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## A qualitative analysis of reasons for satisfying professional career after completing higher education studies of public health

### Abstract

**Introduction.** Public health as an academic discipline is taught at different academical levels all around the world. In Poland, the first School of Public Health was launched in 1991 in the city of Krakow, becoming then a part of the Jagiellonian University Medical College. Through more than three decades, this educational entity (Institute of Public Health Jagiellonian University Medical College; IPH JU MC) has educated hundreds of graduates who work for various healthcare stakeholders.

**Aim.** The goal of this study was to find the benefits resulting from studying public health, based on the experiences of IPH JU MC graduates, as well as to characterize the experiences gained and the skills developed during university studies of public health.

**Material and Methods.** Based on 46 interviews conducted with public health graduates, a qualitative analysis was made using NVivo 12 software. Interviews' content was analyzed with the use of eight codes related to issues mentioned by graduates: EPH (EuroPubHealth), EBM, data analysis, English, project, HTA, practical placement, and students' scientific clubs.

**Results and conclusions.** In the interviews the graduates indicated the role of skills gained during education at IPH JU MC, e.g., drawing conclusions based on scientific research, taking part in many public health projects, better language skills thanks to English specialization path, working in the international environment. The results have shown that experiences gained during university studies of public health allow for career development in the healthcare sector.

**Keywords:** professional career, public health, graduates, qualitative analysis, interviews, healthcare.

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### INTRODUCTION

Public health (PH) is a discipline developed at various academic levels, at different higher education systems all around the world. System of education in PH is not homogenous because public health is usually defined quite broadly, not only medically, but also socially and economically. PH as a discipline is not only related to medical approach, but has more domains derived from other disciplines. That area consists of more definitions e.g. health literacy or environmental health [1]. The field of PH incorporates also political sciences. It was evident during the COVID-19 pandemic because the virus not only infected people all over the world, but also caused changes in the perception of individual freedom in relation to the well-being of the whole society. From the international and political points of view, the part of struggle with pandemic was cooperation between various healthcare stakeholders. All activities related to combat the pandemic show how healthcare institutions, governments, UN, WHO and other international organizations cooperate. A pandemic goes under control only when health policy is based on evidence and cautious decisions [2]. Health risks in the 21st century are beyond the control of any government or country. In the era of globalisation,

promoting public health and equity requires cooperation and coordination both within and among states. Working in partnership, public health lawyers and health professionals can become champions for evidence-based laws to ensure health and safety of the public [3]. Education could bring an added value in PH and a better understanding of issues related to health. To struggle with emergencies like the COVID-19 pandemic, organizing public health specialization paths for healthcare professionals should be significantly advanced.

In Europe, PH education is usually divided into Bachelor and Master level (the UK, Poland, Denmark, southern Europe – three years of Bachelor level and two years of Master level education, according to the Bologna process guideline). On the contrary, in the Netherlands, PH graduates are obliged to spend one year for their Master level training. The PH study programs are usually very diversified, and various schools, universities, and colleges propose a plethora of thematic modules within them, including e.g. Health Economics, Biostatistics, Epidemiology, Health Policy, and others [4]. There is no global unification in PH education and various countries emphasize different aspects of contemporary PH in their national or local study programs.

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PH as a vocational discipline suffers from the lack of dedicated professional organizations and a low level of specific legal regulations – to contrary to specific chambers and legal regulations, which medical professions, including physicians, midwives, nurses, etc., usually have. PH issues are very strongly exposed at the international level on different organizations like the WHO, European Commission, or non-governmental organizations [5]. Many Western countries have developed PH study frameworks and rules of education, which makes PH, as a field of studies, be better understood by the employers. To the contrary, in countries with lower incomes, PH is often not understood properly by various employers [6]. They do not appreciate the competencies of PH graduates, because they do not realize what their skills and abilities are [7]. One of the reasons can be the lack of just one standardized system of education and competencies. Only a few countries have prepared special frameworks for MPH graduates (USA, Canada, Australia) [8].

