Rogalska, Anna, Sobczyk, Karolina & Holecki, Tomasz. Awareness of the costs of selected medical procedures and the use of healthcare among young adults in Poland. Journal of Education, Health and Sport. 2022;12(12):173-179. eISSN 2391-8306. DOI
http://dx.doi.org/10.12775/JEHS.2022.12.12.027
https://apcz.umk.pl/JEHS/article/view/40826
https://zenodo.org/record/7332648

The journal has had 40 points in Ministry of Education and Science of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of December 21, 2021. No. 32343.
Has a Journal's Unique Identifier: 201159. Scientific disciplines assigned: Physical Culture Sciences (Field of Medical sciences and health sciences); Health Sciences (Field of Medical Sciences and Health Sciences).
Punkty Ministerialne z 2019 - aktualny rok 40 punktów. Załącznik do komunikatu Ministra Edukacji i Nauki z dnia 21 grudnia 2021 r. Lp. 32343. Posiada Unikatowy Identyfikator Czasopisma: 201159.
Przypisane dyscypliny naukowe: Nauki o kulturze fizycznej (Dziedzina nauk medycznych i nauk o zdrowiu); Nauki o zdrowiu (Dziedzina nauk medycznych i nauk o zdrowiu).

The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 10.10.2022. Revised: 10.11.2022. Accepted: 18.11.2022.

Awareness of the costs of selected medical procedures and the use of healthcare among young adults in Poland

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Abstract

Aim: The study aimed to test students' awareness of the costs of selected medical procedures. Another aim was to identify the frequency of used medical benefits both as part of public and private medical care.

Materials and Methods: The research group included 246 people, both women, and men, aged 19-29, studying in Poland. An anonymous research questionnaire was used to conduct the study, which was sent to 21 universities in Poland (medical universities and physical education academies). The questionnaire asked participants to estimate the costs of treatments and investigations. The respondents were also asked which services of medical specialists they used in the last year.

Results: Outpatient specialist care services under the public health care system were used by the majority of respondents (N = 200; 81.3%). Most often it was 1-2 times in the last year (54.5% of all respondents used the public health service). The respondents most often used gynecological (33%), ophthalmological (21%), and dermatological (15.5%). In turn, private medical care was used by 192 respondents (78%) out of all the respondents. Respondents revalued all assessed medical procedures by 27% for the diagnostic colonoscopy to 790% for a 20-minute massage at a rehabilitation clinic.

Conclusion: Cost awareness among polish students is poor. Lack of awareness of the costs of medical procedures (the amount that the public payer pays for specific procedures medical) that may have an impact on the use of healthcare services as well as health care expenses.

Keywords: use of public and private medical care, awareness of the cost of medical procedures, healthcare

1. Introduction

The health and social care systems struggle to cope with the growing demand for medical care, which is associated with increased expenses [1], observed in many countries globally [2-4]. As OECD data show, total health spending varies greatly; from 257 US dollars/per capita in India to 10,948 US dollars /per capita in the United States [5]. According to the Global Burden of Disease Health Financing Collaborator Network Between 1995 and 2016, health spending grew at a rate of 4.00% annually. It is important to note that underfunding is a universal constraint faced by all healthcare systems [6].

The lack of transparency in healthcare reimbursement leaves patients and physicians unaware of the distribution of healthcare costs [7]. Cost awareness in the economics of medical care is defined as knowledge and consideration of the comparative costs of preventive actions versus the treatment of avoidable illness and disability [8] and applies to paying attention to efficiency [9]. Cost awareness influences many aspects of the functioning of health systems in various specializations. Many studies have shown that in the case of surgeon doctors, that awareness of cost resulted, and decreased overall hospital admission charges, without a detectable increase in surgical complications [10-12] as well as a reduction of waste generated in operating rooms [11]. Therefore training for cost containment is necessary because the neglect of cost-consciousness in training can lead to a lack of knowledge of the costs of treatments or consumable items [13].

As for patients, they show a willingness to obtain information about the costs of healthcare [14] even if the procedures or medications were covered by insurance [15]. Information about costs can bring the necessary tools for improvement in patients and health resources and as well this information could bring awareness to the patient's life, enhancing responsibility and personal autonomy [16]. In addition, it has been shown that informing visit costs to patients reduced the number of missed hospital visits [17]. Wasted resources are estimated at for one-third of healthcare costs and avoiding unnecessary healthcare can lead to savings[18-20]. Various measures are taken to increase awareness of medical costs. One way to increase awareness regarding the real cost of specific treatments and limit unnecessary use of healthcare services is the direct participation of patients in healthcare financing [21]. However, such a solution may have negative consequences in the form of preventing patients from accessing the necessary care [21].

