elucidate how very old single-living Latvian women experience the use of MDs over time. Quantitative data ~~were analysed by means of descriptive statistics~~, generating frequencies and sum scores ~~on topical variables~~ described for each case, are presented in Table 1. ~~In the findings, this data contributes to contextualization of each case the detailed descriptions of each case.~~ The analysis of the qualitative data was performed in the following way for each case; the first author listened to the taped interviews repeatedly in order to obtain a general sense of the whole and to become familiar with the data. Listening to the interviews several times and reading the field notes recalled the physical, temporal and social dimensions of the context during the home visit. The interviews were transcribed verbatim (in Latvian) partly by the first author and partly by a research assistant, which was followed by accuracy checking to assure the precision of transcripts. Next, inductive analysis aimed to condense the text into specific statements, capturing the experiences of MDs use in relation to everyday life and, subsequently, they were extracted to separate case records for each participant in Latvian. The case records were translated in English and were shared and discussed with the co-authors, both experienced researchers in qualitative cross-national ageing research (occupational therapists by training). Thereafter, the statements were complemented with ~~selected~~ longitudinal quantitative data on health, home

environment and use of MDs over time enriching the descriptions. In addition, information from the field notes was embedded to contextualise the findings. ~~Based on these integrated data, I~~involving the entire pool of quantitative and qualitative data for each participant (25), narratives of the three cases were created in English by the first author, ~~which~~ describinge~~d~~ the present situation, changes in everyday life and longitudinal experiences of MDs use for each participant. Further, the narratives were shared and discussed with the co-authors. The iterative discussions on the analytic approach and steps of analysis and ideas for interpretation of findings facilitated the progress and development of narratives including revisiting the ~~.~~ ~~The~~ interview transcripts ~~were revisited~~in order to make clarifications.~~,~~ Quotations were selected to illustrate how the findings had arisen from the interview transcripts. The evolving integrated findings and interpretations were discussed until consensus was reached and gradually the final narratives of the three cases were established. Next, a senior researcher (occupational therapists by training), reviewed the analysis process and critically reviewed the emerging findings for each case. In the next step involving all the co-authors, a cross-case analysis of the three narratives was performed inspired by the conventional content analysis described by Hsiu-Fang and Shannon (32). Based on repeatedly data reading open coding was performed and sorted into codes elucidating core issues on MD use among cases. Once all narratives had been coded by the first author the codes were discussed among authors. In the next step all authors decided on the combination of codes into categories, illustrating the core findings of all three cases.

Findings

Overview of experiences of MD use

Helena (90 years) had a long-term experience of using MDs, including the cane and rollator, but lately the use of devices has been limited due to deteriorating health. Elza (89

years) had experienced ageing along with a life-long disability and had used different MDs (cane and crutches) during her lifetime, but recently she has stopped using them due to deteriorating health. For Helga (89 years), the ability to walk had changed rapidly over the past years and she has tried using several different MDs such as a cane, crutches, and rollator. For details see also Table 1.

Helena

The everyday life situation. For more than 20 years Helena has lived in a small flat (two rooms and a kitchen) on the 2nd floor of an old two-storey wooden building. Helena moved there with her husband, who passed away soon after the move. The flat has a limited range of amenities; however the housing condition improved over the years to include central heating and a private toilet, but still had only a cold water tap. The not supporting housing situation in combination with gradually increasing functional limitations are reflected in a higher accessibility score at the one year follow up. However, even though functional limitations increased over time, when the housing conditions improved resulting in fewer barriers in the physical environment, the accessibility score- improved at the nine years follow-up-, (see Table 1).

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Being a widow without children, Helena has not been very socially active. She used to read books and enjoyed listening to music. She used to socialise with her neighbours. However, the older neighbours have died and younger people moved in, so nowadays she is visited frequently by only one woman.

The main limitations for Helena's daily activities were caused by dyspnea and fatigue due to chronic heart failure which has become worse over the years. She also has diabetes, but controls her health by regularly monitoring her sugar level and blood pressure, taking injections and having a healthy diet. Her daily routines were influenced by her medications

and taking diuretics made her feel very uncomfortable: "every 10 minutes I need to go to toilet, these days are off schedule till afternoon". In addition, deterioration of her hearing, sight and having limited strength in the right arm has influenced how daily activities are performed.

