

# Digitalisation of Healthcare and the Problem of Digital Exclusion

Ewa M. Kwiatkowska<sup>1</sup>, Małgorzata Skórzewska-Amberg<sup>2</sup>

Submitted: 4.03.2019. Final acceptance: 27.05.2019.

## Abstract

**Purpose:** Digitalisation of healthcare in Poland which covers e-prescriptions, e-referrals, and sharing electronic medical records (EMR) on the P1 platform<sup>3</sup> is supposed to be fully completed and implemented from 1 January 2021. The success of that implementation is strictly connected to the level of digital skills of both healthcare providers and healthcare service users. The purpose of the present paper is to indicate potential problems which may arise from the digitalisation of healthcare in social groups which are not adapted to using information and communication technologies (ICT) in their day-to-day lives, especially in case of the elderly.

**Methodology:** In order to indicate a potentially high level of digital exclusion in society, secondary data collected by Eurostat, Statistics Poland and CBOS<sup>4</sup> were used. Problems in the healthcare sector, including those resulting from the digitalisation implemented in Poland, were presented against the backdrop of the changing law which applies here.

**Findings:** The introduction of digital solutions in the healthcare sector in Poland, including EMR, e-referrals, and e-prescriptions, was postponed numerous times, which can indicate the lack of the proper preparation of providers for a digital revolution. However, a potentially greater problem may lie with healthcare service users, especially considering the fact that such services are used mostly by the elderly. The phenomenon of digital exclusion, generally associated with the lack of skills necessary for using ICT, is frequently observed particularly among senior citizens. It can lead to social isolation which is a risk factor that influences the health of senior citizens and the quality of their lives.

**Originality/value:** Some of the issues resulting from the adopted solutions and the legislation governing healthcare in Poland, including the digitalisation of said healthcare, and proposals for amendments in this regard were provided in this interdisciplinary paper. It seems that those solutions could be used to reduce the threats of the digital exclusion of a significant part of Polish society, particularly in the group of seniors.

**Keywords:** healthcare, Internet, patient, digital exclusion, e-prescriptions

**JEL:** I15, I18, L86

<sup>1</sup> Kozminski University

Corresponding address: Kozminski University, Jagiellońska 57/59 St., 03-301 Warsaw; ewcia@kozminski.edu.pl; ORCID: 0000-0001-7576-1996.

<sup>2</sup> Kozminski University

Corresponding address: Kozminski University, Jagiellońska 57/59 St., 03-301 Warsaw; e-mail: mskorzewska@kozminski.edu.pl; ORCID: 0000-0002-8498-833X.

<sup>3</sup> In Polish: Platforma P1 (Elektroniczna Platforma Gromadzenia, Analizy i Udostępniania Zasobów Cyfrowych o Zdarzeniach Medycznych). Full English name: Electronic Platform for Collection, Analysis and Sharing of Digital Medical Records.

<sup>4</sup> CBOS – Centrum Badania Opinii Społecznej (Public Opinion Research Center).

## Introduction

The computerisation of healthcare is slowly becoming a reality in Poland. Currently, it involves mainly pilot programmes which are realised only in selected voivodships and it only applies to selected functions/services. For instance, in Siedlce and Skierniewice, in May 2018, a pilot programme concerning the implementation of e-prescriptions to be delivered to healthcare service users electronically – by e-mail, SMS, or as a print-out<sup>5</sup> – was introduced. In accordance with the objectives, such a form of prescriptions is to be beneficial mainly for patients because every medication will be registered independently from others and it will be possible to purchase every medication in another pharmacy (e.g. if a given medicine is not available in one pharmacy, it will be possible to purchase in another). What is more, it will not be possible for a patient to lose his or her prescription because the data necessary to purchase the medicine will be available on the patient's Internet Patient Account (IKP)<sup>6</sup> which can be accessed after logging in to the website [www.pacjent.gov.pl](http://www.pacjent.gov.pl). A healthcare provider, in turn, will be able to familiarise himself or herself at any moment with all medicines prescribed for and purchased by the patient. The first e-prescription was issued in Siedlce on 25 May 2018 (CSIOZ, 2018). Thus, the pilot e-prescriptions programme was started which was carried out to 12 September 2018<sup>7</sup>. Over 23 000 e-prescriptions used by 5 250 patients were issued within the programme. 10 205 e-prescriptions were filled, which amounts to 44% of total e-prescriptions issued (Kowalska, 2018).

Under Article 56 paragraph 2 of the Act of 28 April 2011 on Information System in Healthcare<sup>8</sup> e-prescriptions are supposed to be available throughout Poland, starting from 1 January 2020. Unfortunately, it does not seem that the Polish e-prescriptions system is particularly patient-friendly – at least at the initial stage of using it.

It is highly probable that in most cases patients will continue to use printouts of e-prescriptions, if only because of the fact that making it possible to receiving them on mobile devices (e.g. smartphones) requires the activation of an ePUAP trusted profile<sup>9</sup> (i.e. Electronic Platform for Public Administration Services), access to one's

---

<sup>5</sup> Attempts to implement e-prescriptions under the Electronic Platform for Collection, Analysis and Sharing of Digital Medical Records have already been made since 2011 – in Leszno and in Leszno County (Jadczak, 2011).