The academic PH studies have been introduced in the Central-Eastern European countries in the 90's of the 20th century. In Poland, along with the socio-economic changes, the possibility of education in the area of PH has also appeared at that time. In the years 1991-1997, the PH education was carried out in the form of postgraduate studies at the School of Public Health in Krakow, which was the first institution in Poland to undertake the training of new management staff in healthcare. It was established by the Jagiellonian University together with the Medical Academy. The first graduates of the School of Public Health had different medical backgrounds (physicians, midwives, nurses). As the models of training carried out in this facility, the experiences of the Ecole Nationale de Sante Publique in Rennes and Harvard School of Public Health were used (programs in health policy and management in healthcare). Since 1997, the public health training has become a full-time program, run by the Institute of Public Health (IPH; built on the basis of the former School of Public Health), which became part of the newly established Faculty of Health Sciences – they all have become the integral part of the Jagiellonian University Medical College (JU MC) [9]. IPH enjoys a good reputation on the international scene, where it cooperates with many foreign universities. In 2021, IPH celebrated the 30th anniversary. It is active in social media and has its own profiles on Facebook, Instagram, Twitter, LinkedIn and YouTube. Recently, new studies, such as Healthcare Management (Bachelor and Master degree) and MBA studies, have been introduced and organized in cooperation with the Faculty of Management and Social Communication of the Jagiellonian University. The employees of IPH have been cooperating with other scholars from foreign universities. IPH is active as a part of various PH networks, including the Association of Schools of Public Health in the European Region (ASPHER), and it participates in actions strengthening the idea of PH [10].

## AIM

The goal of this study was firstly to explore the facilitators of satisfactory carriers among PH graduates in Poland, using qualitative analysis of interviews. Secondly, the aim was also to characterize the experiences gained, and the skills developed by the graduates during their higher education studies, which may be considered as the prerequisites for satisfying professional career of a PH graduate.

## MATERIAL AND METHODS

This qualitative study included information contained within 49 interviews with the graduates of PH studies which had been completed at the Institute of Public Health (IPH) of the Faculty of Health Sciences of the Jagiellonian University Medical College in Krakow, Poland. The study material was sourced from the section “Careers of graduates (interviews)”; in Polish: “Kariery absolwentów (wywiady)”; published on the websites of IPH. The interviews were conducted between March 2019 and July 2022 [11].

Interviewees were recruited mainly through electronic mail correspondence by academicians employed at IPH, in vast majority by the section’s editor.

Interviews were structured and all graduates were asked to answer the following questions:

- What has been your career path?
- What kind of experience gained during your public health studies helped you in getting a job?
- What skills acquired during your studies do you use in your professional work?

The text of interviews was subjected to qualitative analysis with the use of NVivo 12 software. The codes were created during analytical phase of this study. They were put into emerging categories and grouped. Since this study was based on the publicly available material, no ethical approval was sought.

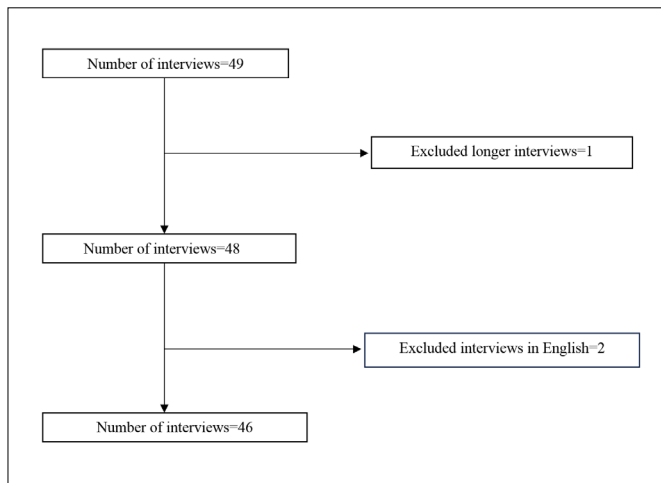
The analyzed fragments of the text of interviews were grouped according to the following codes: “EPH (pathway of studies alongside the Europubhealth/Europubhealth+)”, “EBM”, “data analysis”, “English”, “project”, “HTA”, “practical placement”, “students’ scientific club”. The detailed description of the names of codes developed in this study, as well as their description is provided in Table 1.

