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"Truly once in a lifetime opportunity". An overview of nursing students experiences of study-to-work transition in the SARS-CoV-2 pandemic

"Jedyna taka szansa w życiu". Przegląd doświadczeń studentów kierunku Pielęgniarstwo związanych z rozpoczęciem przez nich pracy zawodowej w czasie pandemii SARS-CoV-2

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STRESZCZENIE

"JEDYNA TAKA SZANSA W ŻYCIU". PRZEGLĄD DOŚWIADCZEŃ STUDENTÓW KIERUNKU PIELĘGNIARSTWO ZWIĄZANYCH Z ROZPOCZĘCIEM PRZEZ NICH PRACY ZAWODOWEJ W CZASIE PANDEMII SARS-COV-2

Wprowadzenie. Wybuch pandemii wirusa SARS-CoV2 sparaliżował funkcjonowanie systemów ochrony zdrowia. Najistotniejszym problemem było zapewnienie odpowiedniej liczby osób personelu medycznego. Sposobem uzupełnienia braków kadr medycznych było umożliwienie studentom ostatniego roku studiów medycznych rozpoczęcie pracy zawodowej.

Cel pracy. Analiza dostępnego piśmiennictwa podejmującego zagadnienie rozpoczęcia pracy zawodowej przed studentów kierunków medycznych w czasie pandemii wirusa SARS-CoV-2.

Metoda. Przeszukano zasoby pięciu baz bibliograficznych: PubMed, Scopus, ProQuest, Web of Science, CINAHL Complete via EBSCOhost. Kryteria włączenia: 1) publikacje w języku angielskim, 2) prace opublikowane w recenzowanych czasopismach naukowych, 3) rodzaj publikacji, 4) prace opublikowane pomiędzy 01.01.2020 a 21.12.2020. Zidentyfikowano 2,341 publikacji. Do przeglądu włączono 17 publikacji.

Podsumowanie. Analiza wskazała, że jedną z najważniejszych grup kompetencji, umożliwiających sprawne wdrożenie do pracy są kompetencje miękkie (n=13). Studenci zwracali uwagę na problemy etyczne, z którymi zetknęli się rozpoczynając pracę zawodową w pandemii (n=8). Przegląd wskazał dwa czynniki, mogące mieć znaczenie dla kształtowania się w przyszłości tożsamości zawodowej studentów rozpoczynających pracę zawodową w pandemii: zaburzonego procesu adaptacji zawodowej oraz konieczność natychmiastowego wdrażania zmian do procesów kształcenia studentów kierunków medycznych.

Słowa kluczowe: pandemia COVID-19, studenci pielęgniarstwa, studenci medycyny, doświadczenia, rozpoczęcie pracy zawodowej

ABSTRACT

"TRULY ONCE IN A LIFETIME OPPORTUNITY". AN OVERVIEW OF NURSING STUDENTS EXPERIENCES OF STUDY-TO-WORK TRANSITION IN THE SARS-COV-2 PANDEMIC

Introduction. The outbreak of the SARS-CoV2 pandemic resulted in a paralysis of healthcare systems. The most important problem was the provision of an appropriate number of healthcare personnel. One of the ways was to enable final-year students of medical sciences to start professional work.

Aim. To analyse the available literature dealing with student study-to-work transition during the SARS-CoV-2 pandemic outbreak.

Method. The resources of five databases: PubMed, Scopus, ProQuest, Web of Science, CINAHL Complete via EBSCOhost were researched. The inclusion criteria: 1) English language, 2) papers published in peer-reviewed journals, 3) type of publication, 4) papers published between 01.01.2020 and 31.12.2020. We have found 2,341 articles. The 17 papers were included in the final analysis.

Results. The analysis pointed to soft competences as one of the most important group of competences enabling efficient study-to-work transition (n=13). Students pointed to the ethical problems encountered at the start of work in the pandemic (n=8). Two important factors should be highlighted as crucial for the future formation of the professional identity of a group of students starting their professional career in the pandemic: the impact of the disturbed process of professional adaptation and the need to implement changes to the processes of education of students of medical sciences.

Key words: COVID-19 pandemic, Nursing Students, Medical Students, Experiences, Study-To-Work Transition

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INTRODUCTION

The COVID-19 pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has by far been the most severe pandemic this century [1]. According to the World Health Organization (WHO) data from 29 December 2021, there have been 280,119,931 diagnosed cases in 180 countries and 5,403,662 deaths worldwide [2].