<sup>6</sup> In Polish: Internetowe Konto Pacjenta.

<sup>7</sup> The programme was initially carried out in Siedlce, Skierniewice and later also in Krynica-Zdrój and Wysokie in Lubelszczyzna (Ktomalek.pl, 2018).

<sup>8</sup> In Polish: Ustawa z dnia 28 kwietnia 2011 o systemie informacji w ochronie zdrowia, t.j. Dz. U. z 2017 r., poz. 1845 ze zm. (consolidated text: Journal of Laws of 2017, item 1845 with amendments).

<sup>9</sup> In Polish: ePUAP – Elektroniczna Platforma Usług Administracji Publicznej.

Internet Patient Account (IKP), and – additionally, when filling e-prescriptions by means of a mobile phone, it requires a PIN number which will be received along with an SMS or an e-mail message ([https://pacjent.gov.pl/pomoc/e-recepta\\_w\\_kilku\\_krokach](https://pacjent.gov.pl/pomoc/e-recepta_w_kilku_krokach)). Currently, a patient has to have a printed e-prescription (so the state of affairs does not deviate from the traditional, paper form of the prescription) or a medium (e.g. a smartphone) on which the e-prescription is stored in order to purchase the prescribed medicaments. In the event of any mistake or error in the e-prescription, it is also necessary to have it cancelled by its issuer, who is a doctor in most cases, and to have a new e-prescription issued, which may involve the necessity of making another medical appointment.

It all results in the fact that the use of e-prescriptions can be too difficult just for most of the elderly who will not manage even to create an ePUAP trusted profile without another individual's assistance. One may wonder why the creators of the Polish e-prescriptions system did not model it, for instance, on Swedish solutions which only require a patient to visit a random pharmacy and identify himself or herself (by means of an identity card, a driving licence). The patient's medicines can also be picked up by another individual if that individual presents proof of both the patient's identity and of his or her own one. An additional facility for Swedish patients is a sticker with the names of both the patient and the doctor, and information on the dosage of the medicine. The sticker is automatically printed in the pharmacy by the person who dispenses the medication and then it is stuck on the package before that medication is dispensed to the patient.

Starting from 1 January 2019, medical records should be kept electronically by health-care institutions and doctors. Sharing data concerning patients and their treatment, including issuing and using e-referrals, is to become common from 1 January 2021. It should be emphasised that data stored and shared by the IKP require special protection as data regarded by Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)<sup>10</sup> as the so-called special category of data (sensitive data), the unauthorised or authorised but uncontrolled disclosure of which may cause harm to the patient – subject of those data. In case of the processing of sensitive data, in accordance with Article 30 paragraph 1 of the Regulation, the data controller or his or her representative is obliged to keep a record of

---

<sup>10</sup> Official Journal L 119 of 4 May 2016, pp. 1–88.

personal data processing activities, which contains in particular: the denomination<sup>11</sup> of the controller, of the joint controllers and of their representatives, as well as the denomination of the personal data protection officer; the purposes of the processing and a description of the categories of personal data and of the subjects of those data; the categories of recipients to whom the personal data have been or will be disclosed.

In accordance with Article 30 paragraph 2 of the Regulation, in turn, each processor or the processor's representative is obliged to keep a record of all categories of processing activities carried out on behalf of a controller, containing in particular the denomination<sup>12</sup> of the processor or processors and the denomination of each controller on behalf of whom they are acting; the categories of processing carried out on behalf of each of the controllers. The obligation of keeping records applies to each processor of medical data. Moreover, in case of processing special categories of data, the controller is obliged to designate a data protection officer (Article 37 of the Regulation) and, prior to the processing, to carry out an assessment of the impact of the envisaged processing operations on the protection of those data. The assessment contains in particular a description of the envisaged processing operations and the purposes of the processing; an assessment of the risks to the rights and freedoms of data subjects, and security types, methods and mechanisms used for the protection of data (Article 35 of the Regulation).

The major goal of the introduced changes is the general digitalisation of medical information and – consequently – enabling its electronic circulation to make it easier and faster. However, acknowledging the validity of such an objective does not prevent one from asking the question, is the society ready for such changes? Despite the fact that the obligation of implementing services included in the functionalities related to the full operability of the P1 platform has been already postponed numerous times, problems may arise both on the side of healthcare providers – unprepared for the changes – and on the side of users, particularly the elderly, who use digital solutions less frequently than the general public and, therefore, may be threatened with digital exclusion. The introduced solutions should then be flexible enough to make them possible to use by both fluent computer and Internet users and by those who either do not have such skills or cannot access a computer or the Internet. At the same time, those solutions should be designed in such a way that the functioning of healthcare service users in the area related to providing them health and life comfort is easier and improved, not only by implementing digital solutions, but also by improving the traditional ones.

