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ORIGINAL PAPER

# FUTURE HEALTHCARE PROFESSIONALS ON WORKING CONDITIONS IN POLAND: PERSPECTIVE OF MEDICAL UNIVERSITY STUDENTS

Izabela Rydlewska-Liszkowska[1], Agnieszka Strzelecka[2], Anna Rybarczyk-Szwajkowska[3]

[1] Medical University of Lodz, Łódź, Poland
Faculty of Health Sciences, Medical Insurance and Health Care Financing Unit
[2] Czestochowa University of Technology, Częstochowa, Poland
Faculty of Management, Department of Econometric and Statistics
[3] Medical University of Lodz, Łódź, Poland
Faculty of Health Sciences, Management and Logistics in Health Care Unit

**Abstract**

**Background:** Students of medical universities, future employees, will have an impact on the shaping healthcare system. It is important to know and understand their opinions on the factors affecting working conditions and, consequently, changes necessary to improve effectiveness of health care. Students' expectations can contribute to the changing working conditions for graduates and bring added value to health system redefinition. **Material and Methods:** The study used factor analysis to check whether its use was justified. Reliability analysis was performed and structure indicators were determined for each question. The anonymous survey was conducted from September 2017 until March 2018; 1205 students were randomly selected for the sample. **Results:** Eighty percent of the students declared interest in healthcare changes, >50% reported that the main factors influencing the work were competencies, financing, medical equipment and organization. Over 90% of the respondents indicated too long wait times for an appointment with a specialist and admission to hospital as the reason for the low efficiency of healthcare, whereas >80% of the survey participants considered insufficient funding to be a barrier. The need for changing the financing scheme was underlined by >90% of the students, and of health priorities by about 80%. Approximately 71% of the respondents were in favour of limiting the role of government in decision-making processes and introducing changes into the education system. **Conclusions:** Students' views on organizational and financial factors of working conditions can contribute to improvement in systemic solutions at both micro and macro levels. Limiting the role of politicians in planning and implementing reforms can motivate employees to be more creative and decisive. Analysis of opinions can bring added value to health policy and systemic changes and should be extended by further research results after the COVID-19 pandemic. Students' interest in healthcare reform encourages reflection on enriching education with managerial skills. Med Pr Work Health Saf. 2024;75(4):321–332

**Key words:** working conditions, healthcare financing, workforce, opinions of medical university students, healthcare organization, work factors

Corresponding author: Izabela Rydlewska-Liszkowska, Medical University of Lodz, Faculty of Health Sciences, Medical Insurance and Health Care Financing Unit, Lindleya 6, 90-131 Łódź, Poland, e-mail: izabela.rydlewska-liszkowska@umed.lodz.pl
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## INTRODUCTION

The changes in public healthcare systems, introduced in such areas as management, organization and financing, have an impact on the working conditions of medical and non-medical staff in healthcare facilities [1–3]. This also applies to the Polish healthcare system [4,5]. Healthcare units, delivering basic benefits package, operate in Polish public healthcare system based on the National Health Fund. Over 93% of the Polish population are covered by compulsory insurance benefits [6]. The authorities at the local level are also responsible for health care services delivering. Voivodships representing the state government are responsible for healthcare access on their territories [7,8].

Undoubtedly, in the processes of delivering healthcare services, the most important aspect are employees, particularly teams of medical professionals working directly with patients. Factors affecting the effectiveness and productivity of healthcare staff are responsibility for the quality of health services provided in variable organization of healthcare system, and the allocation

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of competencies between its particular parts, as well as availability of material and financial resources. The constantly growing pressure on the rational use of resources leaves no doubt as to the key role of medical professionals in this process. It is also worth emphasising that their working environment is defined, to a large extent, by healthcare system regulations [9].

The results of the analysis carried out by the authors of the cited publication indicate that in the process of reforming the Polish health system special attention should be paid to planning and ensuring the availability of professional employees [10]. The healthcare system faces the problem of insufficient number of medical professionals. According to the reports published by the Organisation for Economic Co-operation and Development (OECD) the number of doctors per 1000 inhabitants in Poland was 2.4 [compared to the average in the European Union (EU) of 3.9], with one-fourth of them having reached retirement age. When it comes to nurses, these values were 5.2 and 8.4 respectively [6,8].

Taking into account the current and future health needs of the population, the Ministry of Health in Poland determined the shortage of medical personnel according to medical specialties, increased the number of places for resident doctors and increased the remuneration for doctors specializing in deficit specialties. The basic salaries of health professionals have been steadily increasing [8,11].