The codes were created during analysis of text of the interviews, referring to information contained in these interviews. The presented codes were established based on the analysis of all research material, according to the consensus developed by this paper’s authors. Out of 49 interviews included in the initial analysis, 46 were selected for the full analysis. The remaining three interviews were excluded due to their atypical, non-standardized character. Only interviews performed in Polish language and interviews based on the same set of questions were included and analyzed. This was to maintain homogeneity of the studied material. The information provided by the interviewees was described and analyzed in this paper using two informants’ characteristics: sex (male/female) and year of graduation, e.g. (female, graduated in 2014).

The diagram in Figure 1. presents the process of the selection of interviews for the final analysis.

**TABLE 1. Names of codes developed in this study and their description.**

Code's name	Code's meaning
EPH	The special English language pathway of studies developed by IPH for students of Master of Public Health study direction, normally (beyond EPH) taught in Polish language. Participation in this special pathway allows the students of Polish language study direction to study for one semester together with international students of the Europubhealth/Europubhealth+ (European Public Health Master degree studies). The students are selected to this pathway based on their former academic achievements and results of a qualification interview.
EBM	Evidence-Based Medicine as a special type of knowledge and skills used by interviewees in their daily work. EBM is a source of information gained from clinical experience. Graduates related to HTA field often indicate the role of Evidence-Based Medicine in finding good conclusions.
data analysis	Set of knowledge and skills related to critical thinking and data analysis which is acquired and developed during the studies. It is used by the graduates on their job positions and allows them to fulfill their duties properly.
English	Knowledge of English language used by the graduates in their professional careers, not only abroad, but also in Poland.
project	Participation in scientific research or commercial consulting projects implemented by IPH or other parties, which allowed students to gain their first work experiences. The separate sub-codes for specific three projects implemented at IPH in recent years have been included into code, i.e., the HAPPIE study, the project in the region of Beskid Wyspowy organized by IPH, and the PROHEALTH 65+ project.
HTA	Health Technology Assessment as a set of knowledge and skills used by the graduates in their professional careers. A lot of graduates analyze clinical trials in their work, preparing HTA reports for different healthcare stakeholders.
practical placement	Participation in compulsory students' practical placements (internships) during the studies.
students' scientific club	Voluntary participation in activities of the students' scientific clubs of various types that are aimed to enhance and develop skills in various areas of public health.

**FIGURE 1. PRISMA selection of interviews.**

- ) Excluded interview: 1 (atypical character; other set of questions)
- ) Excluded interviews: 2 (atypical character; language other than Polish)

## RESULTS

### Characteristics of the interviewees

Most of the interviewees were women (78%), seven of them being academic teachers (15%), while professions of the remaining ones were very differentiated. Regarding time span of professional experience after completing the studies, almost the same number of people graduated less than five years ago and more than five years ago (26 vs. 20; 57% vs. 43%) (Table 2).

**TABLE 2. Summary characteristics of the interviewees.**

Sex	Female (n, %)	Male (n, %)
	36 (78%)	10 (22%)
Occupation	Academic teacher (n, %)	Other than academic teacher (n, %)
	7 (15%)	39 (85%)
Period since graduation	More than five years (n, %)	Lower than 5 years (n, %)
	26 (57%)	20 (43%)

In total, 97 fragments of the overall text of interviews were coded. Most of them have been labelled with the code named “project” (30 fragments), while the lowest number of fragments were associated with the “EPH” code (only three fragments). The detailed description of the frequency of appearance of codes identified in this study is provided in Table 3.

