TECHNOLOGICAL CHANGES IN HEALTH CARE - IMPLEMENTATION OF ELECTRONIC HEALTH RECORDS

Olja Arsenijević[1], Milan Radosavljević[2], Edita Kastratović[3]

[1]Faculty of Business Studies and Law, University Union-Nikola Tesla, Belgrade, SERBIA, e-mail: arsenijevicolja@gmail.com
[2]Faculty for Strategic and Operational Management, University Union-Nikola Tesla, Belgrade, SERBIA, e-mail: milan.radosavljevic@fsom.edu.rs
[3]Faculty of BusinessEconomics and Entrepreneurship, Belgrade, SERBIA, e-mail: kastratovice@yahoo.com

Abstract: *The aim of this paper is to show the importance of technological change in the health care system through the implementation of electronic health records. The study was conducted on 206 subjects, employed in Health care centers in the municipality of Pancevo (Pančevo and surrounding villages), who use electronic health records in their work. Medical / visiting nurses / technicians, doctors, IT specialists from 19 health stations participated in the survey. The sample was random because it involved only those respondents who have voluntarily agreed. Due to limited space in this paper, we present only the results of 56 physicians (27%) who participated in the study. It can be seen that just over 50% of them find work with the e-record complicated and that it requires much more time than the ordinary medical records. Positive attitudes of doctors are expressed through impressions that work is faster, and it is more clear and readable. Compared to the average grade of satisfaction with e-record of the entire sample, their grade is lower (3.07).*

Keywords: *changes in technology, electronic health records*

1. INTRODUCTION

Until the end of the last century there were objective technological limitations in terms of exchange of large amounts of information generated in every process of treating the population. Paper as a bearer of information had to be physically transferred from doctor to doctor, from one institution to another, from one counter to the other counter, and during that time the patient had to wait for competent service to finally process his case. Informa-

tion systems and the use of e-health have significantly improved access to health care and quality of health services, and enablde increased efficiency and productivity in health care. Integrated and complete solutions related to treatment have brought new quality for patients and generated substantial savings in time - an average of 10 minutes per patient at every visit to the institution. Health institutions and their personnel can not only effectively devote to patients in order to ensure higher quality of treatment, but they can also carry out effective monitoring of the optimal use of all resources dedicated to this process.

2. FLOW OF INFORMATION

Lack of network in any given health centre used to be a problem. On the other hand, we also have lack of networking on the level of the whole Health system. There was also poor software support (the billing was not harmonized with the actual needs which resulted in slow execution or lack thereof, lack of electronic cards, the Internet and the lack of an information system for statistical processing (all is done manually)). There was also a problem with old computers with little memory (which is slowing down the business), because of the lack of adequate network systems and software solutions, as well as professional staff to fully support the introduction and management information system. The existing systems in the Health Care Center of Pancevo were outdated and obsolete to the extent that they had no cohesive characteristics in terms of integration, connectivity, security, modularity and standardization.

Figure 1: The flow of informationin HC ”Južni Banat” Pancevo the old and thenew solution
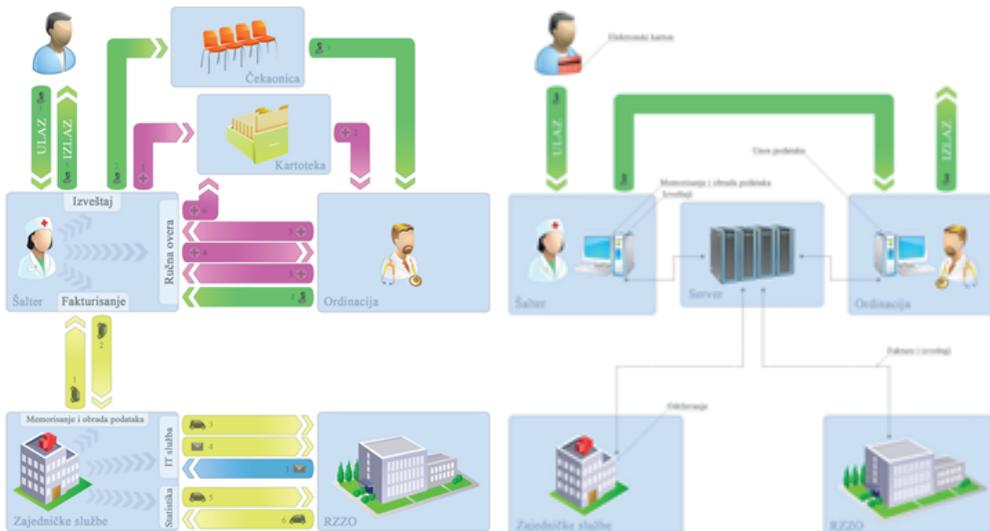
E-record practically rounds out the entire medical and administrative workflow of medical personnel at all levels of diagnosis and treatment in primary care.

