



# CROATIAN NURSING JOURNAL

**Psychological Difficulties of Nursing Students -  
Is There a Difference on Various Levels of Study?**

**Opinions of High School Nursing Students on  
Integrating Medical IT Applications in Vocational Classes  
in Sisak-Moslavina County**

**Importance of Modern Communication Technologies in  
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**Nurses' Knowledge of Palliative Care**

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**Review of a Book Entitled *Critical Pedagogy in Nursing*  
by Sue Dyson (2018)**

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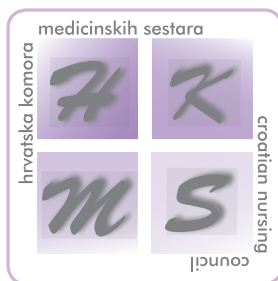
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# Psychological Difficulties of Nursing Students - Is There a Difference on Various Levels of Study?

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## Abstract

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The research of students adapting to university life, difficulties in coping with the academic demands, and personal problems students face during their study is important for a better understanding of their needs in order to prevent possible mental health problems in the student population and increase the overall quality of study. When researching the difficulties that students face, one of the important factors to be taken into account is the type of study, for instance whether they study full or part time.

Since nursing students represent the largest student population at the University of Applied Health Sciences in Zagreb, Croatia, we investigated the differences in the perceived difficulties during studying between full-time undergraduate nursing students and part-time specialist graduate nursing students, most of whom already work as professional nurses.

In a sample of 231 participants, there were 143 undergraduate students with the average age of 26.38 years (90.2% females) and 88 specialist graduate students with the average age of 37.52 years (95.5% females). We examined the frequency of 62 difficulties that students may encounter during their study using a survey by the Student Counselling Centre at the Faculty of Philosophy in Zagreb. On average, nursing students perceived 12 difficulties. The most frequent difficulties all students struggle with are nervousness or tension, financial problems, fear of failure, inefficient time management, insecurity, and

changes in eating habits. There is no significant difference in the total frequency of perceived difficulties between undergraduate and graduate students but we found significant differences between these two groups in the number of students who encountered particular difficulties regarding 13 issues. Undergraduate students face problems with roommates and problems in communication with professors more often than graduate students, while graduate students struggle the most with financial problems and adapting to the study regime. When faced with problems, 65.4% of all students would seek free psychological counselling. Graduate students and students who perceive more difficulties are more willing to seek psychological support.

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## Introduction

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Studying requires adapting to various new life challenges and can be extremely stressful. Stress and its consequences on mental health are associated with reduced engagement with the study, which is associated with a reduced degree of study completion (1).

Adapting to studying is a complex construct within which academic, social, and emotional adaptation is most often examined (Baker, as cited in 2). Adaptation to academic life refers to meeting the requirements of the study, social adaptation implies managing oneself in the faculty environment and interaction with colleagues, while emotional adaptation involves the presence or absence of various signs of emotional discomfort and physical symptoms (2). In evaluating psychological adaptation to study, the most examined variables are stress, self-esteem, and motivational and emotional difficulties (anxiety, depression, psychosomatic symptoms).

The current research on adaptation to study in Croatia has been conducted mostly with students from the University of Rijeka and Zagreb. In researching the dominant problems in psychological adaptation to study with the students of the University of Rijeka, Bezinović and associates found that the most common problems were the fear of failure, exam-related anxiety, difficulties in learning, and taking exams, poor study time management, the feeling of

ineffectiveness in study and the pressures and expectations from their family (3). According to fifteen years of work experience of the Psychological Counselling Centre of the University of Rijeka, students usually seek help because of different academic problems (concentration difficulties, lack of motivation for learning, lack of academic skills, poor time management, examination anxiety etc.), interpersonal problems (problems in relationships with parents, friends or partners), anxiety and depression, and stressful and traumatic experiences (4). Research of psychological problems of students at the University of Zagreb shows that most students face mild disturbances in the form of tension and anxiety, and about one quarter suffers from long-lasting mental problems (5).

Many authors warn that students are at an increased risk of mental health damage. Even mild and moderate mental difficulties can have a significant negative impact on student life but are often not recognized and students are not adequately supported (6). When they are not treated, there is an increased risk they will become chronic (7). Student counselling centres report on the shift in the cause of seeking help from more benign, developmental, and information-related needs to increasingly serious psychological problems (8).

Research consistently confirms the growth in the number of students with serious mental disorders (9). Students have more psychological problems than their peers who are not attending college (9,10,11), as well as the existence of an increased risk of anxiety and depression compared to lower levels of education (12,13). The research by Lenza and associates on the student population of the Faculty of Medicine and Faculty of Law in Osijek found a 2.6-fold increase in depression, anxiety, and phobia when compared with the general population (14).

The perceived presence and growth of psychological disturbances in students may have multiple causes. Students are already a risk group because of their age, as most of the more serious psychological problems appear and are diagnosed before the age of 24 (Kessler, as cited in 15). There is an increasing number of young people enrolling in higher levels of education and some of them have previously existing mental disorders. According to the publicly presented results of the survey "Positive Development of Zagreb Adolescents: Situational Analysis" within the project on positive development of youth in Croatia,



about 30% of high school students reported serious symptoms of anxiety and about 20% reported serious signs of depressive symptoms and stress (16).

Some research suggests that the demands of studying are a direct cause of psychological difficulties in some students (17). In 63.9% of students at the University of Rijeka, anxiety was associated with studying (3). Halfway through the study, 9% of British students who previously had no psychological disturbances developed clinically significant depression levels, with 20% having high anxiety (18). Anxiety disorder, which most commonly occurs during the first year of study, does not diminish during study, while the psychological benefit decreases (12,19). In the UK National Student Community, 80% of students state that they experience stress, 70% lack of energy and motivation, and 55% feel anxiety. The triggers for negative emotions and distress were mostly academic obligations, such as deadlines, exam pressure, coordinating studies with other commitments, and desire for better grades and academic success (20). Emotional problems are associated with various stressors that occur during studies, such as leaving home and demands for independent living, academic pressures and deadlines, and financial problems (9). A particular problem is that many students experiencing distress and psychological difficulties do not seek help (21), and the main reason is the fear of stigmatization (22) that is higher in men (23,24).

Many studies point to increased psychological distress among medical students and other health care providers, among which nursing students are particularly vulnerable (17,25,26). Backović and Jevtić (27) state that even in the case of medical students there is a growing incidence of burnout syndrome during the course of the study and that the burnout should be acknowledged not only as a healthcare problem but also as a psychological problem in the education process.

In a longitudinal study of distress on 232 Norwegian students of nursing, physiotherapy, and occupational therapy, nursing students were significantly more distressed during a three-year study compared to other healthcare students (17). The most significant predictors of psychological distress were the degree of distress at the beginning of the study, the quality of private life, the structure of the study, the subjective learning experience and the degree of support in the student environment. In a literature review, Nerdrum and associates stated that increased psy-

chological distress in nursing students is most commonly associated with the quality of interpersonal relationships, demanding study programs and exams, financial situation, instructors' expectations, and fear of error in working with patients on clinical exercises, lack of correlation between theory and practice in education, the conflict between the students' idealistic motives for choosing a nursing profession and the reality of health practice, the burden of working with severely ill patients and demanding interpersonal situations (17). Some mental health studies of nursing students even suggest increased risk of suicide compared to other students (Goetz, as cited in 19).

Psychological distress in students of health studies increases the risk of anxiety, depression, and suicidal ideation, and it also contributes to lower academic success, drop-out, and cynicism and lack of empathy in working with patients (Dyrbye, as cited in 17).

In Croatia, it is possible to enroll in full-time state-subsidized nursing study and a part time study, which is usually financed by students themselves and is only available for nurses in full employment. Students of graduate, specialist nursing studies, who usually study while working, are on average an older age group when compared with regular undergraduate students. They face specific stressors more often; from financial expenditures for those who finance the study themselves to the lack of time for learning due to the difficulty of aligning study with work and family life. Many already have children, work in shifts, and use annual vacations for learning and taking exams. Due to the increase of growing academic and professional demands, nursing students simultaneously experience stress related to studies and job-related stress (25). All of these study circumstances require additional effort and competence to adapt to study and represent the risk of distress and its consequences on mental and physical health.

Comparison of stress among nurses and police officers who are studying while employed shows that nurses and technicians (especially women) experience statistically significant stress in the form of exhaustion and lack of control, impaired eating and sleep difficulties (26). Roberts and associates (28) found that poor mental health is associated with financial problems and with less time for students who are studying while employed.

Employed students may also be at a greater risk of drop-out because of the workload they are ex-

posed to. Bernardo and associates (29) found in their research, which included over a thousand students from a north Spanish university (University of Oviedo), that those already employed, those over 25 years old, and those who do not enrol in college immediately after high school have a higher drop out risk. Students who work full-time have the highest likelihood of dropping out (Elias, Goldenhersh, Esteban, all as cited in 29).

The work of nurses is considered extremely stressful, and the psychological well-being of future nurses must be an essential component of nursing education (30). Faculties and student institutions should help students overcome all the difficulties that arise during their studies, including psychological ones, and provide them with fast and effective psychological support (31). Even though universities are primarily interested in academic success and completion of study, it is still important to be concerned with the psychological wellbeing of students, as it is directly connected with the positive academic success while, on the other hand, psychological problems significantly disrupt studies and predict poor academic results (9, 18). The analysis of students' psychological difficulties is a prerequisite for assessing which of these difficulties can be prevented by university institutions as well as for developing appropriate aid strategies.

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## Methods

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### Participants

The study was attended by 231 first year nursing students of the Zagreb University of Applied Health Sciences (Zdravstveno veleučilište u Zagrebu - ZVU), of whom 143 were in full-time undergraduate and 88 in the specialty graduate study. The average age of students in the whole sample is 30.7 years with SD 9.69 (range 21-56). The sample consists of 92% of women and 8% of men. For 50.4% of students, Zagreb was the place of residence, while 49.6% came to study in Zagreb from other places. 37.7% of all students are married, and 36.8% have children, most often two children (20.8%).

The average age of undergraduate students is 26.38 years, with SD 7.20 (21-47), and graduate students are, on average, 37.52 years old with SD 9.22 (23-56). The share of male participants is 9.8% in the undergraduate and 4.5% in the graduate group of students.

### Instrument

We collected data with the instrument used for the DUCAS\* project by the employees of the Counseling Center for Students of the Faculty of Philosophy in Zagreb, Rijeka and Zadar (5). In addition to demographic data and study data, we examined the types of psychosocial difficulties and the readiness of the student to seek psychological help. A questionnaire investigating the types of psychological difficulties consists of 62 descriptions of psychological problems, from very common in student population, such as tension and learning difficulties, to more severe difficulties that may indicate serious psychological disorders. The offered responses were dichotomous (yes / no). The reliability of the scale is KR-20 = 0.88. The willingness of a person to turn to help is measured by one question with the offered answers such as yes, I don't know, and no.

The research was approved by the ethics committee of the University of Applied Health Sciences. The data collection was anonymous with the voluntary participation of students, and carried out in small groups.

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## Results

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The main purpose of this research was to determine the most prominent psychological difficulties encountered by nursing students during their study. Table 1 shows percentages of students who encountered a particular difficulty. The difficulties are sorted by frequency of appearance. The difficulties that are encountered in less than 1% of students are not presented.

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\* The DUCAS project (Developing university counseling and advisory services) took place at the universities of Rijeka, Zadar and Zagreb during the 2007/08 academic year.

**Table 1. The percentage of all nursing students who encountered particular difficulties**

		YES	NO
1.	Tension or nervousness	84.8	15.2
2.	Financial problems	61.0	39.0
3.	Fear of failure while studying	51.9	48.1
4.	Ineffective use of time for learning and leisure	48.1	51.9
5.	Changes in nutrition-related habits	42.0	58.0
6.	Uncertainty about the future career	41.6	58.4
7.	Disappointment with the study	41.1	58.9
8.	Lack of motivation	37.7	62.3
9.	Feeling of ineffectiveness while studying	35.5	64.5
10.	Doubt regarding the correct choice of study	34.2	65.8
11.	Strong anxiety about exams	33.3	66.7
12.	Excessive self-criticism	33.3	66.7
13.	Sleeping problems	31.2	68.8
14.	Health problems	30.7	69.3
15.	Difficulties with adapting to the study regime	30.7	69.3
16.	Dissatisfaction with my own body weight	29.4	70.6
17.	Feeling of distrust in other people	29.0	71.0
18.	Difficulties with exams	26.4	73.6
19.	A sense of being misunderstood by the environment	26.4	73.6
20.	Learning difficulties	26.0	74.0
21.	Problems related to love life	24.2	75.8
22.	Lack of awareness of one's abilities	23.4	76.6
23.	Feeling of discouragement about the future	22.5	77.5
24.	Feeling lonely and lacking emotional support	21.6	78.4
25.	Dissatisfaction with my appearance	20.3	79.7
26.	Difficulties in making important decisions	19.5	80.5
27.	General anxiety	18.6	81.4
28.	Depression and a sense of helplessness	17.7	82.3

**Table 1. The percentage of all nursing students who encountered particular difficulties**

		YES	NO
29.	Problems with one's relationship with friends	17.3	82.7
30.	Poor communication with professors	16.5	83.5
31.	Concerns about what other people think of me	16.0	84.0
32.	Problems with temporary accommodation (dorm, sub-tenancy)	14.7	85.3
33.	Dissatisfaction with myself	14.3	85.7
34.	Contemplation about leaving the study	14.3	85.7
35.	Problems of coping with the loss of a loved one	13.0	87.0
36.	The pressures and high expectations of the family	11.7	88.3
37.	Disagreements and conflicts with parents	11.3	88.7
38.	Inability to maintain control and entering into conflicts easily	11.3	88.7
39.	Sadness and pain after ending a relationship	10.8	89.2
40.	Feelings of inadequacy	10.8	89.2
41.	Roommate problems	10.0	90.0
42.	Identity problems	10.0	90.0
43.	Occasional aggressive and destructive behaviours	10.8	89.2
44.	Intimate relationship problems	10.4	89.6
45.	Difficulties in adjusting to study location and environment	10.4	89.6
46.	A more lasting sense of dissatisfaction	8.2	91.8
47.	Sex life issues	7.8	92.2
48.	Problems with children	6.9	93.1
49.	Alcoholism in the family	6.5	93.5
50.	Self-loathing	5.6	94.4
51.	Inability to make contact with parents and loved ones	5.6	94.4
52.	Problems in the marriage	3.9	96.1
53.	Overconsumption of alcohol	3.5	96.5
54.	Problems with sexual intercourse	1.7	98.3
55.	Taking drugs	1.3	98.7

The results in Table 1 show that tension or nervousness occurs in a very large percentage. More than half of the participants stated that they were concerned about financial problems and had a fear of failure in their studies. Severe problems such as sexual assault or rape, unwanted sexual relations, thoughts of self-harm or suicide, use of laxatives, vomiting and extreme diets, dealing with crime, domestic abuse, and lack of acceptance from society are experienced by less than 1% of all students. The participants reported an average of 12.11 (SD=7.764) difficulties (D=11), with the lowest indicated number of difficulties being 0 and the highest being 34.

We were also interested in the potential differences between undergraduate and graduate students.

Given the sociodemographic characteristics, the proportion of males, although small in both samples, is statistically significantly smaller in the specialist graduate study program ( $\chi^2=8.378$ ;  $p=0.004$ ), and in this study students are significantly older ( $t=17.052$ ;  $p=0.000$ ). The most common problems that undergraduate students face are tension or nervousness, fear of failure in their studies, dissatisfaction with studies, lack of motivation and changes in nutrition-related habits, while graduate students are mostly burdened by tension or nervousness, financial problems, irrational use of time, fear of failure in their studies, and adapting to the study regime. There is no significant difference between undergraduate and specialist graduate students in the total number

**Table 2. Significant differences between undergraduate and graduate study programmes in the frequency of perceived difficulties (N = 231)**

Difficulty	$\chi^2$	$p$	Study programme with a more pronounced difficulty
Lack of motivation	5.146	0.023	undergraduate
Financial problems	17.363	0.000	graduate
Sleep problems	4.500	0.034	graduate
Excessive self-criticism	4.215	0.040	graduate
Learning difficulties	4.298	0.038	graduate
Conflicts with parents	9.466	0.002	undergraduate
Poor communication with professors	15.135	0.000	undergraduate
Grief over ending a relationship	5.864	0.015	undergraduate
Adapting to study regime	19.121	0.000	graduate
Loss of a loved one	5.207	0.022	undergraduate
Roommate problems	21.792	0.000	undergraduate
Overconsumption of alcohol	8.696	0.003	undergraduate
Weak control and conflicts	4.310	0.038	graduate
Problems in marriage	5.699	0.017	graduate
Problems with children	10.462	0.001	graduate

**Table 3. Significant gender differences in the frequency of perceived difficulties (N = 231)**

Difficulty	$\chi^2$	$p$	Gender with a more pronounced difficulty
Financial problems	9.081	0.003	female
Feeling of doubt about the choice of studies	7.117	0.008	female
Grief over ending a relationship	10.250	0.001	female
Adapting to the study regime	5.814	0.016	female



of perceived difficulties ( $t=0.306$ ;  $p=0.76$ ) but the chi-square test showed significant differences in the incidence of particular difficulties (Table 2).

Female and male students do not differ significantly in the total number of difficulties, but they differ in the prevalence of four difficulties (Table 3).

Female students are more troubled by financial problems and adjusting to their study regime, and more often doubt their choice of studies, while male students grieve more over ending a relationship.

65.4% of students declared they would seek psychological help if they were able to get it for free and with complete discretion, 28.5% were uncertain and the others would not seek help (6.1%). No significant gender differences were identified in the need for free psychological help. Comparing only those who would or would not seek help by type of study, a significantly higher number of graduate students would seek help ( $\chi^2=5.41$ ;  $p=0.02$ ), and students who would seek help also have more difficulties ( $M=12.3$ ;  $SD=7.68$ ) when compared to 6.6 ( $SD=3.99$ ) reported by those who would not seek help ( $t=4.595$ ;  $p=0.000$ ).

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## Discussion

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Nursing students make up the largest share of all health and medical studies. Despite the digitalisation of the system that facilitates the administrative side of studying and the availability of literature, studying today does not seem easier. The large number of academic requirements that students are exposed to (seminars, colloquiums, professional practice) and the large number of exams in a year seem exhausting to students. Adding to that other responsibilities and problems that accompany student life, the situation may become unbearable for some of them. Finding yourself in a new environment, looking for accommodation or commuting daily, and meeting the requirements of each course are problems that all students face, but some of them are already employed in the profession (students of specialist graduate studies) and have their own families with offspring. Adjusting these additional roles can be very burdensome

for students, leading to an increase in their mental and physical vulnerability, and even burnout. In addition to identifying the main groups of problems that students face, it is important to identify the specificities and differences in their difficulties in particular studies when designing targeted student support. Given that undergraduate and graduate students differ in their characteristics (age, employment, marital status, children, different motivation), it is to be expected that these differences will also reflect on their problems, which is what this paper sought to examine.

For the entire sample of nursing students, tension or nervousness, financial problems, fear of failure in their studies, and ineffective use of time for learning and leisure are at the top of the problem list. Students at the University of Zadar also experienced these same difficulties (32). Changes in eating habits are also very prevalent both in the students studying at the University of Applied Health Sciences and those from the University of Zadar. Nursing students, on average, cite 12 difficulties in this research, while the average for all health studies at the University of Applied Health Sciences is 14 (33). The average number of difficulties of students at the University of Zagreb is much greater, as much as 18.7 (5). Other studies have found fewer difficulties in college students compared to university students (34).

## Differences between study programmes

Although there are overlaps, the dominant problems encountered by undergraduate and graduate students are not identical. Given that the two observed groups differ significantly by age (as much as 11 years) and by the number of male participants, differences were expected. The average number of difficulties that bother them does not differentiate undergraduate and graduate students. Tension or nervousness is obviously a universal problem because it is at the top of the difficulties in both samples, and among the top five is the fear of failure in their studies. Undergraduate students are most disturbed by their dissatisfaction with their studies, lack of motivation, and changes in nutrition, and graduate students are most disturbed by financial problems, irrational use of time, and adjustment to their study regime. Undergraduate students perceive significantly more problems with roommates, parents, poor communication with professors, overconsumption of alcohol, grief about ending a relationship, and losing

a loved one. Graduate students have more difficulties with learning and sleeping, problems in marriage and with children, are bothered by excessive self-criticism, and poor control and conflicts. Therefore, we can say that undergraduate students are more likely to face problems typical of the developmental stage of late adolescence. Since most of them are still living with their parents or roommates, many of them are still not in stable emotional relationships and lack assertiveness in communication with authorities. In contrast, specialist graduate students (who belong to the developmental stage of younger adulthood), have more difficulty in reconciling different life roles and are more concerned with financial problems, which is understandable given that they mainly fund their own studies.

Some studies have identified better psychological adjustment for older students (35), but the results of our study do not differentiate these two groups of students by their overall adjustment, but only by the type of problem.

In this study, female and male students do not experience significantly different average number of psychological difficulties, which is not consistent with the findings of most other studies. Our findings should be taken with great caution, since the proportion of males in our study is very small in both observed samples. In general, the findings of other studies are not straightforward, so they may indicate a lower emotional adjustment to studying in female students (Baker, as cited in 2) (3,36), and thus to the study of nursing (37). Extensive research conducted at two of our largest universities (2,35) has indicated there is better adjustment among female students, but the results are complex, since at the University of Rijeka female students show better academic and social adjustment, but weaker emotional adjustment.

Over 60% of nursing students would request free psychological help, which is consistent with the literature (32), with significantly more graduate students compared to undergraduate students. Given that there is a significant age difference between them, we can assume that as people age, they are less burdened with the opinions and condemnation of others, and, on the other hand, more aware of the importance of such assistance. Students who perceive significantly more difficulties are more likely to seek psychological help, which is to be expected. Given that participants in this study are both current and future health professionals, their awareness of

the importance of mental health probably invalidates the experience of stigmatization associated with seeking help.

However, we are aware that the intention of seeking psychological help does not always correspond to the actual seeking of help. Common barriers to seeking professional help are uncertainty about the severity of their own problems, the need to rely on themselves, distrust of the effectiveness of psychological treatments, and lack of knowledge of places where they can seek psychological help (23). For example, although 32.8% of students in Zagreb report a clinically significant degree of psychological distress, only 23.6% of those at risk seek professional help (23). According to a survey by the National Student Union in Scotland, only 30% of students would be willing to disclose their psychological problems, while the rest are worried about what the consequences would be if their colleagues at the university found about it (38). It is important to continually educate students on the importance of psychological support for their good mental health.

No significant difference was found in the willingness to seek psychological help in relation to gender. Such a finding is not expected, as other studies have identified a greater willingness to seek help in female students (24,39,40,41).

