Exploratory paper

KNOWLEDGE MANAGEMENT IN NURSING EDUCATION: LESSONS LEARNED FROM ONLINE-LEARNING AND ONLINE-TEACHING

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Abstract. *The global COVID-19 pandemic has changed the way health and education services are delivered, forcing to develop new effective strategies. The effectiveness of online-learning and online-teaching depends on many factors. The aim of this study is to analyze the factors that influence the effectiveness of knowledge management in new circumstances and to explain its use and strategies. A qualitative research was conducted during April and May 2022 in two higher educational institutions for nurses in Serbia. Data on a comprehensive view of the quality of teaching and learning methods was obtained through the opinions and attitudes of students and teachers who participated in two focus groups. The results showed that the most important factors that impact the quality of online-learning and online-teaching are: attitudes and motivation of students and teachers, confidence in using the technology involved, clarity of speech, teaching design, preparation for teaching, ability to monitor educational outcomes, clinical reasoning, storytelling. The more effective online-learning and online-teaching were, the more benefits and positive outcomes the students and teachers experienced. This study recognized some trends in nursing education, such as innovative teaching strategies of improving students' clinical ability and leadership. The knowledge management structure and process can improve the education of nurses, and consequently improve the performance of teaching hospitals, which is the main goal of nursing education.*

Key words: *Knowledge management, nursing education, online teaching*

1. WHAT DID THE CORONA TEACH US?

"*He who does not change, does not live*".
(Unknown author)

From the time of the original civilizations, exposure to infections was no stranger. What the progress of civilization has brought with it, among other things, also concerns the increase in exposure to pandemics. It is inevitable that the reaction to the pandemic itself will depend on the specific society. If an epidemic broke out in a pre-modern society, e.g. in medieval Europe, the main cultural reaction (typical of that period) would be resignation or "learned helplessness", which would be justified by God's will or God's punishment for the sins of humanity (Prodović Milojković, 2021, pp. 23-50). Today, the attitudes are the opposite. Whenever a disaster befalls us, we tend to see it as human error rather than God's punishment or an inevitable natural phenomenon. Covid-19 is no exception to that rule.

What must be accepted is that this pandemic is not a war, as long as the virus is not used as a weapon. And it should stay that way. However, it should be emphasized that no war has ever changed the ways of living and dying as much as the virus did. He cruelly interrupted the seemingly precisely defined and inevitable political-historical, professional-educational and cultural-sports flows. Corona has changed us in many segments: emotional, human, closeness. In the past few months since the appearance of the virus, we have witnessed an almost complete change in the routine and usual rhythm of life for all people, changed habits and replanned plans. It was this situation that showed us how we are all, more or less, slaves to routine (Prodović Milojković, 2021, p. 27). Changes affected people's behavior first. While the virus does not recognizeNew borders, *homo sapiens* opposes it with methods only known in Orwell's world: close, limit, return, suspend, isolate, degrade... As this crisis is truly global, the available means are reduced to isolation, social distance and the reduction of almost all activities (Wilder-Smith, Freedman, 2020). The question arises whether, instead of repressive measures, it would be more appropriate for people to implement measures through education, explanation, mitigation, and the search for some creative solutions so that they do not resort to punishment tactics, but to self-responsibility. If the answer to this dilemma is negative, then it is clear that the state must resort to stricter measures, which would point us to the fact that the vision of a liberal society is still too far, and anarchism in the realm of science fiction.

The virus is a tool that further encourages alienation (social distancing), so social distancing, as a key term in the fight against infectious diseases, is gaining an unrivaled starting position among the most commonly used trending words in 2020. As the pandemic keeps pace with globalization, it increasingly imposes the inevitable need to live with diseases, just as the Japanese adapted to earthquakes (Prodović Milojković, 2021, p. 36). The new situation proved to us that the whole concept of self-sustainability and self-sufficiency of humanity is a wrong concept, both at the world and national level. *De facto* if the point of view of pre-coronary capitalism is individual and group greed; then, according to Kant, the point of view of post-coronary society should be human society or social humanity.

The way of communication has also changed. That's how Corona, with patient and disciplined waiting in line, with a distance of at least one meter away from us, and that we didn't want it, imposed new models of behavior and treatment towards ourselves and others. Lessons from the past teach us that crises bring with them positive impulses and creative solutions. The changed way of communicating during the pandemic taught us indirect communication, but also that the organization of events can be mediated without

physical presence. The coronavirus, in addition to changing our habits and freedom of movement, also influenced an unprecedented increase in the importance of certain branches, such as the Internet digital economy[1].