Helena independently still manages the daily chores such as bed-making, caring for a cat, watering the flowers, and cooking.– Her independence in performing in particular I-ADL activities had however decreased over time. Nine years ago cleaning was the only I-ADL activity she was partly dependent in, but nine years later she expressed different levels of dependence in performing several additional ADL-activities such as –dressing, bathing, use of public transport, shopping and cleaning. She emphasised that every routine took time and that she needed to rest a lot. Since she had no bath or shower, washing herself was complicated. She got regular help and support from relatives (e.g. with the laundry) and for several years she has had a formal assistant who did the shopping and house cleaning, i.e. she developed a lower functional independence in ADL (see table 1) .

Use of MDs in everyday life. When Helena started to feel a lack of stability, more than eight years ago, a family doctor suggested that she should use a cane. She bought one later, encouraged by a neighbour. First, she only used the cane outdoors for walking and shopping, but gradually she started to also use it indoors as her difficulties increased. Some years later an assistant brought her a rollator: "she told me about this thing (a rollator) and she got it for me". Helena continued to use the cane mainly indoors and used the rollator for walking and shopping in the local neighbourhood. She described how she used to walk slowly and carefully, and she tried not to disturb other people on the narrow street pass: "Yes, it is stable (the rollator), with it I can go… Yes, I walked on the street edge. And I watched out to not disturb the people around me". The most difficult thing had always been to manage the stairs at the entrance, and finally a neighbour, together with the house manager, made a special

storage locker for it on the first floor. The last time Helena used the rollator was the summer one year before the interview when she attended a flea market 1 km from her home. When her neighbour died and a new house manager took over, the rollator was returned back into Helena's flat. Due to not having much space, and complicated passages indoors, the rollator was perceived as cumbersome and not practical to use. "I think that cane is more practical… That is the problem, in the flat it takes extra time if I use it (rollator) now to get to the kitchen". Due to her trouble with stairs along with her ongoing health deterioration, Helena has not been outdoors in the last year. She was able to walk independently down the stairs to the mailbox but did so only occasionally. She recognised that without the cane it would even be difficult for her to move around the flat; she moved slowly and always kept the cane close to her while sitting on a chair or the bed so she could reach it easily when changing position. Overall, Helena had a positive attitude towards using MDs.

Elza

The everyday life situation. Elza lives on the 6th floor in a 9-storey block of flats. The entrance for the building was somewhat confusing because of corridors, and visitors required instructions and assistance to find their way. Elza lived in a one-room flat with a kitchen, bathroom and corridor. The room was full of furniture and had little space left to move around. She had many pots with plants on the windowsill and the table, along with newspapers and miscellaneous items.

Elza has lived alone her whole life and after her sister died, her feelings of loneliness increased. She had good relations with the neighbours, whom were also older people. She had two younger friends; one woman whom regularly visited her and, if needed, assisted practically, and another woman who prepared hot meals that they shared once or twice a week.

Elza had polio during her childhood and had experienced poor mobility and a variety of functional limitations over her lifetime. Despite her disability she graduated from university and worked and she expressed pride in her abilities. She had an active social life after retirement and used to attend cultural and public events, but stated that she had stopped doing so almost 20 years ago. For many years Elza took care in planting trees and flowers in the yard. As her knee deformation and weakness in hands became more pronounced, she felt increasingly insecure while walking outdoors despite the use of a cane and, therefore she stopped going out three years ago. Activities performed partly dependent already nine years ago were use of transport, shopping and cleaning. Nine years later Elza also stated that she was partly dependent in meal preparation. Even though it was extremely difficult for Elza she tried to move around and keep her daily routines. Despite her gradually increasing difficulties to be mobil, it was important for her to care for the flowers, but it was hard keeping steady while carrying water with her weak hands. Elza continues to make the bed in the mornings but mentioned that she often stayed in an armrest chair to sleep during night, where she also spent most of the day. To keep up with the outside world, most days Elza watches TV, listens to the radio and reads newspapers. At the nine years follow-up Elza perceived that her eyesight had improved (after having a surgery?) which also improved her coordination (reflected in less number of functional limitations stated in table 1).

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Elza received help from a formal assistant for many years with mainly the shopping and cleaning. Because of this, she emphasised that she could not imagine leaving the dishes on the table and so she continued washing dishes despite having great difficulties. Elza was upset about the fact that the municipality recently reduced the amount of help she received, but was content that the family doctor visited her at home when she needed.

