

# Opportunities of digital health in the medical care of people experiencing homelessness

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## Summary

Although there is a broad consensus that the health issues of people experiencing homelessness are significant both from an individual and a public health perspective, medical research projects aiming to improve the management of chronic conditions for this group are rare. The use of digital health tools was a huge success during the COVID-19 pandemic in the general population in several countries. Yet, it can also widen the gap to access valuable medical services for people lacking devices and skills to use them. This is also known as the digital divide or the digital health paradox. Very limited knowledge and experience are available on how to utilise the benefits of telemedicine among vulnerable populations. The DocRoom Health Research Program of the Hungarian Charity Service of the Order of Malta made it possible to obtain and share first-hand results of a successful digital health initiative in homeless shelters in Budapest, Hungary. In times of permacrisis<sup>1,2</sup>, we believe that all additional services are important that can raise the quality of health care for disadvantaged groups of society.

## Background

Telemedical health services are not novel concepts, they were offered in several countries well before the novel coronavirus disease 2019 (COVID-19) pandemic. However, they became widely accepted and used only after access to in-person care was severely restricted. At the outbreak of the pandemic, early recommendations and publications regarding the rapid launch of telemedicine services emphasized the role of online consultations and remote patient monitoring as a substitution for traditional in-person care. The need for an alternative care pathway was also recognised in Hungary but the country was unprepared for this change when the pandemic hit: even the legal framework of telemedicine was not established prior to 2020 and it only got enacted during the first wave of the pandemic.

As digital health technologies emerged, access to and routine use of these online platforms and devices have a strong effect on basic healthcare utilisation and are now considered social determinants of health. However, the ways of harnessing digital health are not obvious in the case of vulnerable populations. There is evidence<sup>3,4,5</sup> that populations with low socioeconomic

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<sup>1</sup> <https://www.ehfg.org/conference/programme/sessions/europe-in-permacrisis-pandemic-climate-war>

<sup>2</sup> <https://www.who.int/europe/news/item/27-09-2022-statement-the-european-region-is-in-a-permacrisis-that-stretches-well-beyond-the-pandemic-climate-change-and-war>

<sup>3</sup> Who Is (and Is Not) Receiving Telemedicine Care During the COVID-19 Pandemic (doi:10.1016/j.amepre.2021.01.030)

<sup>4</sup> Patient Characteristics Associated With Telemedicine Access for Primary and Specialty Ambulatory Care During the COVID-19 Pandemic (doi:10.1001/jamanetworkopen.2020.31640)

<sup>5</sup> Social determinants of telemedicine utilization in ambulatory cardiovascular patients during the COVID-19 pandemic (doi:10.1093/ehjdh/ztab039)

status use telemedicine less, most likely due to lower access to the Internet and digital technology, and a lack of digital literacy skills. Supported by studies, the reduction of burdens to technology might increase access.

In Hungary, people experiencing homelessness face severe health challenges. In the last two decades, the proportion of older generations among the homeless population has substantially increased<sup>6</sup>. Self-reported health status of people experiencing homelessness in Hungary is significantly worse than the lowest income quintile of the general population. Lower access to primary care visits and a lack of regular medication in cases of existing chronic diseases underscore the shortcomings of care continuity<sup>7</sup>.

The COVID-19 pandemic put the social sector under further serious pressure worldwide. Residents of community shelters experienced heavy limitations during isolation, curfew, and quarantine restrictions, while shelters also represented a high risk of SARS-CoV-2 transmission. A dissociation between social and health services potentially increased health care inaccessibility. Although there are ongoing efforts to offer telehealth services for people experiencing homelessness, mainly in the USA, scientific evaluation of these initiatives is extremely rare. In the framework of the DocRoom Health Research Program of the Hungarian Charity Service of the Order of Malta, we conducted a series of projects covering digital health opportunities among people experiencing homelessness. The main results are summarised below through excerpts from our publications.

### **Attitude survey**

As a starting point in 2020, we wanted to examine the attitudes and openness of people facing homelessness regarding telecare in a Hungarian sample. 98 people were recruited into our cross-sectional attitude survey from four homeless shelters providing mid- or long-term accommodation in Budapest, Hungary. Based on our previous experience in the health management of people experiencing homelessness, we assumed that telecare services are most efficiently linked to such institutions where adequate technological and human resource infrastructure is ensured.