Given that the study was conducted among nursing students at only one higher education institution, there is no solid basis for generalizing the results to include other institutions. Nonetheless, we believe that this research makes an important contribution to designing and shaping guidelines to improve support for nursing students, who represent the largest health study program, as well as the largest body of healthcare professionals. This is especially important for specialist graduate students who study and work within their profession at the same time. Their problems may also affect their functioning in the workplace.

## Conclusion

We can conclude that undergraduate and graduate nursing students are different populations, who face some of the same but mostly different problems, which is primarily a consequence of their age difference and related different living conditions. Therefore, an approach to students at different levels of study should differ in their content, for example in the topics of offered workshops. Considering the results obtained in our research, workshops on assertive communication would be more appropriate for undergraduate students, while education regarding time management would be more useful to graduate students.

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## PSIHIČKE POTEŠKOĆE STUDENATA SESTRINSTVA - POSTOJI LI RAZLIKA NA RAZLIČITIM RAZINAMA STUDIJA

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### Sažetak

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Istraživanja prilagodbe i problema s kojima se susreće studentska populacija važna su za bolje razumijevanje studentskih potreba, povećanje kvalitete studiranja te poboljšanje mentalnog zdravlja samih studenata. Poteškoće s kojima se studenti najviše susreću raznolike su, a važan faktor o kojem treba voditi računa jest i sam način studiranja. Zanimala nas je razlika u problemima prilagodbe kod studenata redovnog stručnog studija i specijalističkoga (diplomskog) studija sestrinstva, kao jednog od najbrojnijih studija na Zdravstvenom veleučilištu.

Na uzorku od 231 sudionika ispitali smo učestalost pojavljivanja različitih poteškoća s kojima se tijekom studija suočavaju studenti preddiplomskog (N = 143) i diplomskog studija sestrinstva (N = 88), primijenivši anketu koju nam je ustupilo Savjetovalište za studente FFZG-a. Prosječna dob sudionika redovnog stručnog studija iznosi 26,38 godina (21 - 47), pri čemu među njima prevladavaju studentice (90,2 %), dok je prosječna dob sudionika specijalističkoga (diplomskog) studija sestrinstva 37,52 godine (23 - 56) te isto tako prevladava ženski spol (95,5 %).

Studenti sestrinstva u prosjeku navode 12 poteškoća, a najčešće su nervoza ili napetost, financijski problemi, strah od neuspjeha u studiju, neracionalna upotreba vremena te promjene u navikama hranjenja i nesigurnost. Studenti preddiplomskog i diplomskog studija znatno se razlikuju po 13 poteškoća, ali ne i u ukupnom broju poteškoća koje ih muče. Najizrazitije razlike dobivene su za probleme sa sustanarima,

komunikaciju s profesorima za preddiplomske te za financijske probleme i prilagodbu režimu studiranja za diplomatske studente. U slučaju poteškoća, 65,4 % studenata potražilo bi besplatnu psihološku pomoć, pri čemu znatno više studenata diplomskog studija, a na traženje pomoći spremniji su studenti s većim brojem poteškoća.

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**Ključne riječi:** studenti, sestrinstvo, psihičke poteškoće, prilagodba na studij

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# Opinions of High School Nursing Students on Integrating Medical IT Applications in Vocational Classes in Sisak-Moslavina County

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## Abstract

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**Aim.** To examine whether high school nursing students have a positive opinion on using medical IT applications in classes of vocational subjects *Nurse in Primary Healthcare* and *Principles of Administration* and whether students' opinions regarding integrating medical IT applications in classes were related to their knowledge on nursing documentation and attitudes towards its use in primary healthcare.

**Methods.** The study was conducted in the form of a cross-sectional study. In total, there were 84 participants, all students of the Viktorovac High School in Sisak, who filled in a questionnaire consisting of 37 questions. The answers were defined by the Likert rating scale.

**Results.** Sixty-six (79%) students completely agree with the claim that using the application prior to the workplace is useful. 59 (70%) completely agree that being well-trained in using the application ensures a higher quality documenting skills. 40 (48%) students ranked their knowhow in test application as very good (knowhow sufficient for serious work with the application in primary healthcare), and 21 (25%) as excellent. Those students who ranked their knowhow as higher significantly less agree with the claim that there is no need to document nurses' work and activities.

**Conclusion.** High school nursing students hold positive opinions towards integrating medical IT applications in vocational subjects' classes. Students' opin-

ions towards integrating medical IT applications in classes are related to their knowledge on nursing documentation and attitudes towards its use in primary healthcare.

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## Introduction

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Primary level of health care is available to all residents of the Republic of Croatia. Primary health care includes a family doctor, a pediatrician, a gynecologist and a doctor of dental medicine. Other levels of health care are generally used by patients when referred by their primary care physician. As a rule, a primary health care doctor usually has a long-term contact with the patient who is registered with him/her, so he/she is able to collect numerous data about the patient, his/her family, illnesses, use of all other services in the healthcare system, prescribed medicines, his/her own work, and the like. It is well known that the amount and quality of patient data collected is associated with better quality of patient care and rational use of available health facilities (1). The primary care team includes a doctor of medicine and a nurse. The team is obliged to send daily reports of their work and monthly submit all forms and reports in electronic form through the Central Health Information System of the Republic of Croatia (CEZIH) to the Croatian Health Insurance Fund (HZZO). Modern information technologies bring changes to the existing way of work of all health professionals, who must acquire new knowledge, but also participate with their own proposals in the development of medical IT applications themselves.

The scope of nurses' work has changed due to the advancement of information and communication technology (ICT). Based on the Nursing Act, nurses always had to prepare relevant patient care documentation. This process has been digitalized by the progress of ICT. The biggest wave of informatization occurred in primary health care, and the work of the nurse in the outpatient clinic is to a large extent related to the administrative part. Nurses employed in primary care infirmaries are in charge of administrative tasks (patient enrollment through the application, checking the patient's health insurance, issuing

bills) and performing diagnostic-therapeutic procedures prescribed by the doctor. Nurses will send electronic messages through CEZIH regarding the payment of the participation fee for supplemental insurance or issue a payment slip to the patient if the patient has no insurance or is not exempt from payment under certain conditions (e.g. children, disabled persons). Medical and administrative information are classified information and doctors and nurses have a professional responsibility to keep all patient information secure (2).

Students must learn to properly keep administrative and medical records of the patient prior to going to training. Considering that it is impossible for students to immediately work on real data, as this would mean impermissible possibility of error on the real patient data, incorrectly entered vital signs, incorrectly recorded division of therapy, etc., the leading Croatian manufacturer of health information systems has given a free trial version of the program (Medicus.Net) to Viktorovac High School in Sisak. Documenting nursing work in primary health care is a legal obligation and a professional responsibility, it provides legal protection, ensures quality communication among team members, improves quality of health care, provides a complete set of data on patient needs and goals of nursing care, contains chronological overview of care and results achieved, enables research and better cost control. The need to make some basic information about the computer and practical skills of its use became part of general education as early as primary school (in some ways even in kindergarten), as well as the first attempts, successes and difficulties, are explained by the new term - "computer literacy"(3). In our country, the teaching of Informatics in health schools was introduced in 1990, in the first grade with 35 school hours per year, and in the second grade with 70 school hours per year. Croatian Nursing Council (CNC) was established in 2003, and that same year, with the adoption of the Nursing Act (Official Gazette 121/2003), keeping nursing records became compulsory (4). In July 2006, CNC issued recommendations for keeping nursing records.

The student must adopt the content prescribed by the curriculum and the teacher must ensure an effective teaching process. One of the key competencies of future workers is computer literacy. More recently, technology (e.g. smart boards) has been increasingly used in teaching, which also affects the teach-



ing process itself. It is the teacher's role to properly combine and use all media. The advantage of the e-learning system is its accessibility to all users, which involves the use of various communication channels. E-learning systems in use today most commonly use the Internet as a medium for communication with the user (5). ICT enables rapid exchange of information between teachers and students. Since the software application used by the students in the teaching process is part of the fifth generation of computer programs, i.e. mentor programs - it has highly differentiated expertise and logical data management processes, greatly facilitated the work of the user, but also requires education so that the student can make the most of its possibilities. In order for the students to practice administrative work before going to work sites (primary health care infirmaries), access to the application is provided on the computers in the IT classroom and the school library. Five school hours before going to training at the infirmaries, students practice data entry using the test application. The test version of the application is identical to the user version (the one the staff actually work on at the infirmary). Considering it is a web-based application, installation was not required, the application is accessed on a computer, through the Internet connection, a server address, and with a user code and password. Students could also access the application from home, from a computer, tablet or smartphone. In order to ensure proper work of the application, it is best to access it through Google Chrome. Information about the link, user, and password for logging in to the application, as well as instructions for working in the primary healthcare application except for the teaching exercises, were also forwarded to the students by a joint e-mail. Application Access Link: <https://demo.medicusnet.hr/MedicusLogin/Test/>

Depending on the primary health care activity, instructions for using the Medicus.Net program are as follows:

- General practice:  
<http://public.mcs.hr/upute/MCS/Upute-Opca-BrziUnos.pdf>
- Pediatrics:  
<http://public.mcs.hr/upute/MCS/Upute-Pedijatrija.pdf>
- Gynecology:  
<http://public.mcs.hr/upute/MCS/Upute-Ginekologija.pdf>

One of the basic parameters that has changed our educational system, as well as all aspects of human life, has been the Internet explosion, more specifically the Web, as a medium of instructional delivery. The appeal of learning using ICT is undeniable. It can overcome distance and reduce costs; it is available at any time, in accordance with student needs. Online educational materials can be updated more easily than traditional textbooks, and communication channels between teachers and students are always open (6). Today's educational goals are significantly different from those set in the last century. Instead of focusing on the complete transformation of education and new challenges that society requires, we seek to adapt the outdated education system by shifting problems from one area to another. The rational solution is to educate students to know how to learn in a constantly changing society. Transformation of the education model requires adopting a student-centered curriculum that makes students proficient in collaboration, finding, analyzing, organizing, evaluating, and adopting new information in accordance with their own needs and academic and cultural background (6).

Like any other learning, e-learning is a process consisting of four key elements, namely the teacher, the teaching content, technology and the learner. In e-learning, the emphasis is on a particular type of educational technology in which computer mediates teaching content between the teacher and the student and vice versa, and which is of particular importance in this respect, which is sometimes referred to as the didactic quadrilateral of e-learning. The most common and purely technical definition of e-learning is that of Fallon and Brown (2003): "*E-learning is any form of learning, teaching or education that is aided by the use of computer technologies, and in particular computer networks based on Internet technologies*" (7). In their classrooms teachers and students daily create a singular aura that depends on a unique spatial, temporal and social context. Online-supported education is always accompanied by the elimination of student-teacher interaction here and now, that is, the loss of aura. In the age of online technical reproduction, one should not be afraid of downplaying the role of the teacher: the aura of education is unique and can only be created by man. On the other hand, the internet definitely provides a level of access to information that no creature can otherwise reach. In order to get the best out of the machine and

the human, the tasks we put before them need to be balanced so that both do the work that suit them best (8).

Given that at the Viktorovac High School, the work on the test application was introduced for the subject Nurse in Primary Health Care, students come more ready for teaching exercises at the infirmaries, they independently (under the supervision of mentors and nurses) enter the data, and work in the real user programme. It is also interesting that during the exercise the students noticed some "shortcomings" of the application, such as the inability to record all nursing procedures. Therefore, it can be said that the students participated in the testing of the application, and thus their creativity and innovative thinking came to the fore. The application of ICT promotes the development of motivation, social skills, cooperation, and a sense of community (9).

The students successfully use the application, they are interested and often self-initiate entering data in the application, stating that all documents (prescriptions, referrals, aids, medical transport, sick leave, etc.) seemed rather vague until they started using the application themselves. Nurses in primary care infirmaries also play an advisory role. In the advisory role, nurses plan, implement, and record patient health care (10, 11).

Students can enter patient measurement values into the application, such as weight and height, and the application automatically calculates body mass index. Based on the measured values, the student knows what advice needs to be given to the patient, such as diet, exercise, avoiding salt and fat for high blood pressure and high body mass index. Additionally, when entering blood pressure values, the application automatically creates a chart and connects the diastolic and systolic blood pressure values with previous measurements.

Prior to the computerization of primary health care, each document (prescription, referral, orthopedic aids, medical transport, travel warrant, etc.) had to be completed "manually", which greatly delayed and complicated the work. Today, with a single mouse click, all chronic patient prescriptions are sent to the pharmacy via CEZIH, and with a single click, records of all diagnostic (laboratory and specialist findings) are obtained, which truly saves both time and paper. Also, all patient files are in electronic form (EHR), no longer needed to be stored in paper form, which

saves office space. Since 2008, family medicine physicians have had to keep an electronic health record on one of the Ministry of Health and Welfare's approved programmatic solutions. There are various manufacturers of IT applications, however, the principle of working in all applications is similar, and when a student masters working in one application, he/she can easily understand and use another. The list of certified manufacturers by all areas can be checked on the HZZO website: [http://www.cezih.hr/certificirani\\_proizvodjaci\\_aplikacija.html](http://www.cezih.hr/certificirani_proizvodjaci_aplikacija.html).

Among the certified manufacturers is Medicus.Net, the MCS Grupa d.o.o. application provided at the school, since Sisak Health Center uses this application in all areas. Adequate training in the application allows students to focus more on the patient during the teaching exercises. Students are often given tasks to be done in the test version of the application. It is sufficient to access the application and see quickly and easily which student has done which of the tasks for the given patient, which makes it easy to track the student's achievements.

Until the in-app data entry skills are brought to the level of automaticity, students look for the icon that they must select instead of communicating with the patient. In order to acquire the skill of using the program, students practice working with the application in the IT classroom before going to practice in the infirmary, and are also given homework. The IT classroom and library of Viktorovac High School are well equipped, so no additional investment was needed. Computers set up for work in the application are always available in the school library. Each participant also needs their own technology: hardware, network and software.

The student needs a computer and a network connection to access the educational material. In addition to the basic PC operating system, the student also needs add-ons such as a web browser and a multimedia viewer. The system, that is, the server, consists of a network server and a software package. In addition, it requires a high-speed network connection to deliver information to many students who are simultaneously accessing it (12). High-speed Internet connection must be provided to access the application, and if a problem with the Internet occurs the application cannot be used until the malfunction is corrected.

## Aim

The aim of this study is to examine the opinions of the nursing students of Viktorovac High School on the use of the medical IT application in teaching the subjects Nurse in Primary Health Care, and Principles of Administration. It also seeks to examine whether students' opinions on integrating a medical IT application in teaching are related to their knowledge of nursing records, and attitudes towards its application in primary care.

## Hypotheses

Hypothesis 1. Nursing high school students have a positive opinion towards integrating the medical IT application in the teaching of the subjects Nursing in Primary Health Care and Principles of Administration.

Hypothesis 2. Nursing high school students' opinions towards integrating a medical IT application in teaching are related to their knowledge of nursing documentation and attitudes towards its application in primary care.

## Methods

### Participants

The inquiry was conducted on a total of 84 students of the Viktorovac High School in Sisak in the period from July 1 to July 7 2018.

Of the total 84 students, 55 (65.5%) are 4th grade students and 45 (35.5%) are 5th grade students. By gender, there are slightly more young women, 57 (68%) than young men (Table 1).

Table 1. Respondents' characteristics	
Sex	Number (%) of students
Female students	57 (68)
Male students	27 (32)
Grade	Number (%) of students
4th grade	55 (66)
5th grade	29 (34)
<b>Total</b>	<b>84 (100)</b>

All students were fully trained to work in a web-based medical-informatics technology application (Medicus. Net) for primary health care. The training was carried out as a part of teaching exercises in the subject Nursing in Primary Health Care on the computers in the computer room and library of the Viktorovac High School, and through the tasks in the subject Principles of Administration that students had to finish prior to attending the teaching exercises in primary healthcare infirmaries.

## Instrument

The survey was conducted using a questionnaire consisting of thirty-seven questions. The first part of the questionnaire covers general data on respondents' characteristics, gender, and year of education. The second part of the questionnaire examines the students' opinions on the use of the medical IT application in the teaching of the subjects Nursing in Primary Health Care, and Principles of Administration. In four questions, students choose one of the answers offered, and in the statements (16 statements) that follow, they circle the figure that best reflects their opinion using the Likert scale (1 - strongly disagree, 2 - disagree, 3 - not sure, 4 - agree, 5 - totally agree). This examines their opinion on how well they have mastered the possibilities of the medical IT application and whether they can adequately apply the acquired knowledge in working on teaching exercises in primary health care infirmaries. The third part of the questionnaire examines students' opinions about the usefulness/significance of learning and working in a primary health care test application. In four statements, students circle the figure that best reflects their opinion using the Likert scale (1 - completely disagree, 2 - disagree, 3 - not sure, 4 - agree, 5 - strongly agree). This examines whether the knowledge of using the patient's electronic health record and knowing how to work in an application in primary health care can help students in the educational process, or while working with patients in teaching exercises. The fourth part of the questionnaire examines students' opinions on nursing documentation in the Primary Health Care (PHC). In a total of twelve statements, students circle the figure that best reflects their opinion using the Likert scale (1 - strongly disagree, 2 - disagree, 3 - not sure, 4 - agree, 5 - strongly agree). This examines the students' opinions about what nursing documentation in primary health care entails and why it is important to keep nursing documentation in primary health care.

## Statistics

Categorical data are represented by absolute and relative frequencies. Differences of categorical variables were tested by the Fisher's exact test. Numerical data are described by the median and the limits of the interquartile range. The normality of the distribution of numerical variables was tested by the Shapiro-Wilk test, and in the results which showed deviations from the normal distribution for all variables, non-parametric methods were used. Differences in numerical variables between the two independent groups, 4th and 5th grade students, and gender differences were tested with the Mann-Whitney U test. The correlation between normally distributed numerical variables was evaluated by Spearman's correlation coefficient  $\rho$  (rho). All  $p$  values are two-sided. The significance level was set to Alpha=0.05. The statistical software MedCalc Statistical Software version 18.2.1 (MedCalc Software bvba, Ostend, Belgium; <http://www.medcalc.org>; 2018) and SPSS (IBM Corp. Released 2013. IBM SPSS Statistics for Windows Version 21.0. Armonk, NY: IBM Corp.) were used for statistical analysis.

## Results

40 (48%) students rated their knowledge and skill in using the test application as very good (knowledge and skills quite sufficient to work seriously with the PHC application), while 4 (5%) said that they had

sufficient knowledge (scarce knowledge and skills, barely sufficient to work with the application in the PHC). Since this is a web application, 58 (69%) students access the application from a PC or laptop. When given homework to create a simulation of patient processing in the primary health care team, 47 (56%) students did the task independently, without difficulty. There are no significant differences in the assessment of one's own knowledge and skills in the use of the application, the manner and frequency of access to the application by gender.

66 (79%) students fully agree with the statement that in-app training before going to work sites (primary care infirmaries) is useful, and 57 (68%) with the statement that they generally find learning through test applications useful. 59 (70%) students fully agree that adequate training in using the application ensures higher quality of documentation. 47 (56%) students agree with the statement that the benefits of working in a medical IT application is to understand how to implement what they have learned during class and 49 (58%) students agree that adequate training in using the application ensures greater accessibility of patient information.

When compared to 4<sup>th</sup> grade students, 5<sup>th</sup> grade students are significantly more likely to use instructions (written or video instructions) when working with the test application (Mann-Whitney U test,  $p=0.01$ ) and agree with the statement that the advantage of working in the application is understanding how to implement what they have learned during class (Mann-Whitney U test,  $p=0.04$ ) (Table 3).

57 (68%) students fully agree that the knowledge of using the application and electronic health record data in primary health care contributes to improving

Table 2. **Self-assessment of knowledge and application usage skills**

	Number (%) of students			<i>p</i> *
	Female students	Male students	Total	
Assess your own knowledge and skills of using the test application				
Sufficient (scarce knowledge and skills, barely sufficient to work with PHC application)	2 (4)	2 (7)	4 (5)	0.73
Good (basic knowledge and basic skills of using PHC application)	14 (25)	5 (19)	19 (23)	
Very good (knowledge and skills quite sufficient to work seriously with the application in the PHC)	28 (49)	12 (44)	40 (48)	
Great (excellent knowledge and use of the PHC application)	13 (23)	8 (30)	21 (25)	

**Table 3. Assessment of their own knowledge and skills of using the application, the manner and frequency of access to the application in relation to the class attending**

	Median (interquartile range)			<i>p</i> *
	4th grade	5th grade	Total	
Didactic knowledge acquired in test medical IT application can be adequately applied to working in the real application in teaching exercises.	5 (4 - 5)	4 (4 - 5)	4 (4 - 5)	0.13
I find that I have fully understood the capabilities of the test application.	4 (3 - 5)	4 (3 - 4)	4 (3 - 5)	0.65
I find that I have completely mastered working in the application.	4 (3 - 5)	4 (3 - 4)	4 (3 - 4)	0.40
Using a test application seems easy enough and understandable to students.	4 (3 - 5)	4 (3 - 5)	4 (3 - 5)	0.74
The test application should be further refined and adapted to students.	3 (3 - 4)	4 (3 - 4)	4 (3 - 4)	0.47
When practising in the IT classroom the teaching content on the test application was understandable to me.	4 (4 - 5)	4 (4 - 5)	4 (4 - 5)	0.68
Practicing in-app before going to the job site (primary care infirmaries) seems helpful.	5 (5 - 5)	5 (4.5 - 5)	5 (5 - 5)	0.63
I find learning through test applications useful.	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.24
I find learning through test applications interesting.	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.93
When doing the practice tasks I used instructions (written or video instructions) to work in the test application.	3 (2 - 4)	4 (4 - 5)	4 (3 - 4)	<b>0.01</b>
Adequate training in using the application allows me to have more time for professional jobs regarding the patient during teaching exercises.	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.97
Computerization of nursing data offers an opportunity to improve nursing care.	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.16
Adequate training in using the application ensures greater accessibility of patient information.	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.39
Adequate training in using the application ensures greater quality of documentation.	5 (4 - 5)	5 (5 - 5)	5 (4 - 5)	0.21
Adequate training in using the application makes it less likely to make mistakes in teaching exercises.	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.07
The benefits of working in a medical-informatics application for students is to understand how to implement what we have learned during class.	4 (4 - 5)	5 (4 - 5)	5 (4 - 5)	<b>0.04</b>
*Mann-Whitney U test				

education, and 53 (63%) agree with the statement that this knowledge makes it easier for them to do the teaching exercises in a doctor's office.

There are no significant differences in the evaluation of the use of the application and electronic health records in PHC by gender or grade.

58 (69%) students fully agree that the use of the application facilitates communication among team members (doctor - nurse - home care nurse), while 23 (27%) are uncertain whether it needs to be adapted to the nurses further (Table 4).

There is no significant difference by gender in the assessment of what nursing documentation in primary health care implies.