---

<sup>11</sup> The name and contact details.

<sup>12</sup> The name and contact details.

The main purpose of this paper is to analyse the extent of digital exclusion in Poland as compared to the EU and to analyse the status of the implementation of some digital solutions in healthcare in Poland, as well as to identify the needs – especially those of the elderly – in the healthcare sector while at the same time indicating the postulated directions of changes. In the study i.a. an analysis of legal acts and of Eurostat, Statistics Poland, and CBOS data was made. Information collected from interviews with general practitioners (GPs) was also analysed. A comparative method and an interdisciplinary approach were used.

## Medicaments for seniors

In 2016 so-called medicaments for seniors were introduced. Those individuals who have reached the age of 75 have the right to free medicines if those medicaments are on the list of medicines which is published in the applicable notice of the Minister of Health on the list of reimbursed medicines, foods for particular nutritional uses and medical devices<sup>13</sup>. The first notice including a list of free medicines for seniors (1129 items) was published by the Minister of Health on 19 August 2016 and became applicable on 1 September 2016<sup>14</sup>. There are 2017 items on the current list of medicines, and they include medicines for the treatment of age-related diseases. All information concerning the project is published on the website dedicated to that project (75plus.mz.gov.pl). Unfortunately, at the same time, access to the medications available to seniors free of charge is procedurally limited in a sense because, in reality, the right to issue a prescription which allows for dispensing a free medicine was basically given only to GPs.

The question about the limited catalogue of entities which are entitled to prescribe free medicaments for patients aged 75+ arises. According to Article 43a paragraph 1 of the Act of 27 August 2004 on Healthcare Services Financed from Public<sup>15</sup>, those recipients

<sup>13</sup> The current list of medicines to which patients over the age of 75 are entitled can be found in Annex to the Notice of the Minister of Health of 27 December 2018 on the list of reimbursed drugs, foods for particular nutritional uses and medical devices, The list of reimbursed medicines, foods for particular nutritional uses and medical devices as of 2019-01-01, section D. Official Journal of the Minister of Health of 2018, Item 123; hereinafter referred to as the Notice of the Minister of Health of 27 December 2018. In Polish: obwieszczenie Ministra Zdrowia z dnia 27 grudnia 2018 r. w sprawie wykazu refundowanych leków, środków spożywczych specjalnego przeznaczenia żywieniowego oraz wyrobów medycznych, Wykaz refundowanych leków, środków spożywczych specjalnego przeznaczenia żywieniowego oraz wyrobów medycznych na dzień 2019-01-01, część D.

<sup>14</sup> In Polish: obwieszczenie Ministra Zdrowia z dnia 19 sierpnia 2016 r. w sprawie wykazu refundowanych leków, środków spożywczych specjalnego przeznaczenia żywieniowego oraz wyrobów medycznych (Dz.Urz. Min. Zdr. z 2016 r., poz. 79); in English: The Notice of the Minister of Health of 19 August 2016 on the list of reimbursed medicines, foods for particular nutritional uses and medical devices; Official Journal of the Minister of Health of 2016, Item 79.

<sup>15</sup> In Polish: ustawa z dnia 27 sierpnia 2004 r. o świadczeniach opieki zdrowotnej finansowanych ze środków publicznych, t.j. Dz.U. z 2018 r., poz. 1510 z późn. zm. (consolidated text: Journal of Laws of 2018 item 1510 with amendments).

who have reached the age of 75 are entitled to free medicines, foods for particular nutritional uses and medical devices specified on the list published by the Minister of Health on the basis of a prescription issued by a GP, a primary care nurse, or a doctor licensed in the practice of medicine, who ceased to exercise his or her profession and issued a prescription for himself or herself or his or her spouse, direct relatives in the ascending line, direct relatives in the descending line, and siblings. The catalogue of those entitled to prescribe free medicines is, consequently, limited to three categories of entities. In practice, in many cases, only a GP becomes the entity that fulfils that statutory obligation. On the one hand, it is because primary care nurses do not wish to take any additional responsibility which is related to prescribing medicines, and on the other hand, not all nurses can prescribe such medicines. Only nurses with higher education or those who completed a special course have such a right. The third group of entities with the right to prescribe such medications is strongly limited by definition – it only includes persons who are family members of a doctor who no longer exercises his or her profession.

In one of the primary healthcare outpatient clinics in Warsaw which executes a contract with the NFZ<sup>16</sup> for primary care, where only GPs prescribe free medicines for patients aged over 75 years, it was only in March 2018 that over 1/3 of all appointments (specifically speaking, 37.52% of appointments) was limited to issuing prescriptions. Obviously, not all of those appointments concerned patients over 75 years of age who were coming back from visits to specialists or with a hospital discharge only to receive a prescription for free medicines to which they were entitled. It should be emphasised, however, that all those patients blocked patients who needed medical attention.