It undoubtedly influenced the entire education and teaching format. The curriculum was increasingly transformed into an online format, which was a challenge for all participants in the educational process[2]. Thus, online learning or distance learning involves instruction provided via the Internet[3]. Thus, the concept of education began to take on a new form. Within the approach of online education, learning is understood as a social-cognitive process, and not only as a matter of information transfer, and special attention is paid when planning online learning to identifying adequate teaching content, ways of supporting different types of interactions and activities that are important for the learning process (Hodges, et al., 2020).

With such a situation, the current pandemic has transformed the contexts in which curricula and programs are implemented, not only in the form of the use of platforms and applications, but also in the form of acquiring new digital knowledge and competences that would help teaching to take place smoothly in a digital environment (Vidosavljević, 2022, p. 436). Changes in teaching, caused by the current pandemic, have proven to be both positive and negative. For example, the benefit of online classes was seen in the ease of preparing lessons, student interest in classes, participation in classes, 24-hour availability, asynchronous communication, didactic value of online tools, the Internet as an additional knowledge base, development of digital skills, increased quality of teaching materials, possibilities of faster and easier access to materials, all of which, on the other hand, brought the students closer to the lecturers, personalized the work and independence of the participants in the educational process. On the other hand, the lack of this type of teaching can be identified as insufficient development of the digital literacy of teachers, lack of motivation, lack of live or synchronous communication, student assessment, student workload, lack of time, lack of technical equipment, weak internet connection, and the inability to control student work. (see more in: Stepanović, 2020, pp. 183-196; Nikolić & Milojević, 2020, pp. 5-7). Thus, due to global changes in education due to the emergence of the corona virus, many lecturers had to suddenly switch to this type of teaching, where they encountered the mentioned advantages and disadvantages of online teaching, changing their own long-standing teaching model. The importance of such changes is given its epilogue by the very fact that the pandemic caused the greatest disruption of educational systems in history and affected 1.6 billion students in more than 190 countries (Vidosavljević, 2022, p. 437).

Research that served as an insight into the level of readiness of teachers for online education proved, among other things, that the main challenges of its actors were navigating in a virtual environment, developing digital literacy, collective support, readiness of academic staff and students for online learning (Nikolić & Milojević, 2020, pp. 87-95; Almazova, et al., 2020; Sepulveda-Escobar & Morrison, 2020, pp. 587-607; Iswati, 2021, p. 36; Yang, 2020, p. 739).

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[1] For example, the company Amazon employed an additional 100,000 people during this period (Prodović, Milojković, 2021, 36).

[2] Online teaching or distance learning is not a new term in the academic field. This name was created by *The United States Distance Learning Association*, which was founded in 1987, and refers to "the acquisition of knowledge and skills through mediated information and instruction that includes all technologies and other forms of learning." at a distance" (Koet, Aziz, 2021, 534).

[3] According to data from the Association of European Universities (EUA, 2020), as many as 95% of higher education institutions have switched to online teaching.

The global COVID-19 pandemic has changed the way health and education services are delivered, forcing to develop new effective strategies. The effectiveness of online-learning and online-teaching depends on many factors. The current pandemic has brought into question two key functions of every educational system - providing quality education and educational equality. Although it is too early to draw conclusions about the complex effects and consequences of the current health, social and economic crisis, since it is still ongoing, it is possible to point out the main challenges it has on the higher education sector and the tendencies of future responses of educational policy makers, higher education institutions and individuals, which will be the subject of further discussion in the work.

2. THE AIM AND METHOD OF STUDY

The aim of this study it to analyze the factors that influence the effectiveness of knowledge managemant in new circumstances and to explain its use and strategies.

The design of the study is a focus group discussion as a qualitative research method and data collection technique that was conducted during April and May 2022. in two higher educational institutions for nurses in Serbia (The Academy of Applied Preschool Teaching and Health Studies Kruševac – Department in Ćuprija and High Medical College of Professional Studies "Milutin Milanković", Beograd). Data on a comprehensive view of the quality of teaching and learning methods was obtained through the opinions and attitudes of students and teachers who participated in two focus groups. Each group consists of 9 students and 2 teachers.

