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Telephone advice – a form of hearing rehabilitation of people over 60 years of age with hearing loss, in Poland, in the face of the Covid-19 pandemic

The potential for the development of telemedicine in Poland is large, which is influenced by the ageing society and increasing openness to new technologies. The article contains information concerning the use of telephone advice in speech therapy rehabilitation of people over 60 years of age with hearing loss and fitted with hearing aids or cochlear implant, in conditions limited by the COVID-19 pandemic. The authors give the algorithm of therapeutic treatment conducted by means of telephone advice and describe an exemplary course of hearing training with a patient. Telemedical services are a beneficial solution for the elderly. They have now become one of the tools limiting the spread of the COVID-19 pandemic. Patients who have decided to continue their hearing rehabilitation by means of telephone advice assess it as useful and necessary. They declare to continue participating in this form of therapy.

Key words: telemedicine, telephone advice, hearing loss, hearing training, COVID-19

Porada telefoniczna jako forma rehabilitacji słuchowej osób po 60. roku życia z niedosłuchem w czasie pandemii Covid-19 w Polsce

Potencjał rozwoju telemedycyny w Polsce jest duży, na co wpływ ma starzenie się społeczeństwa oraz coraz większa otwartość na nowe technologie. Artykuł zawiera informacje dotyczące wykorzystania porad telefonicznych w rehabilitacji surdologicpedycznej osób powyżej 60 roku życia z niedosłuchem i aparatami słuchowymi, w warunkach ograniczonych pandemią COVID-19. Autorzy podają algorytm postępowania terapeutycznego prowadzonego za pomocą porady telefonicznej oraz opisują przykładowy przebieg treningu słuchowego z pacjentem. Usługi telemedyczne to korzystne rozwiązanie dla osób starszych. Stały się one obecnie jednym z narzędzi ograniczających rozprzestrzenianie się pandemii COVID-19. Pacjenci, którzy zdecydowali się na kontynuację rehabilitacji surdologicpedycznej w formie porady telefonicznej oceniają ją jako przydatną i konieczną. Deklarują dalsze uczestnictwo w tej formie terapii.

Słowa kluczowe: telemedycyna, porady telefoniczne, niedosłuch, trening słuchu, COVID-19

The COVID-19 pandemic

COVID-19 is an acute respiratory disease caused by the coronavirus SARS CoV-2, first diagnosed in December 2019 in the Chinese town of Wuhan. Currently, COVID-19 is present on all continents of the world. On March 11th 2020, the World Health Organisation (WHO) announced the COVID-19 pandemic and defined the disease as a major public health threat (Di Gennaro et. al. 2020; Guo et. al. 2020).

COVID-19 is mild in the majority of infected people, unfortunately in about 14% of patients the course of the disease is severe, requires hospitalization and administration of oxygen, and in 5% of cases – admission to the intensive care unit (The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team, 2020). The most common diagnosis in patients with severe course of COVID-19 is severe pneumonia. In critical cases, the following complications may occur: acute respiratory failure syndrome, sepsis and septic shock, multi-organ failure (including kidney and heart), and most people in this condition require mechanical ventilation (Yang et. al. 2020). Unfortunately, it has been observed that after contracting COVID-19, many patients developed long-term complications of the virus. In addition to preliminary reports of patients feeling fatigue for several months after the initial infection, long-distance COVID-19 presents the wide complications and consequences of symptoms that may arise (Chen et. al. 2021; Farshidfar et. al. 2021; Shanbehzadeh et. al. 2021).

Scientific reports show that the course of infection caused by the SARS-CoV-2 coronavirus is particularly dangerous for the elderly and patients with multiple underlying health conditions. The American Centers for Disease Control and Prevention mention the age over 65 as a risk factor for severe COVID-19 (Centers for Disease Control and Prevention, 2020). This is directly related to the increase in the number of hospitalisations and increased mortality in this age group (Liu et. al. 2020). So far, over 80% of COVID-19 deaths have occurred in people over the age of 60. Over 75% of those who died had comorbidities. Gender also matters: men have a higher risk of dying (Ye et. al. 2020).