3. ORGANIZATIONAL DIMENSION ANDINFORMATION SYSTEMS

Information systems and organization mutually influence each other. Although information systems are primarily based on real business requirements of organizations and organizations must be open to novelty provided by new technologies through information systems. Factors influencing this are as follows: complex interaction of organizational structure, policies, culture, environment, standard operating procedures and management decisions. [1]

Information systems, whether computerized or paper, are of key importance for the effective and efficient operation of health organizations. In the Health Center Pancevo the interest for comprehensiveness and thoroughness of medical records was rudimentary, except in the areas of financial management, and it was in most cases on paper meeting thereforebureaucratic demands, such as the visibility of the signatures and seals. Development of information systems was aimed at streamlining the system for collecting health information at all levels and creating a strategy to harmonize all health information systems.

The introduction of information systems in health care, i.e. in organizations, as well as functioning and rationalization of health services in an optimal way – all this bears the improvement of quality of medical care thus providing accurate, complete and timely information and reducing health care costs. Information system in health care is an important tool in their daily work.

The main aim of introducing health information system was to overcome problems related to paperwork and files, and the establishment of so-called electronic records for patients, which were to include images from all appliances, medicines that the patient has to use, prescribed therapy, information on whether they should be adjusted, etc.

Integrated and complete solutions of information system in the treatment process for patients bring quality, save time and engaged with financial means. Health institutions and their staff can not only effectively devote to patients and ensure higher quality of treatment, but they can also carry out effective monitoring of the optimal use of all resources dedicated to this process.

4. EMPIRICAL RESEARCH

The subject of this research was to evaluate the implemented electronic records based on the attitudes of medical workers employed at the Health Center Pancevo. The problem could be summarized as follows: how employees evaluate different aspects of these changes in the work.

This study was created in order to complete our knowledge in terms of how staff perceive the work process after the introduction of electronic records, what types of problems they are faced with, whether their views are positive or negative after the aforementioned types of changes, and whether, in their opinion, there is any place for possible improvements.

Hypotheses

H1 There is a statistically significant difference in the attitudes of the respondents in relation to socio-demographic characteristics.

H2 There was a statistically significant difference in the attitudes of respondents with regard to the use of information systems.

H3 There is a statistically significant difference in the attitudes of the respondents in relation to personal satisfaction e-record.

H4 There is a statistically significant difference in the attitudes of the respondents in relation to how they manage the computer.

Research Tasks

The research had several tasks: to determine whether there is a link between socio-demographic variables, greater computer literacy, length of use of electronic records, training and desire for additional training on the e-records and attitudes to change the mode to determine which are the main sources of positive and negative attitudes towards e-records, to determine whether the changes in the work are more positively perceived by technique personnel or by doctors, to determine whether there is room for improvement in the work.

Variables

*Conditionallyindependent variables:*Socio- demographicvariables- gender-thecategories ofmaleand female, age categoriesof respondent-with 5categories (in years) 1)18-25, 2) 26-35, 3)36-45, 4)46-555)55+;a job at whichthe respondent works-withcategories1) Doctor2) Nurse /technician3)Information expert4) primarynurse5)visiting nurse6)midwife; Totalyears of service- with 7categories 1) less than 1 year2) 1-5 years3)6-104)11-15years 5) 16-206)21-307) over 30 years.