Providing better care at a lower cost is an important public health challenge. To limit the rapid increase in costs is the reduction of unnecessary expenditure on health care. To achieve this goal, a cost-awareness strategy is used [22]. The key element of any cost control or cost reduction initiative is a thorough understanding of the current cost structure [23]. The cost-consciousness among medical staff is a noteworthy matter for public health policymakers and hospital managers alike [24]. Both patients and professionals have a growing responsibility to ensure that resources are used effectively and efficiently [25].

Taking into account that although young adults less often utilization rates of the healthcare system compared to other groups, they have significantly higher rates of emergency room visits compared to those directly younger and older than them [26] and the fact that in the Polish public healthcare system the costs of medical procedures are not widely known and available the study aimed to explore the awareness of young about the costs of medical procedures. Another aim was to identify the frequency of using medical benefits both as part of public and private medical care.

2. Methods

The actual study was preceded by a pilot study, which was conducted on a group of 22 students, where respondents could assess whether they understood the questions contained in the questionnaire. It was estimated that 95.5% of respondents understood the questions. Then the actual study was conducted in 2021. The study was prepared based on the analyzed literature on the cost estimation of medical procedures in various countries. An anonymous research questionnaire was used to conduct the study, which was sent to 21 universities in Poland (medical universities and physical education academies).

We aimed to get to know the cost awareness of various medical specialties, not only those that young people most often use. The questionnaire asked participants to estimate the costs of 8 selected medical procedures in neurology, cardiology, gastroenterology, and rehabilitation. The respondents were also asked which services of specialist doctors they used in the last year.

To assess the knowledge of the costs of medical procedures by students, the average of the estimated costs of a given procedure by all respondents was calculated and compared with the actual cost of public healthcare.

Data analysis was performed with the use of Microsoft Excel 365. Descriptive statistics were used in the study. Cost values were presented in the Polish currency (PLN) and then converted to the Euro currency according to the exchange rate from February 18, 2022 (1EUR = 4.5256 PLN) from the National Bank of Poland (sources: https://www.nbp.pl/home.aspx?f=/statystyka/kursy.html).

3. Results

Demographics, description of the study population

In Poland, there were 1 million students during the study, with a fraction size of 0.9 and a confidence level of 0.95%, the minimum number of people in the study was 138.

In the study, 246 people participated, including 206 women (83.7%) and 40 men (12.3%). The respondents were between 19 and 29 years old, the mean age was 23.1 years, and the median was 23 years. The vast majority of respondents had secondary education (69.5%), and others - had higher (31.5%) education. Most of the respondents were people who were only students (67.1%), and the rest were both students and professionally active people (32.9%).

Use of public healthcare services and private healthcare services among young people

In the last 12 months, 200 people out of the respondents (81.3%) used public health care. It was most often 1-2 times in the last year (54.5% of all respondents using public health services). Less frequently, services of this type were used by: 58 respondents 3-5 times (29%), 14 respondents 6-10 times (7%), and 19 people - more than 10 times (9.5%). The respondents most often used gynecological (33%), ophthalmological (21%), and dermatological (15.5%) financed by publicly-funded healthcare. The data are shown in Figure 1.