Table 4. **Assessment of what nursing documentation in primary care entails**

Nursing documentation in PHC entails ...	Number (%) of students				
	I fully disagree	I disagree	I'm not sure	I agree	I fully agree
The link between identifying health care needs, planning, delivering, and evaluating provided health care	0	2 (2)	4 (5)	25 (30)	53 (63)
Ensuring continuity of patient care	0	1 (1)	4 (5)	25 (30)	54 (64)
Providing data for nursing research	0	1 (1)	4 (5)	31 (37)	48 (57)
Facilitating communication among team members (doctor - nurse - home care nurse)	1 (1)	0	2 (2)	23 (27)	58 (69)
No managing required while mostly recorded by the doctor	21 (25)	31 (37)	17 (20)	9 (11)	6 (7)
Needs to be further adjusted to nurses	2 (2)	7 (8)	23 (27)	31 (37)	21 (25)

4<sup>th</sup> grade students agree significantly more with the statement that nursing documentation in the PHC entails the link between identifying health care needs, planning, delivering, and evaluating provided health care (Mann-Whitney U test,  $p=0.02$ ), and that it needs to be further adjusted to nurses (Mann-Whitney U test,  $p=0.008$ ) (Table 5).

Most students, 57 (68%), agree with the statement that it is important to keep nursing records in order to improve the quality of health care, and for 56 (67%) students the importance of keeping nursing records lies in the need to ensure better communication, whereas 55 (65%) see its advantage in legal protection (Table 6).

Female students agree significantly more with the statement that keeping nursing records in PHC is

important because of legal obligations, compared to young men (Mann-Whitney U test,  $p=0.002$ ) (Table 7).

5<sup>th</sup> grade students agree significantly more with the statement that keeping nursing records in PHC is important for determining professional responsibility, compared to 4<sup>th</sup> grade students (Mann-Whitney U test,  $p=0.002$ ) (Table 8).

When asked what they would change while learning through test applications, most students would not change anything, while 19 (23%) students would introduce more hands-on work with their teacher before going to a real work site (PHC infirmaries), with no significant difference by gender of the student (Table 9).

Significantly more 5<sup>th</sup> grade students would not change anything while learning through test applica-

Table 5. **Assessment of what nursing documentation in the PHC entails by the student's grade**

Nursing documentation in PHC entails ...	Median (interquartile range)			$p^*$
	4 <sup>th</sup> grade	5 <sup>th</sup> grade	Total	
The link between identifying health care needs, planning, delivering, and evaluating provided health care.	4 (4 - 5)	5 (5 - 5)	5 (4 - 5)	<b>0.02</b>
Ensuring continuity of patient care	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.37
Providing data for nursing research	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.32
Facilitating communication among team members (doctor - nurse - home care nurse)	5 (4 - 5)	5 (4.5 - 5)	5 (4 - 5)	0.28
No managing required while mostly recorded by the doctor	2 (1 - 3)	2 (1.5 - 4)	2 (1.3 - 3)	0.31
Needs to be further adjusted to nurses	3.5 (3 - 4)	4 (3.5 - 5)	4 (3 - 4.8)	<b>0.008</b>

\*Mann-Whitney U test

Table 6. **Assessment of the importance of keeping nursing records in PHC**

	Number (%) of students				
	I fully disagree	I disagree	I'm not sure	I agree	I fully agree
Determining professional responsibility	0	1 (1)	3 (4)	27 (32)	53 (63)
Legal obligations	0	1 (1)	9 (11)	25 (30)	49 (58)
Ensuring better communication	0	0	3 (4)	25 (30)	56 (67)
Legal protection	0	1 (1)	2 (2)	26 (31)	55 (65)
Improving quality of health care	1 (1)	1 (1)	5 (6)	20 (24)	57 (68)
No need to document nursing work in primary health care	48 (57)	10 (12)	7 (8)	10 (12)	9 (11)

Table 7. **Assessment of the importance of keeping nursing records in PHC by gender**

	Median (interquartile range)			<i>p</i> *
	Female students	Male students	Total	
Determining professional responsibility	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.22
Legal obligations	5 (4 - 5)	4 (3 - 5)	5 (4 - 5)	<b>0.002</b>
Ensuring better communication	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.34
Legal protection	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.11
Improving quality of health care	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.19
No need to document nursing work in primary health care	1 (1 - 3)	1 (1 - 4)	1 (1 - 3)	0.78

\*Mann-Whitney U test

Table 8. **Assessment of the importance of keeping nursing records in PHC by the grade**

	Median (interquartile range)			<i>p</i> *
	4 <sup>th</sup> grade	5 <sup>th</sup> grade	Total	
Determining professional responsibility	4 (4 - 5)	5 (5 - 5)	5 (4 - 5)	<b>0.006</b>
Legal obligations	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.75
Ensuring better communication	5 (4 - 5)	5 (4.5 - 5)	5 (4 - 5)	0.16
Legal protection	5 (4 - 5)	5 (4 - 5)	5 (4 - 5)	0.53
Improving quality of health care	5 (4 - 5)	5 (4.5 - 5)	5 (4 - 5)	0.23
No need to document nursing work in primary health care	1 (1 - 3)	1 (1 - 4)	1 (1 - 3)	0.44

\*Mann-Whitney U test

tions, while 4<sup>th</sup> grade students would introduce significantly more hands-on work with the teacher before going to a real work site, or working in the teaching process on a test application for hospital information system (Fisher's exact test,  $p < 0.001$ ) (Table 10).

Spearman's correlation coefficient assesses the correlation between the rating of one's own knowledge and

the skills of using the test application with the opinion and attitudes about the application. Students who rated their knowledge higher agree significantly more with the statement that didactic knowledge learned in test medical IT application can be adequately applied to working in the real application in teaching exercises and that they have fully understood the capabilities of

Table 9. **What would you change while learning through test applications by gender**

What would you change while learning through test applications	Number (%) of students			<i>p</i> *
	Female students	Male students	Total	
I wouldn't change anything	28 (49)	15 (56)	43 (51)	0.85
I find it very useful in practice	2 (4)	1 (4)	3 (4)	
Make it more accessible to students	1 (2)	1 (4)	2 (2)	
I would put more tasks (homework)	2 (4)	2 (7)	4 (5)	
More practical work with the teacher before going to a real work site (PHC infirmaries)	14 (25)	5 (19)	19 (23)	
Introduce work in the teaching process on test application for the hospital information system	10 (17.5)	3 (11.1)	13 (15.5)	
Total	57 (100)	27 (100)	84 (100)	

\*Mann-Whitney U test

Table 10. **What would you change while learning through test applications by the student's grade**

What would you change while learning through test applications	Number (%) of students			<i>p</i> *
	Female students	Male students	Total	
I wouldn't change anything	24 (44)	19 (66)	43 (51)	<0.001
I find it very useful in practice	0	3 (10)	3 (4)	
Make it more accessible to students	1 (2)	1 (3)	2 (2)	
I would put more tasks (homework)	1 (2)	3 (10)	4 (5)	
More practical work with the teacher before going to a real work site (PHC infirmaries)	16 (29)	3 (10)	19 (23)	
Introduce work in the teaching process on test application for the hospital information system	13 (23.6)	0	13 (15.5)	
Total	55 (100)	29 (100)	84 (100)	

\*Fisher's exact test

the test application. Additionally, they feel that they have completely mastered working in the application. Practicing in-app work prior to going to work sites (primary health care infirmaries) is useful to them, as well as learning through test applications in general, and adequate training in using the application, according to the respondents, makes it less likely to make mistakes in teaching exercises. Knowledge of using the application and patients' electronic health record data in primary health care will help them find employment and compete in the job market more easily. The students who rated their knowledge and skills higher significantly less agree with the statement that there is no need to document nursing work in primary health care (Table 11).

## Discussion

With the development of information and communication technology, information literacy is becoming one of the professional competencies of the nurse. An information literate person knows how to use information for a specific purpose (19). Primary care nurse uses the medical IT application to record all necessary administrative and medical data about the patient. 40 (48%) students rated their knowledge and skill in using the test application as very good (knowledge and skills sufficient to work seriously with the application in the PHC), and 21 (25%) rated

**Table 11. Significant correlation of assessment of own knowledge and skills of using the test application with the opinion and attitudes about nursing documentation in PHC**

	Spearman's correlation coefficient of the rating of one's own knowledge and skills in using the test application	
	$\rho$ (Rho)	p value
Didactic knowledge learned in test medical IT application can be adequately applied to working in the real application in teaching exercises.	<b>0.405</b>	<0.001
I find that I have fully understood the capabilities of the test application.	<b>0.415</b>	<0.001
I find that I have completely mastered working in the application.	<b>0.480</b>	<0.001
Practicing in-app before going to the job site (primary care infirmaries) seems helpful.	<b>0.292</b>	0.007
I find learning through test applications useful.	<b>0.295</b>	0.007
Adequate training in using the application makes it less likely to make mistakes in teaching exercises.	<b>0.230</b>	0.04
Knowledge of using the application and patients' electronic health record data in primary health care will help me find employment and compete in the job market easier	<b>0.231</b>	0.04
No need to document nursing work in primary health care	<b>-0.355</b>	0.001

it excellent. Based on the results obtained, we can expect the students to be able to use the application for work in the primary health care infirmaries very well after finishing school.

Since this is a web application, 58 (69%) students mostly access the application from a PC or laptop, and when given homework to create a simulation of patient processing in the primary care team, 47 (56%) students did the task independently, without the help of teachers or written/video instructions. Through their regular education, the students of Viktorovac High School in Sisak acquire computer knowledge and skills through subjects such as Informatics, Principles of Administration and Nursing in Primary Health Care, and information and communication technology is a part of their everyday lives. Informatics as a subject in secondary education of nurses comprises 35 school hours of lectures in the first grade and 70 school hours of exercises in the second grade, while the Principles of Administration comprises 37 school hours of teaching and the subject Nurses in Primary Health Care 37 school hours of lectures and 74 school hours of exercises (14). It can be assumed that frequent use of various IT applications results in more developed skills of using the application itself. 29 (35%) students are not sure whether the test application should be refined and adapted to students.

Nurses also state that they are not fully satisfied with the electronic nursing records because they do not meet the needs for adequate records of daily practice (15). Medical IT application are not fully customized for nurses. No primary health care software solution contains a part where a nurse can keep his/her own nursing records, which has been recognized by students. The reason for this response lies in the fact that it is not possible to record nursing diagnoses or health care plans, which should be possible to write if the nurse has the possibility to record nursing work with the patient in diagnostic and therapeutic procedures (DTP). Some examples of records of DTP procedures for general medicine are OM022 - telephone consultation with a nurse, OM032 - first visit of a nurse at home, OM033 - a control visit of a nurse at home that can be recorded through the application (16). Although there is a possibility to record DTP, there is no possibility of a more extensive record of procedures performed by the nurse and further nursing documentation.

Advisory work also comes to light when designing various "panels". The nurse takes certain patient information (e.g. height, weight, blood glucose values, blood pressure values, waist circumference, hip range, physical activity, smoking, alcohol, narcotics, drugs) and enters it into some of the offered "panels" and measurements. When recording this data, the

nurse could also create a health care plan, but the application does not have the possibility to enter it.

With the introduction of EHRs and general computerization of the health system, nurses in primary health care have in some ways become an "invisible" part of the health system. Nurses in PHC do not have their documentation and cannot record the quantity and quality of work performed or services provided. At the same time, by increasing the availability and range of community health services, there is a need to increase the number of educated nurses, to increase professional competencies, and thus the need for additional knowledge and skills (17). The fact is that applications need to be more tailored to nurses. The students were right to notice that there is no way to record all the procedures they carry out in teaching exercises in primary care infirmaries.

66 (79%) students fully agree with the statement that practicing in-app work before going to work sites (primary care infirmaries) is useful, and 57 (68%) students find learning through test applications generally useful. If we compare this data with the data of the research by Rafaj G., who examined the problem of recording nursing work in primary health care, and conducted the research with the employees of the Bjelovar-Bilogora County Health Center who use the same application as Viktorovac High School (Medicus. Net, MCS grupa d.o.o.), a lack of IT education is evident. Only seven out of 98 respondents completed some of the IT courses, and nine had received basic training before working on a computer in the workplace (17). From the above, we can conclude that there is a benefit of working in the application before going to job sites, because if students are familiar with the application when they enter the job market, the employer will not have to invest in further education of their future employees.

59 (70%) students fully agree that adequate training in using the application ensures higher quality of documentation, and 49 (58%) students agree with the statement that adequate training in using the application ensures greater accessibility of patient information. A 2014 study by Rafaj G., which examines the attitude of nurses, users of the application, yields the most positive results for the statement that computers provide greater data accessibility, and respondents also believe that computers provide higher quality of documentation (17). It is evident that students have also recognized the usefulness and purpose of learning to work in a test application for PHC.

There are no significant differences in the assessment of one's own knowledge and skills in the use of the application, the manner and frequency of access to the application by gender. On the other hand, 5<sup>th</sup> grade students agree significantly more than 4<sup>th</sup> grade students with the statement that they use the instructions (written or video instructions) to work in a test application when doing the practice tasks. This information should be further researched and its cause examined. It is possible that the younger generations use various applications more easily, and that by updating the application itself, it has become more user friendly. The manufacturer, as it were, regularly updates the application not only according to HZZO regulations, but also at the request of the user, thus adapting it to the user.

57 (68%) students fully agree that the knowledge of using the application and electronic health record data in primary health care contribute to improving education, and 53 (63%) agree with the statement that this knowledge makes it easier for them to do the teaching exercises in a doctor's office. A study by Lee and associates finds that health professionals with computer science knowledge completed computer tasks faster and easier and had a more positive attitude towards computerization (18).

58 (69%) students fully agree that the use of the application facilitates communication among team members (doctor - nurse - home care nurse). The results of Rafaj G. in 2014 are almost identical, according to which 68.4% of the respondents agree that using the application facilitates communication among team members (17). In the application, the nurse has the ability to enter the reason for the patient's arrival to the doctor, as well as the values of vital signs. All these measurements can be entered by the nurse before the patient is examined by a doctor. Physicians and nurses have clearly defined complementary and reciprocal roles, and would use shared documentation that would allow for a continuous flow of information aimed at patient well-being and enhance mutual trust and respect (19).

4<sup>th</sup> grade students significantly more agree with the statement that nursing documentation in the PHC entails the link between identifying health care needs, planning, delivering, and evaluating provided health care, and that it needs to be further adjusted to nurses. It is possible that the differences between 4<sup>th</sup> and 5<sup>th</sup> grade students are due to the fact that 4<sup>th</sup> grade students are attending the subjects Nurs-



ing in Primary Health Care and Administration Principles, so their knowledge of the application itself and its benefits is more recent.

Most students, 57 (68%), agree with the statement that it is important to keep nursing records in order to improve the quality of health care, whereas 55 (65%) see its advantage in legal protection. The results obtained by Rafaj G. in survey of nurses' attitudes is similar, where respondents agree that nursing records ensure continuity of care (70.4%), while 74.5% believe that nursing records should be kept for legal protection (17). The imperative of nursing is the collection, interpretation, and storage of data into nursing records, which by further processing provides information that forms the basis for quality improvement and health care development (19, 20). Graves Farrell, as the nurses' legal adviser, states that nurses have often recorded all procedures concerning patients for fear of losing their jobs. If there is no documentation, there is no evidence (21).

Young women agree significantly more with the statement that keeping nursing records in PHC is important because of legal obligations, compared to young men. It has also been observed that young men find it easier to cope with in-app work as well as computer work, and often offer to enter administration data in the infirmary on their own, while young women are more likely to observe the work and question what to do in the event of a mistake. There is a need to further investigate why gender differences exist.

5<sup>th</sup> grade students agree significantly more with the statement that keeping nursing records in PHC is important for determining professional responsibility, compared to 4<sup>th</sup> grade students. The final grade students are more mature, their schooling is coming to an end, and they will soon find themselves in the role of a nurse. They have also heard about professional responsibility through attending other subjects, and additionally in the final year there are more teaching exercises and they have been faced to a greater extent with the problem of professional responsibility.

When asked what they would change while learning through test applications, most students would not change anything, while 19 (23%) students would introduce more hands-on work with their teacher before going to a real work site (PHC infirmaries). Before going to the clinical practice in primary health care infirmaries, students spend 5 school hours in

the IT classroom. This is an indication that classroom exercises with the teacher could be held over a number of school hours so that students would arrive to the infirmaries fully prepared.

Significantly more 5<sup>th</sup> grade students would not change anything while learning to use test applications, while 4<sup>th</sup> grade students would introduce significantly more hands-on work with the teacher before going to a real work site, and working in the teaching process on a test application for hospital information system. This answer points to the creative thinking of the students as we are currently expecting a test version of the hospital information system that we would also implement in class. Perhaps this is more important for 4<sup>th</sup> grade students because they are still in the process of schooling, while 5<sup>th</sup> grade students are at the end of their education.

Students who rated their knowledge higher agree significantly more with the statements: didactic knowledge learned in test medical IT application can be adequately applied to working in the real application in teaching exercises; they have fully understood the capabilities of the test application; they feel that they have completely mastered working in the application; practicing in-app work prior to going to work sites (primary health care infirmaries) is useful to them; learning through test applications is useful in general, and adequate training in using the application makes it less likely to make mistakes in teaching exercises, and knowledge of using the application and patients electronic health record data in primary health care will help them find employment and compete in the job market easier. The students who rated their knowledge and skills higher significantly less agree with the statement that there is no need to document nursing work in primary health care.

A survey conducted by Ljubičić in 2009 indicates that users have a more positive view of using nursing documentation through CEZIH if they have greater IT skills. Respondents claim that IT literacy is paramount in improving the quality of nursing record keeping. Nurses also state that keeping nursing records is mandatory and also serves as a legal document in the event of an incident (22). It is extremely important that nurses have recognized their important role in creating medical IT applications, offering solutions and suggesting application manufacturers in order to facilitate keeping nursing records (23). The same can be said for nursing high school students.

## Conclusions

Based on the conducted research and the results obtained, the following conclusions can be drawn:

- students find learning through test applications useful, and that adequate training in using the application ensures greater quality of documentation
- self-assessment of knowledge and skills of the test application shows that half of the students rate the knowledge and skills in the application with a very good grade (knowledge and skills sufficient for serious work with the application in the PHC)
- students agree with the statement that the benefits of working in a medical IT application are understanding how to implement what they have learned during class and that adequate training in using the application ensures greater accessibility of patient information
- most students fully agree that the knowledge of using the application and electronic health record data in primary health care contribute to improving education, as well as with the statement that this knowledge makes it easier for them to do the teaching exercises in a doctor's office
- most students fully agree that the use of the application facilitates communication among team members (doctor - nurse - home care nurse), while some of them are uncertain whether it needs to be adapted to the nurses further
- most students agree with the statement that it is important to keep nursing records in order to improve the quality of health care, next is ensuring better communication, and finally for legal protection
- most students would not change anything when learning through test applications, while some students would like more hands-on work with the teacher before going to a real work site (PHC infirmaries)

There are some gender differences:

- female students agree significantly more with the statement that keeping nursing records in PHC is important because of legal obligations, compared to male students.

There are some differences with regard to the student's grade:

- 5th grade students agree significantly more than 4th grade students with the statement that they use the instructions while doing the practice tasks
- 4th grade students agree significantly more with the statement that nursing documentation in the PHC entails the link between identifying health care needs, planning, delivering, and evaluating provided health care
- significantly more 5th grade students would not change anything while learning through test applications, while 4th grade students would introduce significantly more hands-on work with the teacher before going to a real work site, and working in the teaching process on a test application for hospital information system.

Hypothesis 1 is confirmed. Medical school students have a positive opinion of the integration of the medical IT application in the teaching of professional subjects Nursing in Primary Health Care and Principles of Administration.

Hypothesis 2 is confirmed. Students' opinions about integrating the medical IT application into teaching are related to their knowledge of nursing documentation and attitudes about its application in primary health care.

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## MIŠLJENJA UČENIKA MEDICINSKE ŠKOLE O INTEGRIRANJU MEDICINSKO-INFORMATIČKIH APLIKACIJA U NASTAVI STRUČNIH PREDMETA U SISAČKO-MOSLAVAČKOJ ŽUPANIJ

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### Sažetak

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**Cilj.** Cilj je ovoga rada ispitati mišljenje učenika Srednje škole Viktorovac u Sisku o primjeni medicinsko-informatičke aplikacije u nastavi stručnih predmeta Medicinska sestra u primarnoj zdravstvenoj zaštiti i Načela administracije te jesu li mišljenja učenika o integriranju medicinsko-informatičke aplikacije u nastavi povezana s njihovim znanjem o sestrinskoj dokumentaciji i stavovima prema njezinoj primjeni u primarnoj zdravstvenoj zaštiti.

**Metode.** Istraživanje je provedeno kao presječna studija. Ukupno je sudjelovalo 84 učenika Srednje škole Viktorovac u Sisku s pomoću anketnog upitnika koji se sastoji od 37 pitanja. Odgovori se definiraju primjenom Likertove skale procjena.

**Rezultati.** Šezdeset i šest (79 %) učenika u potpunosti se slaže s tvrdnjom da je vježbanje rada u aplikaciji prije odlaska na radilišta korisno. Da dobra uvježbanost primjene aplikacije osigurava veću kvalitetu dokumentiranja u potpunosti se slaže 59 (70 %) učenika. Svoje znanje i vještinu uporabe testne aplikacije 40 (48 %) učenika ocijenilo je ocjenom vrlo dobar (znanja i vještine sasvim dostatne za ozbiljan rad s aplikacijom u PZZ-u), a izvrsnom ocjenom ocijenio se 21 (25 %) učenik. Oni učenici koji su svoje znanje i vještine ocijenili višom ocjenom znatno se manje slažu s tvrdnjom da ne postoji potreba za dokumentiranjem sestrinskog rada.

**Zaključak.** Učenici Srednje škole Viktorovac u Sisku imaju pozitivno mišljenje o integriranju medicinsko-

informatičke aplikacije u nastavi stručnih predmeta. Mišljenja učenika o integriranju medicinsko-informatičke aplikacije u nastavi povezana su s njihovim znanjem o sestrinskoj dokumentaciji i mišljenjima o njezinoj primjeni u primarnoj zdravstvenoj zaštiti.

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**Ključne riječi:** dokumentacija, primarna zdravstvena zaštita, učenici

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# Importance of Modern Communication Technologies in Monitoring Compliance of Patients with Chronic Myeloid Leukemia

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## Abstract

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Compliance is a term that applies to the patient's ability to correctly follow advice and instructions regarding medications, diet, and activity. The nurse, as an important factor in the multidisciplinary team, has a special responsibility in monitoring the patient's compliance. It is essential for patients with chronic malignancies, such as chronic myeloid leukemia, which is nowadays mostly treated successfully by continuous and regular monitoring and application of therapy.

The aim of the present study was to determine whether the nurse's communication with patients, which implies the use of information and communications technology, affects compliance.

The study was conducted on a sample of 50 outpatients at the Department of Haematology of the University Hospital Centre Zagreb. The respondents used some form of modern communication for three weeks and were re-interviewed for compliance.