Variables related to basic computer litteracy - Use of computers in private use for typing, creation of tables and the like - with the categories of responses in the dichotomous form: 1) Yes and 2) No; Attending one of the computer courses as of 2011, regardless of the electronic cards - with response categories in dichotomous form 1) Yes and 2) No. Self-assessment of how well a respondent is coping with computers regarding his private and business needs - with five response categories: 1) Very poor with computers 2) Poor with computers 3) Medium knowledge of computers 4) Good knowledge of computers 5) Very good wiht computers.

Variables related to electronic health records - Length of keeping medical records electronically in clinics (health stations) of respondents expressed in months. The duration of training for the electronic management of medical records in days - with 4 response categories 1) 1 day 2) 2 - 3 days) 3-7 days 4) 8-14 days. The attitude of respondents on whether additional training on managing e-records would be of any use - the categories of answers in the form of dichotomous 1) Yes and 2) No.

Conditionally dependent variables: Variables related to electronic health records - The views provided on changes in the work, since e-records had been introduced - established through two closed-type answers: 1) reduced administration, 2) operation is complicated and requires a lot more time but with regular medical records and the possibility that the medical officer writes his own impression when two typical suggested attitude does not match his own. Suggestions for improvement in the work of the medical records and the possibility that employees write what they would change (option to offer something else, what?).

Personal level of satisfaction in working with e-record identified through 5 categories where score 1 - means completely discontent, 2 - discontent, 3 - medium satisfaction, 4 - pleasure, 5 - complete satisfaction.

The level of satisfaction that respondents notice with their colleagues in terms of e-records - established through 5 categories where score 1 - means completely discontent, 2 - discontent, 3 - medium satisfaction, 4 - pleasure, 5 - complete satisfaction.

All additional positions could be tested through open-ended questions where respondents could add upanything related to electronic health records management that maybe I had not formed as a question.

General methodof organizingresearch

In this study a systematic non-experimental method was performed. The research was of exploratory type, and not very strictly controlled, of experimental type; at the same time, this is the reason why the hypothesis are insufficiently precise, and as previously mentioned variables are only conditionally dependent or independent.

The data collection technique

The anonymous questionnaire composed of 15 questions, as mentioned above, has been designed for this purpose. Through this questionnaire we have registered socio-demographic variables, those relating to general computer literacy, and those that are related to the change in the work process and concern electronic medical records. The questionnaire contains 10 closed questions, 2 open and 3 mixed questions.

Pattern

The study was conducted on 206 respondents, the medical staff in the Health Care Center in the Municipality of Pancevo (Pančevo and surrounding villages), who use electronic records in their work. Medical / health nurses / medical technicians, doctors, IT specialists from 19 medical stations participated in the survey. The sample was random because only those respondents who have voluntarily accepted did actually participate in the survey. After performing the tests, it was found that a pattern was dominated by females (which corresponds to reality) of technique orientation, and that they are either medium or good with computers, and have been using e-records for the period of 6-10 months.

The Process of Research

After receiving the approval of the director, lawyers and nurses to carry out major a research project we began field work in order to collect data through questionnaires. At first, we performed a brief pilot study in order to produce some of answers to specific questions, and in order to check the user-friendliness and duration of completing the said instrument. After the correction "the true research" had started.We arranged with each head nurse at what time questionnaires could be delivered. We personally motivated certain respondents to participate in the study. Fieldwork was conducted in May and June 2014. The instructions of the questionnaire indicated that it takes no more than 5 minutes. The test was performed individually as the employees in the Health Pancevo completed this instrument without providing their names. They were asked to answer the questions the way they really feel.

When the questionnaires were returned from the field, they were numbered, and then individual responses were encrypted. The data were entered into SPSS base and then processed by descriptive tools, analysis of variance, t-test for independent samples and Hisquare.

4.1. RESULTS AND DISCUSSION

As already noted, in the study we used one instrument - a questionnaire designed for this purpose. Thanks to this, we obtained a series of data through which we can evaluate changes in work such as e-records to separate the main sources of positive and negative attitudes and insights into possible improvements in the work.