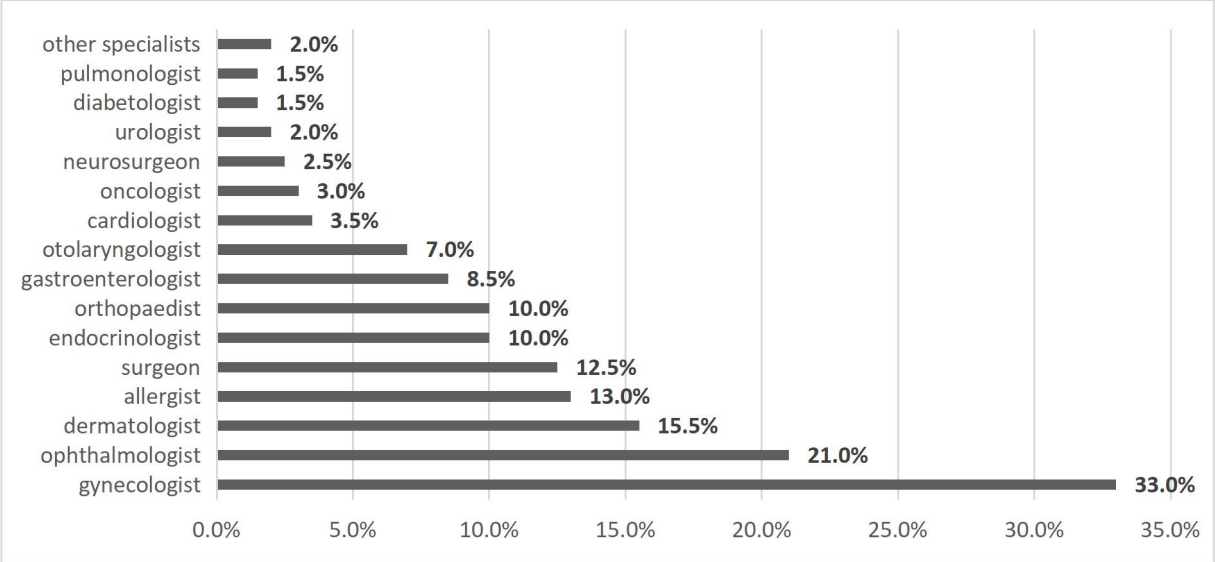

Figure 1. Used by respondents of outpatient specialist care financed by the National Health Fund during the last year before the survey, broken down into individual scopes of services (n = 200).

In turn in the last 12 months, 192 of the respondents (78%) used private healthcare services. It was most often 1-2 times in the last year (43.2% of all respondents using public health services). Less frequently, services of this type were used by 72 respondents 3-5 times (37.5%), 20 respondents 6-10 times (10.4%), and 17 people - more than 10 times (8.9%). Respondents in private healthcare most often used gynecological (58.9%), dermatological (25.5%), and ophthalmological (18.8%) visits. The data are shown in Figure 2.

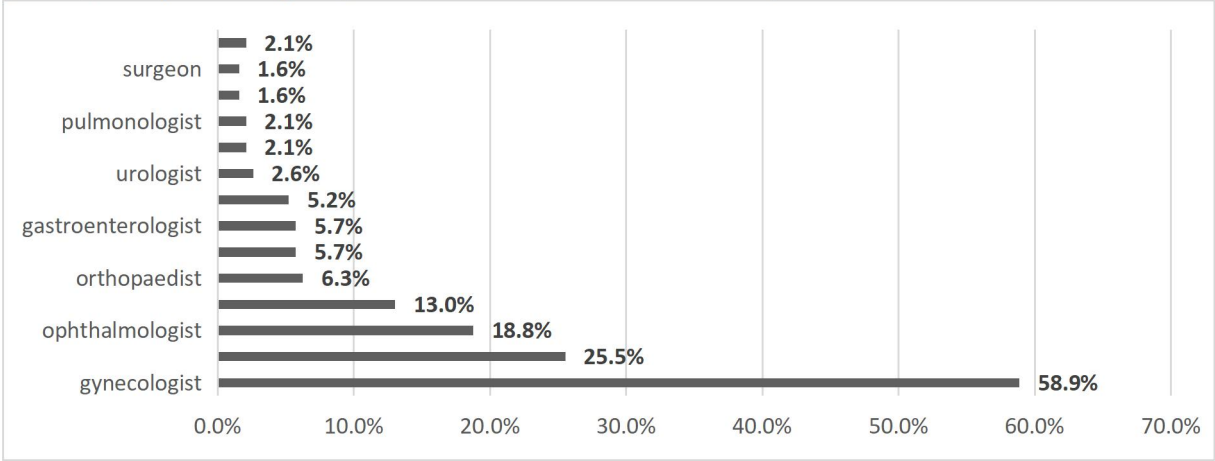

Figure 2. Used outpatient specialist care financed from own funds by the respondents during the last year before the survey, broken down by individual scope of services (n = 192).

Estimated costs of selected medical procedures by respondents

As part of the survey, respondents were asked about the estimated cost of selected medical procedures. For all the procedures taken into account in the study, an overestimation of costs by the respondents was observed. The greatest overestimation occurred in the case of the cost of a 20-minute massage performed in a rehabilitation clinic - the respondents estimated this cost as almost 9 times higher than the actual cost incurred by the National Health Fund, and also in the case of the cost of prescription advice - the respondents estimated this cost as more than 5.5 - times higher than the actual cost. The data are shown in Table 1.