**TABLE 3. Frequency of appearance of codes identified in the study (numbers and percentages).**

Code name	Code frequency (n)	Code frequency (%)
EBM	4	4.12
HTA	8	8.25
data analysis	16	16.5
English	9	9.28
EPH	3	3.1
project	30	30.93
practical placement	14	14.43
students' scientific club	13	13.4
Total	97	100

### Participation in scientific research or commercial consulting projects

The meaning of the code named “project” has been explained in the Table 1. One of the projects in which the former students participated was the PROHEALTH65+, which was implemented at IPH in years 2014-2017, in cooperation with other universities. Six graduates participated in this project: “I also worked in scientific projects implemented by the National Institute of Public Health and the Institute of Public Health JU (PROHEALTH 65+: Health Promotion and Prevention of Risk – Action for Seniors)” (male, graduated in 2014). Students were helping scholars in executing the project, for example by taking part in gathering information using questionnaires prepared for elderly people. According to another interviewee, participating in projects organized by IPH was an occasion to improve interpersonal skills through contacts with the staff of various foreign universities: „In addition, I worked in the PROHEALTH 65+ project financed by the European Commission, in which the Institute of Public Health

was key contractor and involved its students in research, thus giving them the opportunity to undergo internships with such a large project” (male, graduated in 2018). Projects maintained by IPH should be a place to start students’ careers and to develop teamwork skills. Another scientific research project at IPH, the anthropological project implemented in the region of Beskidy Mountains, in southern Poland, carried out in cooperation with the University of Illinois, also attracted considerable interest among students, e.g. “I spent my two holidays engaging in scientific research conducted by the Department of Health and Environment at the Institute of Public Health of the Jagiellonian University and the University of Illinois. My work consisted of conducting questionnaires with volunteers, creating databases and organizational support. There was always a great atmosphere and I could learn a lot watching the research work, plus I could practice English with native speakers” (male, graduated in 2018).

Another project was the one aimed at studying the impact of psychosocial factors on cardiovascular disease. According to one of the interviewees: “Working in the HAPPIE (Health, Alcohol and Psychosocial Factors in Eastern Europe) project, conducted at the Department of Epidemiology and Population Research of IPH was extremely significant for me. I was responsible for creating an electronic database” (female, graduated in 2010). Participation in this project could help in developing useful skills, like time management, human resources management, etc. Students could also achieve the basic skills and the ability of working with statistical programs, like Statistica or SPSS.

The former students emphasized that participation in scientific research and commercial consulting projects shaped their abilities of working in a team. They learnt to prepare their piece of work as good as possible, to avoid errors and shortcomings. Students have highlighted that PH studies gave them a project-thinking approach and facilitated their adaptation from academia to business environment.

### European Public Health

Some of the former students highlighted the possibility to take part in courses taught in English language. This was possible thanks to the cooperation of the IPH with other European universities, as part of the EuroPubHealth consortium. Students from all over the world came to Krakow to study on the Health Economics and Governance in Transition specialization path. The IPH enabled also the qualifying and selected Polish students to participate in these English-language-taught classes, as part of the specialization path for Polish students. The value of this opportunity is presented in a statement made by one of them: “A great opportunity for students is to choose the English-language specialization path called “Health Economics and Governance of Health System” in the EuroPubHealth program, which in my personal opinion perfectly prepares students for work in international organizations and also creates an opportunity to establish international contacts, very important in today’s labor market” (male, graduated in 2014).

### Practical placements

Graduates emphasized the role of practical placements (internships) as one of the fundamental and most important elements of their studies. These internships are carried out in various places (some of them are allocated based on individual preferences and searches done by the students). The pool of

organizations and institutions where graduates have practical placements includes: the Ministry of Health, Sanitary and Epidemiological Stations, hospitals (mainly in accounting or legal departments), medical out-patient centers, or non-governmental institutions: “I have completed internships at the Sanitary and Epidemiological Station in Tomaszów Lubelski and hospital in Zamość. During my studies and after graduation, I was involved in actions carried out by the many local organizations” (female, graduated in 2014).

In some cases, the internship became the graduate’s future workplace: “The adventure with my current workplace, the Ministry of Health, began in the summer of 2016, when I had compulsory student internships” (female; graduated in 2014). “I did my student internships in sanitary surveillance, hospitals, and the National Health Fund. Thanks to that, I was able to see from the inside how work in the administration of healthcare system organizations looks like. After these experiences, it was easier for me to get a job after graduation” (female, graduated in 2015).