In view of the above, the question concerning the goal of the legislator limiting the catalogue of entities which have the right to prescribe free medicines for seniors arises. The objective probably was to shorten queues to medical specialists. However, in practice, it came to this that an elderly person who has seen a medical specialist can only receive a normally paid prescription for specialist medicaments from that doctor. If the medicaments are on the list of free medicines, that person has to return to the GP, with written information from the medical specialist about the patient's diagnosed disease and prescribed treatment, in order to have those medicaments prescribed (if, obviously, an indication for using those medicines is refunded, that is, the patient suffers from certain illnesses). Otherwise, the patient will have to pay for such medicines because a medical specialist cannot prescribe free medicines for seniors. Thus, if the patient does not wish to come back to the GP, which at times involves waiting in queues in order

---

<sup>16</sup> In Polish: Narodowy Fundusz Zdrowia; in English: National Health Fund.

to receive a number, and then waiting in a queue for the sole medical appointment, he or she has to pay for those medicines under general conditions. The amounts of money paid for such medications are frequently not small. For instance, in case of Alzheimer's disease, according to the indications for symptomatic treatment of mild to intermediate dementia of the Alzheimer type, a one-month treatment with Exelon (transdermal system, patch 13.3 mg/24 h) costs PLN 233.18 (Annex to the Notice of the Minister of Health of 27 December 2018, p. 442 and 1659), if a patient received a prescription, with the patient's share in financing the purchase of the medicines which amounts to 30%, from a medical specialist – the specialist can prescribe only medicaments which are reimbursed on general conditions. However, if a patient comes back to a GP after visiting a medical specialist who prescribed such a medicine, that patient can obtain that medicine free of charge because it is included on the list of free medicines for patients over 75 years of age. It should be emphasised that in case of neurological diseases, patients generally receive more than one medicine, so their savings are considerable. The situation is similar in case of patients who are discharged home from hospital treatment. It is impossible for hospital doctors to prescribe free medicines to those patients. Thus, there may be situations when a patient leaving the hospital with a medical recommendation of remaining at home for his or her recovery should see a GP in order to receive a prescription for free medicines. Otherwise, the patient will have to pay for the medicaments which he or she can lawfully obtain free of charge.

The cases described above indicate the necessity to amend the Act on Healthcare Services Financed from Public Funds, which would involve extending the catalogue of doctors who are entitled to prescribing free medicines for seniors, by including both medical specialists who see outpatients, and hospital doctors. Otherwise, senior individuals' right to receive free medications becomes a certain nuisance, exposing them not only to a waste of time, but also – by forcing them to go to a primary healthcare outpatient clinic – to an unnecessary risk of e.g. contagion. In general, ill patients (and not only healthy ones – for instance, in order to receive a prescription), visit clinics.

## Patient's Integrated Guide

A portal implemented by the NFZ – the Patient's Integrated Guide (ZIP)<sup>17</sup> – has been functioning in Poland for over five years, since 1 July 2013 (NFZ, 2013). It is an all-Poland website which allows patients to access the history of their treatment and its funding,

---

<sup>17</sup> In Polish: Zintegrowany Informator Pacjenta.

the data on which are gathered by the NFZ since 2008. The portal makes it possible for an insured individual to access information online, concerning i.a. the status of his or her insurance, treatment history, services provided, prescribed and realised reimbursed medicines, completed declarations of primary healthcare providers, as well as information on the amounts of money donated by the NFZ in order to fund that insured individual's treatment (<https://zip.nfz.gov.pl>; Statistics Poland, 2017, p. 168; NFZ, 2013).

**Table 1.** The number of registered ZIP users per 10 000 individuals in particular age groups, divided by sex (as of 31 December 2016)

Age group	Number of users (per 10 000)		
	Total	Women	Men
0–4	100	99	101
5–9	161	158	163
10–14	156	156	156
15–19	131	135	127
20–24	172	213	131
25–29	286	357	218
30–34	350	414	287
35–39	394	466	324
40–44	444	531	359
45–49	454	539	370
50–54	438	529	345
55–59	452	546	352
60–64	462	516	399
65–69	411	395	432
70–74	295	245	366
75–79	160	127	215
80 years and over	79	59	124

Source: own elaboration based on: Statistics Poland (2017, p. 171).



According to the data from the end of 2016<sup>18</sup>, in Poland, after three years and a half of the functioning of the ZIP portal, there were 1 207 748 registered users there, which means that per 10 000 individuals only 314 were registered ZIP users. The majority in the group were women. Out of 10 000 women 352 registered in the ZIP, whereas out of every 10 000 men 274 registered in the ZIP. What is more, compared to the previous year (the end of 2015), the number of registered individuals increased only by 6.1%. The data from the end of 2016 for individual age groups show that persons aged 40–69 were the most active ones when it came to registering on the ZIP portal (Table 1).