The public healthcare spending in Poland, both in relation to gross domestic product (GDP) (6.5% compared to the average of 10.9 % in EU27) and in *per capita* terms [EUR 1591 adjusted by purchasing power parity (PPP) compared to the average of EUR 3159 PPP in EU27], was one of the lowest in Europe. This factor influences not only patient access time to specialist care but also availability of medical technologies. In 2017 the Polish government decided to increase the public health expenditure from the average of 4.6% over the last 15 years to 6% of GDP by 2024, which can improve the working environment of healthcare staff. It is worth paying attention to the scope and scale of medical diagnostic technologies applied in the Polish health system. According to the OECD and the Statistical Office of the European Union Databases, the utilization rate of the 3 diagnostic tests, i.e., computed tomography, magnetic resonance imaging and positron emission tomography, was 144 per 1000 population compared to 219 in EU22. Organizational, managerial and economic factors resulted in long wait times for medical services, unmet health needs, and a very high mortality rate which was above the average EU level [6].

The authors of this article share the opinion that both healthcare politicians and representatives of medical universities should build the platform of cooperation to deepen the involvement the medical students in value-adding processes to improve future working conditions. Therefore, the students' views on the systemic environment and regulations affecting their future working conditions, as well as the value their opinions can bring to the design of restructuring the health system [12–14].

The aims of the study were to collect and broaden the knowledge about opinions of students at the medical university about organizational and economic factors which influence the working conditions. The value that future medical professionals can add to the concept of changes in the health system can be understood in many ways, however, this article concentrates on students' opinions on the functioning of the health protection system from the perspective of the conditions for fulfilling their professional roles. Although most opinion polls involving medical students are focused on educational strategies [15], opinions on the current functioning of the health system expressed by future professionals are equally important and let look at the systemic determinants of their work with fresh eyes [16,17].

## MATERIAL AND METHODS

### Overview of the background of the research

The study was conducted between September 2017 and March 2018, at the Medical University of Lodz and the Bogomolets National Medical University in Kiev. The research results presented in the article constitute one of the stages of the international research program on the determinants of the effectiveness and efficiency of healthcare systems in Poland and Ukraine, major problems and main research areas, which is aimed at promoting optimal solutions in the organization, functioning and financing of health care [18].

The results presented in the article were part of the research program on factors influencing quality, effectiveness and efficiency of healthcare in Poland from the perspective of future medical professionals, including their opinions on working condition in healthcare units. The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Rector of the Medical University of Lodz. The survey was anonymous and voluntary.

**Questionnaire – design and context**

The research tool was a questionnaire prepared by the staff of the Department of Health Care Policy and the Centre for Research on Health Care Strategies and Health Policy at the Warsaw School of Economics in cooperation with the National Medical University in Kiev. The questionnaire consisted of 34 questions: demographic characteristics of the respondents, faculty of the study, residence, the respondents' self-rated standards of living and health assessment, interest in health care system changes, frequency of receiving health care and the form of health care the respondents are most frequently provided with. The second, more extensive part of the questionnaire included questions about the students' opinions on optimal solutions for the organization and financing of the health system in Poland from the perspective of their working conditions. The questions concerned the following issues:

- general assessment of the public healthcare,
- availability and quality of healthcare services in public and private institutions,
- factors and systemic solutions influencing effectiveness of health protection,
- factors influencing therapeutic effects, including healthcare funding,
- reasons of late diagnosis,
- factors requiring changes aiming at increasing the efficiency of health care,
- system changes requiring improvement and implementation immediately.

Each of the listed categories was assessed on a 7-point Likert scale as follows: "definitely bad/definitely not" (–3 pt), "no" (–2 pt), "somewhat not" (–1 pt), "no opinion" (0), "somewhat yes" (1 pt), "yes" (2 pt), "definitely good/definitely yes" (3 pt). The questionnaire did not contain any open questions. It was evaluated in terms of compliance with the main rules for questionnaire construction, i.e., simple vocabulary, avoiding words that are abstract, not fully defined, or ambiguous, and avoiding jargon, moralizing language, negations, names of institutions, surnames, and lengthy items.