Separated by gender variables, in this study participated - out of 206 respondents - 183 women and 23 men, the medical staff of the Health Care Centre Pancevo (Table 1). Their

percentage distribution (which is clearly visible in Chart 3) approximately corresponds to their fair representation.

Table 1. Gender of respondents

Gender	f	%
Male	23	11.2
female	183	88.8
Total	206	100.0

* f – frequency, number of cases

As the Table shows, in terms of age groups, a total of 5 of them, except in "extreme" (relating to employees of 18-25 years and over 55) we observe a similar number of respondents.

Table 2. Age of respondents

AGE AS CATEGORY	f	%
18-25 years	15	7.3
26-35 years	52	25.2
36-45 years	60	29.1
46-55 years	51	24.8
55+	28	13.6
Total	206	100.0

This study was carried out in six categories of jobs specific to the health system; it is noted that as in reality, the pattern is dominated by those that include IV level of educational attainment. It is evident from the Table that doctors make up less than 1/3 of respondents.

Table 3. Respondents' job

JOB (workplace)	f	%
Doctor	56	27.2
Nurse / technician	141	68.4
Information technician	4	1.9
Head nurse	1	0.5
Visiting nurse	3	1.5
Midwife	1	0.5
Total	206	100.0

In terms of length of service, in most categories (except in the first category, which includes newcomers) percentage distribution is similar (as can be seen in Table 4). There arealmost 2/3 of the respondents with over 10 years of total experience in the sample.

Table 4. Length of service

LENGTH OF SERVICE	f	%
Less than 1 year	10	4,85
1-5 years	37	17,96
6-10 years	27	13,11
11-15 years	29	14,08
16-20 years	34	16,50
21-30 years	38	18,45
More than 30 years	31	15,05
Total	206	100.0

The following table shows that nearly 60% of the respondents also privately use computers for typing, creation of tables, etc. This is the first issue on which the two respondents did not wish to respond.

Table 5. Use of computers

USE OF COMPUTERS – FOR PRIVATE PURPOSES	f	%
Yes	122	59.2
No	82	39.8
No answer	2	1.0
Total	206	100.0

In this sample of health workers in the municipality of Pancevo, 84 (40.80%) of them as of 2011 (unrelated to electronic records) attended a computer course, while 122 (59.20%) have no formal experience it.

As Table 6 shows, only 6.3% of respondents indicated that they were very poor or poor with computers when performing their private and business needs. It is positive that the majority of respondents assess their computer literacy as at least mediocre.

Table 6. Use of computers

USE OF COMPUTERS	f	%
Very poor	2	1.0
Poor	11	5.3
Mediocre	89	43.2
Good	79	38.3
Very good	25	12.1
Total	206	100.0

As Table 7 shows, the respondents at the time of the study had a minimum of 2 and a maximum of 18 months of experience working with electronic records. The good thing is that we can say that most of the secondary health workers who werepart of this sample, had worked forat least 6 months in the changed conditions of work, so that they were able tolearn

about the advantages and disadvantages of information system, as well as to adjust to the new way of working .

Table 7. Use of e-records

LENGTHOF USE E-RECORDSin months	f	%
2	12	5.8
3	5	2.4
4	7	3.4
5	24	11.7
6	25	12.1
7	8	3.9
8	14	6.8
9	26	12.6
10	10	4.9
11	3	1.5
12	9	4.4
13	5	2.4
14	17	8.3
15	3	1.5
16	8	3.9
17	5	2.4
18	20	9.7
No answer	5	2.4
Total	**206**	**100.0**

Around three quarters of respondents had a rather short training on dealing with electronic health records (lasting a day or two), and less than ¼ of them had trainings that lasted for 3-7 or 8-14 days. See Table 8.

Table 8. Training for the use of e-records

LENGTH OF TRAINING FOR E-RE-CORDS	f	%
1 day	77	37,38
2 days	81	39,32
3-7 days	41	19,90
8-14 days	6	2,91
No answer	1	0,49
Total	**206**	**100.0**

As Table 9 shows,the number of respondents who admitted that additional trainings on the topic of e-records would be useful is not insignificant. This might indicate that introduction of these changes in the work process was simply not givenenough time, since the employees are not all at the same, desirable level of acquired knowledge.