Attitudes towards telecare can widely vary from one country to another due to the differences in the healthcare systems and the stages of technological development. At the same time, no Hungarian data on the general population was available regarding the openness towards telecare. Therefore, a national reference group was set up to provide more context to the results of the index group. Two primary care units with average size and demographics were selected as reference groups. These practices were located in Budapest, Hungary, and used the same inclusion criteria as for the homeless cohort: participants had to have at least one chronic condition managed in the corresponding praxis. Being homeless was the only exclusion criterion. All participants were of Hungarian nationality and the questionnaires were administered to 110 respondents.

Healthcare and telecare-related opinions and attitudes were measured by using a questionnaire developed by the research team. The questionnaire also asked about

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<sup>6</sup> National strategies to fight homelessness and housing exclusion – Hungary (<https://ec.europa.eu/social/BlobServlet?docId=21620&langId=en>)

<sup>7</sup> Health status and health behaviour of the Hungarian homeless people (doi:10.1186/s13690-021-00534-2)

sociodemographic data (age, gender, level of education, self-defined homelessness, length of being homeless) and frequency of using health services.

The results about telecare attitudes indicated that a significant portion of the homeless cohort did not oppose the use of telecare via live online video consultation and there was no difference compared to the national reference group. We also found that younger participants were more open to telemedicine. Results of the homeless group indicate that those who are more satisfied with health care services, in general, manifest more openness to telecare.

It might be assumed that in telecare, considerable trust is required between the service provider and the recipient. Trust is a pillar of the doctor-patient relationship, it affects the possibilities of access to care, is essential to adherence, compliance, and patient satisfaction, and improves clinical outcomes. People who feel they receive adequate care have a bigger chance of having trust in telecare, too. In the case of people facing homelessness, 'digital trust' is not primarily related to information privacy and security concerns or having faith in technology. Here, trust is more related to having access to quality care and conditions necessary for the continuity of care. Homeless persons reporting a more restricted access to healthcare services were more likely to favour in-person doctor-patient consultations.

### **Access to digital devices and health-related Internet use**

Little is known about the relationship between technology and health among people experiencing homelessness in Central and Eastern Europe. As a next step, we aimed to assess the existing technological resources available for the homeless population and their health-related Internet use characteristics. The aim was to set the ground for potential interventions, enabling better access to health services by strengthening the digital components of the existing health care system.

In 2021, our research group surveyed 662 people in Budapest, Hungary, with the cooperation of 28 social institutions that provide various social services for homeless individuals. Altogether, six types of institutions participated in the study. The research team formulated a questionnaire based on the Digital Inclusion Survey used in a report by Pathway, the United Kingdom's leading homeless healthcare organisation.

As a result of the study, we found that a significant proportion of respondents had a mobile phone (69.6%), and a lower but still significant number of respondents possessed a smartphone (39.9%). However, the ownership of devices and access to the Internet lag behind that of Western countries<sup>8,9</sup>. Our results showed that people experiencing homelessness turn to their GPs and social workers the most frequently for help with medical issues, but their third most frequent choice is the Internet (20.5%), even before asking family members or friends. In total, 34.6% of the respondents said they had used the Internet for medical purposes, and 11.2% of the respondents had already used a medical mobile app.

Although age seemed not to play a key factor in homeless individuals accessing technology, it might be a crucial factor when it comes to their own perception of competence in using web-based services and health-related Internet use. Younger respondents (age group 18-44 years) considered themselves rather competent, whereas older respondents (age groups 45-59 years

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<sup>8</sup> No Digital Divide? Technology Use among Homeless Adults. (doi:10.1080/10530789.2017.1305140)

<sup>9</sup> Smartphone Technology to Empower People Experiencing Homelessness: Secondary Analysis (doi:10.2196/27787)

and >60 years) did not consider themselves somewhat competent or at all when it came to using the Internet. Moreover, the statistical analysis showed that the younger a homeless respondent was, the more likely they were to use the internet for health-related reasons.