**Statistical analysis and factors identification of this research**

The study describes variables relating to factors and conditions of the public health system using fewer hidden factors. In order to isolate a set of factors that explain the information contained in primary variables as much as possible, a factor analysis was used. Before the analysis began, a reliability analysis was carried out and it was checked whether the use of factor analysis was justified. The statistical study included: checking the reliability of the scale using the Cronbach's α coefficient, analysis of the justification for the use of factor analysis [Bartlett's sphericity test was used to assess the significance of the correlation between observable variables, and to check whether the collected information is suitable for factor analysis; the Kaiser-Meyer-Olkin (KMO) coefficient was calculated], checking the possibility of creating a structure by conducting a factor analysis using the main component method. Additionally, the statistical analysis describes the structure of the community by determining the structure indicators for each question. Based on the Cronbach's α coefficient, it was concluded that the proposed questionnaire is reliable and internally consistent. This coefficient is at a level that allows to conclude that the test used is correct. In order to detect structure in the relationships between variables, factor analysis was performed. Its validity is confirmed by the KMO and Bartlett's tests. The KMO coefficient confirms the reliability of factor analysis, and the value and significance ($p < 0.000$) of Bartlett's test of sphericity indicate the relationship between the described variables. The obtained results indicated that there are strong grounds for the use of factor analysis. A structure can be created within the individual questions in the questionnaire. This was done based on the Kaiser criterion and after analysing the scree plot. These factors explain almost 56% of the total variance.

## RESULTS

**Respondents**

In the academic year 2017/2018, the Medical University of Lodz had a student population of 9100. A representative group was selected from the total number of students. However, due to the limitations of conducting the study among all those selected, the population of 1308 was re-selected randomly. Ultimately, the analysis included the opinions of 1205 people from only fully completed and voluntary questionnaires.

The mean age of the respondents was almost 23 years. Women accounted for 80% of the study population. A majority of the respondents were village inhabitants (31.62%). Over 83% of the surveyed students declared their material status was quite good, good and definitely good, and 87.56% reported that their health status was rather good, good and definitely good. The majority of the respondents were students of emergency medicine, public health, dietetics and nursing (691 respondents, i.e., 57.35%) (Table 1).

**Table 1.** Characteristics of 1205 Polish medical students from Medical University of Lodz participating in the study on organizational and economic factors affecting working conditions in health care in Poland, in the opinion of future professionals, performed from September 2017 until March 2018

| Variable | Participants (N = 1205) |
|---|---|
| Age [years] (M±SD) | 22.9±2.13 |
| Gender [n (%)] | |
| male | 240 (19.9) |
| female | 965 (80.1) |
| Place of residence [n (%)] | |
| village/rural area | 381 (31.62) |
| small town (<20 000 residents) | 153 (12.70) |
| city | |
| medium-sized (20 000–99 999 residents) | 257 (21.33) |
| big (100 000–500 000 residents) | 154 (12.78) |
| very big (>500 000 residents) | 260 (21.58) |
| Education [n (%)] | |
| biotechnology | 89 (7.39) |
| dietetics | 135 (11.20) |
| electroradiology | 30 (2.49) |
| pharmacy | 39 (3.24) |
| physiotherapy | 38 (3.15) |
| cosmetology | 65 (5.39) |
| medicine | 76 (6.31) |
| dentistry | 89 (7.39) |
| nursing | 113 (9.38) |
| obstetrics | 23 (1.91) |
| emergency medical services | 247 (20.50) |
| dental-techniques | 60 (4.98) |
| military medicine | 5 (0.41) |
| public health | 196 (16.27) |
| Self-rated standards of living [n (%)] | |
| definitely bad | 11 (0.91) |
| bad | 17 (1.41) |
| rather bad | 75 (6.22) |
| no opinion | 98 (8.13) |
| rather good | 465 (38.59) |
| good | 410 (34.02) |
| definitely good | 129 (10.71) |
| Self-rated health status [n (%)] | |
| definitely bad | 6 (0.50) |
| bad | 12 (1.00) |
| rather bad | 69 (5.73) |
| no opinion | 63 (5.23) |
| rather good | 400 (33.20) |
| good | 482 (40.00) |
| definitely good | 173 (14.36) |