The outbreak of the SARS-CoV2 pandemic in early 2020 resulted in a paralysis of many healthcare systems worldwide [3]. The unknown origin of the virus, its initially unknown routes of transmission, the lack of knowledge about COVID-19 treatment, and the rapidly growing number of patients undermined many healthcare systems [1]. As a result of the rapidly spreading pandemic and the overload of healthcare systems, hospital wards in many countries closed down or were transformed into COVID-19 wards, elective procedures were cancelled, and telehealth services launched [4,5]. Standard procedures had to be replaced with new crisis intervention strategies modified depending on the current epidemic situation [6].

The most important problem related to ensuring the stability, efficiency and safety of healthcare systems was the provision of an appropriate number of healthcare personnel, both for the care of SARS-CoV-2 and COVID-19 patients, as well as for the care of the remaining group of patients staying in non-COVID hospital wards or attending outpatient clinics. The growing systemic problem of understaffing became even more visible in the pandemic and disabled many healthcare systems [7]. The staff shortage problem escalated even more as a result of a growing number of healthcare workers being infected, in quarantine or isolation, or delegated to COVID-19 wards [8,9].

In many countries, one of the most commonly used ways to fill in staff shortages was to call on retired healthcare professionals back to work [10,11]. Another way was to enable final-year students of medical sciences, especially doctors and nurses to start their professional work before graduation or obtaining a licence to practice. Many European countries had to rely on final-year nursing and medical students to work side-by-side with healthcare professionals in order to minimize system overload [12-17]. In the Spanish region of La Rioja, nursing students whose clinical placements were suspended between February and March, 2020, were offered work in various healthcare settings with a salary of a novice nurse. Although initially they were only supposed to perform tasks delegated to them by registered nurses, due to enormous staff shortages their contribution to teamwork was much bigger [18].

However, it should be remembered that for obvious and objective reasons, the study-to-work transition took place suddenly, without a prior process of professional adaptation the work environment. The induction of healthcare workers is related to learning the procedures and code of conduct. Newly hired employees assume new social roles and perform delegated tasks, e.g. acquire specific manual skills or achieve professional independence. During this time, they also learn to communicate in a team [19].

This process is country- and profession-specific, but usually it lasts for 3 to 6 months, depending on the workplace. During professional adaptation, newly hired healthcare workers, e.g. doctors or nurses, work under the care of a mentor or supervisor, learning, e.g. through job-shadowing, and only after a certain amount of training do they receive tasks to be performed independently [20]. In the literature, it has been noted that problems with professional adaptation may greatly affect healthcare workers, especially nurses, which results in the abandonment of the profession even several years after starting work [21-23]. Therefore, during the current pandemic, when the process of professional adaptation, if it took place at all, it took place under the shortage of mentors, in non-standard working conditions, with a significant overload of professional tasks, at an increased risk of making a medical error and endangering the safety of patients and one's own. All these factors may adversely affect the socialization to the healthcare profession and may cause undesirable effects in the form of burnout or, in extreme cases, the abandonment of the profession in the long run [24-26].

Therefore, it should be emphasized that the time of adaptation and professional socialization of students beginning work in the pandemic may have been crucial and decisive from the point of view of the formation of their professional attitudes and the decision to stay or not in their chosen profession.

AIM

The aim of the presented review was to analyse the available literature dealing with student study-to-work transition from the SARS-CoV-2 pandemic outbreak (January 2020) until the end of the first wave of the pandemic (the end of December 2020).

The analysis of literature focused on two main issues: (1) The experience of final-year students, especially students of nursing and medicine, entering their professional career even before graduation, without proper professional adaptation; (2) The opportunity to use student experience to modify and improve both the process of transition and study programs.

METHODS

Design

We developed a model to search for and synthesize information, in accordance with the PRISMA guidelines [27].

Eligibility Criteria

The inclusion criteria were as follows: (1) publications written in English, (2) papers published in peer-reviewed scientific journals, (3) original studies, reviews, comments, letters to the Editor, expert opinions, editorials, polemical and problem papers, case reports, (4) papers published between 1 January and 31 December, 2020. The exclusion criteria were as follows: (1) publications not written in English, (2) study-to-work transition was not the main topic, (3) conference abstracts, (4) papers published in non-peer-reviewed journals (press reports, magazine articles, etc.).