The COVID-19 pandemic in Poland

The pandemic has forced governments in many countries to make changes in social life. In Poland, on March 20th 2020, pursuant to the regulation of the Minister of Health, the state of the epidemic caused by the SARS CoV-2 coronavirus was announced (Rozporządzenie Ministra Zdrowia, 2020). Numerous restrictions were imposed, such as closing educational establishments - schools and universi-

ties, limiting travel by suspending international air and rail connections, the introduction of quarantine, the obligatory covering of the nose and mouth with a face mask in public space, the ban on assemblies, movement, and the recommendation to limit leaving home to the minimum necessary, and closing shops with the exception of grocery shops and pharmacies. This state of affairs lasted for about two months, followed by a gradual unfreezing of the economy and a relaxation of restrictions. In the autumn of 2020, unfortunately, there was a large increase in the incidence of the disease, and the Polish government began to reintroduce restrictions on, among other things, education, the activities of clubs, bars, restaurants and the organisation of sports and cultural events. A turning point in the fight against the pandemic was the development of a suitable vaccine. In December 2020, vaccinations against COVID-19 began in Poland (Narodowy Program Szczepień, 2020). From that moment until August 2022, 59.4% of the Polish population was vaccinated (Raport szczepień przeciwko COVID-19, 2022). Until August 2022, 6.1 million COVID-19 infections were recorded in Poland, including 116,000 deaths. As in other countries, the most frequent deaths were people over 60 years of age (Raport zakażeń koronawirusem (SARS-CoV-2), 2022).

Psychological consequences of COVID-19 pandemic

In addition to health problems, the COVID-19 pandemic has also brought changes in many areas of social life. The stress of being in quarantine and long-term isolation occurred. All of this increased the symptoms of stress, which has been shown in many studies conducted around the world (Peng, Roth 2022; Hanaideh et. al. 2022). The epidemic of an infectious disease negatively affects not only the physical and mental health of those who are ill, but also the mental health of the general population without being ill (Fardin 2020; Ornell et. al. 2020; Xiao et. al. 2020). The studies on the occurrence of anxiety and depression during the covid-19 pandemic show that younger people (<35 years old) had them more often than people over 61 years of age (Huang, Zhao 2020; Ozamiz-Etxebarria et. al. 2020), despite a statistically higher risk of death and severe COVID-19 in the seniors group (Shevlin et. al. 2020). This result is unexpected but very interesting. In the case of people over 60 years of age, the cause of emotional difficulties is different. The reason may be imposed restrictions, which in this age group may cause the occurrence or intensification of anxiety and depression symptoms, a feeling of loneliness, and perceived threat (World Health Organization, 2020). A decrease in life activity associated with social isolation may adversely affect their daily functioning (Vernooij-Dassen, Jeon 2016; Dymecka, Gerymski 2019; Brooks et. al. 2020). Studies have shown that maintaining networks of contacts and partic-

ipating in meetings and group activities is a source of maintaining the physical and cognitive fitness of seniors (Evans et. al. 2018). To minimize these negative phenomena and the risk of spreading the virus in this group of people, new methods of medical and psychological treatment and care have been implemented (Armitage, Nellumus 2020). One of the preferred forms of help is telemedicine. Also organizations dedicated to the elderly started operating online (for example university of the third age) (Pikuła 2020).

Telemedicine

According to World Health Organization telemedicine is “the provision of healthcare services at a distance with communication conducted between healthcare providers seeking clinical guidance and support from other healthcare providers (provider-to provider telemedicine); or conducted between remote healthcare users seeking health services and healthcare providers (client-to-provider telemedicine)” (Implementing telemedicine services during COVID-19: guiding principles and considerations for a stepwise approach, 2020). Telemedicine, using modern information and communications technology, combines the needs of patients and technological progress. Telemedicine is successfully used in various fields of medicine (Demartini et. al. 2020; Liu et. al. 2021; Kędzierski et. al. 2022) . Although older people are not supporters of the Internet and telemedicine, due to their multiple diseases, the need to take many medications and regular check-ups, and above all due to the phenomenon of rapid aging of the population will be the most common and demanding beneficiaries of telemedicine services. Modern information and communication tools can become essential support for their treatment.

