

Correlation between Visually Impaired Persons Emotional Distress and Frequency in Independent Everyday Mobility and Attitudes towards Epidemiological Guidelines in Mobility

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Abstract

The purpose of this article was to determine the connection between emotional distress of visually impaired persons in Croatia during the first 2020 lockdown in April due to COVID-19 and certain aspects of mobility. 43 participants completed the questionnaire in May 2020 containing demographic questions and 28 questions on a 5-point Likert scale describing emotional distress, independence in everyday mobility behaviour through frequencies in shopping for groceries and medication, and attitudes toward safety and epidemiological guidelines in mobility of visually impaired. Cronbach's Alpha's coefficient ($\alpha=0.906$) was calculated for the 10 variable emotional distress scale. Spearman's correlation coefficient was used to test statistically significant correlation ($p<0.05$) in frequencies of independent mobility and attitudes to emotional distress. The results showed statistically significant correlation $0.3 < r < 0.58$ (medium to large) for 12 out of 18 tested variables. Higher emotional distress correlated with less independent mobility behaviours (shopping for groceries and visits pharmacy alone or with family members or neighbours, taking walks) and higher use of the sighted guide services provided by the civil organizations in Croatia. Higher emotional distress correlated with higher perception of unsuccessful epidemiological guidelines implementation and safety from COVID-19. The results indicate the increased need for sighted guide support services in pandemic circumstances that should not be dependent on epidemiologic guidelines, and possible further negative implications of prolonged lowered independence of visually impaired persons after the pandemic.

Keywords: blindness; COVID-19 impact; low vision; orientation and mobility; pandemic preventive measures

1. Introduction

In March 2020, the entire world was hit by a pandemic caused by COVID-19, a crisis that this generation has not yet experienced on this scale. To maintain COVID-19 prevalence the World Health Organization (WHO) advised epidemiologic guidelines for prevention that

include wearing protective gear (gloves and face masks), regular hand hygiene, maintaining social distance, minimizing leaving home and avoiding unnecessary contact with objects (WHO, 2020 as cited in Jondani, 2021; Halpern et al., 2021; Ting et al., 2021).

In a situation that was new to everyone, characterised by ignorance and uncertainty, the responses of the various governments were aimed at controlling the spread of the virus in the general population and protecting the health care system. In such a situation, no special epidemiological measures were taken for visually impaired persons (VIP, persons with blindness and low vision), although this population was particularly affected due to the highly visual features of the epidemiological measures introduced and some other circumstances.

Jondani (2021) notes that in the COVID-19 pandemic, VIP face some problems other may not face: (1) possible heightened vulnerability to contracting COVID-19, (2) a greater number of struggles in executing epidemiologic measures to prevent COVID-19 that may lead to other added protective measures, and (3) possible higher number of mental health issues because of COVID-19 and the aftermath of the pandemic. Senjam (2020) describes several other situations that VIP face in relation to COVID-19, such as requiring support and aid more often, lacking knowledge on following epidemiological guidelines for safety and recommendations (using face masks, hand washing), lacking to understand the importance and ways of sanitising assistive technology devices used. VIP often need closer experiences with other people around them or tactile research of objects and work areas. Maintaining social distance of 2-meters is an action predominately directed by vision and therefore challenging for VIP, because due to their visual impairment, judgement of appropriate distance may be difficult especially if they cannot see the warning and marks on the floor indicating distance (Halpern et al., 2021).

Given the mass public disclosure by governments, general awareness about COVID-19 might be satisfactory, but due to inaccessible information, specific knowledge about the disease, procedures, and measure for protection from spreading of the disease does not also have to be high (Boyle et al., 2020; Senjam, 2020). The inaccessibility of websites, apps and graphic information has made obtaining information during the pandemic challenging visually impaired persons (American Foundation for the Blind [AFB], 2020), which poses another challenge for VIP. Participants with VI in a study by Kim and Sutharson (2021) felt marginalised when faced with low information accessibility and limited access to communication technologies, they also experienced the feeling of loneliness either in person or online.