The use of modern information technology enhances patient compliance. Those who were reminded significantly improved the regularity of their check-ups. After the intervention, the respondents considered reminders useful in encouraging them to take medicines more regularly and to attend check-ups.



## Introduction

Malignancies are a significant public health problem in Croatia, as in the rest of the developed world. Considering the distribution of new cancer patients with leukemia, lymphomas make up 5% in both sexes (1). The treatment of these diseases is extremely costly because it requires the use of high doses of chemotherapy, often including transplantation of hematopoietic stem cells (2). The multidisciplinary approach in the care of patients with chronic myeloid leukemia (CML) recognizes and involves the nurse as an important partner. There are several important elements of nursing in the care for a patient with CML (3):

1. the patient's lack of knowledge; it is important that the nurse thoroughly explain the health state to the patient, as well as the importance of taking medication and overall treatment, and to make daily recommendations. The patient should be referred to any community resources they can use.
2. compliance - it is necessary to pay attention to the factors that enhance good patient compliance such as motivation, belief in the ability of controlling the condition, quality recommendations, and availability of resources. Once established, good compliance should be monitored continuously, as the patient may be at risk of losing the will to co-operate. Therefore, it is crucial to describe to the patient the benefits of collaborating and adhering to health recommendations.
3. the improvement of communication has a great importance for the relationship between the nurse and the patient, and is essential in addressing clinical, psychological, and social needs. An individualized approach to the patient, as well as, more recently, modern information and communications technology (ICT), form the basis for achieving good communication. Since CML is a malignant disease that is today most successfully treated with continuous and regular treatment, the importance of nursing interventions is at the forefront of educating patients and encouraging compliance. It is essential to be informed about the current condition and to inform the patient that col-

laborative patients are three times more likely to have good therapy outcomes in comparison with non-compliant patients (4). Despite the knowledge about patient compliance and the possibilities of its improvement, numerous studies have shown poor compliance results (5,6). Mann et al. have examined the compliance of patients with CML with *imatinib* treatment, and the results showed that one third of the patients were considered non-compliant (7).

Practically all modern forms of ICT can help follow the recommendations for achieving the set goals of better cooperation. When the first symptoms appear, patients are more likely to resort to online information. However, it is crucial that they are valid and reliable, as they will have an increasing impact on medical practice under the influence of growing computerization (8). According to some studies, nurses still have insufficient knowledge in the field of ICT, although they have the motivation for acquiring new knowledge (9). Communication based on new technologies in the relationship between healthcare professionals and patients is not very common. Telephone calls still have primacy. According to a New Zealand study, 70% of doctors never use e-mail to communicate with their patients (10). Questioning GPs about the use of email in patient care, Car and Sheikh found that doctors used e-mail in communication with 1-5% of their patients (11). On the other hand, patients' opinions on the use of ICT with health professionals are interesting. According to one study, more than one third of the patients were willing to pay extra for this type of care (12). It is certain that patient attitudes towards ICT correspondence with healthcare professionals has an impact on the relationship. A study conducted in Norway found that, on average, one e-mail per year resulted in reduced arrival at the office for one visit per patient per year (13). Literature analysis provides unambiguous conclusions about the benefits of using ICT (10-14). Nevertheless, patient communication with the staff in the healthcare system using ICT does not follow its growth in general use. Nurses encounter the problem of poor co-operation in their daily work with patients with chronic diseases. There are many reasons for poor co-operation, and nursing care interventions lead to discovering the causes and finding solutions. It seems that the use of ICT could have an impact on compliance, especially in younger patients.

Therefore, the aim of the present study was to determine the extent to which non-compliance in the care of CML patients at University Hospital Centre (UHC) Zagreb is expressed and whether the manner of communication influences patient compliance. The hypothesis is that modern forms of communication improve the compliance of patients with CML.

## Methods

This prospective intervention study was conducted on a group of 50 outpatients at the polyclinic section of the Department of Haematology, UHC Zagreb, from January to April 2014. Each respondent was informed of the basic methods of conducting and participating in the study. The sample includes all adult patients with CML. Excluded from the sample were persons under 18 years of age, all patients with significant comorbidities, infectious diseases, severe anaemia, and patients older than 70 years of age due to the fact that they are mostly looked after by others, which can affect their compliance. On the basis of the first survey results, an intervention subgroup that included those who did not evaluate their compliance as completely regular was formed. From a total of 27 respondents who estimated their compliance as incomplete, five of them did not use ICT, so the final sample included 22 patients, who included their specific identifier for electronic communication (e-mail address, cellular phone number, Facebook profile) at the end of the questionnaire, which was then used to contact them. The subgroup used some form of modern communication (e-mail, SMS, Facebook, WhatsApp). Messages in the form of a reminder to take medications were sent every morning, and patients were reminded to come for check-ups or collect new doses of medication seven days prior and a day before a scheduled appointment. The reminder sent this message: "Do not forget to take your daily dose of medication/to collect your new dose of medication/to come to the scheduled appointment." The respondents were interviewed again three weeks after the intervention. The survey was created using the Google Docs web application, and respondents were surveyed online, which made it anonymous. The obtained results are processed in the form of absolute and relative frequencies, shown in

tables and charts made in MS Excel 2007. The values were given as mean (M), standard deviation (SD) and range as minimal (min.) and maximal (max.) response on a 5-point scale. Differences between the groups were tested by the paired samples t-test. P-values  $\leq 0.05$  were considered statistically significant. All analyses were performed using the online Social Science Statistics resources available from <https://www.socscistatistics.com>.

## Results

### Overall assessment of patient compliance

Participants evaluated their compliance on a five-point scale measuring cross-domain adherence to recommended treatment. Patients mostly cooperate when it comes to the regularity of collecting new doses of medications, with the incidence of forgetting to take the daily dose of medication varying from cases when it occurred every day to several times per week (grades 1-3) in 32% of patients, which represents the most non-cooperative domain (Table 1).

Table 1. **Overall assessment of patient compliance**

Self-reported variable (N=50)	not at all compliant (1) → completely compliant (5)				
	1 N (%)	2 N (%)	3 N (%)	4 N (%)	5 N (%)
Overall compliance	0 (0)	0 (0)	4 (8)	23 (46)	23 (46)
Regularity of controls	0 (0)	0 (0)	0 (0)	27 (54)	23 (46)
Forgetfulness to take a daily dose	4 (8)	5 (10)	7 (14)	12 (24)	22 (44)
Taking medications at the wrong time	4 (8)	0 (0)	5 (10)	24 (48)	17 (34)
Regularity in collecting new doses of medications	4 (8)	0 (0)	0 (0)	5 (10)	41 (82)

## Individual domains of compliance before and after the intervention

Out of the total number of respondents who used some form of ICT reminder for cooperation before the intervention, the regularity of their check-ups was assessed as mostly irregular. After the intervention, regularity was significantly greater: 69% of the respondents improved their compliance and it was completely regular. The regularity of check-ups was significantly improved after the intervention (Table 2).

Responses to a survey questionnaire assessing the timelines of taking medication showed that 23% of respondents often forgot to take medications on time, while after the intervention this was reduced to 14%. There were no significant differences in the mean score of forgetting to take medications on time before and after the intervention (Table 3).

Before the intervention, 23% of the respondents forgot to take the daily dose several times during the week, whereas after the intervention, this was reduced to 14%. Also, before the intervention, 27% of the respondents never forgot to take their daily dose of medications, whereas after the intervention this increased to 54%. There were no significant differences in the mean score of forgetting to take the daily dose of medications before and after the intervention (Table 4).

The regularity in collecting new medication doses was rated as significantly worse after the intervention because 14% of the respondents began to sometimes irregularly collect new doses of medications. There is an equal percentage of respondents who, despite the intervention, rarely irregularly collect a new dose in 23% of cases. Ultimately, 63% of the respondents had complete regularity after the intervention (Table 5).

**Table 2. The regularity of check-ups before and after the intervention**

How would you rate the regularity of your previous check-ups?*	Before the intervention (N=22)	After the intervention (N=22)	t	p
M	3.00	4.32	5.937	0.001**
SD	0.00	1.04		
scale min. (response %)	3 (100)	2 (4)		
scale max. (response %)	-	5 (69)		

\*scale: completely irregular (1) → completely regular (5)

\*\*statistically significant

**Table 3. How often do you forget to take your medications on time?**

How often do you forget to take your medications on time?	Before the intervention (N=22)	After the intervention (N=22)	t	p
M	3.55	3.77	1.742	0.096
SD	0.86	0.75		
scale min. (response %)	2 (23)	2 (14)		
scale max. (response %)	4 (77)	5 (4)		

\*scale: very often (1) → never (5)

**Table 4. Forgetfulness to take a daily dose of medications**

How often do you forget to take your daily dose of medications?	Before the intervention (N=22)	After the intervention (N=22)	t	p
M	3.73	3.95	1.555	0.135
SD	1.12	1.21		
scale min. (response %)	2 (23%)	3 (14%)		
scale max. (response %)	5 (27%)	5 (54%)		

\*scale: very often (1) → never (5)

**Table 5. Regularity in collecting new doses of medications**

How would you rate the regularity in collecting new doses of medications?	Before the intervention (N=22)	After the intervention (N=22)	t	p
M	4.77	4.50	-2.806	0.010**
SD	0.43	0.74		
scale min. (response %)	4 (23)	3 (14)		
scale max. (response %)	5 (77)	5 (63)		

\*scale: completely irregular (1) → completely regular (5)  
 \*\*statistically significant

**Table 6. Importance of a nurse in overseeing the medication intake**

How important is a nurse in overseeing medication intake?	Before the intervention (N=22)	After the intervention (N=22)	t	p
M	3.77	4.68	4.629	0.001**
SD	1.27	0.48		
min. (response %)	1 (9)	5 (32)		
max. (response %)	4 (32)	5 (68)		

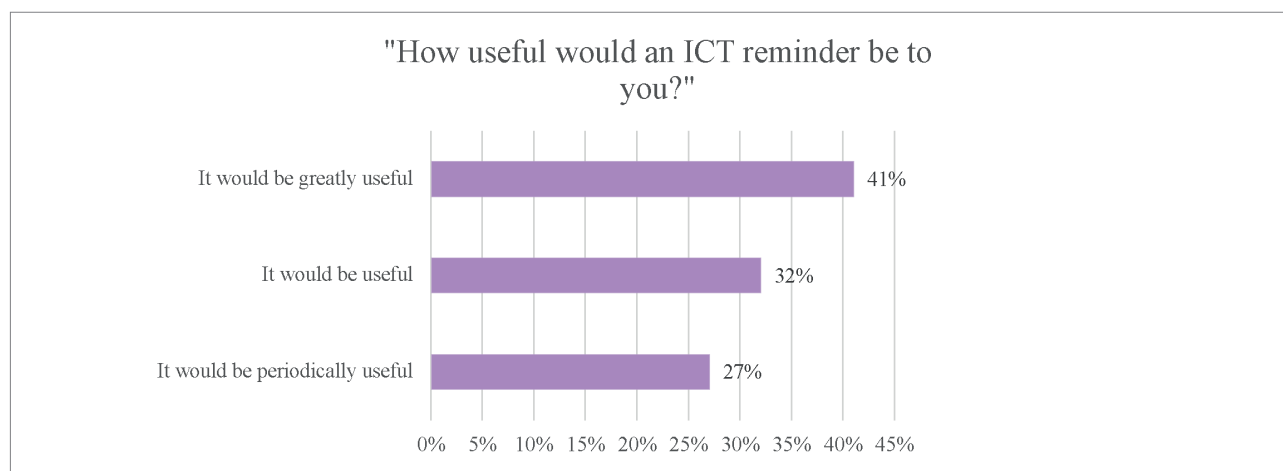
\*scale: not important at all (1) → extremely important (5)

In assessing the importance of nurses in overseeing medication intake, before the intervention 9% of respondents considered the function irrelevant, and the same percentage considered that function mostly irrelevant but sometimes important. After the intervention, none of the participants responded as they did before the intervention. Simultaneously, before the intervention, 32% of respondents estimated that function as very important, while after the intervention, 68% of respondents claimed they considered

the function of a nurse extremely important. There were significant differences in the participants' opinions before and after the intervention (Table 6).

After the intervention, all participants felt that an ICT reminder would be useful for them to take medications more regularly (Figure 1).

When asked, "Would you be interested in continuing the reminder program with the use of ICT", 86% of the participants answered in the affirmative (Figure 2).

**Figure 1. Usefulness of an ICT reminder**

**"WOULD YOU BE INTERESTED IN  
CONTINUING THE REMINDER PROGRAM  
WITH THE USE OF ICT?"**

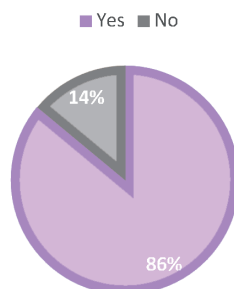


Figure 2. Interest in the use of an ICT reminder

## Discussion

The use of ICT services such as e-mail and SMS in communication between patients and healthcare professionals is a relatively new trend that is of increasing importance. Among other things, the contribution of this communication method to the improvement of patient compliance is significant. Therefore, the aim of this study was to determine the degree of poor patient compliance and whether it was influenced by communication involving the use of ICT. While a significant percentage of patients regularly collect new doses of medications, most fail to take them at a certain time or sometimes even forget to take them entirely. Some studies have shown that GPs play the largest role in patient compliance and communication (13). All hematologic patients are expected to be consistent in taking therapy and consider compliance important to the outcome (14) because the use of costly therapy is the only hope for these patients. Respondents largely believe that a reminder would be useful for them to take medications more regularly.

Participants who received a reminder significantly improved the regularity of their check-ups. Before the intervention, they evaluated their compliance as mediocre, while after the intervention, in 70% of cases, they exhibited excellent cooperation regarding the regularity of coming for check-ups. Regularity in collecting new drug doses was rated worse after the intervention. Afterwards, when they arrived to collect their new dose of medication, the patients

were asked to state their reasons for not collecting their medications on time. They often answered that during and after intervention they were better connected with nurses, and there were no problems with collecting new doses of medication on time. Patients were convinced they developed greater confidence in the professionals they interacted more often with, given the fact that they were more relaxed and knew that they could collect their dose at any time. Some studies have confirmed that frequent communication, for example via e-mail, contributes to increased confidence among patients (15).

In assessing the importance of a nurse in monitoring the administration of medication, 41% of respondents agreed that this function is often important and 32% that it is extremely important, and after the intervention 69% of respondents claimed that the function of a nurse is extremely important. This result is especially important since the research was conducted at the polyclinic department, from where the largest number of complaints about the work of nurses is received (16).

After the intervention, all respondents believed that an ICT reminder would be useful for them to take medications more regularly. After the intervention, 46% of the respondents confirmed that the reminder increased their regularity in taking their medications. A certain proportion of the respondents were largely cooperative in treatment, even before the intervention. When asked "Would you be interested in continuing the reminder program using information and communication technology", 86% answered in the affirmative. Such a high percentage imposes the ne-

cessity of developing new applications that will be tailored to the needs of the patient in order to improve compliance.

Further research should be carried out. It would be useful to determine which of the above modes of communication has the best effect. It would also be useful to monitor individual participants' responses to observe changes in individual cases.

## Conclusions

On the basis of the study, it can be concluded that patient compliance is an occurrence that covers many areas which can be further employed using ICT. Participants who received a reminder significantly improved the regularity of their check-ups. Following the use of ICT, there was a decrease in non-cooperativeness regarding the timely administration of medicine, and a marked improvement in compliance regarding intake of daily doses of medications.

After the examination, patients considered a reminder useful for taking medications more regularly. At the same time, patients are encouraged to have a better sense of the importance of the nurse's role in monitoring compliance as a result of improved communication. It is necessary to promote a culture of communication using new technologies, conduct formal and informal education of healthcare professionals, and develop awareness of saving costs and professional time. Motivating health care professionals is crucial, and it is definitely important to use some model of change to increase the efficiency of the system and improve the quality of overall care using new technologies.

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## VAŽNOST SUVREMENIH KOMUNIKACIJSKIH TEHNOLOGIJA U PRAĆENJU SURADLJIVOSTI PACIJENATA OBOJELIH OD KRONIČNE MIJELOIČNE LEUKEMIJE

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### Sažetak

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Suradljivost bolesnika pojam je koji označava pridržavanje pravila, savjeta i uputa dobivenih od zdravstvenih profesionalaca, a odnose se na primjenu lijekova, prehranu, aktivnosti te redovito kontroliranje. Medicinska sestra važan je čimbenik multidisciplinarnog tima u praćenju suradljivosti bolesnika, posebice obojelih od kroničnih malignih bolesti kao što je kronična mijeloična leukemija. Bolest se danas uspješno liječi kontinuiranim i redovitim praćenjem i primjenom terapije, a važnost sestrinskih intervencija odnosi se i na poticanje i održavanje suradljivosti.

Cilj ovoga rada bio je utvrditi razinu suradljivosti bolesnika obojelih od kronične mijeloične leukemije liječenih u KBC-u Zagreb te postojanje utjecaja modernih oblika komunikacija na suradljivost bolesnika.

Istraživanje je provedeno u Klinici za unutarnje bolesti KBC-a Zagreb na uzorku od 50 pacijenata koji su bili ambulantno liječeni. Samoprocijenjeno nesuradljivi ispitanici bili su podvrgnuti modernom obliku komunikacije tijekom tri tjedna te su ponovno anketirani.

Ispitanici koji su bili podvrgnuti podsjetniku znatno su popravili redovitost dolazaka na kontrolne preglede. Nakon provedene intervencije svi ispitanici smatraju da bi im bio koristan informatički podsjetnik u svrhu redovitijeg uzimanja lijekova te obavljanja kontrolnih pregleda.

Primjena modernih informacijskih tehnologija unaprijedila je suradljivost bolesnika.

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**Ključne riječi:** sestrinstvo, informacijsko-komunikacijska tehnologija, suradljivost

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# Nurses' Knowledge of Palliative Care

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**Keywords:** palliative care, education, nurses, PCQN questionnaire

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## Abstract

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**Introduction.** Palliative care has evolved to identify the specific needs of patients with severe and incurable diseases. An estimated 46,000 patients in the Republic of Croatia require some form of palliative care. The aim of this study is to examine nurses' knowledge of palliative care.

**Methods.** A cross-sectional study included 198 nurses. The survey was conducted during March and April of 2017. As a survey instrument, a 2-part questionnaire was used. The first part dealt with socio-demographic data and the second part consisted of a standardized palliative care quiz for nursing (PCQN) questionnaire.

**Results.** Respondents gave the most correct answers in the area of pain and other symptoms control. It was found that there was no significant difference in gender, age, or seniority in knowledge of palliative care. Respondents who received informal education showed better knowledge.

**Conclusion.** From the study conducted, we can conclude that nurses have insufficient knowledge of palliative care.

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## Introduction

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In 2002, the World Health Organization (WHO) defined palliative care as an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual (1). Its focus is on the patient and their family, and the main goal is to promote the patient's quality of life through various stages of the disease, relieving the patient of pain and suffering. Palliative care does not only relate to the final days of life, since it is often required during periods lasting for months, even years - from the diagnosis of a terminal disease to the period of mourning after a patient's death. It is provided by a competent and highly educated multidisciplinary team consisting of doctors, nurses, physical therapists, psychologists, social workers, priests, occupational therapists, etc. Many authors state that nurses are indispensable links in the chain of palliative care. They spend the most time with patients and therefore their role in palliative care is of immense importance (2). According to current estimates, slightly more than 60% of patients suffer from some oncological disease, while the remaining (40%) represent a spectrum of various diseases, from dementia and cerebrovascular stroke to end-stage liver disease, cardiac insufficiency, and chronic obstructive pulmonary disease (3).

Important factors influencing the successful delivery of palliative care to patients are knowledge, attitudes, beliefs, and experience of healthcare professionals, and those factors determine not only their procedure but also their behaviour during the assessment and treatment of patients (4). Existing studies have shown that, in contrast to many other countries around the world, the education of nurses in the field of palliative care in the Republic of Croatia is still insufficient. This study provides proof of that, as do other studies cited in this paper.

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## Objectives

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The overall objective of this study is to determine the level of nurses' existing knowledge of palliative care in order to achieve a higher quality of care for palliative patients and their families.

The specific objective is the following:

- To examine whether there is a correlation between age, gender, educational level, and work experience of the respondents and their knowledge of palliative care

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## Methods

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The study was conducted at "Dr. Josip Benčević" General Hospital in Slavonski Brod, Croatia and Našice General County Hospital, Croatia. A total of 198 nurses participated in the study. The Data were collected during March and April of 2017. The PCQN questionnaire, created by Margharet M. Ross and colleagues at the University of Ottawa, Canada, was used for the purpose of this study. The questionnaire consists of 20 questions pertaining to the philosophy of palliative care, mental and spiritual issues, and control of pain and other symptoms. The questionnaire is intended to test nurses' basic knowledge of palliative care, and the possible answers are: true, false, and I do not know (5). It is scored in such a way that each correct answer amounts to one point, which makes a possible score ranging from 0 to 20. Depending on the total score, the respondents could show insufficient, sufficient, or good knowledge. "Good knowledge" as a result was initially defined as >75% of correct answers (15/20), but due to the needs of this study, the limit was reduced to the level of "sufficient knowledge", which was defined as >50% of correct answers (10/20). Furthermore, demographic questions related to age, gender, education, workplace, work experience, and education were also included in the survey.

## Ethics

The Ethics Committee of Našice General County Hospital and „Dr. Josip Benčević“ General Hospital in Slavonski Brod approved the study. All respondents were informed of the purpose of the study and received written notice for the respondents and a statement and a document of consent and consent of the informed respondent for participation. They voluntarily agreed to participate in the study, which they confirmed with their signature. All data were collected through an anonymous questionnaire, which the respondents completed independently. The study was conducted in accordance with ethical principles and human rights in research.

## Statistics

Categorical data are represented by absolute and relative frequencies. Differences of categorical variables were tested by the Hi-square test and, if necessary, by Fisher's exact test. All P values are two-sided. The significance level was set at  $\alpha = 0.05$ . The SPSS statistical program (version 23, SPSS Inc., Chicago, IL, USA) was used for statistical analysis.

## Results

Out of the total number of respondents ( $n=198$ ), 100 were employed at „Dr. Josip Benčević“ General Hospital in Slavonski Brod and 98 of them at Našice General County Hospital. The majority of participants were females,  $n=128$  (64.6%). Regarding age, most participants were in the ranges of 25-34 years of age (25.3%) and 45 years of age and above (47.9%). According to years of work experience, the majority of respondents has 31 or more years of experience,  $n=60$  (30.6%).

In their daily work, participants from Slavonski Brod, 68.2% of them, work with as much as 135 patients in need of palliative care (Fisher's exact test,  $p<0.001$ ), which is significantly higher than in the case of participants from the Našice General County Hospital. During education, 98 (49.5%) of the respondents were educated on palliative care as a part of a school program, of whom significantly more were from Slavonski Brod (Fisher's exact test,  $p=0.03$ ), while 103 (52%) received informal education on palliative care, of whom significantly more were from the Našice General County Hospital (Fisher's exact test,  $p<0.001$ ). As many as 146 (73.7%) of the respondents indicate that palliative care education would help them in their work with patients, with no significant difference between the hospitals (Table 1).