Telemedical services – telephone advice

In December 2015, an amendment to the Act on the Healthcare Information System came into force in Poland, which allowed for the provision of health services using telemedicine technologies. In order to minimise the risk of transmission of COVID-19, the functioning of medical facilities in Poland has changed. The National Health Fund (NFZ – Narodowy Fundusz Zdrowia)) made it possible to perform and account for medical advice provided within the framework of primary health care services (POZ – podstawowa opieka zdrowotna) and outpatient specialist care (AOS – ambulatoryjna opieka specjalistyczna), including speech therapy (including hearing rehabilitation) rehabilitation with the use of

ICT systems or other communications systems (Narodowy Fundusz Zdrowia, 2020). Owing to such decisions, it is now possible in Poland to safely continue the rehabilitation of hearing and speech in patients over 60 years of age without exposing them to the risk of leaving the place of residence and the related risk of developing the disease. Telemedicine is a relatively new phenomenon in Poland and it has not established itself in the public consciousness yet. The elderly are the group of recipients who are sceptical about telemedicine. This may be due to a lack of understanding of the very concept and location of telemedicine in relation to the forms of action in health care they are familiar with, as well as concerns about the use of new technologies. Polish law does not specify which communications system should be used to provide telemedical services (Naczelna Izba Lekarska NIL, 2020). Some telephone advice, without any reduction in the substantive quality of the service, may be carried out through telephone calls. The results of studies indicate that more and more elderly people are using mobile phones without difficulty (Bujnowska-Fedak et. al. 2007). Between 2017–2018, Rostkowska conducted a study on the use of mobile phones among 100 post-lingually deaf people who received a cochlear implant after 60 years of age. All subjects state that they communicate on the phone – they make calls and send and receive text messages (Rostkowska et. al. 2017). The results confirmed the prevalence of telephone use in this group of people. Significantly fewer older people use computers and the Internet. According to a study conducted by the Office of Electronic Communications in 2019, after the age of 60, only 30% of respondents use computers and the Internet. The main barrier is lack of equipment or inability to use it (digital exclusion) (Urząd Komunikacji Elektronicznej, 2019). Moreover, it should be mentioned that telemedical advice will fulfil its purpose when the patient is able to freely use the equipment necessary to carry it out (Mashima, Doarn 2008).

Telephone advice covering hearing rehabilitation

Telemedicine is a remote form of healthcare provision and constitutes a part of the process of professional, coordinated medical care for patients. Providing telemedical services in the field of speech therapy is an equal health service provided in accordance with current medical knowledge, as is in-person speech therapy advice provided in a consultation room. Its course and summary must be entered in the patient's medical records with additional information that it was performed using ICT systems. The remaining principles of the service, concerning, among others, the use of current logopedic knowledge, professional ethics and due diligence, remain unchanged. Such advice may be provided, among others, in the form of telephone advice, video chat, and, in justified cases, by

e-mail. This is a specific form of contact and requires preparation of detailed guidelines and procedures, which, due to the development of technology and their scope, must be constantly updated and adapted to the needs and capabilities of older patients. The most important information concerning the currently binding rules of providing telemedical services is contained in the document prepared by the Telemedicine Working Group Foundation (The Telemedicine Working Group has been operating since June 2015 and since October 2016 as a Foundation. It is a sector organisation established to support the responsible development of telemedicine in Poland). The experts included in it, i. a., the algorithm of the basic procedure of communication between the provider and the recipient during telephone advice (Table 1) (Naczelna Izba Lekarska NIL, 2020).

Table 1. Model of the basic procedure of communication between the provider and the recipient during telephone advice, developed by the Telemedicine Working Group Foundation

PROCEDURE	
1.	Welcoming the patient and introducing each other. Confirmation of keeping medical confidentiality.
2.	Ensuring that the patient correctly understands the message.
3.	Recommendation of immediate patient response when technical problems occur. These should be communicated immediately.
4.	Verification of the patient's identity and establishment of the patient's whereabouts.
5.	Informing the patient about the nature of the service and its limitations.
6.	Informing the patient that the service is not a substitute for standard therapy and that the patient can go for an in-person consultation at any time.
7.	Instructing the patient that he/she should see a doctor if his/her condition deteriorates.
8.	Providing the service.
9.	Ensuring that the patient has understood the information and recommendations provided to him/her as part of the service.
10.	Ending the telephone advice.

Source: own elaboration.