Table 1. Actual and estimated costs of selected medical procedures by respondents (n = 246).

Diagnosis and Procedures	Estimated cost (average) (Euro)	Actual cost (Euro)	Revaluation (%)
Computed tomography of the head without contrast	84.96	37.03	129.44%
Magnetic resonance imaging of the head without contrast	115.59	67.59	71.02%
Diagnostic gastroscopy	67.48	23.86	182.82%
Diagnostic colonoscopy	74.49	58.25	27.88%
Cardiologist's consultation without additional diagnostic tests	35.64	8.60	314.42%
Prescription advice (collecting the prescription at the clinic without a doctor's visit)	13.17	2.35	460.43%
Consulting a medical rehabilitation doctor	29.85	7.69	288.17%
A 20-minute massage at a rehabilitation clinic	23.16	2.60	790.77%

4. Discussion

In many health systems, institutions provide treatment to patients at little or no cost, and it is they who bear the greatest financial burden [27]. Beneficiaries of free treatment are generally unaware of the cost of treatment paid by the state [28, 29]. In the insurance model of the health care system functioning in Poland, the patient remains unaware of the expenses incurred by health services by the institution. In Poland, health care is provided through a publicly sponsored insurance system. In addition, there is also a growing private market for health services [30]. At the time the research was conducted in the Polish health care system, information on the costs of medical services in the public health care system was not readily available. To our knowledge, this is the only study conducted in Poland on the awareness of the costs of medical procedures in a public healthcare system among young people.

Young adults are often viewed as healthy and poorly using healthcare. On the other hand, it seems important that young adults are covered by health insurance to compensate for the higher costs of caring for the elderly [31]. Lau et al suggested that young adults may not be utilizing the health care system optimally because they having low rates of office-based visits and simultaneously they high rates of ER visits [32].

This study showed that 81.3% (N = 200) of respondents aged 19-29 used the services of a specialist physician in public health care at least 1-2 times a year. Not much fewer respondents (78%) used private medical care in the last year, which shows that this social group benefits from both public and private healthcare. For nearly twenty years, Poland has been registering some changes in the use of medical care. These consist of a decline in the percentage of people who use public health care exclusively, as well as an increase in the number of those who receive mixed treatment - both within and outside the public insurance system [33]. The results of our study are similar to the results of the National Health Fund study, which showed that up to 87% of respondents aged 18-39 (N = 365) used public health care in 2020 [34]. Lower percentages are indicated by the Center for Public Opinion Research (CBOS). According to their report, in 2020, 70% of respondents sought medical advice at least once due to illness or ill health. During this period, due to the coronavirus outbreak, Poles used health services much less frequently than in 2018. Taking age into account, it can be noted that respondents aged 65 and older (76%) and those aged 25-44 (71%-72%) used medical care most frequently [33].

Lau et al showed that young adults had the lowest rate of healthcare utilization (72%) compared to children (88%, $p<0.001$) and adolescents (83%, $p<0.001$)[32]. Pianiori et al. showed the use of private care exhibited a

large variation across specialties, from 26.3% for cardiology and 32.0% for orthopedics to 46.1% for ophthalmology and 53.6% for obstetrics/gynecology [35]. In this study, the respondents most often used the services of such doctors as gynecologists, ophthalmologists, and dermatologists. However, a study conducted in Italy by Pianori et al showed in the adults with a visit in the past 12 months, the most frequent specialties were ophthalmology (n = 8.619; 16.9%), cardiology (n = 7.932; 15.6%), obstetrics/gynecology (n = 7.858; 15.5%) and orthopedics (n = 7.290, 14.3%)[35].

In the present study, the respondents overestimated the assessed medical procedures, of which the greatest overestimation, i.e. by 790%, concerning services in the field of rehabilitation. These results are similar to the research by Negretti et al, in which ophthalmic hospital patients estimated the costs of 9 medical procedures, all mean patient response values were significantly different from actual cost - they tended to overstate costs [36]. Similar results regarding the reassessment of medical procedures costs were shown by Herrick et al On average for all 6 procedures, patients estimated the total cost was $ 36,177, ~ 1,540% more than the actual Medicare rate of $ 7,333[7].