However, in those age groups in which the percentage of registered users was highest, that number was small and amounted to (variably in particular age categories) only over 400 per 10 000 individuals. The highest number of registered users – as much as 462 out of 10 000 persons – was observed in the 60–64 age group. Older individuals, generally most frequent healthcare users, did not register in the ZIP as frequently – there were only 79 out of 10 000 individuals aged 80+, or 160 out of 10 000 in the 75–79 age group. What is more, despite the fact that it was women who generally registered on the portal more frequently than men did, among seniors, in all age groups covering individuals aged 65+, the percentage of registered men was higher than that of registered women. That predominance was significant among persons aged 70+. However, still only registered users are taken into account, that means nearly 2.5% of women and over 3.6% of men aged 70–74, respectively, nearly 1.3% of women and 2.2% of men aged 75–79, or finally, nearly 0.6% of the oldest women and 1.2% of the oldest men (Statistics Poland, 2017, pp. 168–171).

As a matter of fact, until the end of 2017, accessing the ZIP portal involved the necessity to go to one's regional department of the NFZ in order to receive a login ID and a password. After all, it was possible to register on the website also by means of a secure electronic signature, that is, by signing with a secure device used for creating an electronic signature and a signature verified with a qualified certificate (NFZ, 2015), however, only 1 987 individuals chose such a form of registration by the end of 2016 (Statistics Poland, 2017, p. 169), which constitutes a minor percentage (0.16%) of all registered users. Two years after launching the ZIP, that is, starting from 1 July 2015, an additional possibility of receiving one's login ID and password at one's regional department of the NFZ through a representative, without having to do it only in person was allowed (NFZ, 2015). Currently, from January 2018, in accordance with the Regulation of the Minister of Health of 4 December 2017 on methods, procedures and time limits for submitting requests to the National Health Fund and on providing

---

<sup>18</sup> At the time of submitting the text for publication, any newer data were not available yet.

access for the recipient to the information on the recipient's right to healthcare services and on the services provided by the National Health Fund to the recipient<sup>19</sup>, it is also possible to register an account via the Internet on the website of the Patient's Integrated Guide (<https://zip.nfz.gov.pl>), without any necessity to visit a NFZ department. A patient can verify his or her identity using a qualified certificate of his or her electronic signature or via a trusted profile (e.g. eGo or ePUAP). Creating a trusted profile requires filling in a form in a so-called confirmation point or in an online application which one should personally confirm in one of the confirmation points (e.g. in Warsaw, according to the list at <https://pz.gov.pl/pz/confirmationPointAddressesList>, there are 40 points of this kind<sup>20</sup>, i.a. in selected post offices, selected banks, tax offices or ZUS<sup>21</sup> departments or online on the website of one's bank. Unfortunately, not all banks offer such a service. Customers of only eight banks have the possibility to use the service. Such a service is also offered by *Envelo*, which is an entity of Grupa Poczty Polskiej (Polish Post Group) which provides digital services. Thus, the exclusively online creation of a trusted profile is not a universal service.

The question regarding the sense of the functioning of the service arises. Information collected there concerns treatment history and its funding – healthcare services provided, purchased reimbursed medicines or declarations of primary healthcare (the choice of a doctor). Apart from the fact that part of the information on the website is not always correct (e.g. there were cases when the name of a doctor who has not been working in a given primary care outpatient clinic for several years, so he or she cannot be a given patient's doctor, is/was entered in a declaration regarding a GP – despite the fact that a given primary care outpatient clinic sends a monthly list of doctors working there and of patients treated there), it is not a platform of exchanging patient medical information. The portal rather focuses on information concerning the funding of provided medical services, thanks to which it is possible to detect irregularities, but not to receive i.a. information about a patient's health, the medicines which he or she takes, the results of medical examinations or the results of consultations and received medical recommendations. What is more, the portal which is supposed to collect patient medical information is the Internet Patient Account (IKP) which is supposed to make it possible to receive and fill e-prescriptions, and also to download e-referrals. The results of medical examinations and hospital discharges are to be found there. In the IKP, similarly as in the case of the ZIP, it will be possible to check the history

---

<sup>19</sup> In Polish: Rozporządzenie Ministra Zdrowia z dnia 4 grudnia 2017 roku w sprawie sposobu, trybu i terminów występowania do Narodowego Funduszu Zdrowia oraz udostępniania przez Narodowy Fundusz Zdrowia świadczeniobiorcy informacji o prawie do świadczeń opieki zdrowotnej oraz o udzielonych mu świadczeniach, Dz.U., poz. 2297 (Journal of Laws, item 2297).

<sup>20</sup> As of 30 January 2019.

<sup>21</sup> In Polish: Zakład Ubezpieczeń Społecznych; in English: Social Insurance Institution.

of medical appointments which were paid for by the NFZ, and to check the amount of the reimbursement of medicines or services (<https://www.csioz.gov.pl/pl/e-zdrowie-p1/internetowe-konto-pacjenta/>). So what is the point of the parallel functioning of two portals which additionally duplicate some information, especially when one can log in to the IKP via the ZIP? Finally, will a patient, especially an elderly one, who struggles with computer use, not be discouraged from the digitalisation of medical information because of that?

