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COVID-19 Effect on Everyday Mobility of Different Demographic Groups of People with Blindness and Visual Impairment

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Abstract

Introduction: The COVID-19 pandemic imposed some challenges on the mobility of people with blindness and visual impairment (BVI). Compliance with social distance epidemiological guidelines proved to be especially troublesome for those with BVI.

Objective: The goal of this research was to determine the differences between specific demographic groups of people with BVI before and during the COVID-19 pandemic lockdown in everyday mobility, to identify the groups most affected.

Method: Forty-five people with BVI members of the Croatian Blind Union completed the questionnaire describing their pre-pandemic and lockdown independent everyday mobility activity frequencies on a 5-point Likert scale along with demographic questions in May 2020. Wilcoxon signed ranks test and paired samples t-test were used to test differences before and during the pandemic lockdown on average scale results for demographic groups.

Results: A decline in independent everyday mobility between before and during the COVID-19 pandemic lockdown was shown for the total sample of people with BVI. When considering demographic groups both those with blindness and low vision, non-married and married, females, participants living in apartments, employed and unemployed participants, and participants living in a household with two members showed a statistically significant decline in independence during the pandemic. Males, retired participants, and participants older than 40, living alone in a house did not show a statistically significant decline.

Conclusion: The decline in mobility functioning implies possible long-term effects of the pandemic lockdown on specific groups of people with BVI and additional support needed after the lockdown and the COVID-19 pandemic.

Keywords: everyday mobility, people with blindness and visual impairment, COVID-19 pandemic

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1. Introduction

The COVID-19 pandemic has had an impact on social inclusion and the well-being of people with blindness and visual impairment (BVI) (Halpern et al., 2021) as well as their orientation and mobility (O&M). O&M encompasses a range of skills and strategies that enable moving independently, safely, and effectively (Mršić, 1995). Problems faced by people with BVI in their everyday mobility include lack of confidence to go out and visit unfamiliar places, uncertainties related to collisions with objects, and anxiety in complex traffic environments (Pavey, 2009). People with low vision additionally have difficulties with light control, perception of changes in terrain, and elevation, and anxiety related to crossing roads and traffic control in general (Wiener et al., 2010).

These difficulties may manifest themselves in everyday activities such as shopping, going to work, using public transportation, etc. These activities are particularly important to mention because, the outbreak brought challenges to the daily functioning of people with BVI.

In the period since the COVID-19 pandemic outbreak, some attention has been paid to people with BVI, and some research has been conducted on the impact of the pandemic on people with BVI in performing daily activities based on independent mobility. Abbasi Jondani (2021) refers to difficulties in implementing strategies against COVID-19 (access to information on prevention strategies; wearing a mask and hand hygiene; social distancing). Martinez et al. (2020), Rizzo et al. (2021), and Suraweera et al. (2021) emphasise potential difficulties in collecting environmental information during mobility and daily activities of people with BVI by strictly following epidemiological measures. Research on the daily life changes of people with BVI during the pandemic has identified changes in daily dynamics and challenges in independent mobility (Goggin & Ellis, 2020; Gombas & Csakvari, 2021; Oviedo-Cáceres et al., 2021; Rickly et al., 2020; Senjam, 2020).

Senjam (2020) notes that due to epidemiological measures and lack of necessary support, people with BVI may have problems performing daily living and O&M skills (e.g., crossing the street or shopping). Gombas and Csakvari (2021) found that people with BVI are less independent when shopping and need more support. Goggin and Ellis (2020) refer to the increased need of some people with BVI for support and sighted guides, as well as problems related to interaction with the environment, derived from the fact that they sometimes rely on tactile-kinesthetic perception for orientation cues. People with BVI also had difficulties in obtaining information about epidemiological measures (Shalaby et al., 2021; Siu et al., 2021) which they are expected to follow while being outside. In terms of mobility, problems encountered were related to using public transport, maintaining social distance, and avoiding touching different surfaces (Oviedo-Caceres et al, 2021). Rickly et al. (2020) in a study of people with BVI participation during the COVID-19 pandemic, found significantly reduced mobility.

People with BVI are a very heterogeneous group of individuals living in different social and economic circumstances, with various levels of support options available from their families and institutions, and with various degrees of vision loss that affect them in receiving visual environmental information (e.g., judging appropriate social distance from others, locating hand sanitizer at store entrances, following distance markings on the floor). These demographic factors may influence possible adherence to epidemiological guidelines during O&M in outdoor spaces and therefore the decision or option to travel independently.