3. RESULTS

The two focus groups discussed the following research questions: 1) What are the perceptions of interviewees in terms of quality of online learning and on-line teaching?, 2) What strategies do interviewees deem effective in learnig and teaching nursing students?, 3) What are the main benefits and the main problems in terms of quality of on-line learning and on-line teaching?

Table 1 shows the results of the first question discussion. In both higher educational institutions for nurses in Serbia (The Academy of Applied Preschool Teaching and Health Studies Kruševac – Department in Ćuprija – signed as Institution A and High Medical College of Professional Studies "Milutin Milanković", Beograd - signed as Institution B), the quality is considered as good organization and student-centered teaching style.

Regarding the second question ("What strategies do interviewees deem effective in learnig and teaching nursing students?"), the interviewees agreed that it is of key importance to have online-learning motivation. Another important issue is to have better online learning self-efficacy, which means the user's skill in using a computer, as well as internet, and their beliefs that they can use them efficiently and effectively. Students suggested strategies that help them in online learning: always be present in online classes, have clear goals, figure out how to learn best in new circumstances, be active during the online classes and ask questions, be connected with others, eliminate distractions (members of family in the same room with student, working environment in the case of students who work in health institutions, traffic noise, notifications from the cell phone), identify important concepts from each topic. It is interesting that in both institution,

students didn't create an online forum for discussions. Teachers had good experinces with ensuring clear communication with students, preparing the entire lesson in detail, preparing interesting educational materials for online teaching, making lessons interactive and engaging, storytelling, preparing and analyzing case studies, breaking a long lecture into shorter segments, being focused all the time, providing timely feedback to students, reinforcing important topic, materials, concepts and skills.

Table 1 Interviewees' priority ranks in terms of quality of online-learning and online-teaching

Themes	Priority rank	
	Institution A	Institution B
To have a clear class schedule and clear instruction for work.	I	I
To have adequate acess to the most basic infrastructure (electricity, hardware, software, good connectivity).	I	I
To learn something that is applicable in the future proffesion of a nurse.	I	I
To inform students about what knowledge and skills they should acquire.	I	II
To have high self-efficacy and familiarity with on-line lerning and teaching.	II	II
To allow a dyamic interaction between the teachers and students, and among the students themselves.	II	III
Clear speach of the teachers, good preparation and focus on the topic being addressed.	II	II
To provide more relaxed atmosphere to converse with students.	III	IV
To provide adequate material for work before the start of on-line class.	IV	V

Regarding the third question (What are the main benefits and the main problems in terms of quality of on-line learning and on-line teaching?), a consensus was reached in both institutions, with small differences on some issues.

All participants agreed that the most important benefits of on-line learning and on-line teaching, in oreder of priorities, are: saving time and money, allowing students (especially students who study and work) to participate in high quality learning situations when distance and schedule make on-ground learning difficult or impossible, interesting and fun as a new way of larning and teaching, increasing independency in learning and teaching and more freedom. Only few participants from the Institution A thought that online-learning provides them real skills for future profession. Also, a few students from Institution B found that online-learning helped them meet new interested people and connect with them.

Main problems of on-line learning, in order of importance, are: loss of the social aspects of studying (lack of friendships, socializing, the so-called student life), lack of feeling of belonging to a peer group, lack of human contact, lack of instant communication, lack of interest of some teachers to give lectures adequately, the feeling that online-learning is less important than the one held in the classroom.

From teachers' point of view, there are several important obstacles in online-teaching. Namely, teachers considered that the lack of interaction with students and among students is the biggest drawback in online-teaching, as well as opinion that some subjects can be taught better in classroom settings or in health care institutions as compared to online sessions, especially those related to the acquisition of skills essential for the nursing profession. The teachers specifically mentioned that they thought they had lower criteria when they evaluated students' knowledge and skills during exams. In their

opinions, the reason for lowering the criteria is the feeling that they did not provide enough skills, energy and motivation to the all students during online-teaching.

In the end, all of the participants concluded that online-education for nurses can be an alternative means, but cannot replace face to face method of education in classroom settings and in health facilities. If online-education for nurses is to continue, then it should be very carefully planned and designed, with clear objectives, extremely well prepared teachers and students who are very motivated to learn and very focus on it.