## Organizational and economic factors influencing work of healthcare personnel

The majority of the respondents declared interest in the changes taking place in the health protection system. More than half of them answered affirmatively (definitely „yes") to the question about the factors that most define the effectiveness of activities undertaken as part of the work of healthcare personnel, which include doctors' competences, financing, medical equipment used for diagnosis and therapeutic procedures, organization and hospital infrastructure. The following factors were considered to be definitely important for the effective implementation of healthcare personnel tasks: prevention and health education, number of practicing physicians, costs of drugs, screening examinations. The respondents' opinions on the characteristics of healthcare system functioning were diverse. The example was the view on treating patients with sufficient courtesy and care. While nearly one-third of the respondents thought that patients are not treated with sufficient courtesy and care, only >1% of the surveyed population were of the opposite opinion („definitely yes"). As regards the organizational working conditions of healthcare professionals in the system, the similar percentage of the respondents believed that patients are unlikely to have a problem with access to a primary care doctor and expressed the opposite opinion. As for the issue of access to healthcare, above one-fourth of students disagree with the thesis that patients have no problem obtaining information about available healthcare services. Also, as regards other features characterizing the organizational and financial aspects of the health care personnel, nearly one-fourth of those answering the question about the assessment of health care processes expressed negative opinions about the practical possibilities of their implementation. Nearly half of the respondents disagreed with the statement that the treatment conditions are satisfactory („definitely no," „no," „rather no"). At the same time, more than

half of the students expressed the opinion that patients are not cared for immediately when they need it („definitely no," „no," „rather no"). Also, similar percentage of the students thought that doctors refer patients to specialist treatment units too quickly („rather yes," „yes," „definitely yes"). They believe that patients are not covered by the healthcare system in the same way, which can be reflected in unequal provision of different type of healthcare to patients with the same diseases. This opinion is expressed by the majority of the respondents. Moreover, one-fourth of the study participants believed that patients are the smallest beneficiaries of the healthcare system among its other stakeholders. According to the students' opinion the largest beneficiaries are drug manufacturers and private medical units. Analysis of the structure of responses indicated that the majority of students surveyed were of the opinion that another problem the healthcare system is faced with is too late diagnosis of patients. From the perspective of organizational and economic working conditions of medical staff, the greatest emphasis was placed on the answers given for too long queues related to waiting for an appointment with a specialist doctor and for admission to hospital. Other factors that contribute most to making a late diagnosis are the following: poorly developed preventive activity; too late diagnosis by a doctor. Further main organizational reasons of late diagnosis faced by healthcare personnel were identified as follows: difficult access to diagnostic tests is a barrier and waiting time for their results is too long. As for the financial perspective of securing working conditions in healthcare units, the majority of the respondents thought that the barrier is too low level of health care financing (Table 2).

**What elements of the public health system should be changed from the perspective of working conditions?**

What elements and mechanisms of the public health system should be changed in order to improve the delivery of healthcare services and secure personnel with appropriate organizational and economic instruments? What should be done to create working conditions that increase effectiveness of work? Based on opinions expressed by future healthcare professionals it may be concluded that there is a need for changes both at the macroeconomic and medical-unit level. The systemic changes that should be introduced comprise the education system, the principles of financing healthcare, the participation of government institutions in decision-making processes, as well as health policy priorities. Among the areas of potential changes in the public healthcare, the largest group of students indicated the principles of financing and healthcare priorities, which may mean that the students had some doubts not only as to the designated directions of systemic activities, but also in relation to the allocation of financial resources and, consequently, to operational tasks/activities imposed on medical units. The majority pointed to the need of increasing financial resources to improve treatment outcomes and expressed a need to increase expenditure on hospital treatment, emergency medical services, advanced medical technologies, specialist ambulatory care and primary health care. This does not mean, however, that the respondents expected that the healthcare services listed above are the only areas that should be awarded increased funds. It is worth paying attention to rehabilitation services since most of the students indicated the need to increase funding in this sector.

The need to change the role of health insurance, limiting the role of government institutions in decision-making processes was indicated by the large proportion of the respondents. The need to change the education system of medical staff was indicated in most questionnaires. The most divided opinions were expressed in relation to free market solutions in the public healthcare. Among the respondents, the similar percentage of them believed that these rules should be introduced to improve the system and did not express any opinion on this topic (Table 2). Attitudes towards changes in the public healthcare are reflected in more detail in the answers about changes to be implemented immediately. They illustrate the factors/areas of priority importance. Apart from the need for changes at the systemic level, the respondents also emphasized microeconomic changes. As for those requiring immediate change, the largest number of the respondents were in favour of improving the availability of healthcare services, but almost half of the study group expressed the opposite view. The second most often expressed opinion concerned restructuring of healthcare financing (almost half of the respondents). Similar percentage of the survey participants gave the opposite opinion. The need for immediate changes in healthcare financed from health insurance contributions was supported by almost half of the students, the level of quality of health care services provided – by slightly lower percentage of the group surveyed than in relation to the previous factor, the principles of financing infrastructure – by more