Table 9. Additional training for the use of e-records

WOULD ADDITIONAL TRAINING ON E-RE-CORDS BE USEFUL?	f	%
Yes	83	40.3
No	123	59.7
Total	206	100.0

One very important issue is precisely this which refers to the overall impression of change in the work. If we analyze the two given answers, it is good that in this polarization prevailesthe impression that the administration was reduced. It can be said that this is because the sample was dominated by technique staff (nurses / male technicians, laboratory technicians) because it is actually this sector that has been relieved of administrative tasks (Table 10).

Table 10. Impressions on work

IMPRESSIONS ON WORK AFTER IMPLEMENTATION OF E-RECORDS	f	%
Administration has been reduced	94	45,63
The workis complicated andtakes a lotmore time thanwith ordinaryhealth records	71	34,47
Something else (free options)	41	19,90
Total	**206**	**100.00**

If we analyze the level of satisfaction of the respondents (Table 11) in terms of working with e-records compard to the level of satisfaction observed in their colleagues (at least in the way the respondents perceive it), we can establish that the average grade pointa (expressed through the arithmetic mean AS) are very similar. Reviews that were most often chosen are: 3 (about 40%) and 4 (slightly over 30%).

Table 11. Satisfaction with e-records

LEVEL/GRADE OF SATISFACTION	PERSONAL SATISFACTION WITH E-RECORDS		SATISFACTION WITH E-RECORDS OBSERVED IN COLLEAGUES	
	f	%	f	%
Total dissatisfaction(1)	4	1.9	4	2.0
dissatisfaction(2)	29	14.1	32	15.6
Mediuim dissatisfaction(3)	89	43.2	85	41.5
satisfaction (4)	69	33.5	70	34.1
Total satisfaction(5)	25	7.3	14	6.8
Total	**206**	**100.0**	**205**	**100.0**
AS (ARITHMETICMEAN)	**3.30**		**3.28**	

Statistical analysis after using T-test for independent samples, analysis of variance and chi-square made it possible to make a few conclusions: that there is a statistically significant difference in frequency response between employees who think that the reduced administration and those who think that working with e-recordsis complicated viewed by variables:

age category, length of service, position, length of use of the information system (ek), navigate the computer, personal satisfaction with e-records. Also, when compared to personal satisfaction e-record with different variables, a statistically significant difference was evident only at different levels of coping with a computer and various impressions of e-records.

4.2. THE VIEWS OF DOCTORS ON ELECTRONIC RECORDS

If we focus solely on the doctors' answers,we see that more than half of them believe that the work after the introduction of e-records is more complicated and requires a lot more time than working with ordinary medical records. (Table 12)

Table 12. Doctors impressions

Impressions of DOCTORS after implementation of e-records?	f	%
Administration has been reduced	12	21,4
The workis complicated andtakes a lotmore time thanwith ordinaryhealth records	29	51,8
Something else (or no answer)	15	26,8
Total	**56**	**100.0**

Doctors added some of their impressions on electronic medical records and they are presented in Table 13. Their responses are structurally divided into 3 parts, into the positive, mixed and negative (the most numerous answers). Probably it is the reality that e-records haveboth good and bad sides, and the fact that certain respondents point out only the shortcomings may be connected with resistance to a large shift in the work process. It remains for computer experts in the field to determine why certain doctors consider that the work is now difficult, slow, impractical, etc.