4. DISCUSSION

Online-education is internet-based learning and a prerequisite for such type of education is that teachers and students have technological knowledge and skills. Overall, online-education can be a huge resource of knowledge and authentic materials from various fields (Paudel, 2021). The results of this study show that relying on online-education is an effective tool against the rising costs of post-secondary education by shifting the cost of schooling from traditional classrooms settings (Ramazanzade et al., 2019; Gokah, 2015; Tucker, 2007), but, at the same time there are many challenges according to equal access to e-education for all teachers and students in the country. Also, it is clear that online-education offers potential opportunities to open new markets for higher education institutions (public and private), and reduces travel time and costs, and thus increases opportunities for access to education (Paudel, 2021).

From this and other research, the following issues are seen as very important issues for online-education quality: confidence, knowledge and motivation of teachers in information and communication technology (Shrestha, 2018). Namely, skillful use of information and communications technology by trained teachers is "absolutely key to higher attainment" (Somekh & Davis, 1999) because, these teachers establish careful pedagogical automation, capacity, reach and interactivity (Cox and Marshall, 2007). Interactivity leads to effective and successful learning (Paudel, 2021; Muijs & Reynolds, 2010). Interviewees from this study estimate that online-education provided only few opportunities for the lesson study process which is one of the strategies for improving the quality of education. In the process of lesson study, teachers and students "collaborate and interact in planning, conducting, and evaluating the process with classroom issues, find answers and apply them in practice, and end up with a grouped assessment of their educational work. They practice in groups, exchange and interact with each other, learn from each other, and, in addition to teaching the theoretical foundations of teaching and learning, they learn the academic and applied skills related to the teaching-learning process, the assessment of teaching methods, self-assessment and learning activities" (Ramazanzade et al., 2019).

Concerning the issue about the quality of online-education, the results show that time management skill, reliable internet connection at workplace, having high self-efficacy and familiarity with online learning and teaching and dyamic interaction between the teachers and students, and among the students themselves are the most important. These findings correlate with other researches. Regarding the quality of online-education, students are most often faced with the following problems: poor time management, lack of interaction, communication that leads to the isolation of the student, uncertainty about the organization of the exam, traditional education habits (Kebritchi et al., 2017).

Findings from this study about interviewees' priority ranks in terms of quality of online-education are in line with other studies. If students had high self-efficacy and familiarity with appropriate, complete, and comprehensive learning strategies, they will be motivated for learning (Hongsuchon et al., 2022; Wang et al., 2008). Teachers should be able to adapt to student needs, such as providing learning content with a reasonable level of difficulty that can be gradually adjusted and thus help students feel more confident in their abilities (Hongsuchon et al., 2022), which are also the attitudes of the teachers from our research. It is important to empphasiye that confidence in online learning is the most important prerequisite for online-learning effectiviness, and it is conditioned by the motivation for online-learning (Hongsuchon et al., 2022). Students in our study recognized the importance of having clear learning goals for learning success, as other research has shown. "Lack of clear goals for students can affect motivation, along with ineffective learning strategies, and will ultimately affect learning effectiveness" (Moriña et al., 2018).

In this research, the main problem of online-learning are loss of the social aspects of studying and lack of human contact, which is in contrast to the findings of another research that emphasizes the positive role of the online learning process on students and teachers by providing support to more easily overcome the isolation period (Duraku & Hoxha, 2020), but which is in line with some other research (Hongsuchon et al., 2022, Rawashdehet al., 2021; Rafart, 2019). It is important to take into consideration those findings because many studies highlighted that student well-being is affected by the quality of learning.

The findings have emphasized the aspects of the online-learning that students should take into account when realizing their individual preference: to provide unique learning styles and improve academic performances of students, to participate in online-learning environment where they can increase their thinking ability and learn independently (Dumford and Miller, 2018).

In this research, teachers note that they need education for online teaching. Teachers should be aware of the level and needs of student in order to plan the way and time in presenting a lesson (Beauchamp, 2012), and they cannot easily make that assessment during online-teaching. Online-education has changed the traditional role of the teachers. It is challenging for teachers to understand the learning abilities of individual students during online classes. As teachers and students hardly get to know each other, it is difficult to set up an interactive environment in classes. Online-teaching and online-learning is more about support needs and expectations of students than delivery of the subject only from teacher's perspective (Paudel, 2021). From that point of view, actually, the teacher is a senior adviser, a key and critical partner in the dialogue with students, a leader who guides a student through a certain specific area and a promoter of greater independence in learning. The success of online-education is also influenced by other factors from teacher's point: the opinion of the teacher on new teaching methods that integrate technology (Duraku & Hoxha, 2020), the level of self-satisfaction, time, dedication and commitment of the teacher in order to introduce changes in teaching with quality and success (Ibrahim et al., 2013).