## The problem of digital exclusion

One of the five specific objectives of the intervention of the *2020 Human Capital Development Strategy*<sup>22</sup> adopted by the Council of Ministers in 2013 is: “Improving the health of citizens and the effectiveness of the healthcare system”<sup>23</sup>. That objective is to be met by, among other things, “increasing knowledge and awareness of patients and medical personnel on the possibilities of using ICT in healthcare”<sup>24</sup> (*Resolution No. 104 of the Council of Ministers of 18 June 2013 on adoption of the 2020 Human Capital Development Strategy*)<sup>25</sup>. It is also the European Commission that emphasises that “Information and Communication Technologies (ICT) applied to health and healthcare systems can increase their efficiency, improve quality of life and unlock innovation in health markets. eHealth is the use of ICT in health products, services and processes combined with organisational change in healthcare systems and new skills” (European Commission, 2012, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, eHealth Action Plan 2012–2020 – Innovative healthcare for the 21st century*, Brussels, COM (2012) 736 final, p. 3). In order for such interactions between healthcare users and healthcare providers to be possible, the former must not be digitally excluded. Otherwise, mutual communication between these parties will be more difficult or even impossible. Simultaneously, lack of possibilities for patients to make use of digital facilities may result in those patients’ isolation and exclusion. The European Commission also indicates barriers to using eHealth. It mentions i.a. lack of awareness of eHealth, and also lack of confidence in eHealth solutions among patients and healthcare professionals (European Commission, 2012, p. 5).

<sup>22</sup> Own translation. In Polish: *Strategia Rozwoju Kapitału Ludzkiego 2020*.

<sup>23</sup> Own translation.

<sup>24</sup> Own translation.

<sup>25</sup> In Polish: *Uchwała Nr 104 Rady Ministrów z dnia 18 czerwca 2013 roku w sprawie przyjęcia Strategii Rozwoju Kapitału Ludzkiego 2020* (Official Journal of the Republic of Poland “Monitor Polski” Item 640).

With the introduction of ICT, a new phenomenon is observed – the presence of social differences between citizens who have access to and use modern technologies and those citizens who are unable to or cannot use such technologies (Luhan and Novotná, 2015, p. 84). What is more, because of declining birth rates and the increase in longevity, a dynamic increase in the number of seniors is observed around the world (Statistics Poland, 2017a, p. 1; Padilla-Góngora et al., 2017, p. 1413). The increase in the number of the elderly is one of the major issues and, at the same time, a challenge for the healthcare system. It causes the costs of healthcare to increase as well (Felixiak, 2016, p. 6). Simultaneously, the development of information society increases the risk of creating another form of social exclusion – of individuals who do not have any access to digital resources (de Araujo and Reinhard, 2015, p. 587). It is chiefly the elderly who belong to that group, as it is more difficult for them to adapt to the changing reality. It is chiefly among them that the phenomenon of so-called e-exclusion (digital exclusion), frequently associated with the lack of skills necessary to use ICT, is observed (2020 *Human Capital Development Strategy*, p. 11).

Studies carried out in Spain on a sample of 322 seniors indicate that most individuals aged 65+ do not have any skills which would allow them to use ICT. The respondents i.a. do not know the basic components of a computer, its functions or even how to power on and off the computer (nearly 75% of the sample). They do not know: how to use Internet browsers, how to find information online (ca. 85%) or how to send and receive e-mails (nearly 86%). Over 71% of the respondents do not know what mobile phones are used for, and they do not know how to use the Internet by means of those devices, whereas nearly 86% of the respondents cannot remotely execute transactions, such as booking tickets online, Internet shopping or online banking (Padilla-Góngora et al., 2017, pp. 1413–1415).

The results of the study conducted by Statistics Poland in 2018 show that those who used the Internet did it in order to i.a. find information about products and services (24% of all seniors and 64% of all individuals aged 16–74), use online banking (13.2% of seniors and 44% of total population). Only 10.9% of seniors and 35.5% of total population declare that they use public administration services via the Internet (Statistics Poland, 2018).

One of the ways of purchasing medicines in a pharmacy by means of an e-prescription is a possibility of showing a code in an SMS and one's PESEL<sup>26</sup> number to the pharmacist. It may be impossible to do especially for seniors because, according to the results

---

<sup>26</sup> In Polish: Powszechny Elektroniczny System Ewidencji Ludności; in English: Universal Electronic System for Registration of the Population.

of the study conducted by CBOS in 2017, most of those individuals who do not use mobile phones at all are among the elderly (27%), that is, those aged 65+. The percentage among all respondents, that is, individuals aged 18+, is much lower (8%). Additionally, users of traditional mobile phones dominate in the group of seniors (59% of seniors). For comparison, that percentage among all the respondents amounts is 34%. What is more, as far as all declared mobile phone users use those devices for calling, that is, making and receiving calls, only 78% of them send and receive short text messages (SMS messages). It should be emphasised that users of traditional mobile phones – and seniors dominate among those users – send and receive SMS messages even less frequently: 60% of the respondents in comparison with 95% of smartphone users (Feliński, 2017, p. 3 and 5–6).