Information Sources and Search Strategies

The research questions that guided our search strategy were as follows: (1) What experiences do students have regarding study-to-work transition in the SARS-CoV-2 pandemic?; (2) What conclusions from these experiences can help to modify and improve the current guidelines for professional adaptation and education of the students of medical sciences?

We conducted a scoping literature search of papers published between 1 January and 31 December, 2020 and searched five bibliographic databases (MEDLINE via PubMed, Scopus, ProQuest, Web of Science Core Collection, CINAHL Complete via EBSCOhost). Four authors screened the databases independently. The search was performed in January 2021.

The search design contained three main elements (COVID-19, nursing students, medical students), with a list of synonyms built around them. Both keywords and terms from a controlled term base of MeSH terms were used. The query used in the search engines of the databases was as follows:

((((((„COVID-19" [Supplementary Concept]) OR („Pandemics"[Mesh])) OR („Epidemics"[Mesh])) OR ((((covid[Text Word]) OR (pandemic*[Text Word])) OR (epidemic*[Text Word])) OR (SARS[Text Word]))) OR („SARS Virus"[Mesh])) AND (student [MeSH Terms] OR (student[Text Word])))

Study selection

A three-stage approach was used in order to include/exclude studies in the final review process. Initially, duplicate studies were excluded and after that, the screening process took place based on (1) title, (2) abstract and finally (3) the full-text. Discrepancies regarding article selection were solved by consensus in the reviewing team (Figure 1).

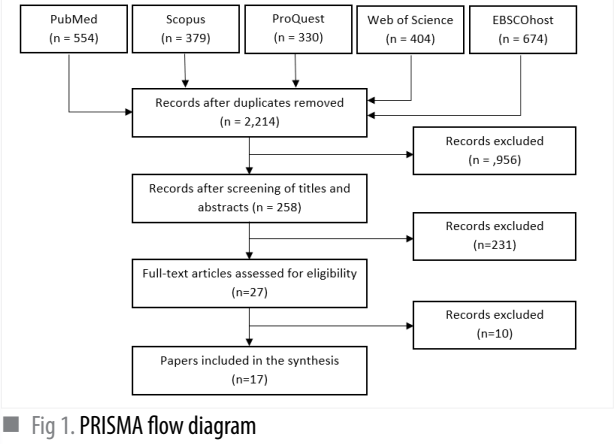


Fig 1. PRISMA flow diagram

Data collection process, extraction and quality assessment

We found 554 articles from PubMed, 379 from Scopus, 330 from ProQuest, 404 from Web of Science, and 674 from EBSCOhost (total n = 2,341). After duplication removal, 2,214 papers were eligible for further analysis. Subsequently, titles, abstracts and keywords were screened. Four researchers conducted a full-text analysis of 27 papers. A data extraction form was established including authors, year of publication, country, specific objectives, main objectives, findings, and geographic focus. Standardised checklist tools were used to assess the quality and risk of bias of individual studies.

Synthesis of the results

A total of 17 papers were included in the final analysis. An aggregative narrative synthesis of the included studies was performed.

Ethic approval

No Institutional Review Board approval was required, because no human subjects were engaged in this review study.

RESULTS

Characteristics of publications

A detailed description of the publications included in the review is presented in Table 1.

LEADERSHIP COMPETENCIES: A FINAL CALL TO ACTION

The analysis of the available publications on the experience of final-year students of medical sciences, starting their professional career in the pandemic, pointed to leadership competences as one of the most important group of competences enabling quick and efficient study--to-work transition [33,34,39,41]. The pandemic turned out to be an excellent opportunity to implement and develop leadership skills. What appeared of key importance to the students who began their professional career immediately after the outbreak of the pandemic were soft skills related to effective communication, teamwork (also interdisciplinary teamwork), the ability to adapt to constantly changing working environment, resilience, endurance and supporting others [18,20, 32-34,37,39,41]. Students emphasized that these competences were as important as the knowledge about the SARS-CoV-2 virus and COVID-19 symptoms, diagnosis, treatment and prevention [20,41].