Table 1. Palliative care needs

Question GCH NAŠICE		Number of respondents (%)			$p^*$
		GH SLAVONSKI BROD	TOTAL		
Do you meet patients who need palliative care in your daily work?	Yes	51 (52)	84 (84)	135 (68.2)	<0.001
	No	47 (48)	16 (16)	63 (31.8)	
Were you educated on palliative care as part of your school's program?	Yes	41 (41.8)	57 (57)	98 (49.5)	0.30
	No	57 (58.2)	43 (43)	100 (50.5)	
Have you undergone informal palliative care education?	Yes	71 (72.4)	32 (32)	103 (52)	<0.001
	No	27 (27.6)	68 (68)	95 (48)	
Would palliative care education help you in your work with patients?	Yes	78 (79.6)	68 (68)	146 (73.7)	0.06
	No	5 (5.1)	15 (15)	20 (10.1)	
	I do not know	15 (15.3)	17 (17)	32 (16.2)	

\* Hi-square test

The Respondents' knowledge of palliative care was tested using more than twenty questions, which had to be answered correctly. Table 2 lists the correct answers. The claim that the manifestation of chronic pain is different from that of acute pain received the greatest number of correct answers, while the least number of correct answers was provided for the question of whether the loss of a person with whom we are not close is more easily tolerated than the loss of a close person.

The fact that palliative care is not appropriate only in situations where there is evidence of a downhill trajectory or deterioration was answered correctly by 119 (60.1%) respondents, of whom 71 (71%) work at the General Hospital in Slavonski Brod. The fact that in the last days of life, drowsiness is associated with electrolyte imbalance and thus the need for sedation is reduced was answered correctly by 87 (43.9%) of the respondents, of whom significantly more were from the Našice General County Hospital (Fisher's exact test,  $p=0.006$ ). The fact that patients who take opioids need to also take laxatives was answered correctly by 92 (46.5%) of respondents, of whom significantly more were from the Našice General County Hospital (Fisher's exact test,  $p<0.001$ ). The fact that medicines that could cause respiratory depression were suitable for the treatment of severe dyspnoea in the terminal phase of the disease was answered correctly by 47 (23.7%) participants, of whom significantly more were from the Našice General County Hospital (Fisher's exact test,  $p=0.01$ ). The fact that the use of placebo was not appropriate in the treatment of certain types of pain was answered correctly by 44 (22.2%) respondents, of whom significantly more were from the Našice General County Hospital (Fisher's exact test,  $p=0.002$ ). That the statement that suffering and physical pain are one and the same was incorrect was answered correctly by 155 (78.3%) respondents, of whom significantly more were also from the Našice General County Hospital (Fisher's exact test,  $p=0.04$ ). The fact that anxiety or fatigue reduce the pain threshold was answered correctly by 75 (37.9%) the respondents, of whom significantly more, 45 (45.9%) of them, were from the Našice General County Hospital (Fisher's exact test,  $p=0.03$ ) (Table 2).

There is no significant difference in knowledge and attitudes regarding palliative care according to gender and age of respondents. Respondents with a bachelor's degree have significantly better knowl-

edge of palliative care, unlike those with only high school education. Furthermore, there is no significant difference in palliative care knowledge according to years of experience. Significantly more women believe that palliative care education would help them in their work with patients, but we can also attribute this result to a significantly larger number of female respondents.

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## Discussion

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A total of 198 respondents participated in the survey. The conducted Hi square tests showed that there were significantly more women in the sample. The smallest group in the sample are individuals under 24 years of age, and the majority of respondents are nurses with secondary education. The largest share of respondents have more than 31 years of work experience. A significantly larger number of respondents encounter patients in need of palliative care on a daily basis, but a significantly larger number of respondents have not received formal palliative care education and believe that education would help them in their work with patients. A total of 135 (68.2%) respondents encounter patients who require palliative care on a daily basis.

A total of 119 (60.1%) respondents answered correctly that the statement "Palliative care is appropriate only in situations where the exacerbation of the disease and decay is evident" is incorrect. The claim that morphine is the standard used to compare the analgesic effect of other opioids is completely accurate, and was recognized as such by 81 (41%) subjects. A study using the same questionnaire was also conducted at "Dr. Tomislav Bardek" General Hospital in Koprivnica, and according to their results, 60 (42.2%) respondents answered this claim correctly (6).

The claim that the scope of a disease determined the treatment method of the disease was answered correctly by 33 (16.7 %) of the respondents. Margharet Ross, the author of the questionnaire, explains that the dosage and route of administration are primarily determined by the patient's level of pain and his or her ability to swallow. Adjuvant therapy is essential in the treatment of pain (5). General recommenda-

Table 2. Participants according to correct answers on palliative care with regard to hospitals

Claim	Correct answer	Number (%) of participants who provided correct answer with regard to hospitals			p*
		GCH NAŠICE	GH SLAVONSKI BROD	Total	
Palliative care is appropriate only in situations where there is evidence of a downhill trajectory or deterioration	F	48 (49)	71 (71)	119 (60.1)	<b>0.002</b>
Morphine is a standard used for comparing analgesic effects of other opioids	T	47 (48)	34 (34)	81 (41)	0.06
The scope of the disease determined the treatment method	F	15 (15.3)	18 (18)	33 (16.7)	0.71
Adjuvant therapy is important in pain treatment	T	44 (45)	44 (44)	88 (44)	>0.99
It is very important that family members be at the patient's bedside at the moment of death	F	19 (19.4)	14 (14)	33 (16.7)	0.34
In the final days of life, drowsiness is linked to electrolyte imbalance and thus the need for sedation is reduced	T	53 (54)	34 (34)	87 (43.9)	<b>0.006</b>
Dependence is a significant problem with prolonged morphine administration	F	13 (13.3)	17 (17)	30 (15.2)	0.55
Individuals taking opioids must also take laxatives	T	69 (70.4)	23 (23)	92 (46.5)	<b>&lt;0.001</b>
Provision of palliative care requires emotional detachment	F	23 (23.5)	36 (36)	59 (29.8)	0.06
Medicines that could cause respiratory depression are suitable for the treatment of severe dyspnoea in the terminal phase of the disease	T	31 (31.6)	16 (16)	47 (23.7)	<b>0.01</b>
Men cope with grief better than women	F	77 (78.6)	79 (79)	156 (78.8)	>0.99
Palliative care philosophy is compatible with active treatment	T	34 (34.7)	37 (37)	71 (35.9)	0.77
The Use of placebo is appropriate in treatment of certain types of pain	F	31 (31.6)	13 (13)	44 (22.2)	<b>0.002</b>
In large dosages, Codeine causes more nausea and vomiting than morphine	T	60 (61.2)	27 (27)	87 (43.9)	<b>&lt;0.001</b>
Suffering and physical pain are one and the same	F	83 (84.7)	72 (72)	155 (78.3)	<b>0.04</b>
Dolantin is not an efficient medicine in chronic pain treatment	T	46 (46.9)	36 (36)	82 (41.4)	0.15
Burnout due to accumulation of losses is inevitable for individuals working in palliative care	F	19 (19.4)	18 (18)	37 (18.7)	0.86
Chronic pain manifestations differ from acute pain manifestations	T	84 (85.7)	83 (83)	167 (84.3)	0.70
Loss of a person with whom we are not close is more easily tolerated than the loss of a close person	F	11 (11.2)	7 (7)	18 (9.1)	0.33
Anxiety or fatigue reduce the pain threshold	T	45 (45.9)	30 (30)	75 (37.9)	<b>0.03</b>

\* Fisher's exact test

tions for pain treatment state that adjuvant therapy should be administered depending on the type of pain (7). The same number of respondents from GCH Našice and GH Slavonski Brod considered this state-

ment incorrect. A study conducted on a sample of students from the Kigali Clinical Hospital (Rwanda) found that 87 (62.6%) of the respondents considered adjuvant therapy to be essential in the treatment of



pain (8). Similarly, a study conducted at George Washington University examined the knowledge of nurses before and after palliative care education using the PCQN questionnaire. According to their results, 55 (90.2%) pre-education respondents and 58 (95.1%) post-education respondents answered that adjuvant therapy is essential in pain treatment (9).

Regarding the statement "It is very important that family members be at the patient's bedside at the moment of death", the majority of the respondents, i.e. 165 of them (83.2%), believed it to be correct, but it is actually incorrect. A survey conducted in Spain found that the majority of respondents answered this claim incorrectly, as did a study conducted in Jordan. The authors of both studies state that respondents may have misunderstood this claim. They argue that the claim does not state precisely whether it was related to the very moment of dying or a specific period after death (10,11). Ross, the author of the questionnaire, explains that it can be very exhausting for family members and that in such situations it is difficult to estimate when and how long the patient will live (5).

Regarding the claim "In the final days of life, drowsiness is linked to electrolyte imbalance and thus the need for sedation is reduced", the majority of respondents working at CGH Našice provided a correct answer. Fluid reduction and electrolyte imbalance act as a natural anaesthetic on the central nervous system and therefore the need for patient sedation is reduced (5). A similar survey was conducted at the Bjelovar General Hospital, the results of which showed that a total of 18 (51.43%) respondents answered the above statement correctly (12).

A total of 168 (84.8%) respondents know that prolonged use of morphine does not cause addiction. If morphine is administered at the correct dosage in patients with chronic pain, no dependence can develop (5). A study examining students' knowledge of palliative care in Canada found that a total of 93% of students know that morphine does not cause addiction (13).

The statement that individuals taking opioids must also take laxatives is correct. Opioid drugs often cause constipation in patients, and it is therefore very important that laxatives be introduced into therapy at the same time as opioids are introduced. Most of the respondents responded correctly. Similar results were obtained in a study conducted at the General Hospital in Bjelovar (12).

Furthermore, the majority of respondents felt that providing palliative care required an emotional detachment, but this was incorrect. Providing support and encouragement is a key and valuable component in dealing with palliative patients, and for it to be effectively implemented, there is a need for an emotional connection between the palliative care provider and the patient (5).

Regarding the statement that "Medicines that could cause respiratory depression are suitable for the treatment of severe dyspnoea in the terminal phase of the disease", it was answered correctly by 47 (23.7%) respondents. A significant number of respondents consider men and women to deal with grief equally. The same results were obtained in most other studies that used the PCQN questionnaire (7,10,12,13).

Only 71 (35.9%) respondents know that palliative care philosophy is compatible with active treatment. The provision of palliative care is not necessarily associated with aggressive treatment, but sometimes the control of pain and other symptoms also requires such treatment (5). A survey conducted at the General Hospital in Bjelovar shows that their respondents were more aware that this was the case (12).

Only 44 (22.2%) respondents considered the use of placebo to be appropriate in pain treatment. A study conducted at the University of Ottawa found that 87.8% of nurses and 52.2% of students knew that placebo was not appropriate for pain management (5). Situations limiting the use of placebo in daily pain management are those in which patients receiving placebo may be at risk of progression of an underlying disease that is accompanied by pain, such as a tumour (14). The guidelines of the National Hospice Council and Specialist Palliative Care Services state that the use of placebo should not be the first choice in the treatment of pain, apart from the cases when no effective drug is available (15).

The statement "In large dosages, Codeine causes more nausea and vomiting than morphine" was recognized as correct by 87 (43.9%) of the respondents. McCaffery and Beebe noted that throughout their work they have recognized that codeine is more toxic than morphine when administered at high doses, and consequently causes vomiting, nausea and constipation (5).

The majority of respondents answered correctly that suffering and physical pain were not the same thing. Nurses at the General Hospital in Bjelovar, 114 of

them (80.3%), also marked this statement as correct (12). Twycross and Lack state that it is important to bear in mind that suffering is related to everything that the patient feels and that it cannot be associated with pain exclusively (5). Likewise, 167 (84.3%) respondents provided a correct answer to the statement that chronic pain manifestation was different from that of acute pain.

The claim that burnout due to accumulation of losses is inevitable for individuals working in palliative care is completely incorrect. This was recognized by 37 (18.7%) respondents. In a study conducted at the General Hospital in Bjelovar, only 18 participants knew this (12). Ross states that burnout syndrome in nurses involved in palliative care occurs because of work environment and not solely due to losses (5). Furthermore, there is the claim that the loss of a person with whom we are not close is more easily tolerated than the loss of a close person. Ross et al. found that 60.4% of students answered this claim correctly (5). In our study, 18 (9.1%) respondents considered the claim to be true. A total of 75 (37.9%) respondents know that anxiety or fatigue lower the pain threshold. The same result was obtained in a study conducted at the General Hospital in Bjelovar, where 36 (25.6%) of the respondents answered this claim correctly (12).

From everything stated above, it is evident that our nursing education system is not sufficient. This is a big problem because the nurse, as we have pointed out in the introduction, is one of the key participants in palliative care. A nurse in palliative care takes care of all the needs of patients - the most important thing is pain management, and other symptoms that occur in the patient. Gastrointestinal symptoms occur most commonly, and include nausea, vomiting, loss of appetite, and constipation, followed by respiratory symptoms, the most common being dyspnoea and cough, followed by skin changes, neurological and psychological problems: insomnia, anxiety, depression, impaired consciousness, and chronic fatigue. A nurse caring for a palliative patient should apply the knowledge of the entire field of nursing. Although palliative care has been discussed in the Republic of Croatia for many years, nurses are still not fully qualified to take care of a palliative patient. The Secondary Education Curriculum for Nurses and General Technicians in the Republic of Croatia does not have a separate subject that would allow students to receive education in the field of palliative nursing care.

Palliative nursing care is mentioned in various subjects in school, but not enough. At the level of nursing studies in the Republic of Croatia, a compulsory palliative care course was introduced three years ago. The course teaches students about the basic principles, philosophy, and organization of palliative care, and thus makes the students more proficient in assessing the needs, planning, implementation, and evaluation of palliative care (17).

Insufficient knowledge of palliative care methods and lack of awareness of its usefulness are significant deficiencies for the progress of palliative care in the Republic of Croatia.

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## Conclusion

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Based on the study conducted and the results obtained, we can conclude that nurses have insufficient knowledge on palliative care. Respondents gave the most accurate answers in the area of control of pain and other symptoms. It was found that there was no significant difference in gender, age, and work experience regarding palliative care knowledge. Respondents who received informal education showed better knowledge. Respondents who felt that palliative care education would help them work with patients score higher on the PCQN compared to those who felt that it would not help them or those who were not sure.

This study, as well as many others conducted with the aim of advancing health care, should highlight the need for continuous acquisition of new knowledge and skills.

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## ZNANJE MEDICINSKIH SESTARA O PALIJATIVNOJ SKRBI

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### Sažetak

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**Uvod:** Palijativna skrb razvila se kako bi prepoznala specifične potrebe bolesnika koji boluju od teških i neizlječivih bolesti. Procjenjuje se da u Hrvatskoj oko 46 000 bolesnika treba neki oblik palijativne skrbi. Cilj je ovog istraživanja ispitati znanje medicinskih sestara/tehničara o palijativnoj skrbi.

**Ispitanici i metode:** Presječnom studijom obuhvaćeno je 198 medicinskih sestara/tehničara. Istraživanje je provedeno tijekom ožujka i travnja 2017. godine. Kao instrument istraživanja upotrijebljen je anketni upitnik sastavljen od dva dijela. Prvi dio odnosio se na sociodemografske podatke, a drugi dio sastojao se od standardiziranog upitnika za procjenu osnovnog znanja o palijativnoj skrbi (PCQN).

**Rezultati:** Ispitanici su najviše točnih odgovora dali iz područja kontrole boli i drugih simptoma. Utvrđeno je da nema značajne razlike prema spolu, dobi i radnome stažu o znanju o palijativnoj skrbi. Ispitanici koji su prošli neformalnu edukaciju pokazali su bolje znanje.

**Zaključak:** Iz provedenog istraživanja možemo zaključiti da medicinske sestre / medicinski tehničari imaju nedostatno znanje o palijativnoj skrbi.

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**Cljučne riječi:** palijativna skrb, edukacija, medicinske sestre / medicinski tehničari, upitnik PCQN

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# Healthy Settings / Health Promoting Settings

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**Keywords:** health promoting settings, environmental factors, holistic nature of health, social policy, healthy city

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## Abstract

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In addition to genetic factors, human health is influenced by many other exogenous factors: environmental set-up, housing conditions, education, public services, social security, protection of people, etc. Health improvement and the creation of potentials for good health before health problems and vulnerability appear are the fundamental determinants of health promotion. The World Health Organization advocates health promotion and providing healthy surroundings that would allow the maximal expression of all human potentials (mental, physical, social, spiritual). The aim of this article was to examine the association of environmental factors that affect mental and physical health. By a series of public health programs, there is an attempt to preserve health from the earliest beginning of life - from its conception. Negative environmental factors present in the early phases of childhood may produce far-reaching consequences for the entire life. Critical groups include elderly people, homeless, migrants, persons with special needs and those living on the margin of poverty. The reorientation of the health system is necessary, so that its focus is moved toward the individual and community, and to strengthen the culture oriented to health and prevention, not to disease. The cooperation and linking inside the sector and with other sectors by the creation of partnerships and networks is unavoidable. There are many examples of the Healthy Cities project that contributed to the wellbeing of citizens on the level of city administration.



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## Introduction

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Health is not only the absence of disease or disability; instead, it is the state of the complete mental, physical and social wellbeing (1). In addition to genetic factors, human health is influenced by many other exogenous factors: environmental set-up, housing conditions, education, public services, social security, people protection. Health promoting settings imply the places or environments where people participate in everyday activities under the interaction of ecological, organizational and individual factors in a way that influences their health and wellbeing. The accomplishment of physical and mental health is not only the individual responsibility. The access to information – the knowledge, education and economic situation provided – also influences the maintaining of health to some extent. The studies carried out so far indicate the relationship between the social component and life habits. The promotion of health is aimed at reducing the role of social differences in the creation of life habits the maintenance of health is dependent on. The idea of life promotion is not new. In addition to several attempts during the first half of the 20<sup>th</sup> century, its maturation to an organized discipline was recognized in 1974, when the Canadian minister of health published the document entitled “New health perspectives for Canadian citizens” (2). This was the first document of the governmental national policy that identified health promotion as a fundamental strategy. Subsequently, the document has been used as a basis for the similar documents issued by other countries, including Sweden and the USA, therefore contributing to the increase of international enthusiasm in acceptance of health promotion as both the concept and the approach practiced by governments, organizations, community and individuals.

The investment in health is a pragmatic approach to the implementation of conception and principles of health promotion in the practice. Health is an investment and a critical resource of the community and the individual. It should be streamed to health promotion and health promotion should be understood as an innovative modern strategy, which, in addition to health benefits provided to the population, affords sound social and economic profits to the country. Healthy Setting approaches have been implemented in many different ways in multiple areas (3). The aim

of this article was to examine the association of environmental factors that affect mental and physical health.

## World-wide development of health promotion

The fundamental determinants of health promotion are the improvement of health and creation of potentials for a good health before health problems or threats for health appear (4).

**1981.** WHO „Health for everyone“. A basis for the development of health promoting settings. Role of the community and interdepartmental activities has been emphasized (5).

**1986.** Ottawa, Canada

The first international conference on health promotion held and the process of people capacitation to strengthen their control over their own health started. Five priorities of public health were defined: building of policy focused on health and public health, creation of the environment that contributes to health, increasing of activities on the community level, development of personal knowledge and skills, and reorientation of health services (6).

**1988.** Adelaide, Australia

The second international conference pointed out that health was a fundamental human right and at the same time a basis for a social and economic growth. It also emphasized that health promotion was a profitable social investment and elaborated the idea of health-oriented policy in detail. Priorities of policy focused on public health were defined: women's health, nutrition, smoking, alcohol, environment (7).

**1991.** Sundsvall, Sweden

The conference elaborated the strategy of environmental changes by creation of supporting environment, that necessary include developmental policy, law regulations, reorientation of certain services, creation of partnerships in the field of health promotion, and also the rising of awareness about the environment as a significant health determinant (8).

**1997.** Jakarta, Indonesia

The conference in Jakarta had three objectives: to evaluate the impact of health promotion, to identify new strategies in the field of health promotion and to encourage and allow the development of partnership

in the health promoting area. The need for placing health promotion in the center of health improvement activities was emphasized (9).

**2000.** Verona Incentive. Between 1998 and 2000 European WHO office has organized a series of meetings known as Verona Incentive. The Incentive defined health determinants such as biological determinants (gender, age), genetic factors (inheritance burden), and life conditions (socio-economic, cultural, environmental, professional and life conditions, impact of community, and personal life style) (3). In order to identify pragmatic ways to facilitate collaboration among the actors/partners decisive in the creation of health, the Verona Initiative was set up in 1998. The aim is to identify opportunities and threats to intersectoral collaboration and to create awareness of the possible impact of policy decisions on the determinants of health. The "Verona Benchmarks" provide a framework for measuring countries', regions' and local communities' capacities to implement intersectoral collaboration in line with the HEALTH21 concept and principles. Three-year pilot projects are currently ongoing in Italy, United Kingdom and Austria. More countries, such as Finland, are likely to establish such demonstration projects (10).

### Development of health promotion in Europe

Development of health promotion in Europe has been considerable from 1995.

**1996.** European Union supports the development of health promotion and issued the publication Health Promotion Programme which was adopted by the European Parliament in 1996 (11).

**1997.** The European Network for Health Promotion Agencies (ENHPA) was established. EuroHealthNet is currently a Partnership of nearly 50 organisations and institutes from 26 countries, also drawing in partners from other sectors and academia to foster knowledge-based practice and policy, whole-of-society approaches, and strengthened advocacy (12).

**2000.** European Commission started its Health Action Plan.

### Three basic strategies for health promotion

- advocacy for health to create the essential conditions for health;
- enabling all people to achieve their full health potential;
- mediating between the different interests in society in the pursuit of health (12).

### Environmental health factors

Worldwide, an estimated 24% of the disease burden (healthy life years lost) and an estimated 23% of all deaths (premature mortality) was attributable to environmental factors. Many health problems are becoming more and more social. The most important places for carrying out activities are our home, school, work place, health units, community, etc. Our surroundings should be the origin of our satisfaction, comfort, safety and encouragement. In the medical sense, the environment includes the surroundings, conditions or influences that affect an organism. It is necessary to protect the nature and natural resources and in this way to ensure people's individual, social and economically sound and productive life. The main goal of the health-oriented policy is to protect the environment that would enable healthy living. Even in the most developed countries the most privileged people live several years more and are less ailed than those in need. People's life styles and conditions under which they live and work have significant impact on their health and the length of life (13).