**Table 2.** Medical students' interest in health system changes, opinions on the factors/areas influencing effectiveness of healthcare and system' beneficiaries, the healthcare system requiring changes in order to improve health effects, and requiring immediate changes – 1205 Polish medical students from Medical University of Lodz participating in the study performed from September 2017 until March 2018

| Factor/area | Answers [%] | | | | | | |
|---|---|---|---|---|---|---|---|
| | definitely no | no | rather no | no opinion | rather yes | yes | definitely yes |
| Are you interested in changes taking place in the health system? | 0.00 | 0.00 | 0.00 | 18.20 | 37.34 | 35.56 | 8.89 |
| Which factors have the greatest impact on healthcare effectiveness? | | | | | | | |
| organization | 0.75 | 0.92 | 1.09 | 5.01 | 11.36 | 30.33 | 50.54 |
| financing | 1.00 | 1.58 | 1.49 | 5.31 | 9.46 | 26.89 | 54.27 |
| number of practicing physicians | 0.67 | 0.83 | 2.75 | 7.99 | 16.82 | 32.31 | 38.63 |
| competencies of physicians | 0.83 | 0.58 | 1.66 | 4.74 | 8.23 | 27.10 | 56.86 |
| hospital infrastructure | 1.08 | 1.08 | 2.91 | 10.57 | 26.39 | 33.39 | 24.56 |
| medical equipment used in diagnosis and therapeutic procedures | 0.83 | 0.75 | 0.83 | 3.66 | 11.55 | 31.01 | 51.37 |
| costs of drugs | 1.08 | 0.67 | 2.83 | 6.90 | 17.21 | 27.85 | 43.47 |
| prevention and health education | 1.08 | 0.75 | 2.08 | 8.73 | 21.03 | 30.17 | 36.16 |
| screening examinations | 1.00 | 0.50 | 2.08 | 11.40 | 20.30 | 29.20 | 35.52 |
| To what extent do you agree with characteristics of public health care? | | | | | | | |
| patients are treated with kindness and care | 7.14 | 14.11 | 29.96 | 18.42 | 22.99 | 6.22 | 1.16 |
| there is no problem with access to primary health physicians | 15.74 | 17.99 | 21.48 | 7.83 | 22.40 | 10.24 | 4.33 |
| there is no problem with obtaining information on health services accessibility | 7.40 | 17.0 | 25.1 | 21.38 | 18.05 | 8.49 | 2.50 |
| treatment is free | 22.16 | 22.90 | 25.64 | 12.45 | 10.12 | 5.15 | 1.58 |
| treatment conditions are good | 7.98 | 14.46 | 27.27 | 18.70 | 24.02 | 6.90 | 0.67 |
| doctors refer patients to specialists easily | 7.81 | 11.55 | 17.37 | 13.38 | 27.68 | 16.54 | 5.65 |
| medical care is provided immediately, if required | 12.41 | 13.82 | 24.90 | 15.74 | 23.15 | 7.66 | 2.33 |
| patients are treated equally | 26.79 | 18.47 | 19.97 | 16.81 | 9.90 | 5.57 | 2.50 |
| Who is best served by the healthcare system? | | | | | | | |
| patients | 14.94 | 17.18 | 28.80 | 13.94 | 19.92 | 4.40 | 0.83 |
| physicians | 3.66 | 6.91 | 11.65 | 20.22 | 19.88 | 20.55 | 17.14 |
| nurses | 10.71 | 14.69 | 23.57 | 21.58 | 17.26 | 9.38 | 2.82 |
| pharmacists | 1.58 | 4.00 | 7.91 | 29.06 | 23.23 | 21.32 | 12.91 |
| drug manufacturers | 0.42 | 0.91 | 1.91 | 16.86 | 13.62 | 24.34 | 41.94 |
| administration of healthcare units | 0.75 | 1.50 | 2.91 | 28.73 | 16.49 | 21.40 | 28.23 |
| owners of private healthcare units | 0.67 | 1.00 | 2.91 | 17.37 | 14.80 | 25.77 | 37.49 |
| public health insurance fund | 10.79 | 9.38 | 11.37 | 31.04 | 12.03 | 11.45 | 13.94 |
| What is the main reason of late diagnosis? | | | | | | | |
| visiting a general practitioner too late | 0.33 | 0.66 | 1.99 | 2.82 | 13.44 | 28.05 | 52.70 |
| visiting a specialist doctor too late | 0.41 | 0.66 | 1.83 | 3.40 | 10.62 | 29.38 | 53.69 |
| too long waiting times to specialist doctors | 0.08 | 0.75 | 1.24 | 3.40 | 9.46 | 22.66 | 62.41 |
| receiving hospital treatment too late | 0.58 | 0.50 | 2.90 | 5.89 | 17.34 | 34.52 | 38.26 |
| too long waiting for hospital treatment | 0.25 | 0.25 | 3.15 | 6.22 | 12.78 | 25.81 | 51.54 |