### Students’ scientific clubs as the possibility to improve presentation skills

Graduates also often presented participation in scientific clubs as a highly valued element of their studies. It helped them a lot to acquire the skills needed in future professional work. The most dynamically operating students’ scientific clubs include the ones dedicated to health promotion, evolutionary basis of health, epidemiology, and population research: “In addition, I was active in the Student Scientific Club of Evolutionary Basis of Health and became a co-author of presentation at the International Medical Students’ Conference in Krakow. My scientific topic was related to social campaigns” (male, graduated in 2018). Participation in activities of scientific clubs helped the students to develop useful contacts needed in professional life: “During my studies, I was active in the Scientific Club of Epidemiology and Population Research. I took part in several conferences, both as a speaker and listener. I also helped in the organization of the “Preventive Cardiology” Scientific Conference. Thanks to my work in the scientific club, I learned about the project carried out by the Department of Epidemiology and Population Research. I got involved by conducting surveys on cognitive functions and physical functioning at the respondents’ home. I think that all these activities taught me how to work with people, taught me the openness and teamwork” (female, graduated in 2015).

### Data analysis as the key ability of PH alumni

The graduates of PH stressed that data analysis was one of the most valuable skills which they acquired. In the scientific work, the correct segregation of gathered material leads to relevant conclusions and appropriate assessments. A critical approach to research results is considered as one of the most important abilities of PH graduates. The basic data analysis skills which they acquire are further developed in their professional life or post-graduate education. Data analysis in biostatistics or social and health policy enables to draw the right conclusions. According to one of the graduates: “The most important of these is the ability to think critically, analyze data, search for information; and the comparative analysis of social and health policies” (male, graduated in 2014). Former students emphasized the role of data analysis in their daily work. “The skill of analytical thinking and proper verification of data is

very important in my work” (male, graduated in 2018). “The acquired experience helped me to gain professional skills, for example in the organization of scientific research, performing statistical analyzes and processing research results, as well as preparing scientific presentations or publications” (female, graduated in 2010). Graduates declared biostatistics as a very important university course: “During my studies, I learnt the basics of biostatistics and data analysis. Retrospectively, I must say that these were great foundations” (female, graduated in 2010). Ex-students declared that skills acquired during their study period were crucial in their carriers: “During studies, we were trained in the field of scientific information. I converted my knowledge into practice during this internship, expanded it with new information and skills used until today (including groupwork, joint project preparation, literature review, searching databases and library repositories, and also the use of bibliography)” (female, graduated in 2013). PH graduates are also responsible for collecting pieces of information in their work life: “My role is mainly to contact the research team (doctors, nurses and pharmacists) and to periodically monitor documentation and collected data” (female, graduated in 2003). “Most often, however, I use skills related to statistics. I create analyses of indicators for monitoring the quality of healthcare. I prepare a Safe Hospital Ranking, in which we ask healthcare entities about over 200 issues ranging from the quality of healthcare, through finances, staff, and ending with patient comfort” (male, graduated in 2017). The knowledge of statistics is used by the interviewees regardless of where they are working.

#### **Evidence-Based Medicine and Health Technology Assessment**

The analytical abilities of Public Health graduates allow them to work in teams dealing with the health technology assessment (HTA); mainly at the Agency of Health Technology Assessment and Tariff System (AOTMiT) – the Polish state agency for HTA, as well as the private entities performing pharmacoeconomic analyses. The interviewees indicate that the skills acquired in the studies are later developed as a part of training and workshops carried out outside the university: “We conducted high-quality analyses of medical technologies mainly at the request of pharmaceutical companies. I took several internal trainings, including evidence-based medicine (EBM) and HTA” (male, graduated in 2018). “The module on Medical Information (at the university) gave me the ability to search scientific databases and do a systematic review, which is useful in HTA every day. In the last month of my studies, I started working in a company dealing with health technology assessment (HTA)” (male, graduated in 2018). “When, thanks to the help of my relatives, I recovered to full health, I decided to finally find a job in the health sector. I submitted applications to two employers and after about a month I started working. I began serving patients in one of the medical companies. However, after only two weeks, I also received a response about being admitted to AOTMiT - to its newly formed branch in Krakow” (female, graduated in 2015). “Subjects in the field of epidemiology and biostatistics as well as the basics of Pharmacoeconomics and Health Economics were the foundation of my development path. During my studies, I gained the basic knowledge, which I broadened during specialized training: e.g. by advanced HTA course in the area of using the results of economic analyses and designing HTA reports” (female, graduated in 2013).