Use of MDs in everyday life. During her life time, Elza has regularly used different assistive devices: orthoses and orthopaedic shoes as well as MDs. For the past nine years she

has been using a cane and one year later she also began using crutches for both indoors and outdoors. She recognised that crutches helped her to move around safely but at the same time they limited the performance of daily activities. That is, she always had to plan how to hold objects, where to place the crutches while sitting, and so forth. As her hands became weaker she was not able to use the crutches anymore and now they were kept hidden behind a door. Elza was aware that different types of MDs existed, but did not believe that any were suitable for her needs. Her sister's husband had offered her a rollator, but due to narrow space indoors she did not think it would be of any use: "I don't think there is any good equipment which can help me. Even that rollator, I should put it somewhere if I go for a bath. Also if I go to the kitchen to eat, I should leave it somewhere, but there is no space". Several years ago social services arranged for handrails in her corridor which also helped facilitate getting into the bathroom and outdoors. That is, a more supporting environment improved the -accessibility score over time ~~see (table 1)~~. Otherwise, moving around in the flat was only possible by keeping stable against the furniture and walls. Elza considered the best options for her and thought of new strategies to help carry out daily routines. For example, she still managed bathing independently; however did it under a friend's supervision to feel safe. She had a bath seat and with help from a friend she learned how to use it. She arranged the furniture in the kitchen in order to reach the refrigerator, and she managed washing the dishes and doing other tasks while sitting on a chair: "I always have to rearrange the furniture here as well as in the kitchen in order to get around. I was able to walk with only that crutch, but when I turned 89, I could not do it-anymore with one hand. I should hold on with both hands if I stand or walk". Elza's creative way of finding strategies to cope with everyday life might explain that she still managed ADL activities to a great extent independently, with and without difficulty. Elza expressed however worries about the future and her ability to manage daily activities as her hands and knee got weaker.

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Helga

The everyday life situation. Helga lived on the first floor in a 5-storey block of flats. To enter her flat (two rooms, kitchen, bathroom and a small corridor) she had to walk a small flight of stairs. Helga had been a widow for many years. She had a daughter whom she only saw a few times during the years and some other relatives that visited her occasionally. She regularly got help from a friend whom lived nearby who mainly did her shopping.

Helga stated that she had been a social and very active woman her whole life and was interested in handicrafts, music and gardening. Even at this point in her life she took an interest in the flowerbeds at the front of the house. Helga had basically been healthy most of her life, but she stated that due to osteoporosis she gradually developed a spine deformation that changed her body posture. At the nine year Survey follow-up she still perceived her health as good but at the time for the in-depth interview she expressed that h~~H~~er health had deteriorated. Helga described that pain and weakness limited her in almost all of her daily activities, as can be seen in the increased number of functional limitations in table 1. This also resulted in a higher magnitude of accessibility problems over time, even though she remained in the same appartment. In a short time Elza became dependent in daily activities such as bathing, cleaning, cooking, shopping and use of transport. Most of the time she spent sitting on the couch in her living room and she even slept there. Like a nest, she located all the necessary things nearby: newspapers, books, food, plates and so forth. Her main activities were listening to the radio, watching TV and taking care of her canary bird. She moved around the flat slowly, supported by furniture and walls. Helga could not prepare any meals because "the objects were falling out of my hands". Instead she ate cold cuts, salads and other fast food which her friend brought her from the shop. She still tried to manage bathing and doing some cleaning herself, but she sometimes asked for help from relatives.

Use of MDs in everyday life. When the spine deformation and pain started, Helga tried to use a cane that she had inherited from her mother-in-law to achieve better stability while walking. She used it mainly for going outdoors and found it useless indoors because it prevented her from carrying anything. A friend then bought her an elbow-crutch that she found more stable. However, she felt afraid to use it outdoors due to the risk of dropping it and breaking the handle. Then she bought an underarm crutch but did not find it useful. At the time of the interview the cane and crutches were stored behind the doors and only used occasionally for going out in the neighbourhood. In addition, three years ago before her health declined, Helga bought a rollator which she used for going outdoors in the summertime to maintain the flowerbeds near the house. Helga described how difficult it was to get out of the flat with the rollator, due to the entrance stairs. She was not able to manage the rollator through the stairs alone: "Yes, I wait until someone is coming into or out of the house. Once I was on the street and nobody came for a long time. I managed myself but I was so exhausted when I finally got in". Using the rollator indoors was almost impossible due to the limited space in the flat; it stood in a corner of the bedroom and the seat was covered with oilcloth and served as a flowerpot stand.