Modelling on the basic procedure of communication between the provider and the recipient during telephone advice, the authors of the article have developed a model of telephone advice for speech therapy rehabilitation designed for adults with hearing loss and hearing aids, who participate in a stationary hearing rehabilitation programme, including training in telephone use (Table 2) (Skarżyński et. al. 2004). According to this model of telephone advice addressed to an adult with hearing loss (using hearing aids or cochlear implants), speech therapy rehabilitation was carried out at Institute of Physiology and Pathology of Hearing. The basic algorithm

of the rehabilitation procedure has been supplemented by the following: sending a text message with the content of the tasks that the patient will carry out during the telephone advice; a reminder for the next appointment according to the rehabilitation schedule and the need to read the text message sent prior to each subsequent appointment. However, verification of the patient's identity is based only on the name and surname and the recognition of the patient's voice by the therapist. This is sufficient because the speech therapist and the patient know each other personally from the stationary therapy conducted in a specialist centre.

Table 2. Model of telephone advice concerning hearing rehabilitation aimed at an adult with a hearing loss, using hearing aids

PROCEDURE	
1.	Sending a text message (SMS) to the patient informing him/her about the kind of exercise which will be done during the telephone advice and containing the instructions the patient will be asked to carry out.
2.	Welcoming the patient and introducing each other.
3.	Ensuring that the patient correctly understands the message.
4.	Recommendation of immediate patient response when technical problems occur.
5.	Informing the patient about the nature of the service.
6.	Providing the service: telephone advice concerning hearing rehabilitation
7.	Confirmation of the date of the next planned telephone advice. A reminder of the necessity to get acquainted with the content of the SMS that will be sent before the next telephone advice.
8.	Ending the telephone advice.

Source: own elaboration.

In order to illustrate the actual course of telemedical service, the following is a description of the course of an exemplary telephone advice concerning speech therapy rehabilitation conducted with a person over 60 years of age with a hearing loss and provided with hearing aids (Table 3). The patient was offered three listening exercises:

1. An exercise in discrimination of two words. In the linguistic (word) material there are pairs of words with the same number of syllables, differing in one sound (minimal pairs).
2. An exercise in recognising sentences from a semi-open set. Sets of sentences with a thematic clue are included in the linguistic (word) material.
3. A speech recognition exercise in open sets. The linguistic (word) material contains sentences the beginning of which suggests what will be in the second part of the sentence.

Table 3: Example of telephone advice concerning hearing rehabilitation prepared for a person over 60 years of age, using hearing aids

COURSE OF TELEPHONE ADVICE	
I	<p>Text message (SMS) sent to the patient before the telephone advice</p> <p>During the telephone conversation we are going to perform 3 types of exercises. In exercise 1 you need to say whether the two words you hear are the same or different. In exercise 2 you need to repeat sentences about: restaurants, the COVID-19 epidemic, favourite animals. In exercise 3 you need to repeat sentences whose beginning suggests the end.</p>
II	<p>Start of the telephone advice</p> <p><i>After receiving the patient's answer, therapist ask successive questions and wait for the answer after each one.</i></p> <p>Therapist (T): Good morning/afternoon. My name is ... Am I speaking to ...?</p> <p>T: Can you hear me well?</p> <p>T: Have you read my SMS?</p> <p>T: If there is something you cannot understand, please tell me about it.</p> <p>T: If there are any problems on the phone, such as crackling, squeaking or if you cannot hear me, please let me know.</p> <p>T: If the call is interrupted, I will call you again.</p> <p>T: I would like to remind you that the listening exercises that I am about to carry out are a tele-advice concerning hearing rehabilitation.</p>
III	<p>Exercise 1</p> <p>T: I will say two words. Please listen to them and answer whether they sound the same or different. Have you understood the instructions? Attention, I am beginning to speak:</p> <p><i>After receiving the patient's answer, therapist gives successive pairs of words to compare, after each one we wait for the answer.</i></p> <p>*kura – góra, dom – tom, szycie – szycie, sofa – sowa, buty – buty, tata – data, oko – oko, bark – park, faza – waza, kraj – graj, metal – medal, koniec – goniec, nuta – nuda, rok – rok</p> <p><i>*due to phonetic phenomena pairs of words are given in Polish</i></p>
	<p>Exercise 2</p> <p>T: You will hear some sentences. They will concern "restaurants". Please repeat the sentences. Have you understood the instructions? Attention, I am beginning to speak:</p> <p><i>The patient repeats successive sentences.</i></p> <p>Thank you for the invitation to dinner.</p> <p>This Asian-style chicken is delicious.</p> <p>Hello, may I take your order, please.</p> <p>Two medium rare steak and a red wine, please.</p> <p>We must leave the waitress a big tip.</p> <p>This waiter is very handsome.</p> <p>We'll wait about 30 minutes for the order here.</p> <p>This dish is too salty.</p> <p>Look around, this interior is really beautiful.</p> <p>I think we should eat the today's special recommended by the chef.</p> <p>T: You will hear some sentences. All of them concern „the COVID-19 epidemic”. Please repeat the sentences. Have you understood the instructions? Attention, I am beginning to speak:</p> <p><i>The patient repeats successive sentences.</i></p>