The initial response of many governments and health authorities in most countries focused primarily on minimising further infection and casualties, but frequently overlooking the psychological problems of the pandemic and repercussions related (Khan et al., 2021). In a previously mentioned study by Kim and Sutharson (2021), results showed that VIP felt isolated, marginalised, ignored, pessimistic, superficial relationships, unhappy, angry, and unwell throughout the duration of the COVID-19 pandemic. Their research resulted showed diversity in levels of loneliness among VIP from different socio-demographic groups. A higher feeling of loneliness was more expressed for individuals who did not engage in exercise due to the more attention of their feelings. According to Ting et al. (2021), lockdown had an impact on mental health of VIP aged 18-64 years with moderate or severe visual impairment (VI) significantly, with reports of feelings of fear, anxiety, and stress about the complications VI face while performing everyday activities and caring for family members. The critical issue of

social distancing is that it leaves VIP feeling lonely, interrupts usual activities, restricts movement, reduces employment that adheres financial concerns, and leads to a shortage of COVID-19 unrelated health care services and options for treating other conditions (Kaufman et al., 2020; Ripon et al., 2020; Serafini et al., 2021 as cited in Khan et al., 2021). Khan et al. (2021.) have shown in their research that, among other things, social distancing is negatively associated with psychological stress that than correlates with lowered life quality.

The psychological impact of visual impairment is well documented in different demographic and psychosocial groups of visually impaired people. Salminen and Karhula (2014) concluded that younger VIP are at risk of limited social participation and exclusion. They found that young VIP had specific difficulties in acceptance of their impairment, and those difficulties affected their participation, the development of friendship relationships as well as social contacts and recreational and leisure activities. Nyman et al. (2010) conclude that visually impaired adults of working-age report less of mental health problems, as well as have lower social functioning and life quality. Participants in Stevelink and Fear's (2016) study had troubles that include withdrawing from others, dejection, lowered self-esteem while adjusting to vision loss and the life changes that arise from it. VIP expressed lower self-esteem, dejection, and social withdrawal. The well-known association between visual impairment and lowered psychological well-being is particularly clear in older VIP. Depressive symptoms can be prevalent and as high as 50% in people with visual impairment, compared to 20% of fewer in older persons without VI (Burmedi, Becker, Heyl, Wahl & Himmelsbach, 2002 as cited in Barr et al., 2012). Age-related eye diseases are also associated with VI and poorer health-related quality of life (Li et al., 2011).

The impact of visual impairment on various spheres of life of visually impaired people is obvious. Under conditions of a global pandemic and introduced measures of social distance, in some cases self-isolation, wearing of masks, increased disinfection requirements, closure of schools, colleges, public institutions, working from home, closure of public spaces and public transport, the psycho-emotional demands on visually impaired people multiply and the difficulties in coping with them can be seen in certain aspects of independence, especially around mobility. For visually impaired people, movement is a key factor of independence and a source of self-esteem and self-confidence. The benefits of physical activity are becoming increasingly clear and are known to encompass many sides of physical and mental wellbeing (Holbrook et al., 2009). Fenwick et al. (2018) describe a complex relationship between visual factors and psychological factors that include emotional distress and worry in VIP with diabetic retinopathy that develops in between social activities and activities in daily life that may be limited. There are some psychosocial dimensions that include anxiety symptoms such as increased profuse sweating, lack of breath, muscle tension, problems with comprehending uncomplicated instructions, or problems in orientation (Welsh, 2010) that affect orientation and mobility of VIP. Successful movement and increasing independence require an interplay of psycho-emotional state and some aspects of mobility.

2. Methods

The goal of this paper is to determine the correlation between emotional distress during COVID-19 lockdown in Croatia in April 2020 and certain aspects of everyday independent mobility (frequency of independent and dependant everyday orientation and mobility, and

attitudes about epidemiologic guidelines and safety during everyday mobility of visually impaired persons.

H0: There is no correlation between emotional distress and frequency of independent/dependent everyday mobility and attitudes towards epidemiologic guidelines in mobility of visually impaired persons.

H1: There is a statistically significant correlation between emotional distress and the frequency of independent/dependent everyday mobility and attitudes towards epidemiologic guidelines in mobility of visually impaired persons.