Effective communication was the most important skill guaranteeing a quick and efficient start of work. As medical and nursing teams worked under unprecedented conditions (e.g. extended on-call time, divided teams to prevent mutual infections, new team members delegated from other wards, etc.), everyone, both long-term employees and newly hired students, had to redefine their communication, flexibility, openness and trust in other members of the therapeutic team [29,32,33,36,41,42].

The ability to adapt to changes was crucial for the newly hired students. They emphasized the fact that during the pandemic, the medical procedures in force in many hospitals and wards, as well as legal and organizational measures (e.g. hospital topography) ceased to function. Therefore, sudden and unexpected organizational modifications

Tab. 1. Characteristics of the group of respondents in terms of a year of starting the studies and their profession

Author	Study type	Aim of the study	Study group	Method	Result	Application
Bahethi et al. (2020) [Icahn School of Medicine, New York, USA] [28]	Descriptive work, activity description, numerical summary, no comparisons.	Description of a non-university dependent project: the COVID-19 Student WorkForce during the pandemic	Medical students (all years), PhD students, nursing students (Master's program)	Voluntary activity by students who entered to-do tasks on a google spreadsheet and those interested in problem solving for the student community and hospitals.	29,602 working hours, 2,277 per week, 7 different types of tasks in 7 hospitals. Task types: Personal protective equipment (PPE), Pharmacy, Administrative services, Hospital operations, Labs/Research, Telehealth, Morale.	The COVID-19 Student WorkForce initiative will continue in the future to prevent volunteer burnout and maintain preparedness in the case of another increase in SARS-CoV-2 infection incidence in the New York area.
Buckland R. (2020) [London, UK] (final-year medical student) [29]	Short report (student's perspective)	The analysis of the experiences of medical students from volunteering as medical assistants (nursing aids). [Healthcare Assistants]	200 medical students - volunteers working as Healthcare Assistants	A short report on the effectiveness of the voluntary service.	Student role during volunteering: clinical observation, supporting patients in eating and moving around, helping nurses and nursing students. The outbreak of the COVID-19 pandemic demonstrated the readiness of medical students to perform their tasks as Healthcare Assistants and highlighted the ability of hospitals to incorporate students in nursing teams.	Internships for students as medical assistants should be incorporated into educational programs in the future, as they proved to be an effective method of interprofessional education and a way to understand the importance of other professions in the therapeutic team, e.g. the role of a nurse.
Campbell et al. (2020) [Northern Territory, Australia] [30]	Letter to the Editor	Pointing out that the outbreak of the pandemic was a real threat to Aboriginal and Torres Strait Islander communities, due to limited access to medical care, resulting from the fact that nurses did not want to undertake work in remote northern territories of Australia.	Nurses	Description of risks related to access to healthcare	Building continuous and safe access to healthcare in these regions of Australia had so far been possible through the cooperation between communities, local authorities and university authorities. These places were places of internship for students and were a way of providing access to healthcare (service-learning practices).	It is important to build local health professional workforce and to foster relationships between universities and communities to organize student internships and ensure continued access to healthcare for the residents of Northern Australia.
Choi et al. (2020) [Pokfulam, Hong Kong] [31]	Commentary	Description of the innovations introduced into the education of part-time nursing students	Part-time nursing students	Description of the actions undertaken by universities to adapt teaching methods to the expectations of part-time students working in COVID-19 wards	1. Lectures were recorded and made available to students asynchronously. 2. New, more detailed and descriptive lecture material was developed. 3. Online, real-time consultations with students were organized.	The factors that influenced the effectiveness of the undertaken actions were: preparation of comprehension questions for the lectures, real-time on-line meetings proved to be useful and were at the same time an opportunity for the mental support from academic teachers.
Collado-Boira et al. (2020) [Castellon, Spain] [32]	Qualitative research	The analysis of student experiences regarding voluntary clinical work during the SARS-CoV-2 pandemic.	62 final-year students of nursing (n=29) and medicine (n=33).	Partially structured interviews	During the SASR-CoV-2 pandemic, effective patient care was possible thanks to the immediate inclusion of nursing students in the healthcare system as equal members of interdisciplinary teams. Despite concerns, students were keen to respond to the government's call for immediate work. They were concerned about the possible risk of passing the infection on to other people. Lack of stable work organization, lack of personal protective equipment, lack of professional experience and contact with patient death were the factors which they indicated as the most stressful.	Research shows which areas should be taken into account in the future in planning educational programs and which competences were lacking in a crisis situation.
Duncan et al. (2020) [Belfast, Northern Ireland] [33]	Descriptive study	An attempt to define resilience in the work of nurses and to indicate how nursing leaders should promote organizational resilience in times of crisis.	Nurses	Literature review	Resilience is defined as: the ability to rebound threats and carry on, as well as self-determination, maintaining good relationships, self-respect, self-efficacy and hope. Nursing leaders should be aware of their own coping strategies, use positive language with their subordinates, and manage their effectiveness.	Among the most important features there are: communication in the team, cooperation, authentic and transparent leadership, and effective decision making based on knowing one's team members (staff recognition, meaningful recognition).
García-Martín et al. (2020) [Almeria, Andalusia, Spain] [20]	Qualitative research	The analysis of experiences and the perception of working conditions of nurses in the emergency departments in the SARS-CoV-2 pandemic.	16 nurses. Inclusion criteria for the study: work experience shorter than six months, consent to participate in the study.	Partially structured interviews	Nurses employed in the emergency departments during the SARS-CoV-2 pandemic experienced increased stress levels and had to develop their own ways of coping with stress and uncertainty. What mattered most to newly hired nurses were: access to up-to-date medical knowledge as well as better planning and use of human resources.	Short-term part-time contracts may be the factor limiting the effectiveness and efficiency of newly hired emergency nursing practitioners. Job-shadowing and access to evidence-based knowledge with the use of modern technologies from the first days of work may constitute the factors increasing the effectiveness of nursing practice.