**Table 2.** Medical students' interest in health system changes, opinions on the factors/areas influencing effectiveness of healthcare and system' beneficiaries, the healthcare system requiring changes in order to improve health effects, and requiring immediate changes – 1205 Polish medical students from Medical University of Lodz participating in the study performed from September 2017 until March 2018 – cont.

| Factor/area | Answers [%] | | | | | | |
|---|---|---|---|---|---|---|---|
| | definitely no | no | rather no | no opinion | rather yes | yes | definitely yes |
| What is the main reason of late diagnosis? – cont. | | | | | | | |
| poorly developed prevention programmes | 0.67 | 1.08 | 3.33 | 11.82 | 22.56 | 28.56 | 31.97 |
| insufficient financial resources for health protection | 0.33 | 0.83 | 2.82 | 11.29 | 24.32 | 30.54 | 29.88 |
| medical diagnosis established too late | 0.50 | 2.32 | 5.15 | 12.03 | 21.74 | 25.31 | 32.95 |
| difficult access to diagnostic tests | 1.33 | 1.91 | 6.82 | 14.71 | 22.03 | 25.10 | 28.10 |
| long wait times for diagnostic test results | 2.83 | 3.74 | 11.72 | 16.21 | 20.20 | 20.20 | 25.10 |
| In which areas should funding be increased in order to improve treatment outcomes? | | | | | | | |
| primary health care | 1.58 | 2.07 | 5.81 | 10.54 | 27.14 | 28.22 | 24.65 |
| specialist ambulatory care units | 0.58 | 1.08 | 2.99 | 13.36 | 31.70 | 32.95 | 17.34 |
| advanced medical technologies | 0.50 | 0.83 | 2.90 | 13.94 | 25.56 | 29.46 | 26.80 |
| hospital treatment | 0.75 | 0.83 | 1.91 | 7.72 | 20.75 | 32.12 | 35.93 |
| health programmes | 1.49 | 2.49 | 5.73 | 28.55 | 29.71 | 17.76 | 14.27 |
| dentistry | 2.82 | 2.57 | 9.88 | 24.32 | 28.88 | 16.85 | 14.69 |
| treatment rehabilitation | 0.91 | 1.49 | 4.65 | 15.19 | 33.44 | 25.48 | 18.84 |
| palliative and hospice care | 1.33 | 1.33 | 5.48 | 23.32 | 31.12 | 22.32 | 15.10 |
| emergency medical services | 1.08 | 0.58 | 2.41 | 12.95 | 25.39 | 26.72 | 30.87 |
| spa treatment sector | 7.63 | 5.98 | 14.36 | 32.20 | 22.99 | 9.79 | 7.05 |
| What elements should be changed to make the health system more efficient? | | | | | | | |
| medical staff training system | 2.41 | 4.98 | 6.98 | 14.95 | 24.67 | 23.84 | 22.18 |
| principles of health services financing | 0.17 | 0.66 | 1.00 | 7.88 | 1.24 | 31.45 | 37.59 |
| limiting the role of the state (government institutions) in decision-making processes | 2.24 | 2.07 | 3.49 | 20.83 | 16.68 | 21.58 | 33.11 |
| increasing the role of the state government institutions in decision-making processes | 30.37 | 12.20 | 14.36 | 23.90 | 8.05 | 5.23 | 5.89 |
| the role of health insurance | 0.83 | 1.24 | 3.15 | 18.17 | 30.54 | 25.31 | 20.75 |
| free market principles | 2.50 | 2.25 | 6.58 | 42.71 | 21.07 | 13.16 | 11.74 |
| priorities in healthcare | 0.50 | 0.50 | 1.49 | 18.17 | 21.24 | 28.55 | 29.54 |

than one-third of the respondents, knowledge and skills and competences of medical staff – by approx. one-third of the people surveyed. About half of the opinions indicated that the competences of medical staff do not require improvement. Therefore, with a certain amount of caution, it can be stated that the most severe factors in the work of medical staff were those resulting from systemic regulations, as opposed to the substantive value of healthcare personnel (Table 2).