Table 13. Impressions of thechangein the work

	DOCTORS' IMPRESSIONS ON CHANGES BROUGHT INTO WORK BY E-RECORDS	f
	POSITIVE (ADVANTAGES)	
1	Faster work	1
2	Excellent grade	1
3	Reports are more clear and transparent	1
	POSITIVEAND NEGATIVE (ADVANTAGES AND SHORTCOMINGS)	
1	Withsome changesrelated tothe program, the work would bemuch easier. Somethings are easier (eg. transcriptof recipes), but referrals take longer	1
2	We gained something, and lost something. Work is a bit faster but it takes a lot of typing, we have no scener	1
3	advantage – printing prescriptions, disadvantage – increased workload for doctors, less time for patients	1
4	Work is not complicated but takes a lot of time, serves mainly for issuing invoices	1
	NEGATIVE (DISADVANTAGES)	
1	A lotof unnecessaryinformation unrelated tomedical profession(legal matters, invoicing, IT)	1
2	It is quite distracting, reduces patients' time thus reducing the quality of work. We are not focused on patients	1
3	Disassociation from patients, inability to correct errors	1
4	Prolonged time of patients' visits	1
5	Reducedadministration, butapplicationscan be reduced, in termsof reducingthe numberof operations (fewer clicks for 1 service)	1
6	Slows down the work	2
7	Work is being slowed down, less time for patients, no possibility to correct errors	1
8	Break-downs related to computers and printers; proved to be slow in emergencies	1
9	Due toan emergency, I am forced to leave the current patientandget out ofhis-electronic record	1
	Total	**17**

If we review the results (Table 14), just how the doctors rated themselves in terms of computer knowledge, we see that there are slightly more of them that claim to be mediocre

or poor with computers, compared to those who say that they are either good or very good. It should be noted that 32.1% of them do not use computers for private purposes, that 46.4% of physicians are older than 46 years, which could indicate that they have been working for a long time in the old way and that they find it harder to accept innovations.

Almost 93% of doctors had a 1 to 2 day-training for electronic records, while 37.5% of them recognize that the additional lessonsare certainly welcome (all of the above information can be found in the Annex, in order not to take up too much space within the paper).

Table 14. How doctors manage with computers

DOCTORS ORIENTATION WITH COMPUTERS	f	%
Poor	3	5,4
Mediocre	28	50,0
Good	19	33,9
Very good	6	10,7
Total	**56**	**100.0**

The question referring to what the medical workers would changeregarding e-health records came with the possibility of multiple answers. The results are shown through the number of reduced and non-reduced responses, at 100% (thus in the last column of Table 15, which refers to the perception of the doctor, we find 389%). Most doctors (46 of 56 of them) find that scanning of reports of medical specialists and discharge lists should be possible.A large number of them (41) would network the health facilities (they are not networked as of now, for example, primary and secondary health care in conjunction with pharmacy, laboratory and other specialist services).

Table 15. Things doctors would like to change

What would the doctors modify:		f	%	% of answ.
I would network all the health care facilities	1	41	18.8	73.2
I would enable protocols to be printed out	2	17	7.8	30.4
I would endeavor to make e-records more readable	3	27	12.4	48.2
I would provide more quality printers	4	36	16.5	64.3
I would set up printing on a smaller format	5	15	6.9	26.8
I would enable all the types of referrals to be printed out	6	36	16.5	64.3
I would enable that reports of specialist be scanned	7	46	21.1	82.1

56 valid cases

Table 16also displays interesting information. If doctors (and other subjects) failed to find adequate answers about what they would change about the e-records, they added up their own findings. Their proposals were left in their original form. Most desired changes seem to be very useful. On the other hand, we have two answers (under number 7 and 8), which indicate that there is great resistance regarding this novelty in the work in question. To point out just how important it is to manage change, we present herewithcertain data aboutrespondents who would completely abolishe-records.

In terms of length of service he falls in the 16-20 years category, does not use computer privately,attended no course, mediocre with computers, has been using e-records for 4 months, had only one day of training after introduction of e-records, but no matter he

considers that additional training on the same issue would not be beneficial. Further, he claimsthat this novelty is too distracting and reduces the time with patient.He complains of lack of transparency of e-records, slow printing of recipes and instructions, lack of programs for sick leave (remittances) and justification, and that in prevention is printing of findings is much too slow (i.e. tables systematic review). Although this individual should consider the problems that he faces, we should try to look at the causes and the real possibilities for their elimination.