The questionnaire was distributed online in May and June 2020 to all national civil organisations for visually impaired in Croatia. 45 participants completed the questionnaire, although due to missing information 43 were used in further statistical analysis. All ethical guidelines were adhered to. The questionnaire was primarily accessible to visually impaired people with a certain degree of computer training to complete the questionnaire independently. Therefore, a free telephone completion of the questionnaire was offered in the invitation to participate for those who wished to participate but could not use a computer independently or use sighted help to complete or send the response. Of the 45 questionnaires returned, 3 were completed by telephone.

Besides demographic questions, in total 28 questions on a 5-point Likert scale were administered. To test the emotional distress during the COVID lockdown quarantine in April 2020 a 10-variable scale of emotional distress was created (Tab. 1.).

Table 1: Emotional distress variables on the 5-Point Likert scale (Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree)

Variables
I fear getting infected by people who walk past me.
I'm afraid because I can't judge danger.
I don't feel safe while moving independently.
I'm afraid my health will deteriorate in this situation.
I feel uncomfortable about the uncertainty of the situation.
I feel completely dependent on others.
I feel socially isolated.
I fear the COVID infection.
Epidemiological situation causes me stress.
I do not approach the situation positively and optimistically.

Five-point Likert scale was used to determine the results in each variable. The total score on the scale was calculated with higher scores indicating higher emotional distress. To test the internal reliability of the scale Cronbach's alpha was measured. Cronbach's Alpha's coefficient ($\alpha=0.906$) was between 0.8 and 0.9 which indicates a high level of internal consistency of items in the scale (Gliem & Gliem, 2003). The second section consisted of 11 variables that were used to describe the frequency of dependent and independent aspects of everyday life mobility and transportation on a five-point Likert scale (always, often, sometimes, rarely, never), and the third section consisted of 7 variables on a five-point Likert scale (equal to emotional distress range) that were used to describe attitudes towards epidemiological safety in mobility and transportation during the COVID lockdown (Tab. 1). Descriptive statistics were used to analyse

the results, as well as nonparametric statistics to test the correlation between emotional distress and 18 variable describing dependent/independent mobility variables and mobility and attitudes to epidemiologic guidelines.

3. Results

Among the total of 43 visually impaired participants (N= 43), 13 participants self-classified as blind (69.8%), and 30 as having low vision (30.2%). The mean age of participants was 48.74 (SD= 17,63), ranging from 22 to 80 years old, while 56% were male (N=24), and 44% were female (N=19). 59% of participants were single (N=25), while 41% were married (N=18). 21% of them reported living alone (N=9), 46% lived in a household of 2 members (N= 20), and the rest had two or more members in a household. Almost half of the participant was retired (N=19), 12 were employed, 11 unemployed and only one college student completed the questionnaire.

The participants scored a mean of 27.7 on the emotional distress scale ($M=27.7$, $SD=10.31$). The minimum result of 12 and maximum of 47 was displayed on the 10-50 possible score range. The normality of the total score on the emotional distress scale was tested. Shapiro-Wilk test indicated the results were normally distributed ($W= 0.948$, $df=43$, $p= 0.52$). The Shapiro-Wilk test for normality distribution of 18 correlated variables was used. None of the 18 variables showed normal distribution with p values lower than 0.005. Therefore, to test for statistically significant correlation nonparametric Spearman's correlation coefficient was used.

Table 2: Spearman's correlation coefficient and p-values between emotional distress and frequency dependent /independent mobility variables and attitudes toward epidemiologic guidelines, statistically significant results in bold letters