## DISCUSSION

The aim of the study was to identify organizational and economic factors/areas that, in the opinion of students, have and should have an impact on working conditions of health care staff. The students' answers obtained included both positive (job opportunities) and negative (work barriers) opinions on working conditions (systemic mainly) in healthcare.

**Medical students' interest in systemic environment of the work**

Due to the great interest in changes taking place in the healthcare system declared by a majority of the future medical professionals (>80% of the surveyed group), their opinions should be carefully considered. The similar result as in the case of the Polish study were obtained as a result of the research conducted in the USA and UK. They also indicate the interest of medical students in the systemic environment of their work and health policy. They believe that future doctors should be knowledgeable on this subject and that their opinions should be taken into account in the processes of shaping health policy. They are aware of the fact that their knowledge in this area is not yet profound. They feel that they are not sufficiently involved in analysing the processes either [19,20].

The result obtained in another study indicate that the percentage of students (>80%) who expressed interest in systemic solutions was also similar to that presented in this study. It was recognized that the views of future professionals working in the healthcare system are important since they can be a starting point for predicting the future behaviour of the next generations of medical staff. The results demonstrate that the students see influencing and engaging in health policy as a kind of professional responsibility [21]. They expect that improving working conditions including motivation, expectation and their professional life will pose the challenge to health care system [22].

**Competencies as the factor affecting work**

In the opinions of the future health care professionals, the greatest importance was attached to the competences of doctors. This issue was also raised in the context of necessary systemic changes related to the education of medical staff, which was indicated by >70% of the respondents. The need to immediately introduce such changes was recognized by nearly 32% of the study group. Medical students' opinions and initiatives of institutions shaping the knowledge and skills of medical staff are an area of interest and practical activities in many countries. An important element of improving the competences is the ability to respond to new, often quite unpredictable challenges related to the health of the population and managerial skills [23–26].

The interdisciplinary nature and specificity of work at various levels of the healthcare are important directions for developing personnel competences, what was indirectly indicated in students' opinion (treating patients with kindness and equally) (Table 2) and is also emphasized in national and international studies. The development of skills should involve such areas as: patient relations, cooperation in a multitasking team, updating medical knowledge, digital skills. Providing training not only to medical staff, but also to employees responsible for the quality of the treatment process in a facility may be important for creating a working environment conducive to the improvement and development of these competences [27–34].

It is also worth focusing on the knowledge of future professionals about the principles of spending public funds. The results obtained in the UK, the USA, Australia, New Zealand and Spain showed the need for doctors to have knowledge about the costs of healthcare, indicating that they are both representatives of patients and a professional group acting in the interest of a medical unit. They more often overestimate the costs of commonly performed tests, whereas underestimate the value of expensive research. The problem of awareness among doctors and healthcare personnel as to the real costs of health services is of particular importance in the case of limited public financial resources, introduction of modern medical technologies and prevention of overconsumption of health services. In the survey, 74% of the respondents expressed the opinion that access to cost data could influence the rationalization of clinical decisions [35,36]. Polish students indicated that costs of drugs are the important factor of health care effectiveness (Table 2).

**Organizational and economic aspect of working conditions**

Over 50% of the Polish students think that the crucial factors affecting work and, consequently healthcare effectiveness are financing of health care, providing medical equipment used in diagnostic and therapeutic processes, as well as organizing work in medical facilities which have been recognized as one of the crucial conditions for the effectiveness of the medical personnel work during the COVID-19 pandemic [37–40].

As indicated by >90% of the respondents, these areas of the Polish healthcare require changes due to the need for improving health outcomes in patients what has been noticed in studies also conducted in other geographical areas [41].

According to students' opinion the systemic solutions affecting working conditions that require changes are allocation of resources between different types of healthcare institutions, which is closely related to the need to

change priorities in the system (>79% of the answers), and the role of universal health insurance associated with the change in the scope of services financed from health insurance contributions (>43% of the respondents).

Patient accessibility to healthcare as the consequence of systemic solutions influencing the working conditions of the health care personnel is the area the Polish respondents are critical about; more than half of the surveyed group believe that patients do not receive appropriate services immediately. As for too late diagnosis, the respondents identify too long wait times for appointments with specialist doctors and admission to hospital as the main causes of the problem, along with doctors who establish diagnosis too late. The reasons for this are restricted access to diagnostic tests, too long wait times for their results, as well as insufficient funding. According to the Watch Health Care (WHC) report, the average waiting time for guaranteed health benefits in Poland in 2021 was 3.4 months, while the average waiting time for diagnostic tests is 1.9 months [42].