Digital skills, including computer and Internet use and the frequency of using them by individuals, are studied by national statistical authorities in each of member states of the EU and are presented collectively by Eurostat (Table 2).

**Table 2.** Computer and Internet use in 2017 (in %)

		Age group	EU	Poland	Sweden
Using a computer	never	16–74	14	19	2
		55–64	23	39	1
		65–74	40	62	5
	every day	16–74	64	60	80
		55–64	54	35	81
		65–74	37	18	67
Using the Internet	never	16–74	13	20	2
		55–64	22	40	2
		65–74	42	64	11
	every day	16–74	72	61	90
		55–64	57	35	84
		65–74	39	18	69
	at least once a week	16–74	81	73	95
		55–64	69	47	94
		65–74	48	26	81

Source: own elaboration based on: Eurostat (2018).

In the EU, according to the data from 2017, 64% of all respondents (persons aged 16–74) and 37% of individuals aged 65–74 declare that they use a computer daily. In Poland, a percentage of all the respondents that is not much lower than the EU one, concerns those who use a computer every day (60%), however, the share of seniors who are active in this regard is much smaller and amounts to only 18%. For comparison, in Sweden the difference between all the respondents (80% of those who declare daily computer use) and the elderly (67%) is smaller and amounts to only 13 percentage points. The statistical data showing the percentage of individuals declaring that they have never used a computer or the Internet reveal how huge the digital gap between Poland and e.g. Sweden is. The results of the studies indicate that 19% of respondents in Poland have never used a computer, whereas 20% have never used the Internet. In Sweden that share amounts to only 2% for both of those activities, whereas in the whole EU, these percentages are 14% for computer use and 13% for Internet use, respectively. In Poland, when compared to Sweden, the situation is even worse in the 65–74 age group where 62% of individuals have never used a computer and 64% of persons have never used the Internet, in comparison with 5% for computer use and 11% for Internet use in Sweden, and 40% for computer use and 42% for Internet use, respectively, in the whole EU. When it comes to data concerning the frequency of using the Internet, 72% of respondents aged 16–74 and 39% of individuals aged 65–74 in the EU declared daily Internet activity, and 81% and 48% of them, respectively, did it at least once a week (daily use was included). In Poland, a much lower percentage of both total population and seniors declare that they use the Internet – only 61% of all respondents and 18% of seniors used the Internet every day, whereas 73% and 26% of them, respectively, did it at least once a week. For comparison, in Sweden, when the level of Internet use is not the highest of EU member states at all, 95% of surveyed citizens aged 16–74 and 81% of seniors use the Internet at least once a week, whereas 90% and 65% of them, respectively, do it every day (Eurostat, 2018). Both in the collective statistics which present the level of computer or Internet use in all EU countries, and in the statistics concerning Poland only, a much lower level of using ICT by seniors compared to total population, or individuals aged 16–74, can be seen. That difference is not so significant in case of Sweden. The comparison of the levels of Internet use in EU member states and in Poland is particularly negative in the 65–74 age group where the difference between the percentages of those who use the Internet every day is 21 percentage points, whereas in case of percentages of those who use the Internet at least once a week, that difference amounts to 22 percentage points. The statistics for Sweden show the extent of digital exclusion in Poland.

## Conclusions

The day before introducing the mandatory digitalisation of healthcare, including digital generating and exchanging patient medical information, the obligation of which has been postponed numerous times, the question of digital skills and of access to necessary equipment (devices and software) is becoming a key issue – both for healthcare providers and healthcare service users. The former have, or should have, been preparing themselves for implementing that obligation for many years, but the latter may have a problem with that. The phenomenon of so-called digital exclusion is observed especially among the elderly who frequently have low or even no skills in using a computer or the Internet. New technologies may make it easier to provide medical services and care, particularly when it comes to care for the elderly, but it is necessary to educate the elderly so that they are able to acquire digital skills. Such an action can determine the possibility for them to use more and more e-services, such as e-prescriptions, e-referrals, the ZIP or the IKP, and also e-administration or online banking. Exploring the benefits and advantages of the above-mentioned services and functionalities will only be possible when citizens use IT networks. Otherwise, the benefits which could result from the implementation of ICT solutions will not be derived. It should be emphasised that in the 2020 Human Development Strategy digital competences were considered to be one of the eight essential competences which are necessary for every citizen so that he or she could function in society.

To a large extent, the success of implementing digital solutions also depends on the level of users' confidence and trust in electronic systems – service providers, but, first of all, service users. Therefore, it is necessary to implement such solutions in a way that will not exclude individuals who, due to the lack of skills or equipment, are already digitally excluded.