2. Objectives

The goal of this paper is to identify demographic groups of people with BVI affected most by the pandemic in terms of everyday mobility.

H0: There is no statistically significant difference in the level of independent everyday mobility of people with BVI before and during the COVID-19 pandemic lockdown.

3. Methodology

3. 1. Sample

Forty-five people with BVI people completed the questionnaire, through the open call of the Croatian Blind Union to all non-governmental organisations (NGOs) in Croatia. The questionnaire was completed online for 42 participants, while 3 questionnaires were completed through free of charge telephone calls for those who could not complete the online questionnaire for various reasons but wanted to participate.

The youngest participant was 22 years old, and the oldest was 80 years old. The mean age of participants was 49. 31 participants had blindness, and 14 had low vision, while 14 were male, and 21 were female.

3. 2. Measuring instrument

To measure independent mobility authors have examined available questionnaires on mobility. Mobility research in general is focused on the usage of different frequencies of transportation modes and GPS information (Zhu et al., 2020). Psychometric questionnaires related to O&M of people with BVI are used primarily for skill assessment, training planning, and evaluation of programs (Michigan Orientation and mobility severity rating scale, Michigan Department of Education, 2017), and assessment of participants' perceived ability and difficulties in independent mobility (The Independent Mobility Questionnaire, Turano et al., 1999; Difficulty with Mobility Questionnaire 23, La Grow et al., 2013). Most of the questionnaires assessed children's and elderly's independent mobility and movement (Zarghami and Bagheri, 2020; Zhu et al., 2020) as primary populations of concern. None of the mentioned psychometric questionnaires measured the frequency of independent everyday mobility but mostly questioned problems that accompany it or strategies for overcoming them. In those circumstances, the authors decided to create a questionnaire, which is also the case of Barbier in May 2020, who used a self-made questionnaire to measure mobility disruptions in frequencies due to the COVID-19 pandemic (Barbier, 2020).

The authors selected variables describing available mobility patterns during the lockdown, considering the fact that only grocery stores and pharmacies worked, while everybody else worked from home (except for medical and police emergency services). Schools and recreation facilities were shut down, and public transport except taxis did not work (trams, buses, planes).

The questionnaire containing demographic questions, both pre-pandemic variables and during pandemic lockdown variables, was administered to Croatian Blind Union members in Croatia in May 2020. Demographic variables were located at the start of the questionnaire, followed by a 12-variable scale to measure frequency in independent everyday mobility before the pandemic, and then the same scale was repeated for measuring independent everyday mobility for the COVID-19 pandemic lockdown period (questioning frequencies from April 2020). Participants completed the questionnaire voluntarily, and anonymity and privacy of information were guaranteed. Phone numbers of participants who contacted the researchers by telephone were deleted. All data gathered was coded and will be stored electronically for the next 10 years. Independent everyday mobility scale (IEMS) variables measured the frequency of independent grocery shopping, pharmacy shopping, recreational walks, and the use of public transport and taxis. While the dependent everyday mobility scale variables measured the frequency of assisted grocery and pharmacy shopping with family members, neighbours, or other sighted guides, as well as the distribution of such tasks to others.

Frequency dependent/independent mobility variables:

1. I obtained groceries independently.
2. I went to the store with a family member to get groceries.
3. Family members obtained groceries for me.
4. Neighbours obtained groceries for me.
5. I accompanied an acquaintance or neighbour going to the store to get groceries.
6. I used a sighted guide to go to the store and get groceries.
7. I used taxi services for transportation.
8. I used public transportation.
9. I went to the pharmacy independently.
10. I used a sighted guide to go to the pharmacy.
11. Family members went to the pharmacy for me.
12. I went out for walks independently.

5 variables measured independent everyday mobility and 7 measured dependent everyday mobility on a five-point Likert scale describing frequency. Cronbach's alpha for the pre-pandemic questionnaire was 0.782, indicating good internal consistency.

3. 3. Statistical Analysis

Data gathered was analysed using IBM SPSS Statistics version 26 for Windows. After recording the variable results in the same direction to describe independent mobility, the maximum score on the scale describing independence was 60, and the

minimum was 12. The average level of independence before (AIEMS-B) and during the pandemic was calculated (AIEMS-D).

Descriptive statistics were used to describe the sample and its basic characteristics. Tests of normality (Shapiro-Wilk test) were performed to determine parametric and non-parametric statistics to test the differences between the scale scores averages for certain demographic characteristics. Paired samples t-tests were used for group variables with normal distribution and the Wilcoxon tests were used for response distribution between groups that did not adhere to normal distribution.