Similarly to this study, a comprehensive approach to factors affecting the medical personnel work was adopted in one of American studies conducted among medical students. The results show that 66% of the study participants regard universal health insurance as beneficial, about 40% consider rationing of care to be incompatible with the rules of its delivery, and >70% believe that doctors are responsible for healthcare costs. Also, 60% of the respondents see the need to increase spending on prevention. A similar percentage of the Polish students surveyed supported the need to increase spending on health policy programmes and >80% considered preventive activities in Poland to be insufficiently developed [43].

An interesting approach to the opinions of future employees of the public healthcare was adopted in Germany, where an analysis of the possibilities and limitations of work in the public healthcare system was conducted. The factors identified as increasing the attractiveness of work in the public healthcare were the following: strengthening systemic, structural solutions and preventive measures in response to health needs; reducing bureaucratic and political factors limiting the functioning of medical professionals. Some of them coincide with the questions asked to Polish students, who also drew attention to the need of improving the equipment with advanced medical technologies and limiting the role of government institutions in decision-making processes [44–46].

Summarizing students' opinions, it can be said that they should contribute to setting directions for the redefinition of methods and instruments affecting the increase in employee satisfaction. Feedback obtained from students can be an inspiration to create methods of promoting, on a national scale, the most important solutions influencing working conditions, through a dialogue platform or dissemination of knowledge about the opportunities and limitations that may occur in the healthcare. It seems indisputable that the assumptions of future health policy should be formulated in the context of the results of opinion polls of various stakeholders, including students at medical universities, i.e., future employees of the health system.

**Limitations**

The study had some limitations. First of all, it referred to the factors/areas of change in the healthcare in Poland only from the perspective of students. However, the information obtained from the respondents may be an indicator of the degree of publicity of the process of changes that should take place in the health system to improve the working conditions of medical staff. Secondly, the results of the survey reflect the opinions of respondents of only one medical university (although all its faculties), which may make them more local. Undoubtedly, empirical material referring to this issue should be expanded in further research. Thirdly, it is also worth paying attention on the number of medical faculty students (future physicians) who participated in the study. They were relatively small group of respondents in comparison with students of emergency medicine, public health, dietetics and nursing. Planning the future studies aiming at medical university students and their opinion the proportions of the respondents representing the different group of students should be explained carefully. Furthermore, some factors affecting the working conditions of healthcare personnel, such as the remuneration system in the public system or working conditions in the private health sector compared to the public sector, were deliberately omitted. It was assumed that each of these multifaceted areas could be the subject of separate, extensive explorations.

The limitation of this study is the timeframe of the collected data, which predates the COVID-19 pandemic. The global pandemic has significantly influenced the perception of healthcare systems and their role in ensuring health security for both patients and, perhaps most importantly, the staff working in healthcare facilities. Undoubtedly, future research should include an examination

of this aspect to provide a comprehensive understanding of how the unprecedented health crisis has affected health care personnel expectations and perceptions of healthcare systems. This addition would not only reflect the shifting priorities in health care but also offer insights into the resilience and adaptability of healthcare systems in the face of global health emergencies.

## CONCLUSIONS

Collecting opinions of medical universities students on their attitudes towards organizational and financial working conditions in the public health system can contribute to improved systemic solutions aimed at enhancing healthcare quality, effectiveness and accessibility.

Providing systemic organizational and economic conditions stimulating creativity and decision-making of employees of medical units is one of the key elements indicated by students; according to their views, the role of politicians in planning and implementing reforms should be limited.

The expectations of future professionals regarding working conditions and the systemic environment of their work should be the subject of reproducible and comparable analyses which could reopen a discussion on the health insurance system.

Strongly declared students' interest in healthcare reform encourages reflection on enriching education with elements of managerial knowledge and skills.

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**Author contributions**

**Research concept**: Izabela Rydlewska-Liszkowska, Anna Rybarczyk-Szwajkowska
**Research methodology**: Izabela Rydlewska-Liszkowska, Agnieszka Strzelecka
**Collecting material**: Anna Rybarczyk-Szwajkowska
**Statistical analysis**: Agnieszka Strzelecka
**Interpretation of results**: Izabela Rydlewska-Liszkowska, Agnieszka Strzelecka
**References**: Izabela Rydlewska-Liszkowska, Agnieszka Strzelecka, Anna Rybarczyk-Szwajkowska

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