#### **English skills**

Graduates consider knowledge of the use of English language as one of the most important resources that are associated with better access to employment not only in Polish, but also foreign companies. English allows an international career in the medical industry and opens up opportunities for scientific activities. The module on Specialized English provides the students with skills which are important and necessary, but need to be developed all the time, also after graduation. In their workplaces, graduates work mainly in the international environment: “Daily contact in English with business and science, and clinicians from around the world” (male, graduated in 2018). The graduates emphasize the significance of English language skills: “Knowledge of foreign languages is also important, and both classes and study trips have helped me a lot to develop my language skills”. “Specialized English is extremely important, because (almost) all the scientific articles I read were in English” (male, graduated in 2017). “Staying and studying at a foreign university was a huge leap forward for me, both in academic and personal terms. A foreign scholarship is not only an opportunity to immerse within an international environment and learn about the academic life of another university, but above all, a chance to prove yourself” (female, graduated in 2007).

#### **DISCUSSION**

The presented results indicate the personal development of graduates who, due to the studies at IPH JU MC, had the opportunity to start their professional career, e.g. by participating in student internships or developing English language skills. Most graduates do their work in a project mode in their professional life. The didactic activities during their study period were performed in a similar way, so the activity at the university prepares them well for their jobs. The graduates claimed that skills such as data analysis or English language speaking are useful for them and allowed them to find a job in healthcare entities.

This study has its limitations. One of them is the lack of standardization of the study group. It includes only 46 public health graduates over a long 20-year period. It was not possible to analyze the actual career pathways of IPH graduates using a larger cohort. Only those people who agreed to tell their stories were considered in this study. It was not possible to conduct a comparative quantitative analysis of various aspects of their studies and further professional life, due to many reasons, including the difficulties in reaching them and financial constraints (this study was performed without any external financing).

There is a lack of official statistics about the career of every PH graduate, not only completing their studies at IPH JU MC, but also other universities in Poland. Starting from 2019, the National Institute of Public Health-National Institute of Hygiene took an effort to organize a special database for public health graduates, but the role and use of this database is unknown [12]. Many organizations within international collaboration try to integrate PH workforces and to spread information about public health among policy makers and leaders. The creation of groups and associations bringing together public health professionals are mainly done at the supranational level. One of them is Global Network for Academic Public Health. The role of this body is to enhance academic public health

worldwide through mutual learning and collaborations between academic public health institutions globally to improve and protect the health of people and the planet [13]. They declare some documents and encourage actors from governmental and non-governmental sector to take care of public health issues.

Increasing interest of PH workforce among healthcare stakeholder is crucial, because the analyzed group of graduates gained various skills during their studies at IPH JU MC. Nonetheless, PH graduates work in different institutions and public health is a general-academic type of studies; in contrary to strictly medical and vocational (related to the regulated professions) types of studies like medicine, pharmacy, and midwifery. The lack of a homogeneous type of workplace (e.g., a hospital for medicine graduates), in which PH graduates can work, could be a significant problem for recognizing the field of public health as eminently attractive for future students. Moreover, in Poland, professional interests of PH graduates are not protected by the dedicated legal act. Nowadays, documents related to PH qualification are characterized by the lack of learning outcomes, professional tasks, or internal consistency [14]. There is no legal regulation helping to position the PH graduates on the labor market. Public Health Act in Poland concentrates more on population health problems than developing public health workforces [15].

As far as international research on the professional activities of PH graduates is concerned, their participation in infectious disease prevention can be highlighted. PH graduates in the study of Vassallo and Boston are mentioned as an important factor in the fight against the spread of diseases, due to their ability to draw conclusions from the description of the epidemiological situation or to conduct an epidemiological investigation [16]. In contrast, a survey of Columbia University's Mailman School of Public Health graduates shows an increase in the number of public health graduates among non-government sector workers, whereas the employment rate in the government sector declines or remains unchanged (trend analysis 2012-2016) [17]. In China, there was a significant increase in the number of PH graduates between 1998 and 2012. They constitute an additional resource of professionals helping to cope with shortages of staff in healthcare.