cont. Tab. 1. Characteristics of the group of respondents in terms of a year of starting the studies and their profession

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Gomez-Ibenez et al. (2020) [Barcelona, Spain] [34]	Qualitative research	The analysis of experiences of final year nursing students gained from voluntary employment during the pandemic	Final-year nursing students from 6 colleges in Barcelona (n=20)	Partially structured interviews	Despite the fear that their loved ones could be infected, the students were pleased with being able to help. They felt unprepared and stressed, but that did not affect their willingness to help. Taking up work in clinical departments by students had a positive impact on their professional identification and strengthened their belief in choosing the nursing profession.	Future nursing education curricula should contain content related to crisis management and management in time of pandemic.
Hayter et al. (2020) [Hull, UK] [35]	Editorial	Indication of 10 points that should be thoroughly analyzed before introducing students as frontline workers in the COVID-19 pandemic.	Nursing students	Considerations on the appropriateness of introducing nursing students to work during the COVID-19 pandemic	The starting point is research on stress in a group of healthcare workers and the associated consequences of burnout. The willingness of students to participate in the fight against the pandemic is a very good sign of professionalization. Nonetheless, universities have a legal and moral obligation both to protect students from infection and to care for their mental well-being.	Only after the end of the pandemic will we be able to assess whether the help of nursing students during the pandemic was a valuable contribution of educational institutions and medical universities in the fight against the pandemic or rather a reckless exposure of students to the risk of losing their health or life with little evidence that such help was needed and worth the price.
Intinarelli et al. (2020) [San Francisco, Canada] [36]	Case study. Qualitative account of practices implemented at one university, in cooperation with external stakeholders.	An account of introducing nursing students to daily practice during the SARS-CoV-2 andemic at the UCSF School of Nursing	20 nurse practitioner students	Account of actions undertaken by the university in cooperation with external stakeholders.	In 3 months, students held over 748 over-the-phone appointments with patients; they gained experience in using evidence-based protocols in which they reported the symptoms of SARS-CoV-2 infections in patients. Moreover nursing students created a patient-oriented atmosphere by ensuring confidentiality, privacy, comfort, emotional support and mutual trust. The contribution of nursing students to improving the triage system for COVID-19 patients, was appreciated by the other members of the therapeutic teams.	The help of the nursing students was invaluable. For the help they provided, they should receive credit for clinical hours so that the pandemic does not result in the extension of their study time. Nursing education should prepare nurses at all levels to provide high-quality patient-oriented care via online platforms or over-the-phone.
Leigh et al. (2020) [Salford, UK] [37]	Qualitative research. Case studies.	Analysis of the experience of students and newly admitted nurses in the UK during the SARS-CoV-2 virus pandemic.	Nursing students (n=2) and newly employed nurses (n=1).	Unstructured student interviews/reports	All the professional and personal experiences of working during the pandemic have influenced the formation of students' professional attitudes and professional identification for life. The role of the tutor during this time is crucial.	The decision to take up professional work during the pandemic was very difficult for nursing students, because it involved highly responsible tasks; additionally, it was associated with the risk of infecting oneself and/or the loved ones. The decision was influenced by immense personal resilience, courage and dedication. Combining work in the pandemic with education, especially in the distant learning mode, requires the ability to handle these two tasks.
Leigh et al. (2020) [Salford, UK] [38]	Guidelines [The Nursing and Midwifery Council] the Greater Manchester Supervision and Delegation Framework	Offering guidelines addressed to practice staff, supporting the introduction of nursing students into professional work.	Nursing students	Description of the Nursing and Midwifery Council's guidelines for the introduction into professional work in the SARS-CoV-2 pandemic	Guidance for students and practitioners involved in nurse education on how to introduce students into clinical practice in the pandemic. Description of the rules for delegating tasks to students, tips for evaluating students, guidelines for specific years of study, even for first-year students.	Key message: Practice staff is responsible for every aspect of their clinical practice, including delegating duties. Registered nurses should take into account the type of tasks delegated to students so that they perform them at ease within the limited scope of their skills.
Menon et al. (2020) [Michigan, USA] [39]	Invitation comment	Commentary prepared by medical students	Medical students who had graduated in the previous academic year and were about to begin residency in U.S. hospitals.	Opinion of medical students on the introduction of graduating students to work in hospital wards during the SARS-CoV-2 pandemic.	The students firmly and unequivocally opposed the idea of the introduction of graduating students to work during the pandemic. Caring for infected patients is associated with the danger of infection, and students would unnecessarily use personal protective equipment. By not involving additional people, such as medical students, personal contact would be limited, in accordance with WHO guidelines, and this would contribute to the reduction in the number of infections (to flatten the curve). Medical universities are responsible for the safety of students.	Students are addressed university authorities and relevant state authorities to be allowed to continue remote learning and to adapt the graduation requirements to the pandemic situation.