4. Results

As shown in Table 2 total of 45 participants (N=45) scored a mean of 3.24 on the AIEMS-B (*M*=3.24, *SD*=0.69, Min=2.25, Max=4.67), and a mean of 2.93 on AIEMS-D (*M*=2.94, *SD*=0.50, Min=2,17, Max=4.33). Out of 45 participants, 69% were blind (n=31), and 31% (n=14) had low vision. 53% of participants were male (n=24) and 47% were female (n=21). 58% of participants (n=26) were not married (legal status) and 42% of participants (n=19) were married. 44% of participants (n=20) lived in an apartment, while 53% of participants (n=24) lived in a house. 47% of retired people (n=21) completed the questionnaire, 26% employed, and 24% unemployed participants. 22% of participants lived alone, 44% lived in a household with another member, and 31% lived in a household with another 2 or more household members. One participant did not answer that question. 31% of participants were between 20 to 39 years old, 33% were participants between 40 to 59 years old, and 36% were participants older than 60.

Additionally, in the total sample, one participant (n=1) lived in a nursing home and one participant (n=1) was a student. They were included in the analyses of the total sample and as parts of other demographic groups, but they were excluded from further analyses between the demographic groups for the corresponding variables, for not meeting the minimum sample size required in a group for the Wilcoxon Signed Ranks Test (n=6) (Dwivedi, et. al., 2017) or the paired samples t-test (n=2).

Shapiro-Wilk normality test for the total sample did not show normal distribution (p>0.05) but it showed normal distribution for 5 demographic groups on the AIEMS-B variable, and 10 groups on the AIEMS-D variable (Table 1).

Table 1

Shapiro-Wilk normality test results for AIEMS-B and AIMES-D demographic groups

Demographic group	AIEMS-B			AIEMS-D		
	W	df	p	W	df	p
total	,911	45	,002	,899	45	,001
blind	,914	31	,016	,838	31	,000
low vision	,851	14	,023	,932	14	,324*
male	,875	24	,007	,908	24	,031
female	,919	21	,083*	,856	21	,005
non-married	,914	26	,033	,925	26	,058*
married	,898	19	,045	,827	19	,003
apartment	,880	20	,018	,822	20	,002
house	,909	24	,034	,924	24	,073*
retired	,908	21	,050	,943	21	,251*
employed	,842	12	,029	,837	12	,026
unemployed	,821	11	,018	,943	11	,559*
1 household member	,919	10	,351*	,867	10	,091*
2 household members	,888	20	,025	,833	20	,003
3 household members	,920	14	,221*	,917	14	,197*
age 20-39	,929	14	,293*	,897	14	,101*
age 40-59	,812	15	,005	,897	15	,087*
age ≥ 60	,953	16	,531*	,952	16	,519*

*p>0.05

The Wilcoxon test was used to test the differences before and during the pandemic for all groups (Table 2), but the groups of 1 and 3 or more members in the household, age group 20-39, and age group ≥ 60 for which a paired samples t-test was used (Table 3).

Table 2

Wilcoxon Signed Ranks Test results between AIEMS-D and AIEMS-B

Group	n	AIEMS-B		AIEMS-D		Z	p
		Mean	SD	Mean	SD		
total	45	3.24	.69	2.93	.50	-3.375	.001*
blind	31	3.25	.72	2.97	.52	-2.403	.016*
low vision	14	3.22	.63	2.85	.47	-2.883	.004*
male	24	3.18	.68	3.00	.50	-1.659	.097
female	21	3.30	.71	2.86	.50	-3.030	.002*
non-married	26	3.33	.70	2.98	.48	-2.280	.023*
married	19	3.11	.66	2.87	.54	-2.466	.014*
apartment	20	3.23	.72	2.93	.49	-2.830	.005*
house	24	3.22	.67	2.96	.51	-1.683	.092
retired	21	2.88	.47	2.76	.36	-.747	.455
employed	12	3.83	.71	3.35	.61	-2.280	.023*
unemployed	11	3.18	.48	2.75	.33	-2.589	.010*
2 household members	20	3.24	.75	2.88	.56	-2.374	.018*
age 40-59	15	3.24	.80	3.13	.66	-1.284	.199