Cross-case findings

The core issues on MD use among cases are presented in three categories reflecting i) pattern of MD use over time, ii) environmental barriers as a challenge for the use of MDs in everyday activities and, iii) performing activities in light of MD use.

Pattern of MD use over time. Gradual health deterioration and increased walking difficulties initiated the need for MDs for these three women. The first MD to be used was a cane, which was mainly suggested by other people. Also, the actual process of getting the device had been initiated by other persons; either they suggested and assisted in getting it or the women inherited it from a relative. Initially, the cane was used to support mobility

outdoors, but as difficulties in walking became more pronounced, it was gradually also used for moving around indoors. Increased functional limitations were the reason for trying different types of MDs whenever there was the possibility. The lack of match between the personal function and the MDs implied that they did not have optimal support from the MDs. All three women showed an acceptance towards the use of MDs, however, with some differences in attitude; described as useful to manage everyday life at the beginning and as useless and not practical over time. Though, when it became too complicated to manage, other strategies such as needing personal assistance or changing their behaviour were chosen in order to manage everyday activities.

Environmental barriers as a challenge for the use of MDs in the everyday activities. Barriers in the physical environment were complex to overcome in combination with MD use, for all three women. These barriers in terms of e.g. narrow space and complicated passages indoors, and receiving support from others had an influential role for whether and how the MDs facilitated everyday activities. That is, the physical environment not only challenged but also limited the use of MDs indoors. In addition, it was perceived as almost impossible to overcome barriers such as entrance stairs to get outdoors. To overcome these barriers, the support from other people was of great importance. Even so, the available formal and informal support and assistance in daily activities was not always optimal in terms of amount, regularity or quality. Also practical aspects such as garage and parking locations for the MDs played a part for the use or non-use outdoors, since bringing the MDs indoors was impossible.

Performing activities in light of MD use. The ability to manage and maintain meaningful routines seemed to be very important to the participants. They strived to keep up a positive self-image and autonomy in terms of being able to choose one's own standard of living and choice of activities, despite the growing difficulties in daily life. Over the years they developed a variety of strategies in order to continue to perform their most valued activities.

Due to the restricted space indoors the cane was easier to use. A variety of other available MDs was useful to support activities outdoors such as going for a walk, shopping and attending public places, but over time the women became unable to leave their homes. Although the feeling of being 'locked indoors' was not explicitly expressed, to some extent their present situations limited their choice and ability to perform certain valued activities. Because of fluctuating health conditions and having limited capabilities as an MD user, activities that used to be prioritised were gradually abandoned. Daily chores took more time and solitary and sedentary lifestyles dominated. All three women expressed concerns about the future, particularly about how they would be able to manage practical aspects of daily life along with functional decline.

Discussion

This study gives insight into the experiences of MD use over time in the context of managing everyday life among three very old women in Latvia. Through elucidating aspects of the everyday life of very old people in one of the Eastern European countries, this study is one of the first of its kind. The three cases illustrate that very old women accept and use MDs due to walking difficulties and related needs, and they gradually and in most cases find them to be helpful in everyday life. Over time, functional decline combined with existing physical environmental barriers in their dwellings (narrow space indoors, stairs to entrance doors) and changes in their social networks limited the optimal supportive role that available MDs can offer for these women. The findings indicate that the lack of access to suitable MDs both support and hinder mobility and substantially restricts the women's independence in terms of accomplishing everyday activities in and outside of the home.

The ability to perform daily activities changes as we age (17, 33). Having chronic problems in one's lifetime might lead to better preparedness for these changes and can result

in having a more proactive attitude towards problem-solving in everyday life. However, continuous functional decline can be a serious threat and lead to fear about the future, as is exemplified by the very old single living women in our study. It is important to note that all of the women in these cases were due to limited access to and lack of suitable MDs unable to get outdoors for some time and that seemed to cause some threat to their perception of well-being and autonomy. Other studies show that different forms of mobility (walking, using public transport) is essential for older people (34); besides outdoors mobility is important for physical health and wellbeing in very old age (5). Even if the present study did not explore and shed light on the subjective perceptions and consequences of such situations, it highlights possible problems. Therefore, to optimise active ageing and support very old people, facilitating mobility through the use of MDs is important in countries such as Latvia where changes in the population structure and living circumstances bring forth challenges in providing adequate health and social services for older people in the future (35). To be successful in providing suitable MD for old people, the individual perspective including the environment were the device will be used; need to be taken into account.