Patients' awareness of the costs of medical procedures can affect the allocation of resources in healthcare. As demonstrated, among others, by the Hallsworth et al study, in which presenting patients with a specific tariff cost of a medical visit resulted in an absence rate at the scheduled outpatient visit by about three percentage points lower than in the case of other messages [17].

Patients are not the only participants in the healthcare market for whom knowledge about the costs of treatment is essential. Cost awareness of medical procedures is also important in the group of doctors who can provide the most cost-effective care. Research shows that doctors of various specialties are generally unaware of the cost of almost all of the care they provide [37-40]. In addition, Wang et al showed that knowledge about treatment costs was assessed as limited in the interventional radiologists and vascular surgeons group [41]. As physicians are directly or indirectly responsible for almost all the care they provide, it is the assumption that if physicians fully appreciated the costs of their services and treatments, the rising cost of health care could be better controlled [42, 43]. In turn, in the study by Johnson et al, carried out on a group of 345 orthopedic surgeons, 70.7%; (N = 275) were both cost-conscious and willing to change their practice to reduce costs if encouraged to do so [44]. However, cost-conscious practice is particularly challenging when physicians are faced with patient expectations or requests for medical services that may be unnecessary [45]. In addition, physicians can make trade-offs between a variety of financial and non-financial resources, considering not only the relative cost of medical decisions and alternative services but the time and convenience of patients, their time constraints, as well as the logistics of maintaining a successful practice [46]. The use of web applications can be a helpful tool for increasing the awareness of medical personnel about the costs of medical services. As shown Warsame et al found that 79% of physicians agreed with the statement that “Decision support tools that show costs would be helpful in my practice” [47]. As suggested by Herrick et al, patients are largely unaware of the costs of both healthcare delivery and need to be better educated as a lack of transparency leads to false assumptions that can have detrimental effects on the patient-physician relationship as well as on policy trends to reduce reimbursement by doctors [7].

Most of the 19-to 29-year-old respondents had benefited from outpatient specialist care services in both the public health care system and private health care over the past year. The respondents most often used the services of such doctors as gynecologists, ophthalmologists, and dermatologists, both in the public and the private healthcare system. The majority of the studied group did not know the costs of selected medical procedures and believed that the cost of a given medical procedure was significantly higher than the actual cost. Most often, the respondents overestimated the costs, the most significant was rehabilitation services - the cost of a 20-minute massage performed in a rehabilitation clinic. Based on our results, further research is needed to identify further interventions to raise awareness of the costs of diagnosis and treatment among patients and healthcare professionals. In addition, it is important to monitor the impact of cost awareness on the use of resources in the healthcare system.

Cost awareness among polish students is poor. Lack of awareness of the costs of medical procedures (the amount that the public payer pays for specific procedures medical) may have an impact on the use of healthcare services as well as healthcare expenses. Raising awareness of the costs of medical procedures within the public healthcare system in Poland still requires considerable focus and efforts to increase the optimization of remote care expenditure.

In our opinion, important is undertaking broader activities related to raising awareness of the costs of medical procedures in the public health care system could have many benefits. Information on the costs of medical services could significantly contribute to the improvement of the organization and functioning of the healthcare system in Poland, including reducing the overconsumption of health services and increasing the availability of health services.

This study is limited by the disproportion in the research group - the majority of the respondents were women. Only students in health-related fields of study were examined.

Our main goal in this study was to find out about the cost awareness of selected medical procedures used in the settlement of health services from various specializations. We did this by asking respondents to estimate the costs of a given procedure, taking into account such procedures that this age group uses both frequently and rarely.

Therefore, an important contribution of this study is that it provides much needed empirical data on the knowledge about the costs of medical procedures, which is small in the analyzed research group. It is of great importance for health decision makers to increase attention to the awareness of the costs of medical procedures both among the young and the elderly population, as these activities may influence the use of limited resources in health care.

Author Contributions:
Conceptualization, AR, TH, Methodology: KS, AR; Formal Analysis, KS.; Investigation, KS.; Writing – Original Draft Preparation, AR, Writing – Review & Editing TH, KS; Visualization, KS, AR.; Supervision, TH, KS.; Project Administration, AR; Funding Acquisition, AR". All authors have read and agreed to the published version of the manuscript.
Institutional Review Board Statement: Ethical review and approval were waived for this study due the study did not have the features of a medical experiment.
Informed Consent Statement: Not applicable.
Data Availability Statement: The data presented in this study are available on request from the corresponding author.
Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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