Frequency dependent /independent mobility variables (N=43)	Spearman's correlation coefficient	p
I obtained groceries independently.	-0.439	0.003
I got groceries by going into the store with a family member.	-0.309	0.044
Groceries were obtained for me by family members.	0.104	0.507
Groceries were obtained for me by neighbours.	0.146	0.349
I got groceries by going into the store with an acquaintance or neighbour.	0.132	0.400
I got groceries by going into the store with the sighted guide.	0.403	0.007
I used taxi services for transportation.	-0.190	0.221
I went to the pharmacy independently.	-0.449	0.003
I went to the pharmacy with the sighted guide.	0.332	0.030
Members of the family went to the pharmacy for me.	0.079	0.613
I went out for walks independently.	-0.334	0.028
Attitudes towards epidemiological guidelines in mobility (N=43)		
During the coronavirus pandemic in everyday mobility outside of my house/apartment I can successfully maintain social distance.	-0.350	0.21
I cannot judge the appropriate social distance in outdoors.	0.585	0.000
I avoid independent mobility in public outdoors areas.	0.327	0.032
I think that any type of independent ability for visually impaired persons in outdoors isn't possible following the epidemiological guidelines.	0.430	0.004
I wouldn't use public transportation due to inability to keep appropriate social contact and distance.	0.386	0.011
I'll let sighted family members maintain all my everyday social commitments (bank/post office) for my safety.	0.297	0.053
I tend to out to the smallest extent possible.	0.436	0.004

According to Cohen (2013) correlation coefficient (r) between 0.3 and 0.49 indicates medium correlation effect size, and r higher than 0.5 a large correlation effect size. 12 out of 18 variables tested showed (Tab. 2.) statistically significant Spearman's correlation coefficient ($p < 0.05$).

Out of the 18 variables on which correlation with emotional distress was tested 6 of the 11 variables regarding independent/dependent mobility showed medium correlation, and 6 variables of the seven variables regarding safety epidemiological safety guidelines appearance showed medium to large correlation. Therefore, we can partially accept H1.

A positive medium correlation was found between emotional distress and frequency variables *I got groceries by going into the store with the sighted guide* ($r=0.403$) and *I went to the pharmacy with the sighted guide* ($r=0.332$). A negative medium correlation was found between emotional distress and frequency variables *I obtained groceries independently* ($r=-0.439$), *I got groceries by going into the store with a family member* ($r=-0.309$), *I went to the pharmacy independently* ($r=-0.449$), *I went out for walks independently* ($r=-0.334$).

High positive correlation was found between emotional distress and epidemiological guidelines attitudes variable *I cannot judge the appropriate social distance in outdoors* ($r=0.585$). Medium positive correlation was found between emotional distress and epidemiological guidelines attitudes variables *I avoid independent mobility in public outdoors areas* ($r=0.327$), *I think that any type of independent ability for visually impaired persons in outdoors isn't possible following the epidemiological guidelines* ($r=0.430$), *I wouldn't use public*

*transportation due to inability to keep appropriate social contact and distance ($r=0.386$), I tend to out to the smallest extent possible ($r= 0.436$). Negative medium correlation was found between emotional distress and epidemiological guidelines variable *During the coronavirus pandemic in everyday mobility outside of my house/apartment I can successfully maintain social distance* ($r=-0.350$).*

4. Discussion

The results show higher emotional distress correlates with less frequent independent mobility behaviours and more frequent dependent mobility behaviours. The higher the emotional distress that participants felt, the less likely they would shop for groceries independently or obtain them by going to the store with a family member, go to pharmacies independently and go for walks independently. They were more likely to handle groceries shopping and pharmacy visits using the sighted guide provided by the civil organizations, which is in support of the findings by Gombas and Csakvari (2021) on shopping and general support needs during lockdown.

The higher the emotional distress, the feeling of successful epidemiological guidelines implementation is lowered, and perception of inability to follow safety epidemiological guidelines is increased. The higher the emotional distress the lower the perception off successful social distance maintaining in everyday life mobility outside of one's residence. Visually impaired with higher emotional distress are less likely to successfully judge appropriate social distance between people in outdoors, to independently move in public outdoor areas, to leave the house, to use public transportation due to inability of maintaining appropriate social contact and distance in public transportation vehicles as well as implement appropriate epidemiological safety guidelines in any type of independent mobility or visually impaired persons in public outdoor areas.