## References

- CSIOZ (2018). *Pierwsza e-recepta wystawiona i zrealizowana w Siedlcach*, <https://www.csioz.gov.pl/aktualnosci/szczegoly/pierwsza-e-recepta-wystawiona-i-zrealizowana-w-siedlcach/> (10.08.2018).
- de Araujo, M.H. and Reinhard, N. (2015). Factors Influencing the Use of Electronic Government services in Brazil. *REGE*, 22(4), 585–596, <http://10.5700/rege579>
- European Commission (2012). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, eHealth Action Plan 2012–2020 – Innovative healthcare for the 21st century*, Brussels, COM (2012) 736 final.
- Eurostat (2018). *Database*, <http://ec.europa.eu/eurostat/web/digital-economy-and-society/data/database> (01.08.2018).

- Feliksiak, M. (2017). *Korzystanie z telefonów komórkowych*, Komunikat z badań nr 99/2017, CBOS, Warsaw.
- Feliksiak, M. (2016). Wprowadzenie. W: M. Feliksiak (ed.), *Zdrowie i leczenie w Polsce, Opinie i diagnozy nr 36*. Warszawa: CBOS.  
<http://75plus.mz.gov.pl/> (15.04.2018).  
<https://www.csioz.gov.pl/pl/e-zdrowie-p1/internetowe-konto-pacjenta/> (25.01.2019).  
[https://pacjent.gov.pl/pomoc/e-recepta\\_w\\_kilku\\_krokach](https://pacjent.gov.pl/pomoc/e-recepta_w_kilku_krokach) (25.01.2019).  
<https://pz.gov.pl/pz/confirmationPointAddressesList> (25.01.2019).  
<https://zip.nfz.gov.pl/> (15.04.2018).
- Jadczak, A. (2011). *W Lesznie uruchomiono prototypowy systemu e-Recepta*,  
<https://www.computerworld.pl/news/W-Lesznie-uruchomiono-prototypowy-systemu-e-Recepta,368588.html> (10.02.2019).
- Kowalska, K. (2018). *23 tysiące elektronicznych recept wystawionych w pilotażu*,  
<https://www.rp.pl/Zdrowie/309129965-23-tysiace-elektronicznych-recept-wystawionych-w-pilotazu.html> (25.11.2018).
- Ktomalek.pl (2018). *e-Recepta: czym jest elektroniczna recepta i kiedy zacznie obowiązywać?*  
<https://ktomalek.pl/blog/e-recepta-czym-jest-elektroniczna-recepta-i-kiedy-zacznie-obowiazywac/w-155> (10.02.2019).
- Luhan, J. and Novotná, V. (2015). ICT Use in EU According to National Models of Behaviour. *Procedia – Social and Behavioral Sciences*, 213, 80–85.
- NFZ (2013). *ZIP po siedmiu dniach*,  
<http://www.nfz.gov.pl/aktualnosci/aktualnosci-centrali/zip-po-siedmiu-dniach,5525.html> (15.04.2018).
- NFZ (2015). *Dwa lata ZIP. NFZ wprowadza nową funkcjonalność – możliwość odbioru danych dostępowych przez pełnomocnika*,  
<http://www.nfz.gov.pl/aktualnosci/aktualnosci-centrali/dwa-lata-zip-nfz-wprowadza-nowa-funkcjonalnosc-mozliwosc-odbioru-danych-dostepowych-przez-pelnomocnika,6702.html> (15.04.2018).
- Padilla-Góngora, D., López-Liriab, R., del Pilar Díaz-Lópeza, M., Aguilar-Parraa, J.M., Vargas-Muñoza, M.E. and Rocamora-Pérezb, P. (2017). Habits of the Elderly regarding Access to the New Information and Communication Technologies. *Procedia – Social and Behavioral Sciences*, 237, 1412–1417.
- Statistics Poland (2017). *Spółeczeństwo informacyjne w Polsce. Wyniki badań statystycznych z lat 2013–2017*,  
<http://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/spoleczenstwo-informacyjne/spoleczenstwo-informacyjne-w-polsce-wyniki-badan-statystycznych-z-lat-2013-2017,1,11.html> (20.12.2017).
- Statistics Poland (2017a). *Sytuacja osób starszych w wybranych obszarach życia społeczno-gospodarczego w krajach Unii Europejskiej*,  
[http://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5664/42/1/1/sytuacja\\_osob\\_starszych\\_w\\_wybranych\\_obszarach\\_zycia\\_spoleczno-gosp\\_w\\_krajach\\_ue.pdf](http://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5664/42/1/1/sytuacja_osob_starszych_w_wybranych_obszarach_zycia_spoleczno-gosp_w_krajach_ue.pdf) (20.12.2017).
- Statistics Poland (2018). *Spółeczeństwo informacyjne w Polsce. Wyniki badań statystycznych z lat 2013–2017*,  
<http://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/spoleczenstwo-informacyjne/wykorzystanie-technologiei-informacyjno-komunikacyjnych-w-przedsiębiorstwach-i-gospodarstwach-domowych-w-2018-roku,3,16.html> (30.01.2019).
- Uchwała Nr 104 Rady Ministrów z dnia 18 czerwca 2013 roku w sprawie przyjęcia Strategii Rozwoju Kapitału Ludzkiego 2020, MP poz. 640, pp. 40–41.