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Author	Study type	Aim of the study	Study group	Method	Result	Application
Monforte-Royo et al. (2020) [Universitat Internacional de Catalunya ALTIMA, Spain] [18]	Editorial	Description of the work induction program for nursing students implemented in the SARS-CoV-2 pandemic.	Nursing Students in Spain - Graduation Group (last 6 months)	Description of activities undertaken by the University [Universitat Internacional de Catalunya ALTIMA] to facilitate the introduction of nursing students to work during the SARS-CoV-2 pandemic.	Final year nursing students as Generation Coronials. From March 2020 onwards, nursing students in Spain could take up work in clinical facilities with terms of employment identical to those of novice nurses. Taking up the job was non-obligatory and some of the people who did not do it felt guilty about it. The authors highlight the fact that students began their careers under unusual circumstances and had limited access to tutoring and job-shadowing. In view of this and other numerous restrictions, the university implemented a special support program for students: online access to tutors, website, uplifting quotes, the possibility to contact other students.	It is the responsibility of nurse educators and healthcare systems to monitor coronial nurses to assess the consequences of their taking up work during the COVID-19 pandemic, both in terms of negative impacts and in terms of personal and professional development.
Newell EG. (2020) [Atlanta, Georia, USA] [40]	Opinion, letter	An account of her own experience as a nursing student related to the role of nursing leaders during the COVID-19 pandemic	Nursing student	An account of experiences	Leaders who act quickly can help to reduce and relieve the effects of stress among nursing students during and after a crisis. This can be done through, e.g. integrating crisis management training into nursing degree programs, building up teams of students, nurses and researchers to help	Nursing leadership is essential. During the biggest health crisis this century, the most important thing for nursing leaders seems to be to set new expectations for their own role and that of their teams.
Rasmussen et al. (2020) [Aalborg, Denmark] [41]	Letter to the Editor	Description of the process of introducing final-year medical students into hospital assistance during the SARS-CoV-2 pandemic.	Danish final-year medical students.	Description of educational and practical methods allowing for the effective involvement of students in help during the SARS-CoV-2 pandemic.	On 11 March 2020, the Prime Minister of Denmark called for a full mobilization of medical staff. Universities shifted to distance learning, final-year students were hired as temporary residents and courses were organized in ventilator therapy assistance and nursing assistance. A new portfolio (learning outcomes, clinical placements, professional tasks) was developed. Within two weeks, all Master's degree students in voluntary service, in addition, 47% of students took up jobs as temporary residents, 28% as ventilator therapy assistants and 19% as nursing assistants. As many as 70% of Bachelor program students volunteered within a week.	Organizational support and close institutional cooperation were the key to the success of this program.
Rupley et al. (2020) [Columbia University Irving Medical Center, USA] [42]	Case study, description of one centre and how they introduced students to activities at the patient's bedside.	Evaluation of the functioning of the COVID-19 Student Service Corps (CSSC) [obstetric service-learning projects]	1,600 students in 20 projects. Students phoned patients to conduct an epidemiological survey. They advised over-the-phone how to prepare for the appointment. They provided postpartum care.	Participation in interprofessional service-learning	The participation of students -volunteers in midwifery projects related to service-learning had a positive impact on their professional formation.	„The formation of a physician should be seamless across the continuum of education, training, and practice" [41]. Students who learn in an interdisciplinary way, broaden their knowledge, develop professionalism, apply interpersonal and communication skills, and engage in practice-based self-improvement. The COVID-19 pandemic has made it possible to shape students professional identity.