All of that implies that visually impaired persons were more likely to use an independent sighted guide then to use members of the family or their neighbours for assistance that wasn't paid to do job of a sighted person, which indicates that they do not want to be a burden during the pandemic for their families. We also cannot state that using a sighted guide is a form of dependent behaviour because people do achieve their goals with sighted assistance instead of having them use others to do things for them. The results also proved that sighted guides are valuable assets and a form of acceptable assistance, which are more likely to be used during lockdown and quarantine and should be used as such. Their services should be provided throughout the entire year regardless of the epidemiological situation. Especially since this form of support is especially used in pandemic circumstance when according to Jondani (2021) navigation thought known spaces can be difficult due to COVID-19 altered routes, entrances and other orientation cues previously used, and that causes stress. The use of sighted guides may be a way of avoiding conflict and possible violations of epidemiological guidelines due to the inability to see distance markings on the floor, or hand sanitizers. On the other hand, Martinez et al. (2020) point out that the non-proper distance (as in this case between the sighted guide and the VIP) may cause problems and conflict with others in social surrounding and could cause more stress for VIP then relieve. Epidemiological guidelines could also affect the willingness of sighted people to assist as sighted guides which requires contact, which can cause

them anxiety and nervousness (Oviedo-Cáceres et al., 2021). Sighted guides are not in a violation of epidemiological guidelines, and the public should be more aware of it.

It is inconclusive that whether VIP living with others chose themselves to give up their independence, given that the 80 % of the sample in this research consisted of participants who did not leave alone, or their families insisted in order to protect them, as was the case in Ghana when members of the family tried to protect older persons with disabilities by keeping the indoors for a few weeks due to lack of faith in health care (Tsiboe, 2020).

Barriers to mobility and public transportation for VIP can have severe consequences on their independence (Oviedo-Cáceres et al., 2021), and the distress caused by epidemiologic guidelines is a barrier to mobility as shown in this study. Which is in conclusion with Cochran (2020) findings that measures during the pandemic may create further barriers in accessing daily life activities like food and medicines when persons with disabilities cannot use or access transportation safely. Epidemiologic measures impact VIP physically (in the way they obtain groceries or medical necessities), due to the signs they cannot see and almost complete inability to maintain distance from others, and psychosocial when the pressure to implement guidelines causes stress, worriedness, and loss of confidence (The Royal National Institute of Blind People, 2020). If the guidelines and measure limit access of necessary caregivers or support that are vital to older VIP it may even cause hunger, feelings of loneliness, as well as considerations of suicide (Tsiboe, 2020).

Although the sample of this study tried to include participants with and without computer skill, due to the number of telephone-completed questionnaires we are unable to conclude whether that succeeded. The sample was probability also completed by those who were emotionally more invested in the subject or affected by the COVID-19 lockdown. The result should be observed taking that into account, as well as the small sample size.

Since most of our statistically significant results showed medium correlations between the variables tested, other factors that impact the frequency of the dependent and independent mobility behaviour of everyday life and attitudes towards successful and possible implementation of epidemiological guidelines should be considered in future research, including differences demographic factors and visual factors (e.g. age and additional impairments or chronic diseases).

5. Conclusion

Distancing form others is based on primarily visual cues, while hearing distancing is also important but is dependent on the noise other make while talking and moving or the sound on

their shoes on pavement. Considering other hearing cues, the VIP must perceive, recognize, and sort while moving especially in multiple sound sources and potential traffic noise, while avoiding touching railings, and audible traffic light on crossing with tactile maps in order to activate the sound and while using the sound cues coming from the white cane the true potential problem is discovered. Not to mention that many VIP don't use white canes and prefer to use sighted guides where contact is unavoidable, and the distance between the sighted guide and the VIP is not 2 meters. Therefore, governments should be encouraged to propose strategies for accessible epidemiological guidelines (like tactile distance making with contrasting colours, on a non-glare surfaces), as well as raise public awareness of VIP needed assistance in following guidelines, as well as educate that the use of sighted guide is a violation of those recommendations.

The results of this study may indicate further problems in reintegration of visually impaired persons in everyday life and independent everyday mobility after the pandemic is over. Learned helplessness is a potential concern after the lockdown is over. If not used for a longer period some orientation and mobility skills may be forgotten, preventing independent mobility, and further jeopardizing social inclusion of VIP.

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