In 1989, World Health Organization (WHO) defined environmental health as comprising those aspects of human health and disease that are determined by factors in the environment. We can use terms hazard, exposure and risk to describe how an environmental factor can affect human health. Medical care may extend the survival in some serious diseases but social and economic conditions related to the appearance of diseases are more important for health population as a whole. It has been often cited that the human being itself responsible for its health - by appropriate nutrition, enough physical activities, avoidance of smoking and excessive alcohol drinking, responsible sexual behavior etc (5). Figure 1 shows the diagram of the main determinants of health.



Figure 1. **The Settlement Health Map (7)** (adapted from Barton and Grant, 2006)

Source: WHO Regional Office for Europe. Urban planning, environment and health. From evidence to policy action- Meeting report.

It has been often cited that the human being is responsible itself for its health - by appropriate nutrition, enough physical activities, avoidance of smoking and excessive alcohol drinking, responsible sexual behavior etc. However, social and economic circumstances (social determinants of health) are frequently out of the control of individuals, and these circumstances shape the individual's choices and affect the health itself (social responsibility for health). Poor social and economic conditions affect health throughout the entire life. Social and psychological conditions may cause a long-lasting stress. Permanent anxiety, insecurity, low self-esteem, social loneliness and deficient control over work and life at home have a strong negative impact on health. The process of social exclusion - marginalization of certain groups such as the homeless, immigrants from other countries, refugees, chronic psychiatric patients or invalid or emotively vulnerable persons. The extent of relative poverty in the society has the strongest negative impact on health and may be the cause of an early death. Health is not damaged only due to material poverty but also due to social and psychological problems of life in poverty. The stress at the workplace has an important contributing role

in the creation of large differences in health, absence from work the place and early death related to social status. Several studies of work places in Europe demonstrated that health is at risk when people have little opportunity to use their skills and when they are not authorized to make decisions. Unemployment and professional insecurity are even stronger risk factors for health (5).

#### List of basic environmental factors with potential to affect health (14):

- pollution of air, water, or soil with physical, chemical or biological agents;
- UV and ionizing radiation;
- electromagnetic fields;
- noise;
- built environments, including housing, land use patterns, roads;
- agricultural methods, irrigation schemes;
- man-made climate change, ecosystem change;
- emergencies related to bioterrorism and chemical terrorism.

**Extended list of environmental factors with potential to affect health:**

- alcohol and tobacco consumption, drug abuse;
- diet (although it could be argued that food availability influences diet);
- the natural environments of vectors that cannot reasonably be modified (e.g.) in rivers, lakes, wetlands);
- natural biological agents, such as pollen in the outdoor environment;
- occupational risks.

The World Health Organization's (WHO) strategy "Health for all" in 21<sup>st</sup> century has the promotion of health through social and economic development as its leading idea.

Equity and solidarity - the obligation to pay the highest attention to those in the greatest need. According to the Verona Incentive the key question is to identify investments that promote health. The use of resources (e.g. money, people, lands, environment) in a way to strengthen health and welfare which in turn will bring social and economic benefits to the society as a whole. The social support and good human relationships are an important contribution to health. Social assistance ensures people emotional and real environment they need. Belonging to a community network of co-addressing and reciprocal bindings makes people aware that someone cares for them, that they are respected, noteworthy, or even loved (5).

It is very important to ensure a favorable environment in early childhood. Health foundations in an adult age are set in prenatal life and early childhood.

Slow growth and lack of emotional support during that period bring the risk for poor physical health during life and reduce physical, cognitive and emotional function. Poor social and economic circumstances represent the largest threat for the child's growth. Childhood and adolescence are key periods for leaving the foundations for healthy development and good mental health. Programs have been created out for the promotion of mental health, as well as preventive programs designed for all children and school age adolescents. The emphasis is on the social and emotional aspects of mental health (15, 16). The programs are created by combining mental health programs with those for physical activities and sexual education (17-20). It is estimated that 10-20% of young people all over the world experience mental health problems (21, 22).

In addition to social support and medical care, an important factor is "political strengthening", i.e. the inclusion of "vulnerable" groups and ensuring them the right to vote, as well as changing the position of women in the society.

**Healthy places - healthy people**

the individuals (and their poor health) can not be viewed in their entirety only by looking at the body or the brains; it is necessary to see what happens in their communities, social networks, working places, schools, family. Healthy Cities is a dynamic concept/approach. Therefore, today's interventions go from the modification of risky behavior of individuals toward the preservation of the integrity of social structures where people live (23). The Healthy Cities project and movement is a developmental project - based on the integration of all developmental systems of the society and activation of citizens themselves in the creation of „healthy“ settlements - settlements where respectable quality of life will be ensured for all of the citizens. The term Healthy Cities was launched in 1985. It was the title of a speech given at an international meeting in Canada on the theme »health is the result of much more than medical care«. The Healthy Cities project was launched by the World Health Organization's Regional Office for Europe in 1986 with the aim to increase the interest for positive health concept in cities throughout Europe and to encourage and allow direct cooperation among cities with no political barriers. The project is based on the "Health for all" strategy, transferring its principles into practice by local activities at the city level. The essence of the project is a city concept - what the city is and what it could become as a healthy city. The term "healthy city" implies the process, not only the outcome. Healthy city is a city where the awareness exists about health as an essential content that should be continuously improved. According to WHO, a »healthy city« is the one that continually creates and improves those physical and social environments and expands those community resources, which enable people to mutually support each other in performing all the functions of life and in developing to their maximum potential (24).

In addition, healthy lifestyle can be promoted in city districts by providing arenas for activities (23). The Healthy Cities project affirms the holistic nature of health, indicating the interdependency of physical, mental, social and spiritual dimension of health. The project goes from the assumption that health can



be achieved by collective efforts of individuals and groups living in the city. An essential project postulate is the understanding that in making political decisions at the city level the city administration should pay attention to potential impact on health (23).

By choosing their lifestyle, using healthcare services, by their viewpoints regarding health issues and by their activities people influence their own health. The Healthy Cities project wishes to encourage people to participate more actively in all activities that may influence the health in their city. The availability of green areas is also linked to positive health outcomes and more physical activity.

Natural environmental features - the landscape - have an effect on health by reducing stress and increasing physical activity and social engagement (25). The main project goals - health improvement and disease prevention through intersectoral activities - require creation of climate favorable for changes, continuous searching for new ideas and innovative methods, and supporting those who successfully introduce new approaches and new programs. The measure of success of the Healthy Cities project is the acceptance of health policy at the city level. Homes, working places, schools, streets - all parts of the urban environment - have to become healthy living places.

In its actual health policy "Health for all in 21<sup>st</sup> century" the World Health Organization emphasizes its priorities:

1. to increase responsibility of the society for health - from avoiding adverse effects on health of individuals and care for healthy environment to the restrictions in the manufacture of products with adverse effects to health; (26).

2. more investments to health-improving activities - from education and housing improvement to the improvement of medical services that will be beneficial to health and quality of life of individuals and the society as a whole;
3. establishment of partnerships of various services and community groups in the field of health promotion;
4. strengthening of the community and individuals in the field of health promotion;
5. ensuring infrastructure for health promotion by development of appropriate legislative, educational, social and economic circumstances that will support health promotion.

By the World Health Organization's activity and incentive (27) cultural and social environment has been identified, as being of essential importance and the necessity to "adjust a conceptual framework" has been accepted (28). Attempts to change theoretical backgrounds traditionally insufficiently represented in health promotion have been made. Multilayer frameworks should be widened to achieve improvements in sanitary-hygienic habits conceptualization (29).

According to the World Health Organization, health promotion is defined as a process of capacitating people for the control and improvement of their own health (6). According to the Ottawa Charter, the health improvement action should follow the steps listed below:

1. Improvement of public health policy
2. Creation of supporting environment
3. Strengthening of community participation
4. Development of personal skills
5. Reorientation of health services

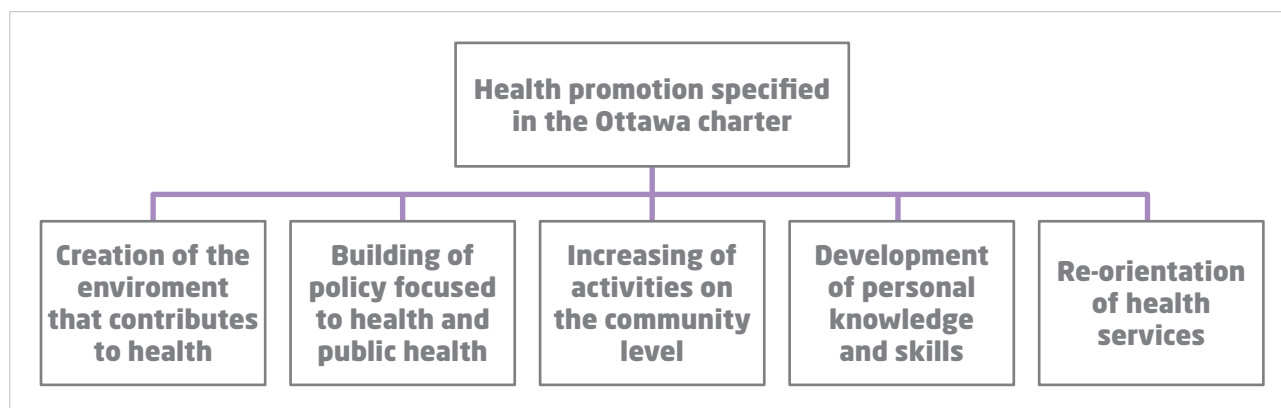


Table 1. **Health promotion specified in the Ottawa charter (6)**

The Ottawa Charter defined not only the term „health promotion“ but also provided the entire vision of the movement, that will be only upgraded and broaden by a series of documents afterwards. Furthermore, just in Ottawa it was emphasized that health promotion strategies and programs should be adjusted to the local needs and capabilities of particular countries and this inspired the creation of a document entitled “Health for all in 21<sup>st</sup> century” (6).

The holistic nature of health and interdependency of physical, mental, social and spiritual dimensions of health is emphasized. Collective efforts of individuals and groups living in the city are considered to contribute to health improvement. It is important to notice that political decisions on the level of city administration may impact health. Factors listed above resulted in the need to launch health improving projects on an international level. The World Health Organization’s Regional Office for Europe launched the Healthy Cities project in 1986 with the aim to increase the interest for a positive health concept in cities throughout Europe (6). The World Health Organization’s Healthy Cities project is a long-term international developmental project aimed to place health on the top of political factors agenda in European cities and to promote local comprehensive strategies for health and sustainable development (23).

The vision of the Healthy Cities project is based on the need for the community to participate in the contribution to health (30). Approximately 5000 cities worldwide joined the international network of healthy cities (31).

The orientation to health includes organizations and individuals as well, who work outside the health sector itself, dealing with activities aimed to improve people’s health. Such a process of collective activities is referred to as “intersectoral or interdepartmental activities”.

Four phases of the project have been completed so far. Thirty-five cities participated in the first phase of the European Healthy Cities project, including the city of Zagreb.

**Phase I** (1987-1992) task was to strengthen the role and contribution of the community, remove political and institutional barriers for changes and to realize a partnership in the creation of social health policy. The expected product of Phase I was to build and activate the “infrastructure” for the Healthy Cities project implementation (31).

**Phase II** started in 1993 when the city of Maribor also became a project site within the European Healthy Cities Network. Maribor was a project site in Phase III too, in the period from 1998 to 2003.

Strategic goals of Phase II (1993-1998) included social health policy adoption acceleration on the city level, strengthening of the supporting system and building of strategic links to other sectors and organizations that influence the development of cities (32).

The expected Phase II products were the production, adoption and implementation of key Healthy Cities documents: The city health image and The city health plan.

These documents served as a basis for the determination of priorities, strategic planning and health care.

**Phase III** (1998-2003) was aimed at translating the strategy of documents “Health for all in 21<sup>st</sup> century” and Local agenda for 21<sup>st</sup> century to the local level „language“ by the creation and implementation of The city plan for sustainable development of health. Approximately 50 cities participated in the European Healthy Cities project Phase III, including Croatian cities of Rijeka and Zagreb. In 2004 the city of Celje also became a WHO project site (2).

WHO requirements for Phase III:

1. To support principles and goals of the WHO „Health for all strategy“. Under this requirement cities should get support of the local self-administration and of key persons authorized for decision making in other sectors.
2. To provide support to the project to ensure its implementation and management. To define guidelines, cities should have an intersectoral group whose members must include persons with the role in political/executive decisions making. Also, a coordinator should be appointed and the administrative and technical support to the project ensured.
3. To take the obligation to realize special health goals, developmental politics, strategies and specific plans and to accomplish targeted results (the engagement in at least one of the following issues is expected: addictions, children, elderly, violence among people and in family, accidents, healthy environments);
4. To develop formal and informal networking and cooperation on local, national and international levels.



This obligation includes the attendance of coordinators to all WHO business meetings and symposia, the access to Internet and use of e-mail, as well as the participation in national networks (2).

The commitment of the city of Zagreb is to continue its activities in the promotion and acceptance of healthy lifestyles, care for risk groups and prevention of chronic diseases requires continuous action in these areas (33).

**Phase IV** (2003-2008) gathered the highest number (more than twenty) of European project cities, dealing with four central topics:

The Healthy Cities programme - Phase IV core themes:

1. Healthy urban planning
2. Health impact assessment.
3. Healthy ageing.
4. Physical activity and active living

Due to significant changes in the environment, several new sub-topics were introduced in the middle of Phase IV: health of migrants, global warming, preparing for crisis situations (public health incidents, disasters and crisis conditions), creative cities (how to use creativity, encouragement in the promotion of quality of life) and social marketing (34).

The Phase IV challenges are not new but are becoming more and more important:

1. To allow active participation of leading political, professional and other features of cities in the project.
2. To provide necessary resources for the project.
3. The importance of the project acts as a leading force.
4. To include the public to individual subprojects.
5. Intersectoral actions.
6. Support of media (35).

Figure 2 shows Ron Draper's ten-year perspective on how healthy city projects affect processes and structure. His model underpins the evaluation of Phase IV (2003-2008).

Phase IV of the European project was closed at the Zagreb Conference held in October 2008 by the adoption of a declaration defining the leading challenge for Phase V: "The healthy city should be, first of all, the city for all of its citizens, inclusive, supportive, socially sensitive and able to respond to various needs and expectations of its citizens" (35).

Three central topics of **Phase V** (2008-2013) are the development of surroundings that provides care and support, healthy life, and healthy urban environment. With the experience of the world economic crisis, being aware of the scope of neoliberal policy, nowadays, when (as said by Professor Michael Marmot in its report to a Global Commission on Inequality) „the social justice became a matter of life and death“, all sectors of the community are increasingly focused on health and welfare as its fundamental values. A motto of the Healthy Cities project Phase V is: „Health and equity in all local policies“!

More than 90 project cities in Europe currently participate in the WHO Healthy Cities project Phase V for Europe (cities of Rijeka and Zagreb as representatives from Croatia) and there are approximately 30 national Healthy Cities networks (Austria, Belgium - Flemish and Walloon, Bosnia and Herzegovina, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Croatia, Italy, Israel, Kazakhstan, Latvia, Lithuania, Hungary, Netherlands, Norway, Germany, Poland, Portugal, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Turkey, Ukraine and England) with over 1,500 cities enrolled. The project has expanded to Australia, the USA, Canada and Middle & Far East countries so that approximately 3,000 cities are engaged in the network (37).

**Phase VI** (2014-2020) strategic goals are:

- To rank health promotion actions highly on the social and political city plan;
- To promote health policies, health measures and sustainable development on the local level and to emphasize the equality in health and principles of European policy for all until 2020.
- To promote intersectoral management of health and the equity in local policy
- To promote solidarity, cooperation and links among European cities, and local administration network and partnership with agencies dealing with urban problems.

The Healthy Cities project in the European region demonstrated the value of integral (holistic) approach to the problems such as poverty, violence, social isolation, substandard housing, unmet needs of the elderly and/or young people, homeless and migrants, unhealthy physical planning, pollution and the absence of active participation practice and indicated the need for resolution of inequality and sustainable development problems.

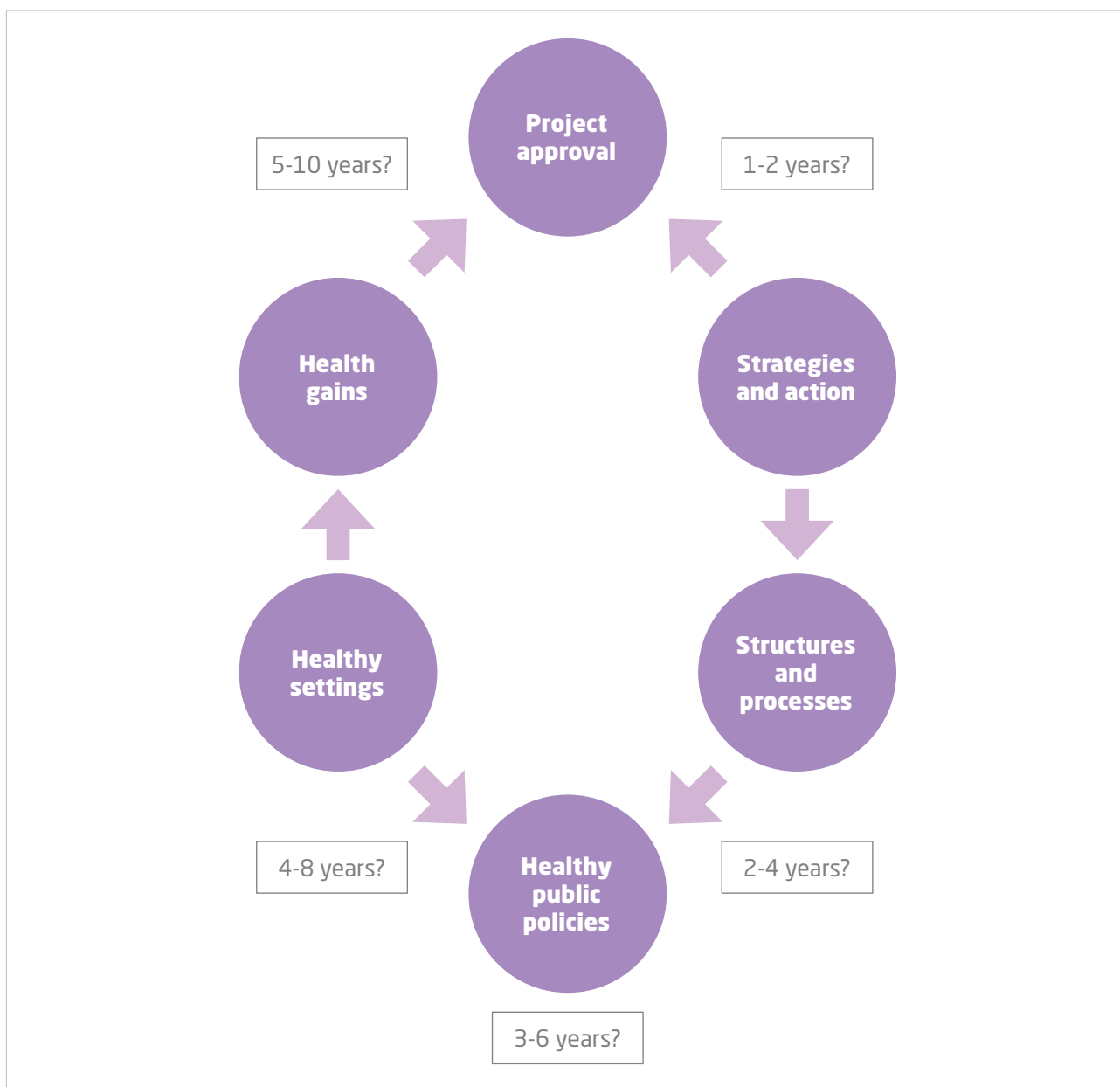


Figure 2. **Ron Draper's ten-year perspective on how healthy city projects affect processes and structure (36)**

The Healthy Cities project is a successful and popular mechanism for the promotion of policies and programs based on "Health" for all on the local level through a process that includes an explicit political commitment, institutional changes and interdepartmental partnerships, innovative actions for the resolution of all aspects of health and life conditions and extensive networking of cities throughout Europe and farther. World health organization (37).

**SWOT** (Strength, Weaknesses, Opportunities and Threats) analysis provides a useful framework for community analysis (24).

#### **Strengths**

- What is good in this area?
- What are we good at in this area? Why?
- What do other people or organizations think we are good at in this area?

## Weaknesses

- What do we do poorly in this area? Why?
- What could we improve in this area?
- What should we avoid in this area?

## Opportunities

- What are the good opportunities facing us in this area?
- First nations issues
- Government policy
- Local developments
- What are some interesting trends happening in this area?

## Threats

- What obstacles do we face in this area?
- First Nations issues
- Government Policy
- Local developments

## Croatian Healthy Cities Network

The WHO European Healthy Cities Network consists of a network of cities from around Europe that are committed to a comprehensive implementation of the Healthy Cities concept. The Croatian Network initiated the Coupled with Health project during 2008 – a media campaign to celebrate 20 years of healthy cities in Croatia. By various activities the members of network drew attention to social problems and sensitized the public to changes required to increase the quality of life in the community.

The Croatian Healthy Cities Network with its Support Center located at Andrija Štampar School of Public Health is one of the oldest European national Healthy Cities Networks and among the first registered non-governmental organizations in the Republic of Croatia (from 1992).

The core working principles of the Croatian Network are contained in the following documents:

1. Universal Declaration on Human Rights (35)
2. 21 goals of the “Health for all in 21st century” (38)
3. 19 goals of the European Social Charter (39)
4. Düsseldorf Declaration on Human Environment (40)
5. Aalborg Charter on Sustainable Development (41)
6. Croatian Healthy Cities Network Program Declaration (2003 revised version)

## Strategic principles of healthy cities

1. Multisectoral approach – health is not only a matter of the health system but of all related and developmental systems in the society;
2. Active participation of citizens (self-assistance, mutual assistance, opportunity to make health-related decisions, etc.);
3. Care for environmental health (biological, physical and social environment) – the right and obligation of citizens to live in an esthetically and ecologically quality environment (24).

## City of Rijeka – an example of healthy city

A Healthy Aging Strategy has been created and adopted in the city of Rijeka, 2009 –2013, allowing even elderly people to swim upstream. In collaboration of older people, politicians and experts of various profiles, 92 different activities have been figured out in an effort to create conditions for a long, healthy and active life of Rijeka citizens.

In cooperation with the University of Rijeka a project of informal education for the third age people was started, aimed to promote lifelong education and the culture of learning, as well as to empower people over 50 years of age. Various educational programs completed almost 300 citizens of older age. New clubs for the elderly (small homes for care) in two city districts were opened.

In the frame of an international project e-Government for You (EGOV4U) a large number of elderly in Rijeka was provided with free of charge IT education and free of charge use of IT equipment and Internet in four newly opened small digital centers. A specialized web portal was created for elderly people; the city was awarded for this by the Association of Cities of the Republic of Croatia. The first online advisor in Croatia was also developed for personalized informing of citizens about urban social measures. The aim of the above activities is digital and social inclusion of elderly people (and other socially vulnerable groups) into community.