The literatures indicate that the success of online-education and change in educational management system depend on teachers' dedication, motivation, time, support and technological knowledge and skills (Paudel, 2021). Further, the experience from online-teaching can help teachers in curriculum development, especially in curriculum planning for the classroom, which is an important component of pedagogical knowledge and it is

essential for the assessment of the existing curriculum and needs (Zhang & Han, 2008). Also, it would be useful to examine the opinions of students' interests and needs in the learning process and to include them in curriculum development and syllabus design (Farahian & Rajabi, 2022).

Knowledge management infrastructure includes cultural, structural and technology aspects. These aspects should be harmonized with the knowledge process capabilities. In fact, the dimensions of technology, structure and culture in knowledge infrastructure need to be compatible with knowledge processes to accomplish significant effectiveness in patient care (Ghosh and Scott, 2007).

5. CONCLUSION

This study tried to explore teachers' and students' perspectives in higher education on online-education in terms of quality, benefits, challenges and strategies during and after the pandemic COVID-19.

The participants realized good organization, good time management, interactivity, high self-efficacy and familiarity with online learning and teaching, effective communication and goal-oriented learning as the qualities, while lack of personal commitment and loss of the social aspects of studying are seen as big obstacles in online-education. It is important for students and teachers to understand the differences between a traditional classroom setting and an online classroom setting, since there are benefits and drawbacks to both environments.

These findings can be an initiative for redesigning the curriculum, which would include creating educational experiences for students that are challenging, transferring of best practice, continuous assessment and prompt feedback.

The crisis situation must always be an opportunity for major changes in life, both on a personal and social level. The current situation gives us a chance to determine our priorities differently and to change the values on which we want our society to rest. The crisis that has hit us represents a huge scientific and social challenge.

That is why it is the task of educational policy makers and decision makers of every society, including ours, that in a post-pandemic situation, the use of e-learning and online education becomes an integral part of the higher education system. It is not an easy job - but it should be pursued. Because only with planned strategies can the achievement of learning outcomes and the standard of education quality be ensured.

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UPRAVLJANJE ZNANJEM U OBRAZOVANJU SESTRINSTVA: LEKCIJE NAUČENE IZ ONLINE-UČENJA I ONLINE-NASTAVA

Globalna pandemija kovida 19 promenila je način na koji se pružaju zdravstvene i obrazovne usluge, uzrokujući razvijanje novih efikasnijih strategija. Efikasnost onlajn učenja i online nastave zavisi od mnogih faktora. Cilj ove studije je da analizira faktore koji utiču na efikasnost upravljanja znanjem u novim okolnostima i da objasni njegovu upotrebu i strategije. Kvalitativno istraživanje sprovedeno je tokom aprila i maja 2022. godine u dve visokoškolske ustanove za medicinske sestre u Srbiji. Podaci o sveobuhvatnom sagledavanju kvaliteta nastave i metoda učenja dobijeni su kroz mišljenja i stavove učenika i nastavnika koji su učestvovali u dve fokus grupe. Rezultati su pokazali da su najvažniji sledeći faktori koji utiču na kvalitet onlajn učenja i onlajn nastave: stavovi i motivacija učenika i nastavnika, samopouzdanje u korišćenju tehnologije, jasnoća govora, dizajn nastave, priprema za nastavu, sposobnost da se prate obrazovni ishodi, kliničko rezonovanje, pripovedanje. Što su onlajn učenje i onlajn nastava bili efikasniji, učenici i nastavnici su imali više koristi i pozitivnih rezultata. Ova studija prepoznala je neke trendove u obrazovanju medicinskih sestara, kao što su inovativne nastavne strategije za poboljšanje kliničkih sposobnosti i liderstva učenika. Struktura i proces upravljanja znanjem mogu poboljšati obrazovanje medicinskih sestara, a samim tim i performanse bolnica koje podučavaju, što je glavni cilj obrazovanja medicinskih sestara.

Ključne reči: *upravljanje znanjem, obrazovanje medicinskih sestara, onlajn nastava*