The demand for PH personnel was particularly noticeable during the COVID-19 pandemic [18]. PH issues were significant in the recent three years, because through relevant data analysis, health policy decisions, and solutions can be more adequate and based on scientific evidence. The results of this study indicate that PH graduates can perform an advisory function for different healthcare stakeholders. From the perspective of the Polish PH graduates, they need more visible representation among the healthcare institutions that potentially can employ them and use skills gained during their studies at the university.

## CONCLUSIONS

Based on the interviews, PH graduates have taken part in a lot of activities during the studies, like projects organized by IPH JU MC. They are employees of different healthcare institutions. At the university they had an opportunity to study abroad and participate in specialization path provided in English. Thanks to studies, they are able to analyze scientific research and making analysis based on HTA and EBM. All these

skills are indicated by graduates as very important in the perspective of their professional careers. The experience gained during studies at IPH JU MC allows for career development in the professional medical sector.

## REFERENCES

- Sørensen K, Broucke SV, Fullam J, et al. Health literacy and public health: a systematic review and integration of definitions and models. *BMC Public Health*. 2012;12(80).
- Jakovljevic M, Bjedov S, Jaksic N, et al. Covid-19 pandemia and public and global mental health from the perspective of global health security. *Psychiatr Danub*. 2020;31(1):6-14.
- Gostin L, Monahan JT, Kaldor J, et al. The legal determinants of health: harnessing the power of law for global health and sustainable development. *The Lancet*. 2019;393(10183):1857-910.
- Averill M, Dillon-Summer L, Stergachis A, et al. Integrating public health students into interprofessional education. *J Interprof Care*. 2020;34(3):427-30.
- Yeager V, Beitsch LM, Johnson SM, et al. Public health graduates and employment in governmental public health: factors that facilitate and deter working in this setting. *J Public Health Manag Pract*. 2021;27(1):4-11.
- Evans D, Gray C. How Important is public health practitioner registration to uk public health employers? *Public Health*. 2019;171:1-5.
- Kaba M, Assefs M, Yigzaw T, et al. Gaps in public health training in Ethiopia: Insights from a qualitative study. *Ethiopian Journal of Health Development*. 34, no. 1. 2020.
- Genat B, Robinson P. New competencies for public health graduates: a useful tool for course design. *Aust N Z J Public Health*. 2010;34(5):513-6.
- Institute of Public Health. Introduction. [<https://izp.wnz.cm.uj.edu.pl/en/about-the-institute/introduction/>] (access: 09.03.2023)
- Kowalska-Bobko I, Gałazka-Sobotka M, Frączkiewicz-Wronka A, et al. Skill mix in medical and about medical professions. *Med Pr*. 2020;71(3):337-52.
- Kariery Absolwentów (Wywiady). Kraków: Institute of Public Health of the Jagiellonian University; 2020.
- National Institute of Public Health. Public Health graduates registration. [<https://www.pzh.gov.pl/rejestracja-absolwenta/>] (access: 09.03.2023)
- Middleton J, Biberman D, Magana L, et al. Global governance for improved human, animal, and planetary health: The essential role of schools and Programs of Public Health. *Public Health*. 2021;42:1604610.
- Cianciara D, Larysa S, Urban E. Sectoral Qualifications Framework for Public Health. Warszawa: Educational Research Institute; 2020.
- Public Health Act. Ustawa z dnia 11 września 2015 r. o zdrowiu publicznym. *Dz. U. z 2022 r. poz. 1608*.
- Vassallo A, Boston KM. The master of public health graduate as infection preventionist: Navigating the changing landscape of infection prevention. *Am J Infect Control*. 2019;47: 2:201-7.
- Krasna H, Kornfeld J, Cushman L, et al. The new public health workforce: employment outcomes of public health graduate students. *J Public Health Manag Pract*. 2019;27(1):12-9.
- Dong L, Bouey J, Public Mental Health Crisis during COVID-19 pandemic, China. *Emerg Infect Dis*. 2020;26(7):1616-8.

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