A new project Yoga 50+ was initiated and it elicited a great interest in the older population.

Home for the elderly with psychic disorders was opened and is active within the Home for mentally diseased adult persons in the Turnić district. A hos-

pice (15 beds stationary + daily care) was opened for patients in the terminal phase of the disease, governed by the Caritas of archdiocese of Rijeka. A study was carried out about the health-related behaviors (physical activity, exposure to the sun, behavior in traffic) in primary school children.

An educative brochure was published for parents having children of primary school age, aimed to promote correct behavior of children when exposed to the sun (Protect your sun from the sun). Healthy nutrition of children was promoted by promotional actions, such as the 4<sup>th</sup> Meeting of the Children Friendly Cities and Municipalities.

The city of Rijeka was recognized at the national level for the projects aimed for the prevention of children's health: *„Rijeka swims, By moped to the finish line, By motorcycle to the finish line, Narrator narrates in Kantrida Children's Hospital and Who will have the highest number of healthy or fixed teeth at the end of the school year*, and by organization of the 3rd Festival on Children's Rights held under the motto *„All (would like to) go to the cinema“*, where all movie projections were adapted to persons with hearing and visual difficulties.

The highest number of projects/programs from the field of physical and mental health protection co-financed by the city of Rijeka were oriented to health promotion and health education of citizens; the largest financial assets were allocated to the prevention of addiction.

The project of Rijeka Promenade enabled citizens to have a meaningfully designed walk through the city along sections passing through historically and geographically most attractive areas.

The first section, 11.5 km long, was open in 2011. The intention of the project is to stimulate citizens for walking for their personal and city health (33).

As of 2009 The University of Rijeka Foundation has maintained the School of Sustainable Development where over 100 students of different faculties from Rijeka gained a basic knowledge about sustainable development and the need for changes in the community. The Rijeka beach for disabled persons got the blue flag that confirmed an appropriate cleanliness of the sea and the coast, equipment and arrangement of the beach and quality of service.

In the frame of Let's Remove Barriers project, information about objects and locations accessible to

disabled persons, as well as information about the traffic is regularly published on the city web pages. The project was presented at the international conference on people with disabilities held in Ljubljana, Slovenia, 2013.

Rijeka Sport Games were initiated for children with developmental difficulties, aimed to improve children's psycho-physical abilities and their recognition in the society and wider community. In 2013 one hundred and twenty children participated in the Games and those from other Croatian cities also took part that year (42).

On the occasion of the International day of disabled persons, each year a Festival of creation and achievement of children with developmental difficulties and disabled persons is organized, with more than three hundred participants each year.

The Europe and young people project, which actively emphasizes the role of young people in the society, was initiated following Croatia's accession to the EU.

In addition, the city of Rijeka has regularly accomplished all of its project obligations within the WHO European Healthy Cities Network project Phase V. Annual action plans related to the key project topics, regular attendance of the city's representatives to Network business meetings, attendance to thematic group trainings, and provision of adequate and sustainable technical, administrative and financial resources for the management, supervision and evaluation of the project have been realized. Also, the project was promoted through various promotional activities (printed materials, press conferences, round table discussions) within the scope of Directorate for Health and Social Welfare of the city government and its partners in implementation of the city's social program and people's psychosocial protection and health protection programs. It should be emphasized that all of the above activities have been coordinated by the Directorate for Health and Social Welfare of the city government (43).

The WHO European Healthy Cities Network was in its Phase VI positioned as a strategic driver and a flexible and practical framework for implementation of the new European policy and strategy for health and wellbeing under a title Health 2020 at a local level. The above document recognizes local government as a leading stakeholder and emphasizes the importance of the inclusion of the complete local government and wider social community in the implementation

of strategy. Furthermore, it will support cities in their efforts to gather the key stakeholders on health and welfare issues, take the leadership, introduce innovations and changes, and strengthen potentials for solving of public health challenges on the local level. The concept of city health profile and (intersectoral) health development plan remains effective with certain adjustments to Phase VI spectrum of goals of the WHO European Healthy Cities Network (24).

Although the participating cities will use different entry points and approaches, they will be united in the accomplishment of Phase VI common goals and main topics. Phase VI will respect all of their diversities and specificities. By taking part in Phase VI of the project cities will get the opportunity for the implementation of new scientific knowledge about health and its social determinants the Health 2020 strategy is based on, as well as for the advancements in priority areas (topics) defined in Phases V & VI (2+4 goals and topics), to make as high as possible contribution to the health of their citizens. The improvement of health of all citizens and reduction of inequality in access to health services, as well improvement of management and increased participation in the management of the health care system are two strategic goals of the Health 2020 document, that strongly support the present commitment of healthy cities to deal with equality, social determinants of health, improvement of management, and promotion of health through all policies.

In Phase VI the cities will start exploring a new issue – the city health diplomacy that will open new opportunities for the international cooperation of cities and for linking of national and global public health plans.

The key Phase VI topics are defined by the Health 2020 strategy and the cities will be able to choose their priorities within these topics.

**Key topic 1** – The investment into health of people of all ages. The earliest age. Elderly people. Vulnerable groups. Health education.

**Key topic 2** – Facing with the greatest health challenges related to infective and non-infective diseases. Physical activity. Nutrition and obesity. Alcohol. Tobacco. Mental wellbeing.

**Key topic 3** – Strengthening of people-oriented systems and public health capacities, emergency preparedness and watch systems. Transformation of city services. Revitalization and strengthening of public health capacities.

**Key topic 4** – Building of resistant communities and supportive surroundings. Resistant community. Healthy circumstances. Healthy urban planning and design. Healthy transportation. Climate changes. Housing and renewal.

The organizational structure of the WHO European Healthy Cities Network implies three fundamental assumptions in its Phase VI (42): The WHO European Healthy Cities Network will allow membership to all cities from European WHO member countries. The national healthy cities networks will renew their accreditations in line with Phase VI goals and key topics. A series of new partnerships and mechanisms will be established or renewed for thematic interest groups, including sub-networks, working groups and partnerships in a support to cities and national networks.

WHO collaborating centers, thematic sub-networks, experts from various fields and WHO consulting boards will provide assistance to the WHO. Several WHO units and programs will provide direct technical assistance to the WHO European Healthy Cities Network during Phase VI. External institutions with the appropriate experience and expertise will perform secretarial functions for the WHO European Healthy Cities Network in Phase VI. Networking, education, development of tools, follow up/supervision, evaluation, transfer of knowledge and partnership will increase the capacities and support transfer during the Phase VI. The European Healthy Cities Network Phase VI will be able to join approximately one hundred cities according to pre-defined quotas for each European country, depending on the number of its citizens (one city per five million of citizens). The admittance of two cities was exceptionally approved for the Republic of Croatia (24).

The candidate cities for the membership in the European Healthy Cities Network are expected to be the members of their national networks. This binds the city of Rijeka to participate in the Croatian Healthy Cities Network (6). The accession process itself implies the following: (i) the mayor of the candidate city for accession to the European Healthy Cities Networks Phase VI should submit the letter of interest, expressing its commitment for active participation in the WHO European Healthy Cities Network as well as in thematic sub-networks and to use city's resources to accomplish goals and requirements of Phase VI of the project; (ii) to complete the registration form for Phase VI accession; and (iii) to submit accompanying documentation and pay the amount of USD 6,000 annual fee for 2014 (42).



## Conclusion

There are a great deal of problems while resources are limited, so that the art of creating a good health policy is to choose and manage, within a limited time frame, selected (solvable) priorities that were recognized as most important by the consensus of politics, profession and community. The reorientation of the health system is necessary, so that its focus is moved toward the individual and community, and to strengthen the culture oriented to health and prevention, not to disease. The cooperation and linking inside the sector and with other sectors by creation of partnerships and networks is unavoidable. Making the world a better place for healthier and more productive life in all respects can and must be the reality.

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## ZDRAVE POSTAVKE / POSTAVKE ZA PROMICANJA ZDRAVLJA

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### Sažetak

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Na zdravlje čovjeka, osim genskih, utječu i brojni drugi vanjski čimbenici: stanje okoliša, uvjeti stanovanja, obrazovanje, javne službe, socijalna sigurnost, zaštita građana itd. Temeljne su odrednice promicanja zdravlja unaprjeđenje zdravlja i stvaranje potencijala za dobro zdravlje, prije nego što se pojave zdravstveni problemi ili ugroženost zdravlja. Svjetska zdravstvena organizacija zalaže se za promociju zdravlja i osiguranje zdrave okoline koja omogućuje maksimalno ostvarenje svih ljudskih potencijala (mentalnih, fizičkih, socijalnih, duhovnih...). Cilj ovog članka bio je ispitati povezanost čimbenika okoliša koji utječu na mentalno i fizičko zdravlje. Nizom javnozdravstvenih programa pokušava se sačuvati zdravlje od najranijeg početka života – od njegova začeća. Negativni čimbenici okoliša prisutni u ranim fazama djetinjstva mogu proizvesti dalekosežne posljedice za cijeli život. Kritične skupine uključuju starije ljude, beskućnike, migrante, osobe s posebnim potrebama i one koji žive na rubu siromaštva. Preusmjerenje zdravstvenog sustava nužno je da bi se njegov fokus premjestio na pojedinca i zajednicu te da bi se ojačala kultura orijentirana na zdravlje i prevenciju, a ne na bolest. Nužna je suradnja i povezivanje unutar sektora i drugih sektora stvaranjem partnerstva i mreža. Mnogo je primjera projekta Zdravi gradovi koji su pridonijeli boljitku građana na razini gradske uprave.

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**Ključne riječi:** postavke za promicanje zdravlja, čimbenici okoline, holistička priroda zdravlja, socijalna politika, zdrav grad

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# Unemployment and Access to Health Care

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## Abstract

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**Introduction.** At the time of the global economies' recovery from the effects of fourth major recession after the Second World War, there was a major increase in the unemployment rate that created a significant existential and public health challenge.

**Aim.** The aim of this study was to provide a systematic review of available research on effects of unemployment on access to health care, and consequentially on health of the population.

**Methods.** A systematic search of relevant, peer-reviewed electronic databases was conducted to identify systematic reviews, review articles, original research papers and reports for the period of past ten years.

**Results.** 10.234 results were initially identified, five of which were included in this review.

**Conclusion.** Significant number of studies confirms that the unemployed individuals, due to sometimes limited access to health care, have impaired health in comparison to the employed population, both in physical and mental health. Global economic change will have a stronger impact on the health of the population in poor countries, therefore a fair and comprehensive system of health care for the unemployed is of paramount importance for the purpose of preserving the health of the population.

## Introduction

The consequences of the fourth global economic recession, according to the International Monetary Fund, the worst since Second World War in terms of overall impact (1); have left high unemployment rates and pose a significant public health challenge to many countries in the world. In addition to the consequent threat to the health system and access to health care, global economies have remained significantly disrupted. The Gross Domestic Product (GDP) average in the Eurozone fell sharply from 0.7% in 2008 to -4.1% in 2009, while the U.S. and world economies followed this trend (Chart 1).

### Unemployment growth as a result of the crisis

According to International Labor Organization (ILO) projections, nearly 20 million jobs in the world were lost by the end of 2009, as a direct consequence of the crisis, bringing the number of unemployed in the world to over 200 million for the first time (2). An additional 5 million people were in direct risk of losing their jobs as a result of reduced working hours, part-time employment and the transition to part-time employment.

The unemployment rate in the United States has increased from 4.9% in 2007 (3) to 10.1% by 2009 (4). Member States of the European Union have also followed negative trends in employment decline. Ac-

cording to Eurostat, Spain was most affected by the crisis, where unemployment reached 17.9% in 2009 (5). In Croatia, it was 9.2% in 2009, representing an increase of 0.6% compared to the previous year.

The largest increase in unemployment was recorded in the construction, financial, automotive and real estate markets. Two thirds of the countries covered by the 2009 ILO report, do not pay unemployment benefits (2).

### Impact of the macroeconomic stability on population health

By disrupting the macroeconomic stability of countries and consequently reducing the supply of jobs in the labor market, a significant number of people who lost their jobs in the post-recession period ultimately depended on the social measures of the state when it comes to health care and access to it. The share of GDP earmarked for social care programs and the health system in general decreases, which ultimately, depending on the health system, potentially leads to impaired health quality, impaired mental health (1), increased levels of stress, avoidance in seeking medical care, difficult access to medicines, lack of preventive measures and many other adverse health effects.

### Health insurance of the unemployed

In most cases, unemployed citizens are dependent on health insurance mainly financed by the state (i.e. taxpayers), introduced with the aim of preserving

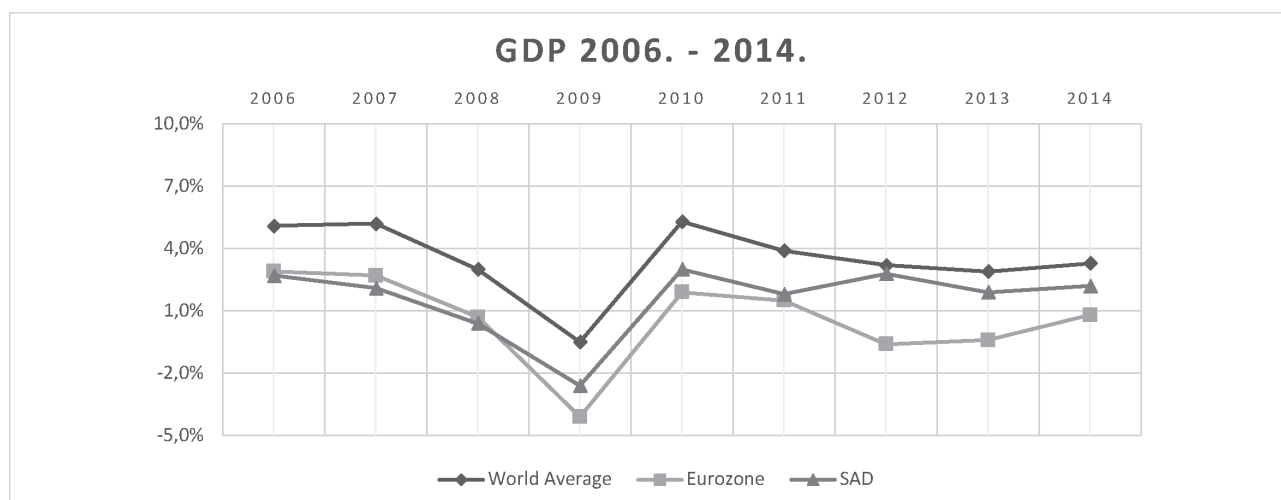


Chart 1. **Outline of GDP trends from 2006 to 2014 (%)**

the health of the individual in situations when loss of regular income occurs. Such insurance systems vary significantly between countries, and sometimes between provinces within countries (6,7). The aforementioned differences include sources of financing (workers, state, employers), additional criteria (loss of work not caused by workers), duration of insurance, grace period (time during which insurance is not paid) (8). In the Republic of Croatia, the rights of the unemployed to basic health insurance is regulated by Article 7 of the Act on Mandatory Health Insurance NN83/13, 137/13. Available studies have shown that countries with developed unemployment insurance systems are extremely successful in eliminating the financial burden of unemployed citizens, protecting them from severe material losses, and ultimately preventing poverty rates from rising. Comprehensive social protection measures for citizens are particularly important in times of difficult economic circumstances given the increased unemployment and risk of job loss.

## Methods

### Selection criteria and search terms

A systematic search of the electronic databases Science Direct, PubMed and Scopus was performed, searching for articles from 2008 to 2018. This criteria was decided due to the different beginning of the financial crisis in the countries of the world.

The articles with available abstracts in Croatian and English are discussed. Part of the keywords were identified using the MeSH database and these were: "unemployment", "health services accessibility", "healthcare". Subsequent searches searched for the terms: "health insurance macroeconomy" and "recession". In order to ensure the representation of all relevant research, the references of selected articles were further searched and included in this paper based on the inclusion criteria (Table 1). Article summaries whose eligibility could not be concluded were subsequently analyzed by reviewing the entire paper.

**Table 1. Criteria for inclusion and exclusion of sources from analysis**

	Inclusion criteria	Exclusion Criteria
Type of publication	Systematic review Review article Original research Report	Letters Editorials
Content (key words)	Unemployment Health services accessibility Health Recession Health insurance macroeconomy	Everything else
Published	From 2008 to 2018	Before 2008
Summary	Included	Not included
Language	English Croatian	Other

### Refinement and selection of the studies

Based on keyword searches in the databases, a total of 10234 papers were found. The initial review excluded duplicates and papers according to the criteria, selecting 82 papers for further review. After reviewing the abstracts, 54 papers were excluded, 28 whole papers were reviewed, five of which were included in this review.



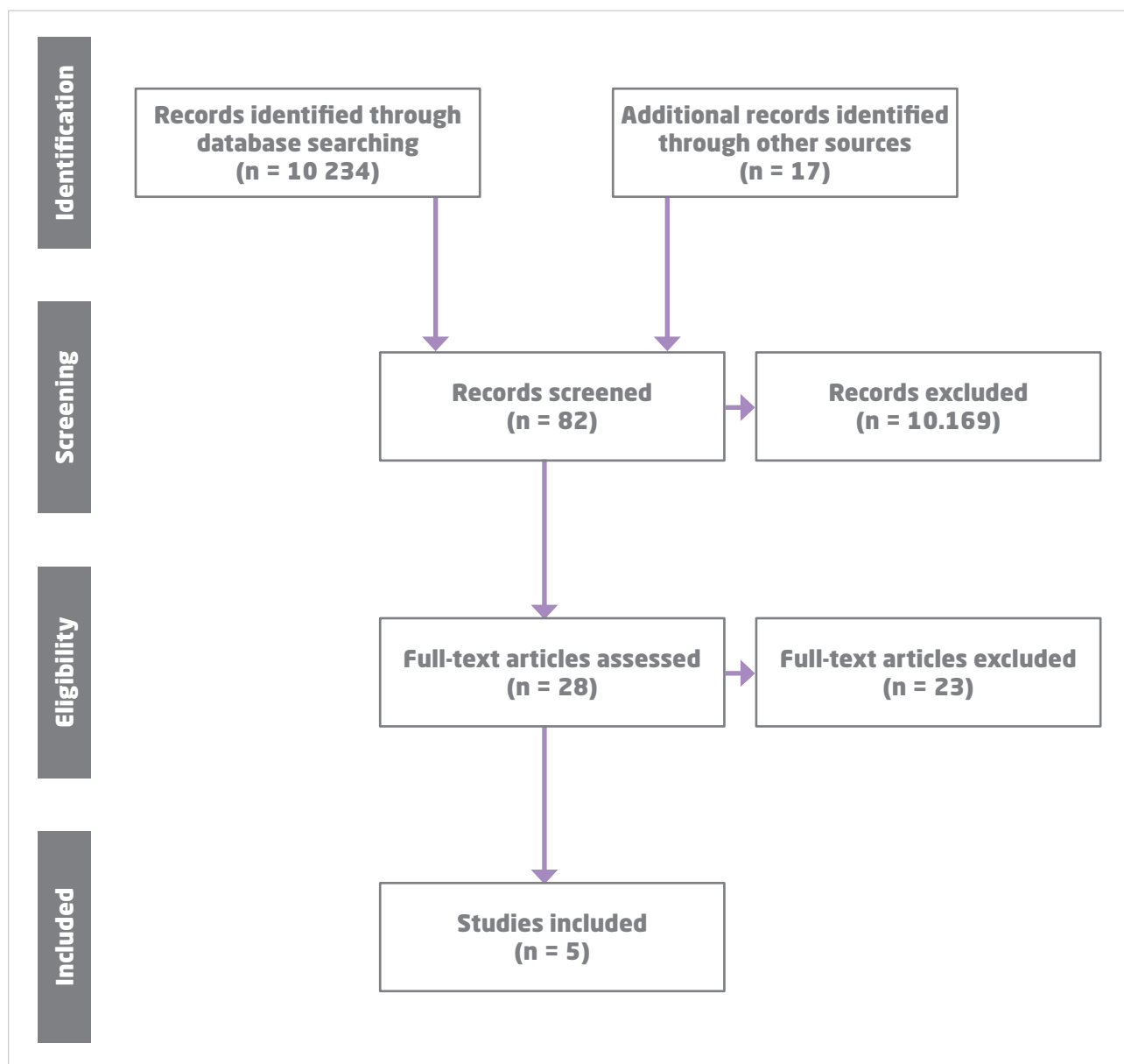


Diagram 1. Selection process of the studies. *Prisma 2009 Flow Diagram*

## Results

Driscoll and Bernstein (2012) made an analysis based on the data from the National Health Survey 2009/2010, which was conducted in the United States. The aim of the analysis was to compare and identify possible differences in access to health care between employed and unemployed adults, aged 18-64. The results were collected through household

interviews, continuously throughout the year. Given the organization of the health care system in the United States and the lack of a social component of the health care system, unlike the countries in Europe or Canada, most U.S. citizens rely on employer-provided health insurance. It is for this reason that accessibility to health care services is significantly hampered by the loss of jobs and income that citizens could use to pay for insurance themselves (9).

Drydakakis (2015) conducted a longitudinal study before and after the financial crisis, aiming to discover

the impact of unemployment on self-assessment of health and mental health in Greece for the period between 2008 and 2013. An analysis of data from 2008-2009 and 2010-2013 examined the extent to which unemployment had an impact on health and mental health, at a time when unemployment in Greece had doubled as a result of the economic crisis. The paper tested and validated two hypotheses: a) unemployment can result in worse health, and b) during 2010-2013, unemployment resulted in greater impairment of health compared to 2008-2009 (10).

Pharr et al. (2012) conducted a secondary analysis of data collected from the BRFSS (Behavioral Risk Factor Surveillance System) of the State of Nevada, USA. Data were collected by telephone survey on 3,840 respondents over 18 years of age. The aim of the study was to examine the impact of duration and length of unemployment on health self-assessment, access to health care, and risky health behaviors (11).

Noordt et al. (2014), through a systematic analysis of prospective studies, sought to explore the impact of employment on an individual's health. By searching the scientific databases (Medline, PsychINFO, SciSearch, Social SciSearch and EMBASE) they included 33 studies, of which 23 were rated as qualitative. The search was limited to the period from 1990 to March 2012 (12).

Bambra and Eikemo (2008) wanted to establish a link between unemployment and an increased risk of morbidity and mortality with different levels of social protection for the unemployed. As the source, 37499 respondents were used on two occasions, in 2002 and 2004. The data for 23 European countries was presented through five models of social protection: Scandinavian (universal health care, promoting social equality not to the minimum but the highest standards of protection), Bismarck's (status-organized programs where the level of social protection is often determined by earnings), Anglo-Saxon (state influence in social programs is minimal, level of protection modest and recipients are often stigmatized), Southern (rudimentary, fragmented systems with limited and partial coverage of services), Eastern (former Eastern European countries, change from universal health care to modified Anglo-Saxon) (13).

