

Digital Proficiency and Teleaudiology: Key Implications in Hearing Care

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From left: Ms. Ratanjee-Vanmali is a PhD candidate at the University of Pretoria (UP) and a clinical research audiologist at the Hearing Research Clinic, a nonprofit based in South Africa. Dr. Swanepoel is a professor of audiology at UP in South Africa and the editor-in-chief of the International Journal of Audiology. Dr. Laplante-Lévesque is an associate professor in the department of behavioral sciences and learning at Linköping University in Sweden.

This is the last part of a four-part article series.

The current online behavior of people with hearing loss—characterized by increased access to and use of mobile technologies, internet, and social media¹—creates an opportunity for audiologists to offer personalized, synchronous, and asynchronous eHealth services and solutions. In this article series, we've outlined the steps to create and implement a combined online and in-person hearing care model throughout the patient journey (review parts one to three: <https://bit.ly/3gJsKcT>, <https://bit.ly/3issfot>, <https://bit.ly/2CiIMfA>).²⁻⁴ But to ensure a person-centered approach via this hybrid model, audiologists must consider their patients' digital proficiency, which is the ability to perform a particular task or skill and can be assessed through self-report or behavioral observation. Measuring digital proficiency becomes particularly important in the rapidly evolving world of digital and remote health care, which has been accelerated by the COVID-19 pandemic.

DIGITAL PROFICIENCY IN HEARING HEALTH CARE

To date, many studies have been conducted on internet and computer use in the context of hearing care.⁵⁻¹⁰ Study findings have indicated that getting online information about hearing loss, screening, and interventions has been beneficial for people who do not typically present themselves to an audiologist to be more engaged in their hearing health care.⁹ These findings also suggest that the improved general digital competence of older adults is making online hearing interventions increasingly viable and even desirable options.⁶

Physical distancing and safety restrictions due to the COVID-19 pandemic, has made the use of mobile and digital tools to deliver or triage patients requiring in-person care more important than ever.¹² Therefore measuring digital proficiency and the ability to use mobile devices is one way for audiologists to assess patient access, support, and ability to use and receive services online. Beyond COVID-19, we can only expect that individuals will continue to seek and receive health care online, owing not only to the pandemic but also to changes in patient preferences to seek health care in virtual ways.¹³ Measuring patient's digital proficiency prior to remote service provision allows audiologists to form a holistic profile of a patient's abilities and to assess the availability of additional support—from the patient's family, friends, or health care facility personnel—to help the patient embrace digital solutions. Audiologists can then offer in-clinic or online support provided by themselves or by trained support staff and create personalized treatment plans.

Some studies have expressed concerns about patients’ access and skills to use the required technology in teleaudiology.^{14,15} New research points to the critical role of audiologists in promoting technological literacy to assist patients in a new hearing need, which is to communicate in virtual platforms.¹⁶ Convery and colleagues have shed light on the fact that while audiologists may not have acquired the necessary tools or infrastructure to offer eHealth services, patients, on the other hand, have access to internet-connected tools and technologies¹⁷ and are willing to use online hearing care.¹⁷⁻¹⁹

INVESTIGATING MOBILE PROFICIENCY

Determining a patient’s digital proficiency beforehand allows the audiologist to better understand the patient's needs and tailor the intervention plan even before the first appointment. At our clinic, we used two shortened questionnaires, the Mobile Device Proficiency Questionnaire (MDPQ-16)²⁰ and the Computer Proficiency Questionnaire (CPQ-12),²¹ to assess patient’s self-reported digital proficiency in our studies.⁴ These questionnaires have been carefully developed and validated to tap into the important concepts of proficiency and allowed for comparisons to other samples.^{20,21} Table 1 shows a comparison of these two measures.

Table 1. Digital Proficiency Questionnaires Used in Studies.