had to be implemented. This might have been difficult under normal circumstances even if the procedures were known to be ineffective but in many cases, the creativity of newly hired students and their lack of routine led to the implementation of innovative and effective solutions [20,28,32,36].

It was of key importance for the students to develop time and stress management skills, personal, effective coping strategies and resilience in life-threatening situations [18,20,33-35].

INTERPROFESSIONAL COLLABORATION

The aforementioned team communication skills were also discussed in association with the cooperation with specialists from various professions or medical specialties [29,30,32,33,36,41]. Effective cooperation can only take place with a mutual understanding of the roles played in the team and mutual respect for the work of each team member. The recognition of the professionalism of other members of the therapeutic team and openness to sharing knowledge and competences in patient care are also important. [29,32,42]. At the onset of the pandemic, these

competences were crucial for newly hired students, especially due to the fact that many facts about the SARS--CoV-2 virus and COVID-19 disease were unknown, e.g. differentiating it from seasonal flu, its specific symptoms or treatment. In many healthcare facilities, emergency interprofessional teams were created to care for coronavirus patients. In addition, apart from final-year medical students, these teams also included people who had not dealt with acute patients before, e.g. health-allied professionals such as physiotherapists or dieticians, because their professional tasks were temporarily suspended. Such solutions required high flexibility and mutual understanding of the competences, e.g. the scope and range of one's knowledge and skills, for the best possible patient outcome [29,33,42].

ETHICS ISSUES

Students also pointed to the ethical problems encountered at the start of work in the pandemic. The ethical problems related to patient care analysed at university were much different from the real ethical dilemmas encountered in the pandemic.

For them, the very decision to take up work in the pandemic was an ethical dilemma [18,29,32,34,40]. On the one hand, they observed the ongoing fight against the pandemic in the absence of a sufficient number of healthcare workers, and on the other hand, the fear of infecting themselves and other people prevailed. In addition, students observed the world economy to deteriorate and unemployment rates to increase day by day, knowing that their profession will not be affected by the crisis. In addition, in many countries around the world, medical workers received additional cash benefits from governments to compensate for the workload in the pandemic [20,32,35,37,40].

Another ethical problem that students encountered in everyday practice was limited access to personal protective equipment and possible decisions on the priority access to PPE in their teams, e.g. by pregnant women. However, the most dramatic ethical dilemmas were related to the lack of access to ventilators for all infected patients requiring such therapy and prioritizing patients for such therapy [32,40].