*p<0.05

Table 3

Paired samples t-test results between AIEMS-B and AIEMS-D

Group	n	AIEMS-B		AIEMS-D		t	df	p
		Mean	SD	Mean	SD			
1 household member	10	3.17	.74	2.95	.62	1.140	9	.284
3household members	14	3.30	.63	3.00	.34	2.484	13	.027*
age 20-39	14	3.57	.65	2.95	.39	3.701	13	.003*
age ≥ 60	16	2.95	.48	2.74	.36	1.631	15	.124

*p<0.05

The Wilcoxon signed ranks test showed that the difference between the measurements before and during the pandemic lockdown was statistically significant, N=45, Z= -3.375, p= 0.001 (Table 2). The decline was statistically significant ($p<0.05$). People with BVI showed a higher level of independence in everyday mobility before the pandemic than during the pandemic lockdown and H0 was rejected. Based on this decline, the significance of differences in specific demographic groups was tested to determine which groups were affected more than others and contributed to the complete significant decline before and during the pandemic lockdown.

Out of 17 participant groups in which the difference between independent everyday mobility behaviour before and during the pandemic lockdown was tested, the results showed a decline in 11 groups, partially rejecting the H0 hypothesis. Wilcoxon signed-rank test showed a statistically significant decline in 10 out of 13 tested demographic sample groups ($p<0.05$) (Table 2), while paired samples t-test showed a statistically significant decline in two out of four tested groups ($p<0.05$) (Table 3). Wilcoxon signed ranks test results showed a decline for participants with blindness (Z=-2.403, p=.016) and low vision (Z=-2.2883, p=.004), females (Z=-3.030, p=.002), nonmarried (Z=-2.280, p=.023) and married participants (Z=-2.466, p=.014), participants living in apartments (Z=-2.830, p=.005), employed (Z=-2.280, p=.023) and unemployed participants (Z=-2.589, p=.010), participants living in a household with two members (Z=-2.374, p=.018). Paired samples t-test showed a decline in independent everyday mobility for participants living in a household of three or more members (t=2.484, df=13, p=.027), and those between the age of 20 and 39 (t=3.701, df=13, p=.003). On all these variables, a higher average of independent mobility behaviours was shown before the pandemic. No statistical difference was found in independent everyday mobility behaviour before and during the pandemic for males (Z=-1.659, p=.097), retired participants (Z=-.747, p=.455), participants living in a house (Z=-1.683, p=.092) and participants ages between 40 to 59 (Z=-.1.284, p=.199) on a Wilcoxon signed ranks test. Participants older than 60 showed no statistical difference on a paired samples t-test (t=1.631, df=15, p=.124) as well as those living alone (t=1.140, df=9, p=.284).

5. Discussion

A decline in independent mobility was shown for participants with blindness, low vision, females, unmarried and married, participants living in apartments, employed and unemployed participants, and participants living in a household with two members. These findings could relate to a wide range of challenges faced by people with BVI during the COVID-19 pandemic outbreak and lockdown.

Statistically significant decline in both blind and people with low vision indicates the changes in everyday dynamics and challenges in independent mobility and confirms the findings of other studies (Goggin & Ellis, 2020; Gombas & Csakvari, 2021; Oviedo-Cáceres et al., 2021; Rickly et al., 2020; Senjam, 2020). The impact on the overall situation of people with BVI underscores the findings on the strength of the epidemiological measures and recommendations of the COVID-19 pandemic. Dervaj and Patel (2021) examined the impact of reduced mobility in the general population on psychological distress during the initial lockdown, and the results showed an association between reduced mobility and increased psychological distress. It should be noted that the data from this study, as well as ours, was collected during the first lockdown. After the lockdown, relaxation of restrictions (opening stores, workplaces) is likely to reduce psychological distress and increase mobility. These findings suggest the need to develop support when human mobility is acutely limited. Also, the combination of reduced mobility and its impact on mental and physical health (Abbasi Jondani, 2021, Ting et al., 2021) with previous knowledge of reduced social participation and increased social exclusion of people with BVI (Nyman et al., 2010; Salminen and Karhula, 2014; Stevelink and Fear, 2016) creates complex challenges for people with BVI.