MOBILE DEVICE PROFICIENCY QUESTIONNAIRE (MDPQ-16)²⁰	COMPUTER PROFICIENCY QUESTIONNAIRE (CPQ-12)²¹
8 domains – 16 questions	6 domains – 12 questions
1.Mobile device basics 2.Communication 3. Data and File storage* 4. Internet 5. Calendar 6. Entertainment 7.Privacy* 8. Troubleshooting and Software Management*	1.Computer basics 2.Printer 3.Communication 4.Internet 5.Calendar 6.Entertainment

Scoring: 1 to 5; 1=never tried; 2=not at all; 3=not very easily; 4=somewhat easily; 5=very easily.

A high score indicated better digital proficiency

*complex questions

To our knowledge, no study to date has looked into mobile proficiency among online hearing health care seekers, which is increasingly becoming the mode of choice to access online information, with smartphone ownership increasing in the age group that needs audiology care the most.¹¹ In the implementation of this project, we found that 83 percent of online hearing health seekers accessed our clinic’s website (www.hearingresearchclinic.org) from a mobile device instead of a computer (read parts

one and two: <https://bit.ly/3gJsKcT>, <https://bit.ly/3issfot>).² As such, in another study, we investigated mobile proficiency and its effects on the uptake of eHealth hearing care.⁴ We used an exact regression model considering mobile device proficiency (MDPQ-16), speech reception thresholds, gender, age and readiness (stage of change) to determine the factors that influenced the uptake of services through the hybrid model.⁴

This study was the first to report on self-perceived mobile device proficiency in people with hearing loss.⁴ Our analysis indicated, that digital proficiency was not a predictor for patients to uptake services that used both online and in-person modalities. Age was the only predictor for continuing with hearing health care through this hybrid clinic. The older the patient, the more likely he or she was likely to continue with hearing health care and take up the intervention offered.⁴ The older patients were also aware of their hearing loss for a longer period as compared with those who did not avail of audiology services and were aware of their hearing loss for a shorter period.⁴

Our study also found higher mobile proficiency among adults with hearing loss as compared with other studies of adults without hearing impairment.^{20,22} Computer literacy among adults in our study was slightly lower than a previous report.²¹ Mobile device use and proficiency in older adults have accelerated with 95 percent of online access in our study occurring on mobile devices (Table 2).

Table 2. Google Analytics Data on Website Traffic for 24 Months.

Website Visitor Locations	Global	Greater Durban area, South Africa
Total number	24,419	19,027
Mobile Operating system	20,035 (82%) <ul style="list-style-type: none"> • Android: 18,513 (76%) • iOS: 3,201 (13%) • Windows: 2,209 (9%) • Other: 496 (2%) 	16,480 (87%) <ul style="list-style-type: none"> • Android: 15,336 (81%) • iOS: 2,539 (13%) • Windows: 913 (5%) • Other: 239 (1%)
Desktop	2 473 (10%)	973 (5%)
Tablet	1,911 (8%)	1,574 (8%)

CLINICAL IMPLICATIONS & CONCLUSION

Using a validated digital proficiency questionnaire like the MDPQ-16 allows audiologists to assess the patient's technology savviness and usage. Assessment of a patient's digital capabilities before the first engagement allows for the personalization of treatment plans and support materials (including asynchronous online solutions) ahead of time.

One example from our study was a 100-year-old patient (now 101) who was found to have poor digital proficiency. Upon further assessment, we learned about his available support

system. With his daughter's assistance, he was able to access hearing care via our hybrid model. Today, he is a successful hearing aid user and communicator.

Planning around mobile device proficiency is becoming increasingly important. Data from our two-year study showed that 87 percent of website visitors from the greater Durban area in South Africa used Android mobile devices (Table 2) and most online hearing screening tests (85%) were completed through a mobile device, emphasizing the importance of having a mobile-responsive web design (<https://bit.ly/3gJsKcT>).⁴ Audiologists can either use the MDPQ-16 questionnaire in its entirety or opt to informally assess digital proficiency based on these two questionnaires. Audiologists can easily integrate digital proficiency screening of patients ahead of appointments to better guide patient interactions, provide person-centered care, and create tailored interventions.

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