NEW MENTORING

The need to develop the aforementioned competences, i.e. leadership skills, cooperation in interdisciplinary teams and the need to solve ethical dilemmas, all posed a significant challenge to students becoming the source of the greatest stress in the first days of their professional work, started in the pandemic, without proper professional adaptation. As a result, the students turned for support from mentors in the workplace or at university, as they had not yet formally obtained their diplomas [33,39,41]. The type of support that was the most important for students was primarily psychological support to cope with the stress and uncertainty caused by undertaking important professional tasks in the pandemic. Nonetheless, organizational support played an important role, i.e. providing basic information about the work at the ward in the pandemic (e.g. topography of the ward), the guidelines for cooperation within a given team, proper use of personal protective equipment (the vast majority of students had not had the opportunity to work in overalls before) [18,20,28,29,31,33,39,41,42]. As they understood the organizational problems associated with the shortage of medical staff who could additionally provide handson support, the students voiced their readiness and willingness to receive help also with the use of modern technologies and methods of distance communication [18,20,31]. It should be emphasized that the generation that is currently entering the job market is known as Generation Z. Generation Z students, born after the year 1995, have been described as true digital natives with a short attention span and tendencies towards boredom [43].

DISCUSSION

This systematic overview discusses 17 studies concerning nursing and medical students in the context of the COVID-19 pandemic, and it provides a comprehensive summary of research to date. The analysis revealed four themes of interest: leadership competencies, interprofessional collaboration, ethics issues, and new mentoring.

The aforementioned need to introduce final-year students to professional work while at university to ensure the safety of healthcare systems in many countries has never happened before on such a scale in the history of modern healthcare systems. A specific situation, which the students starting work in the pandemic found themselves in, and their unique professional experience from that time, prompted the authors of the review to choose this particular area for analysis. It is also worth emphasizing that the necessity to put students to work during the SARS-CoV-2 pandemic will probably never happen again in the modern history of medicine.

LIMITATIONS

Many countries that put students to work in March 2020 implemented other structural solutions to fill in staff shortages after the end of the first wave of the pandemic, at the end of August 2020. Therefore, time is an objective factor limiting the availability of scientific publications on this topic (March – September, 2020). Also, for obvious and objective reasons, their number and type are limited (e.g. opinion articles, commentaries, editorials). In this situation, it was impossible to carry out a systematic review of publications, neither of a quantitative nor qualitative nature. Qualitative research was the dominant type of research, based on individual interviews and focus groups, analyzing, in particular, the attitudes of nursing students in Spain [20,32,34]. From September 2020 onwards, no publications dealing with the described issues have been found in the literature. For this reason, the analysis of publications presented in this review is unique, but at the same limited as far as the time and type of articles published are concerned.

CONCLUSIONS

To conclude, two important factors should be highlighted as crucial for the future formation of the professional identity of a group of students starting their professional career in the pandemic. First, the impact of the disturbed process of professional adaptation on the experience of students starting work. Second, the need to immediately implement changes to the processes of education of students of medical sciences.

Students were mostly open and willing to take up professional work immediately after the outbreak of the pandemic; thus the provision of effective support from professional mentors, despite the organizational difficulties caused by the pandemic, emerged as a key factor in preparing them to perform professional roles at such a demanding time, and at the same time preventing burnout in the future. In the ongoing pandemic, alternative forms of providing support may need to be considered, e.g. distance and online communication, as has already been presented in the literature, with a positive effect [18,20,31]. However, the provision of support itself, regardless of the method used, is a necessary and crucial condition for the efficient induction of students into professional work, guaranteeing not only the safety of both patients and medical teams, but also preventing burnout and the abandonment of the nursing profession. It also helps to counteract the deterioration of the quality of medical services and the lack of access to healthcare services due to staff shortages. The post-pandemic use of new methods of support should also be considered due to the positive effect of innovations implemented in nursing medical practice during the pandemic.

The analysis of the available literature and the accounts of final-year students introduced into professional work in the pandemic did not reveal any new, previously unspoken needs to modify the process of education. What it did reveal, was an insufficient level of determination and eagerness on the part of decision-makers and a too slow pace of changes being implemented at universities. New generations of students and technological developments in healthcare require such changes to take place in education.

For many years, the literature on modern education of students of medical sciences has discussed the need to strengthen their leadership competences, the mastery of which helps to adapt to rapidly changing working conditions and the growing expectations of patients, while developing resilience, preventing burnout and profession abandonment. Cases of study-to-work transitions in the pandemic have only shown that apart from the knowledge and skills, these competences are, and will be, perceived as not only an advantage, but even a must for effective professional adaptation and development. Interprofessional collaboration, i.e. understanding, support and respect for the representatives of various medical professions working in interdisciplinary therapeutic teams, as well as the ability to solve ethical issues indirectly related to this cooperation are key factors in shaping leadership competences in students.

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