The importance of a service delivery system

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Similar studies with very old people from Sweden (19, 20) also reflect changes in MD use in everyday activities during the process of ageing. These studies emphasise the crucial role that personal factors play in terms of having the ability to adapt or to accept changes in one's ability in order to optimise the use of MDs. They also state that it is important to have the possibility to change or combine MDs. In addition, modifications in the home environment can support the use of MDs. Even though other studies also show that older people obtain the MDs from different sources and that informal provision of such devices are typical (20, 22), participants in our study bought their MDs themselves or the devices were provided by a

relative or friend without instructions, training, or support on how to use the devices in a proper and safe way. Since, having less optimal MDs, not adjusted to personal conditions and needs, the risk is that devices becomes a limitation instead of support also resulting in lack of faith in MDs possibilities to constitute a support in everyday life.

The World Disability Report (36) stated that ADs should be economically affordable, suit to the environment, be suitable for the user and that the service delivery systems should include adequate follow-up. The service delivery systems for ADs differ between countries (10, 37) and the possibilities to get an AD are often limited by policies and economic factors. In most of the Eastern European countries, now member states of the EU, the service delivery systems (SDS) for an AD, including MDs, were established during the last few decades and are facing different problems. According to the current regulations for the SDS in Latvia, very old people are not the priority group for receiving state funded MDs (10). Even if the possibilities to get MDs are restricted, our study, as well as others (13), indicates that very old people are very much in need of MDs. As illustrated by the present study, these women had limited access to appropriate MDs suitable for different environments and in accordance with personal needs and prerequisites. This imply far from optimal benefit from the MDs. Also, possibilities to replace or to combine the use of different MDs are limited in Latvia and information on how and where to get hold of or buy MDs are lacking. So are possibilities to remove or adjust for environmental barriers, such as stairs, and narrow spaces. Overall, these restrict old people from going outdoors and live an active and independent life during ageing. Since one of the main aims of the EU policy on health issues is to improve public healthcare for European citizens (38), this is important information for policymakers striving for equal opportunities for old people to be active and participate in society within Europe.

In order to optimise the use of MDs in situations illuminated by our findings, the need for professional support becomes paramount. Theoretical frameworks, like the P-E-O (11),

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describing the transactional and dynamic relations between the person, the environment and the activity guides practices and interventions within OT. The occupational therapists' professional understanding can consequently support the optimisation of MD use. In Latvia as well as in some other EU member states, the OT profession is still quite new and the role of OTs in the SDS is still limited. Our findings support however, the need of the OTs competence bringing in the PEO perspective to improve the situation within the SDS for old people in Latvia. The findings constitute important information for future policy makers within the Latvian society, involved in transformation of health care and social services.

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Methodological reflections

Turning to some methodological reflections, we would like to emphasise the advantages of using a mixed-method approach to address the research questions posed for the present study. The combination of quantitative and qualitative data helped to capture the participant's experiences of MD use from a longitudinal perspective. The co-authors have substantial experience of working with qualitative data in cross-national contexts, including the development of methodology to analyse datasets containing text in several different languages (39). Researchers brought into the project their own research experiences and perceptions related to the ageing and mobility issues. The fact that the authors have the same professional background and were experienced within the field of AD research is an asset and strength for the analysis and interpretation of the findings. Steps were taken to increase trustworthiness involving all authors in the analysis process. Stepwise communication and discussions among the three authors throughout all the stages of the study and clarifying the issues raised served to strengthen credibility and transferability of the study (40).

Purposeful sampling for the current study was challenging since there were not many participants who had experienced using different MDs among the ENABLE AGE follow-up