## **The impact of unemployment on health self-assessment**

Driscoll and Bernstein (2012) found that 11.3% of unemployed adults in the United States, aged 18-64, rated their health poor or bad, compared to 5.3% of employed participants. In the population of respondents with private insurance (self-paid), 4.3% of employees assessed their health as impaired and poor, as opposed to 7.8% of the unemployed - which confirms the negative impact of unemployment on health despite the possibly better health insurance. Respondents with social (state) insurance rated their health as poor, regardless of the employment (9).

Drydakis (2015) evaluated the positive relationship between unemployment and impaired health, that is, the negative effect of unemployment on health by 0.18%, thus accepting the hypothesis that unemployment results in worse health (10).

Bambra and Ekimo (2009) found greater relative inequalities in the countries of Anglo-Saxon, Bismarck (male only) and Scandinavian (female only) health care models, while the least inequalities were reported in Southern (Italy, Portugal, Spain, Czech Republic) and Eastern (Hungary, Poland, Slovenia) Europe (13).

## **The effects of unemployment on the mental health of an individual**

Unemployed participants reported a greater amount of significant psychological distress (6.3%), as opposed to employed participants (1.7%), regardless of the level or source of health insurance. Unemployed respondents with private health insurance were three times more likely to have more serious psychological consequences than employed participants. Respondents with social (state) insurance had more serious psychological consequences, regardless of employment (9).

At the individual level, studies have shown a link between poorer mental health assessments, including parasuicide, and a higher prevalence of risky health behaviors in terms of smoking and alcohol consumption, especially in the younger male population. At the national level, an increase in the unemployment rate is associated with higher mortality (13).

People who have been unemployed for less than a year are more likely to assess their mental state as worse than the employed respondents, as well as a significantly larger number of days when they ex-

perience impaired mental health. Respondents who have been unemployed for more than a year have assessed their mental state significantly worse than the employed ones. Other statistically significant indicators of impaired mental health in the respondents who had been unemployed for less than a year were: anxiety ( $p<0.03$ ), hopelessness ( $p<0.001$ ), depression ( $p<0.004$ ), futility ( $p<0.001$ ). Almost equal results were found in participants unemployed for more than a year, with the addition of a feeling of

restlessness ( $p<0.009$ ) and an increase in the number of days when they feel psychologically ill (11).

The results of ten independent studies have shown a significant protective element of employment for depression. Hopkins Symptom Checklist, Beck Depression Inventory, CES-Depression Scale, Rosenberg's Depression Affect Scale, and Edinburgh Postnatal Depression Scale were used to measure depression. Nine studies examined the impact of unemployment on mental distress using the General Health Ques-

Table 2. Overview of the research included in the review

Authors, year	Aim	Study type / methodology	Population	Country	Results
Driscoll, Bernstein (2012.) [9]	Compare the status of health insurance, health and access to health care between employed and unemployed respondents	Data analysis of the National Health Interview Survey data from 2009 and 2010	N= ~ 87.500 18 - 64 y.o.	USA	41.8% of the unemployed have health insurance, as opposed to 81.4% of the employed adults The unemployed had poorer physical and mental health The unemployed used prescribed medication to a lesser extent due to additional expenses
Drydakīs (2015.) [10]	Study the impact of unemployment on self-assessed health and mental health by comparing periods at the outset of the crisis and after	Longitudinal Survey 2008-2009 and 2010-2013. Results collected by telephone interview	n=21.609	Greece	Positive link between unemployment and poor health Unemployment due to the closure of the company additionally adversely affects the state of health During 2010-2013, unemployment led to a major deterioration in health compared to 2008-2009.
Noordt et al. (2014) [12]	Provide a systematic review of the literature on the employment's effects on health	Systematic literature review Search for prospective studies	33 studies	-	Employment is a protective factor for depression and overall mental health Insufficient evidence found to affect an individual's overall health
Pharr et al. (2012) [11]	Study the impact of unemployment on mental and physical health, access to health care, and health-risk behaviors	Data Analysis: Nevada 2009 Behavioral Risk Factor Surveillance System	n=3.840	Nevada, USA	Poorer perception of mental health in the unemployed, more delayed seeking health care due to costs, less likelihood of access to the health system, unlike the employed
Bambra, Eikemo (2008) [13]	Identify the link between unemployment and the increased risk of morbidity and mortality with different levels of protection for unemployed citizens		n=37.499	EU 23	There is a positive correlation between unemployment and ill health in all countries Visible differences in social protection models: relative differences were most evident in the Anglo-Saxon, Bismarck and Scandinavian models. The negative health effects of unemployment are particularly visible in women within the Anglo-Saxon and Scandinavian models.

tionnaire Scale, CES-depression Scale and self-created questionnaires. Four of the nine studies cited (57%) found a significant protective employment factor for psychological distress, while three studies showed negligible effects (12).

## Unemployment and access to health care

Among the respondents with private health insurance, one in seven (14.7%) respondents stated that they had delays or lack of medical care due to additional material costs, as opposed to the employed (8.7%). In the case of adults with social (state) insurance, one in six (16%) of the unemployed stated that they had delays or lack of medical care due to additional material costs, unlike the employed (11.2%). Unemployed respondents were more likely to be delayed or absent from health care than adults with any type of insurance (9).

In the study of Pharr et al. (2012) results indicate that employed respondents were at least 4.1 times more likely to access healthcare than the unemployed respondents. Unemployed participants were at least 2.1 times more likely to delay health care because of the costs they incurred, as opposed to the employed ones (11).

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## Discussion

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When it comes to unemployment, as one of the important factors in disrupting self-esteem, self-actualization, security and a sense of belonging according to Maslow's hierarchy of needs theory (14), it is difficult to consider unemployment's effect on access to health care services exclusively. It is also important to consider the health of the individual as a final result of the quality of access to the healthcare system due to unemployment, which is at its peak in times of difficult economic situation and global recession.

The psychosocial pressure of the unemployed is particularly emphasized in times of financial crisis as a consequence of the decline in the supply of jobs on the market, which can lead to a period of long-term unemployment resulting in high uncertainty, insecurity, loss of self-esteem and economic struggle for survival (OECD, 2014).

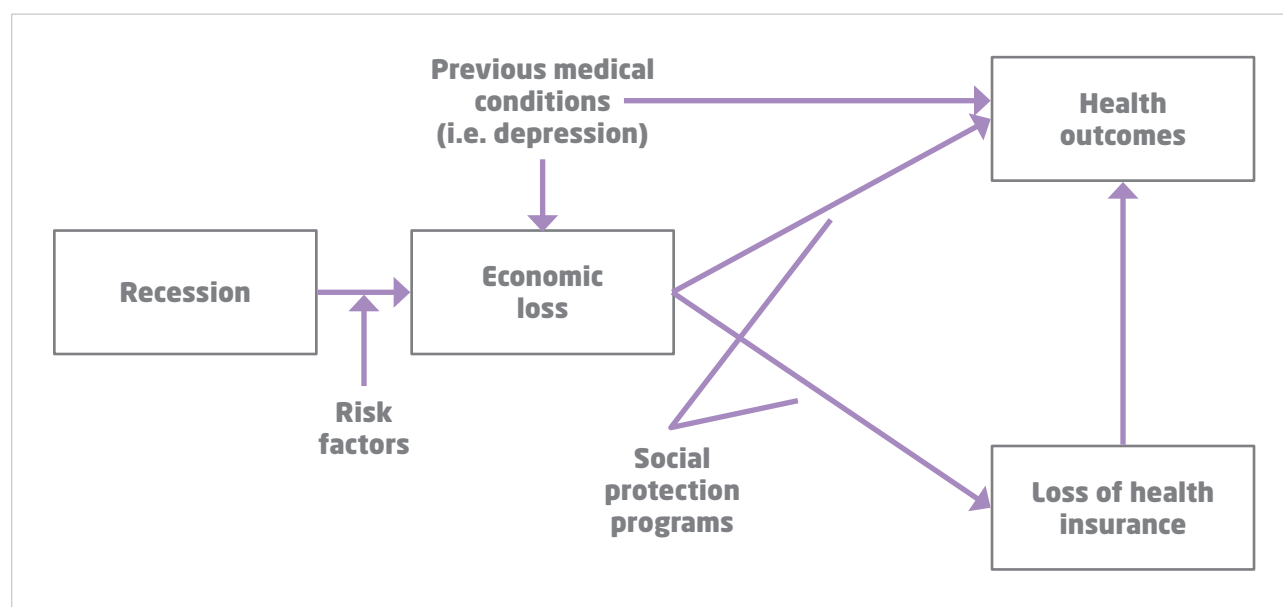
A large number of studies have confirmed that unemployed people are less healthy than employed people, not only in the form of impaired physical but mental health as well (15, 16, 17). Goldman (2001) and Kawachi and Wamala (2006) observed a significant negative correlation between individual health and unemployment as well as an increase in mortality rates in times of recession. By analyzing data from 23 EU countries, Bambra and Eikemo (2009) find a strong link between unemployment and poor health self-assessment between 2000 and 2002. We can explain the above in several different ways:

1. The negative impact of stress as a direct consequence of unemployment on an individual's health.
2. Difficult access to health care due to loss of health insurance, depending on the model of health insurance of the country in which the individual lives.
3. Changes in lifestyle and eating habits due to reduced income.
4. Absence or termination of preventive health activities.

The lack of material security that job loss brings, according to some authors, leads to a change in lifestyle in terms of increasing unhealthy eating habits and smoking (18,19,20). At the same time, acute and chronic stressors affect the unemployed individual and his or her family as a result of reduced family income (19).

The available data also show that, despite the availability of health insurance, there is no guarantee of better access to health care if the insured person has to contribute to the cost of care (9). In addition to lower levels of health, the unemployed are more likely to delay or not seek health care or medication for an additional cost, unlike employed.

There are a number of factors that will contribute to health outcomes, all of which are simultaneously causally linked (Diagram 2). Economic losses at family or individual level caused by recession as a primary factor could secondarily lead to the loss of employment. In addition, gender has been identified as a risk factor, where, according to the ILO, women have a higher unemployment rate than men by 0.4%. The level of social protection of the individual's environment or state is also a potential risk factor. Prior health conditions, such as depression, can sig-

Diagram 2. **Impact of recession on health outcomes**

nificantly contribute to the economic loss of an individual or family, as well as health outcomes. Either because it will make it easier to lose a job (20) or because the financial burden that certain health condition carries will lead to significant economic losses.

## Conclusion

A considerable number of studies prove that unemployed persons are less healthy than employed, both from the physical and mental aspects of health. The reason for this can be explained by the many negative effects that loss of employment entails, such as the poorer access to the health care system due to inadequate health care for the unemployed and loss of income; less use of the necessary remedies; neglect of preventive health effects due to loss of income or impaired mental state; delaying necessary medical procedures, etc.

Global economic change will have a stronger impact on the health of the population in poor countries than in the rich ones, so a fair and comprehensive system of health care for the unemployed is of paramount importance for the purpose of preserving the health of the population.

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## NEZAPOSLENOST I PRISTUP ZDRAVSTVENOJ ZAŠTITI

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### Sažetak

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**Uvod.** U trenutku oporavka globalne ekonomije od posljedica četvrte velike recesije nakon Drugog svjetskog rata, koja se javila završetkom prve deka-de 21. stoljeća – stopa nezaposlenosti posljedično je visoka te predstavlja znatan egzistencijalni i javnozdravstveni izazov.

**Cilj.** Pružiti sistematični pregled dostupnih istraživanja o utjecaju nezaposlenosti na pristup zdravstvenoj zaštiti, kao i o posljedičnom utjecaju na samo zdravlje pojedinca.

**Metode.** Provedena je sistematična pretraga elektroničkih znanstvenih baza za sistematične preglede, pregledne članke, originalne istraživačke radove te izvješća u periodu od posljednjih deset godina.

**Rezultati.** Sistematičnom pretragom recenziranih baza podataka pronađeno je ukupno 10 234 članaka, od kojih je pet uključeno u ovaj pregled.

**Zaključak.** Znatan broj studija dokazuje da su nezaposlene osobe, uslijed ograničenog pristupa zdravstvenoj zaštiti, narušenijeg zdravlja od zaposlenih, kako s fizičkog tako i psihičkog aspekta, što je posljedica negativnih učinaka koje sa sobom nosi gubitak zaposlenja. Globalne ekonomske promjene imat će snažniji utjecaj na zdravlje populacije u siromašnim državama nego u bogatima, stoga je pravedan i sveobuhvatan sustav zdravstvene skrbi za nezaposlene od iznimne važnosti u svrhu očuvanja zdravlja populacije.

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**Ključne riječi:** nezaposlenost, zdravstvena zaštita, ekonomska kriza, recesija

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# Review of a Book Entitled *Critical Pedagogy in Nursing* by Sue Dyson (2018)

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**Keywords:** nursing education, curriculum development,  
review of a book

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## Abstract

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The aim of the paper is to describe the contents of a book entitled *Critical Pedagogy in Nursing*. The purpose of the Letter to the Editor is to increase the level of knowledge of all those involved in the implementation of educational programs for nurses, students, and teachers who are involved in nursing programs, and of those who think about the strategic, organizational, and managerial future of the development of nursing in the Republic of Croatia.

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## Review of a book entitled *Critical Pedagogy in Nursing* by Sue Dyson (2018)

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*Critical Pedagogy in Nursing: Transformational Approaches to Nurse Education in a Globalized World* was written by Sue Dyson and published in 2018 in London by Palgrave Macmillan. Professor Sue Dyson of The Centre for Critical Research in Nursing and Midwifery Education (CCRN), Middlesex University, London, UK, is the author of eighteen scientific articles and a co-author of thirty-four scientific articles. She is also a co-author of *Fundamental Aspects of Transcultural Nursing* (MA Group 2007), *Fundamental Aspects of Research for Nurses* (MA Group 2010), and *Research skills for Nurses and Midwives* (MA Group 2013).

This book provides historical evidence which supports critical theory and presents bibliographical information about individuals who formed theories and approaches in curriculum development.

The book is divided into seven chapters. The first two chapters present an overview of the problem of a conventional approach to curriculum development, attempting to interest those who have influence over nursing curriculum development for the purpose of meeting the needs of clients in the twenty-first century. In the third chapter, the author describes ways in which global healthcare has developed, as well as the subsequent acquirement of skills in the area of nursing according to local needs. Furthermore, she presents the financial and social impact of the population's increased longevity and the migration of medical workers. The first part of chapter four explains the historical development of nursing education in Great Britain. The second part questions the need for critical pedagogy in nursing education as a way of preparing students for the modern labour market. A lack of specific examples and strategies is the only flaw of the abovementioned chapter.

The next chapter of the book offers a very useful analysis of the modern models of nursing education. Structured volunteering possibilities provide a means for using reflection to connect thinking and experience with academic content.

The most beneficial feature of the book is the ex-

planation of how engaging students of nursing in volunteering can help establish the norms of social co-operation necessary for efficient nursing practice.

By doing so, the author confirms the complexity of transformative pedagogy as well as the novelty of its critical assessment. It is based on a distinctive interpretation of her great expertise in the field and on modern theoretical hypotheses. The author's enthusiasm for nursing education is obvious throughout the book.

Dyson points out challenges and possibilities which can be used through transformative pedagogy in order to prepare nursing students for the modern market.

Each chapter is broken down into several sections which are logically organized by subject. This format emphasizes the key phases of the development of attributes necessary for present-day modern nursing. The book contains four figures in colour which clearly present the content of the book. There are also two tables, a list of technical terms in alphabetical order, and references showing various areas of expertise grouped together in this book.

Regarding the adequacy of the approach: The manuscript is divided into chapters in a clear and understandable way for those who have prior knowledge in nursing education. Charts and figures could be added in order to make the book more interesting.

Regarding writing style, language, and phrasing: The text is in accordance with standard language. The writing style is interesting and readable, and the book has been proofread.

Regarding social demands and justification for publishing the book: A social need for this type of book is obvious, as more and more nurses realize the necessity of continuous professional development in order to improve the nursing curriculum, which will later aid professors in preparing nurses for modern nursing practice.

I recommend this valuable scientific book to those who are involved in the education of nurses, nursing students, and teachers, as well as everyone who is contemplating strategic and organizational ways of improving the future of nursing in the Republic of Croatia.

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## Reference

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1. Dyson S. *Critical Pedagogy in Nursing: Transformational Approaches to Nurse Education in a Globalized World*. London: Palgrave Macmillan; 2018.

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## PRIKAZ KNJIGE *KRITIČKA PEDAGOGIJA U SESTRINSTVU* AUTORICE SUE DYSON (2018.)

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### Sažetak

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Cilj je rada opisati sadržaj knjige *Kritička pedagogija u sestrinstvu*. Svrha je rukopisa povećanje obima znanja svima koji su uključeni u izvršavanje edukacijskih programa medicinskih sestara, studentima i profesorima studijskih programa sestrinstva te svima onima koji promišljaju o strateškoj, organizacijskoj i upravljačkoj budućnosti razvoja sestrinstva u Republici Hrvatskoj.

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**Ključne riječi:** edukacija medicinskih sestara, razvoj kurikula, recenzija knjige

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# Author Guidelines

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## AIM AND SCOPE

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**Croatian Nursing Journal** is a peer-reviewed nursing journal that publishes original articles that advance and improve nursing science and practice and that serve the purpose of transfer of original and valuable information to journal readers. Croatian Nursing Journal is published biannually in the English language. Authors are invited to submit original papers in the form of research findings, systematic and methodological review and literature review related to nursing.

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## SUBMITTING A MANUSCRIPT

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All manuscripts must be written in English and in accordance with the ICMJE Recommendations (Recommendations by the International Committee of Medical Journal Editors, formerly the Uniform Requirements for Manuscripts), available at: <http://www.icmje.org>.

The manuscripts must be submitted through an online submission system available at <http://www.cnj.hr>. The submission system guides you stepwise through the process of entering your details and uploading your files. Manuscripts should be uploaded in Step 2 (*Upload Submission*) and cover letter, title page, ta-

bles, figures and/or other documents in Step 4 (*Upload Supplementary Files*).

The Croatian Nursing Journal uses the Diamond Open Access model. The articles go through the process of peer review and there are NO author charges. All articles are freely available at our website to all users immediately upon publication.

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All persons designated as authors should qualify for authorship, and all those who qualify should be listed. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. All others who contributed to the work who are not authors should be named in the Acknowledgments. All authors should take responsibility for the integrity of the whole work, from inception to published article. Each manuscript is checked for plagiarism detection system. By submitting your manuscript to this journal you accept that it will be screened for plagiarism against previous published works.



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## COVER LETTER

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Manuscripts must be accompanied by a cover letter signed by all authors including a statement that the manuscript has not been published or submitted for publishing elsewhere, a statement that the manuscript has been read and approved by all the authors, and a statement about any financial or other conflict of interest. A statement of copyright transfer to the journal must accompany the manuscript.

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## PREPARATION OF MANUSCRIPT

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The manuscript must be prepared using Microsoft Office Word, in a 12-point font, double spacing, in either Times New Roman, Arial or Calibri.

Double spacing should be used throughout, including the title page, abstract, text, acknowledgments, references, individual tables, and legends. Pages should be numbered consecutively, beginning with the title page. The page number is to be written in the lower right-hand corner of each page. Manuscript must not exceed 20 pages (7500 words) including the abstract, text, references, tables and figures. The text should be accompanied by the title page as a separate page.

The text of the manuscript should be divided into sections: Abstract and Key words, Introduction/Background, Methods, Results, Discussion, Acknowledgment, References, Tables, Legends and Figures.

### Title page

The title page should include:

- the title of the article (which should be concise but informative)
- full name of the author(s), with academic degree(s) and institutional affiliation
  - If authors belong to several different institutions, superscript digits should be used to relate authors' names to respective institution. Identical number(s) should follow

the authors' name and precede the institution names

- the name and mailing address of the author responsible for correspondence including his/her e-mail address
- acknowledgments – if any acknowledgment are to be included, they should be briefly stated.

### Abstract and Key Words

The first page should contain the title and the abstract (summary) both in English and Croatian, of no more than 200 -250 words each.

The abstract should state the purposes of the study or investigation, basic procedures, main findings, and principal conclusions. It should emphasize new and important aspects of the study or observations. Below the abstract, the authors should provide 3 to 8 key words or short phrases that will assist in cross-indexing the article and may be published with the abstract. Terms from the Medical Subject Headings (MeSH) list of Index Medicus should be used for key words.

### Introduction/Background

State the purpose of the article and summarize the rationale for the study or investigation. Give a critical review of relevant literature.

### Methods

Describe the selection and identify all important characteristics of the observational or experimental participants. Specify carefully what the descriptors mean, and explain how the data were collected. Identify the methods, apparatus with the manufacturer's name and address in parentheses, and procedures in sufficient detail to allow other workers to reproduce the results. Provide references to established methods and statistical methods used. Describe new or substantially modified methods, give reasons for using them, and evaluate their limitations. Identify precisely all drugs and chemicals used. Use only generic names of drugs. All measurements should be expressed in SI units.

### Ethics

Papers dealing with experiments on human subjects should clearly indicate that the procedures followed were in accordance with the ethical standards of the institutional or regional responsible committee on

human experimentation and with the Helsinki Declaration and Uniform Requirements for Manuscripts submitted to Biomedical journals. This must be stated at an appropriate point in the article.

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Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. Whenever possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty. Specify the statistical software package(s) and versions used.

## Results

Present your results in logical sequence in the text, tables, and illustrations. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize main findings. Provide exact *P-values* with three decimal places or as  $P < 0.001$ .

## Discussion

Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the Introduction or the Results section. Include in the Discussion section the implications of the findings and their limitations, including implications for future research, but avoid unqualified statements and conclusions not completely supported by the data. Relate the observations from your study to other relevant studies. State new hypotheses when warranted, but clearly label them as such.

## Conclusion

Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the Introduction or the Results section. Identify recommendations for practice/research/education or management as appropriate, and consistent with the limitations.

## Tables

Each table with double spacing should be put on a separate page. Do not submit tables as photographs. Number tables consecutively in the order of their first citation in the text and supply a brief title for

each. Give each column a short heading. Each table should be self-explanatory. Legend or key should be placed in footnotes below the table.

## Figures

Figures and illustrations should be professionally drawn and photographed. Make sure that letters, numbers, and symbols should be legible even when reduced in size for publication. Figures should be numbered consecutively according to the order in which they have been first cited in the text.

The preferred formats are JPEG and TIFF, although any format in general use that is not application-specific is acceptable. Make sure that minimum resolution should be 300 DPI.

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## Abbreviations

Use only standard abbreviations. The full term for which an abbreviation stands should precede its first use in the text unless it is a standard unit of measurement.

## Acknowledgments

List all contributors who do not meet the criteria for authorship, such as a person who provided purely technical help, writing assistance, or a department chair who provided only general support. Financial and material support should also be acknowledged.

## References

References should be numbered consecutively in the order in which they are first mentioned in the text. Identify references in the text, tables, and legends by Arabic numerals in brackets.

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