	<p>Wash your hands for at least half a minute. Remember, wear a face mask. You can buy disposable gloves at a good price in this pharmacy. I do not go out if I do not have to. I will only wave to you, because we are not shaking hands now. I know what the symptoms of COVID-19 are. If I feel unwell, I will call an ambulance. During this dangerous disease you may lose smell and taste. Now I am taking special care of my immune system, eating healthily and getting a good night's sleep. My cousin is in quarantine.</p> <p>T: You will hear some sentences. All of them concern the topic of favourite animals. Please repeat the sentences. Have you understood the instructions? Attention, I am beginning to speak: <i>The patient repeats successive sentences.</i> The neighbours have a cat and a dog. A cage with a colourful parrot hangs on the terrace. I love my guinea pig. There have always been animals in my house. My cat purrs loudly. Greyhounds are the most beautiful dogs in the world. The kitten has hidden in the fern. I thought that all rabbits have red eyes, but this one has blue eyes. I've always wanted to have an aquarium with fish. I've never seen so many puppies.</p>
	<p>Exercise 3</p> <p>T: You will hear some sentences. The beginning of the sentence suggest what will be in its second part. Please complete and repeat the entire sentence. Have you understood the instructions? Attention, I am beginning to speak: <i>The patient repeats successive sentences.</i> I'm going to read.... <i>a book.</i> I'm going to write the letter with.... <i>a pen.</i> There are chairs by.... <i>the table.</i> I have supper in.... <i>the evening.</i> I'm going to go to a café for a cup of.... <i>coffee.</i> The sched is built with.... <i>wooden planks.</i> A car is driving on.... <i>the street.</i> I got a cake for my.... <i>birthday.</i> I am going to put my head on.... <i>the pillow.</i> I have money in my.... <i>wallet.</i></p>
IV	<p>Ending the telephone advice</p> <p>T: These are all the exercises. The next meeting will be held according to the rehabilitation schedule on... Before the telephone advice, I will send you a text message concerning the proposed exercises. Please read it. Thank you very much. Speak to you soon.</p>

Source: own elaboration.

Patients who have decided to continue their hearing rehabilitation by means of telephone advice assess it as useful and necessary. They declare to continue participating in this form of therapy. Conducting auditory rehabilitation by telephone is not easy. It requires good knowledge of the patient, especially his hearing and language abilities. Preparation of linguistic (word) material adequate to the age, education and interests of the patient. Providing an appropriate amount of material for exercises for the duration of the consultation, taking into account the need to maintain a specific pace of work imposed by this form of contact. It is extremely difficult to maintain the patient's attention at the appropriate level. Recording of advice may be considered, with the patient's consent, of course, in order to better monitor his or her progress and mistakes made.

Summary

The potential for the development of telemedicine in Poland is very large, which is influenced by the aging society and increasing openness to new technologies, especially in the group of elderly people, for whom telemedicine may be the best solution in many life situations. Telemedicine reduces the cost of traveling to a doctor, which is of great importance nowadays. Telemedicine solutions contribute to the improvement of the availability of medical care in many areas (e.g. cardiology, neurology, rehabilitation). Research shows that telemedicine also carries risks (Bujnowska-Fedak, Tomczak 2013). It is important to remember about securing medical data, and most of all about the fact that clinicians prefer face-to-face consultations at the initial visit to establish a doctor-patient relationship. (Lee et al. 2021). Telephone or video consultations are reasonable options for long-term patients where physical examination may not be needed (Lee et al. 2021). Summing up, auditory rehabilitation can be successfully carried out by means of a telephone call when specific procedures for dealing with a patient are followed.

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