sample in Latvia. Moreover, to interview very old women and to keep the participants' focus on the study-related themes and questions was a challenge, and interviews vary in richness and in length. It is recommended to have a dialogic mode of two-way communication in order to reduce the power differential between the researcher and those targeted for the research (41). Since the participants were already limited in certain daily activities and their use of MDs was not efficient anymore, it was most likely hard for them to recall and reflect upon their thoughts and feelings from the past when the devices were used more frequently. For example, there was limited information on MD use outside the home, as none of the women had been outdoors for a substantial period of time. Overall, their thoughts about MDs were short and pragmatic and mainly factual (when, how, what) and they did not reflect subjective attitudes or feelings. Presumably this has to do with fact these women were uncomfortable exposing decline, since these women might not be used to expressing feelings of vulnerability, which could have impacted the way they expressed themselves. Another reason could be that the available MDs for these women were not optimal according to their needs and indicated a low PEO fit at the time for the present study. Having the possibility to use both quatiative and qualitative data therefore helped to seize and describe the complexity in experiences over time. As all three women in this study had health problems, it was important to ensure their comfort during the long interview process and to respect their unwillingness to demonstrate their MD use in a specific everyday activity, as it was done in other studies (19, 20). Therefore, the natural observation of participants during the interview was seen as important source of information contributing in a valid and efficient way to obtain the findings. In addition, the short walk around the apartment, which women offered spontaneously at the end of interview, substantially highlighted each participant's everyday life situation. That is, their guidance around the apartment increased the understanding of how the participants managed e.g. cooking, cleaning, laundry and showering.

The women in this study illustrate their limited experiences of MDs and highlighted the few situations that MDs were adapted into their lives in Latvia. The participants were very old women living alone in the city. The situation for very old single living men, those living with partners or family members, or even those living in rural areas might be substantially different. Consequently, our findings cannot be transferred to very old persons in Latvia in general. Nevertheless, we would like to emphasise that using the same kind of methodology, these findings are similar to those of previous studies on very old women (19) and men (20) in Sweden and as some authors (42, 43) have pointed out, thus constitute a possibility for cross-national meta-analyses on MD use among very old people in different national contexts.

In conclusion, our findings contribute to the understanding of the complexity of MD use in the everyday life among very old people in Latvia and the need for different kinds of MDs. It illustrates not only the supportive role of MDs but also the importance of taking the interaction between the person in their everyday life situation and the environment into account for optimal use of MDs over time. Most important, this study constitute important information for policy makers in order to optimize the services for old people in Latvia and support the need for occupational therapist's professional competencye in the planning and development of services of MDs provision.

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Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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Table 1. Overview of participants profiles according to health, environmental aspects and use of mobility devices over time at three data collection occasions.

Variables on health, environmental aspects and mobility devices	Data collection occasions 1,2 and 3								
	Helena			**Elza**			**Helga**		
Age	82	83	90	81	82	89	81	82	89
Health [a)]		Poor			Fair	Poor		Good	
Mobility [b)]		Poor			Poor			Good	
Functional limitations (0- 13) [c)]	3	5	6	4	5	3	1	1	4
Accessibility score [d)]	55	313	262	327	363	261	38	34	242
Functional independence (0- 10) [e)]	8	6	5		4		10	8	5
ADL performance (0- 9) [f)]									
- independent without difficulty	5~~8~~	0~~7~~	0~~4~~	2~~6~~	1~~6~~	0~~5~~	9	8	4~~5~~
- independent with difficulty	3	7	4	4	5	5	0	0	0
- partly dependent or dependent	1	2	5	3	3	4	0	1	5~~4~~
Mobility devices:									
-in use indoors		-	Cane	Cane	Crutches	Cane	-		Cane
-available but not in use indoors		Cane	Rollator	-	Cane	-	-	-	Crutches, rollator

-in use outdoors		Cane	-	-	Crutches	-	-	-	Rollator
-available but not in use outdoors		-	Cane, rollator	-	Cane		-	-	Cane, crutches
Time outdoors [g)]	NA	Every day, without help	Nearly never, without help	NA	Never	Never	NA	Every day, without help	Every day, sometimes without help

a) Perceived health rated on a scale ranging from 1 "poor" to 5 "excellent" (22).
b) Perceived mobility rated on a scale ranging from 1 "poor" to 5 "excellent" (22).
c) The Housing Enabler, number of functional limitations, range 0–13 (25).
d) The Housing Enabler, magnitude of housing accessibility problems. Higher score indicate more accessibility problems (25).
e) Perceived functional independence rated on a scale from 0 ''completely dependent'' to 10 ''completely independent (23).
f) ADL Staircase (includes 5 P-ADL and 4 I-ADL) (24). Number of ADL performed independent without difficulty, independent but with difficulty and partly dependent or dependent on another person.
g) A study-specific question with response options "every day", "once/twice a week", "once/twice a month", "nearly never", and "never". NA= not applicable, indicates missing answers.