Results also showed a decline in independent mobility for women but not men. Other studies on gender differences in mobility show that women and girls: have multifunctional routes that included multiple stops to complete household chores (Miralles-Guasch et al., 2016; Brown et al., 2014 according to Gauvin et al., 2020; Ramboll, 2021), travel shorter distances, spend more time on the road

and prefer to use public transport and taxi services more than men (Miralles-Guasch et al, 2016; Ng and Acker, 2018 according to Gauvin et al, 2020; Ramboll, 2021). Women are more likely to be involved in mobility activities such as shopping, accompanying family members, caring for relatives, etc. (CIVITAS, 2016). Women are less likely to travel alone than men and are usually accompanied by children, older people, or people with disabilities (CIVITAS, 2016). They are more likely to report mobility problems and experience more difficulties than men (Mechakra-Tahiri, 2012). In these factors, we find an explanation for the decline in the mobility of women with BVI (and the lack of differences for men with BVI) during the pandemic lockdown when shopping options were largely diminished, and public transport was not available. Caselli et al. (2020) claim that lockdown measures reduce the mobility of women more than men, but (Rickly (2020) on the other hand found no gender differences in mobility during COVID-19 lockdown in a report for the United Kingdom on 937 individuals with BVI. This suggests some sociocultural differences between people with BVI in Croatia and the United Kingdom, which impact differences in mobility and related daily activities.

A decline in mobility was evident for those having one or more co-tenants. Family members or friends living with people with BVI in their need to protect their loved ones during the lockdown could have offered or decided to do everyday mobility tasks instead of them or wanted to accompany them in everyday mobility tasks to prevent them from possibly not adhering to epidemiological guidelines (e.g., standing too close to somebody or bumping into others because they cannot see them). This goes along with the perception of people with BVI as more vulnerable to COVID-19 infection (Senjam, 2020) and the perception of people with BVI during the COVID-19 pandemic as incapable of their health self-care and requiring extreme protection (Oviedo-Cáceres et al., 2021). With the implementation of markers to maintain social distance, the routes and orientation markers used by people with BVI have possibly changed. Therefore, causing problems in independent everyday O&M, that may cause them to seek the help of their family members as sighted guides. If this type of behaviour occurred even after the initial lockdown and throughout the entire pandemic, learned helplessness could be a legitimate concern. Prolonged unnecessary support and obstruction of independence can cause certain groups of people with BVI to get used to the additional support. In some cases, substitution in performing certain activities could lead to them expecting that even after the pandemic. If the orientation markers during the pandemic have changed, markers used before the pandemic can be forgotten, which can be a problem after the pandemic when the old ones return. The use of cane or guide dog techniques could also be forgotten.

Another important finding of this study is no decline in independent mobility of people with BVI living alone. We consider this to be a very positive result, indicating good adaptive skills of people with BVI in a completely new and previously unrecorded situation at the start of the pandemic. People living alone could have established patterns of independent living and mobility patterns and had no one they could or wanted to ask for support. In addition to those living alone, the group of people living in a house stands out. It is difficult to find comparable research on these two constructs. We assume that this is a lower perception of mobility difficulties (from the perspective of people with BVI). People living in the house are not restricted to moving around within the four walls and can spend time in the yard or garden and engage in certain activities there, unlike people living in apartments that have expressed a decline in independent mobility. However, the variables studied referred to activities outside the house, so we can only assume the perception of mobility difficulties here.

Masso et al. (2019) who studied spatial mobility in the general population, found that it is highest at ages 20-29 and decreases with age until 60-69, increasing again after 70. Younger individuals are thought to be more involved in work and leisure activities, while spatial mobility decreases due to fewer work and leisure activities and narrowing of social networks. Similar results of a gradual decline in mobility with increasing chronological age can be seen in the study by Frändberg and Vilhelmson (2011). General population mobility research during the COVID-19 pandemic shows a greater decline in young people's mobility associated with the ban on going to work or taking children to kindergarten or school (Caselli et al., 2020). Although these data refer to the general population, in the absence of comparable results for people with BVI, they are our only source of comparison. Since there has been a marked decline in

mobility among the younger groups of our respondents (20-29 years), it is reasonable to assume that the ban on work, as well as the elimination of public transport, have influenced the decline in mobility among this age group.