The homeless population was a diverse group in terms of health-related Internet use and access to digital tools, with a significant number of digitally engaged participants. When analysing the data, the research team found two broadly interpretable digitally engaged homeless subpopulations: a subpopulation without health-related mobile app use (19.5%) and another with such use (5.9%). Both digitally engaged groups included more women and younger respondents. The overall results were also congruent with previous literature<sup>10</sup> stating that low-income populations rely on smartphones rather than computers for internet access; the latter was less frequent than owning a smartphone in our sample as well.

As the main barriers to accessing technology, respondents mentioned the affordability of digital tools or data contracts, the low number of free Wi-Fi hotspots, and PCs available at social institutions. To foster internet use, a significant number of respondents suggested overcoming these barriers rather than urging the need for educational assistance. In the context of homeless populations in Hungary, increasing public access to high-speed Internet and providing discounted smartphones for high-need, low-income individuals may also increase access to the internet.

### **Online medical visits in shelters**

As a step further, we conducted a telemedicine pilot study in homeless shelters, for which 75 participants experiencing homelessness were recruited from four social institutions in Budapest, Hungary. According to the European Typology of Homelessness and Housing Exclusion (ETHOS) classification, all 4 shelters were categorized as 3.2 (temporary accommodation), however, there is a Hungarian tendency that clients use these kinds of shelters for a longer time (up to 2 years). Although general healthcare services were available for shelter residents prior to the pilot study, their usage was ineffective or underutilised as reported by social workers.

The telecare pilot service consisted of six online consultations with a physician and was available directly in the shelters biweekly. Self-developed questionnaires were used after every online session on the patient (originating) and physician (remote) sites as well. During the pilot, 92.2% of originally planned visits were delivered and 73.3% of clients attended the full program. Both the patients' and physicians' overall satisfaction was very high (4.52 and 4.79, respectively, on a 5-point Likert scale). According to the post-visit questionnaires of the physicians, almost a quarter of visits led to a therapeutic modification in such a short time frame. This underpins that new care pathways might reach patients who were previously excluded from continuous medical supervision.

Our statistical models proved that the accurate assessment of the patient's health status and confidence in the diagnosis had the most important positive effects on the overall satisfaction of physicians, while other variables (therapeutic change, communication difficulties, length of the visit) also affected that. In the patient model, the influence of a couple of variables (ease

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<sup>10</sup> Mobile Phone, Computer, and Internet Use Among Older Homeless Adults: Results from the HOPE HOME Cohort Study (doi:10.2196/10049)

of use, confidence in the doctor's assessment, lack of communication gaps, and preference for an in-person visit) was also detected.

## Conclusions

Our study series on digital health among people experiencing homelessness led to a promising telecare setup in community shelters. The results emphasized that a significant part of previously digitally excluded homeless persons found the telecare visits useful and valuable. At the same time, the physicians reported high medical relevance in chronic care. These experiences might support the need for a hybrid primary care model for vulnerable populations, where a seamless combination of telehealth and in-person care puts the needs of the client at the centre. We envisage a holistic service portfolio that consists of synergistic, transparent, and flexible care pathways rather than parallel or competing offerings. This provides the opportunity for our clients to receive a personalised and convenient way of long-term care.

## Additional information

1. The DocRoom programme won the European Social Services Awards of the European Social Network in the Research project category in 2022. For more information about the program, please, visit our website at <https://docroom.hu/en/home/>.
2. Attitude paper (open access): **Exploratory attitude survey of homeless persons regarding telecare services in shelters providing mid- and long-term accommodation: The importance of trust.** Gyórfy Z, Békási S, Döbrössy B, Bognár VK, Radó N, et al. (2022) Exploratory attitude survey of homeless persons regarding telecare services in shelters providing mid- and long-term accommodation: The importance of trust. PLOS ONE 17(1): e0261145. <https://doi.org/10.1371/journal.pone.0261145>
3. Access to digital devices and health-related Internet use paper (open access): **Digital Technology Access and Health-Related Internet Use Among People Experiencing Homelessness in Hungary: Quantitative Survey.** Radó N, Girasek E, Békási S, Gyórfy Z. J Med Internet Res 2022;24(10):e38729 <https://doi.org/10.2196/38729>
4. Telemedicine pilot paper (accepted for publication in International Journal for Equity in Health): **Telemedicine in community shelters: possibilities to improve chronic care among people experiencing homelessness in Hungary.** Békási S, Girasek E, Gyórfy Z. (In press)