Older people with BVI are more likely to have mobility problems than their non-visually impaired peers (Swenor et al., 2013; Miyata et al., 2021) and therefore already had some mobility problems and limited mobility before the pandemic. The lack of independent mobility activity in the over-60 population was a major challenge even before the pandemic. With age increases the expectance of reduced independence for the elderly, so it is presumed that retired participants already had established support from others and therefore did not show a decline in mobility. Since the general retirement age is 65 in Croatia, these results are partially explained by age group results which also show no decline for those over 60. Brouwer et al. (2008) point out that older people participate less in social activities and rely on others for help. Therefore, the lack of differences is reasonable, because, with the occurrence of the pandemic, conditions for independent mobility in this context have not deteriorated too much. The fact that there was no difference in independent everyday mobility for those over the age of 40 also shows already established patterns of independent behaviour and established responsibilities that had to be taken care of independently or instead of others in their families, which is not influenced statistically by the pandemic. In interpreting those results, caution needs to be maintained, not meaning that those over 40 and 60 received equal support from others. The average on the scale during the lockdown for those over 60 was 2.74, for those 40-59 years old was 3.13, and for those 18-39 was 2.95 showing the highest independent everyday mobility was for those between 40-59. Mobility circumstances have greatly changed for younger people with BVI resulting in a decline in mobility.

As far as theoretical implications of this study are concerned, the results show agreement with some previous studies, but also some differences. Consistency between the results and outcomes of the impact of COVID-19 is visible in the impact on O&M of people with BVI, but differences in certain demographic groups do not support the findings of some other studies. To further develop the theoretical framework, it is necessary to explore what factors (e.g., epidemiological measures and recommendations, health system factors, social care system, family support) have led to demographic differences within a smaller system (single county or city) or why differences occur between larger systems (different states or union of states). Practical implications of the research include strengthening the support for people with BVI in terms of increasing the availability of the sighted guide service; designing crisis support systems and strengthening the capacity to support families of people with BVI. There is also a need to systematically improve support for experts and develop standards and protocols for online support and rehabilitation. The results of this study point out the need to develop support mechanisms for the entire population of people with BVI, whose independence and related self-confidence and self-esteem are manifested in the possibility of independent mobility and daily activities, as well as in the performance of their professional, social, and family roles.

5. 1. Limitations and future research

The sample was minor compared to the entire population of people with BVI in Croatia. An open call to participate excluded those who were not members of NGOs members of the Croatian Blind Union. Those more interested in the topic and affected by COVID-19, both positively and negatively, were more likely motivated to participate in the research. The participants were asked to self-classify as having blindness or low vision, with no medical proof presented, so their self-identity possibly diverges from the classification used in Croatia (WHO International Classification of Diseases 11). Since the questionnaire was administered online, it is possible it was not accessible to those without the necessary knowledge to use a computer and those without sighted support. Since the scale was administered twice, in the same questionnaire during the pandemic lockdown, to measure the behaviour before the pandemic, which the participants had to recall in memory, it is possible that those answers were influenced by the circumstances of the pandemic and therefore judged more positively or more poorly. It is also possible that while completing the scale variables for the second time regarding the behaviour during the pandemic, the participants felt the need to exaggerate.

An additional factor that was not considered during data gathering was the presence of additional medical

conditions or comorbidities that could affect results and mobility in general. Also, data about possible COVID-19 infections and related health implications were not considered. Since all the participants were members of NGOs it is possible that their membership in those organisations provided them with additional support regarding optional sighted guide services, psychological help, support with technology, and online services that could impact the results, since those without membership in these organisations were not included and possibly did not have these options available. The use of sighted guide service support provided by NGOs was the only NGO support questioned in this research.

Also, the research was conducted at the start of the pandemic in 2020, and the participants had to recall their experiences before the pandemic. Since then, and through other lockdowns after that, to the end of the pandemic, the results of demographic differences may vary. In their interpretation, one cannot apply them to the rest of the pandemic period, or after it, but only as an indicator of the initial response to the pandemic lockdown. Additional research considering these factors could give a wider understanding and could reveal long-term implications of the COVID-19 pandemic lockdown.

6. Conclusion

Since these results show a decline in independent everyday mobility behaviours during the first pandemic lockdown for all people with BVI and most demographic groups, it is questionable whether this dependent behaviour could have long-term consequences on everyday life and independent functioning throughout the rest of the pandemic and after the end of the pandemic. These long-term effects have yet to be researched. Identifying the most impacted demographic groups enables planning of further required support by professionals, families, and social communities for maintaining high levels of everyday mobility and with that an opportunity for social inclusion and independent living. These results implicate a possible increase in the demand for rehabilitation programs to refresh and maintain possibly lost O&M skills, which enable independence in mobility. It is the role of professionals to provide support and rehabilitation to help individuals return to their previous independence after the lockdown period but also keep possible adaptations used during the lockdown period (e.g., online shopping, groceries delivery) that enhance their independence but are not inhibiting their social inclusion.

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Conflicts of interests

The authors declare no conflict of interest and no funding sources.

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