Table 16. Other things doctors would change in their work with e-records

No.	OTHER THINGS DOCTORS WOULD CHANGE IN THEIR WORK WITH E-RECORDS	f
1	We should all have access to Internet on our computers	1
2	There should be possibility to copy referrals into the next visit (the same exists for prescriptions)	1
3	Possibility to read out (directly make) daily, monthly, periodical, annual reports	2
4	Possibility to access statistics for doctors, more data to be used in science projects	1
5	Possibility to re-enter the e-record on several occasions without saving in order to correct errors or add information	1
6	I would completely abolish e-records. The whole thing is pointless	1
7	It is not doctors' job to make e-records	1
	Total	**8**

In terms of satisfaction with the use of e-records, which ranges from complete dissatisfaction (1) to complete satisfaction (5), doctors found both themselves andtheir colleagues to be mediocre. They probably projected their own score (3.07) onto the employees from their environment (3:05). Such moderate estimates suggest that certainly it should be consideredwjetjer there is room for reducing barriers and facilitating the work of doctors,so as the new information system would not be the sole purpose.

The segment of presentation and analysis of the results concerning the doctor ends with their additional comments. Specifically, respondents were given space on the questionnaire to write regardomg e-records everything what they want and what had not been raised as an issue. The comments madae by doctors are mainly related to negative innovations in the work, and all of this can be seen as a suggestion that changes in work are indeed possible in order to improve and increase customer satisfaction, both by doctors and by patients. Everything that the doctors had to add on the subject of electronic health records is presented in Table 17

Table 17. Additional comments by doctors

No.	Additional comments of doctors regarding e-records	f
1	Correction solely by IT regarding all errors and eventual shortcomings of the e-records	1
2	It is easierto manuallyprint referralsthan totype them outbecause there area lot of itemsandprintedinstructions. Patients are often harassed due to the shortcomings of the software. They are often rejected if the referrals do not list full names but abbreviations such as KCS, BGD.	1
3	E-cards are nottransparent; there is slowprintingof recipes and instructions. We do not havea program forsick leave(remittances) andjustification. Thepreventionistoo slow in printingfindings (i.e. tablessystematicreview)	1
4	Not all the tertiaryinstitutions are networked, including spa centers. Atstea-tionaryreferralsdoctors cannotindicate the special departmenttowhich the patient isreferred.There is justinternal medicine, and not a sub-specialty (cardiologist, endocrinologist, a dermatologist, oncologist, etc.).	1
5	It is necessarythatphysicians canhave more informationfrom the program. This program serves the Fund exclusively. More consultationsof doc-torsworking in theclinic are necessary	1
6	We shall all go blind	1
7	All the cities should be networked. The problem is that in Belgrade they request a green referral, and our printers print only black-white, therefore, doctors must handwright the referrals	1
8	Paymentof medicines should be separated from pure doctors' work be-causedoctors are trained only to healand notto decide onparticipation.This should be left to economists	1
	Total	**8**

4. CONCLUSION

206 respondents, out of which 56 doctors, participated in a survey of attitudes of health workers to work with newly implemented medical records, to evaluate the same and to highlight their benefits and consider their shortcomings in order to provide suggestions for possible improvements. All of them are employed in the Health Care Center of Pancevo (includes the whole municipality) and work as doctors, conditionally speaking as medical technicians (different profiles) or IT specialists. Almost 90% of the sample were women, which adequately represents the gender structure of the health system of the Health Center. Thesmallestnumber of respondents came from the category 18-25 years and those with less than 1 year of service. Significant number of surveyed health care workers use computers privately too, has not been formally attended some computer course, and estimate work with computers as overall mediocre (to good). When it comes to electronic records, in this research participated a whole range of respondents (in the period of field work research):from those respondents who have worked with them for only two months, to those who have used

them for 1.5 years. The largest number of employees in the Health Care Center of Pancevo had some training following the implementation of e-records, and it lasted for 1 or 2 days. About 40% of them acknowledged that additional education would indeed help. When the findings of health workers are not viewed depending on the workplace, we see that there are more of those who say that the administration is reduced (but the general impression is that this change is perceived as a seesaw, a teeter where sometimes positive and some negative impressions prevail).

Their satisfaction with e-recordsrespondents assessed with an average score of 3.30, and they rate the satisfaction of their colleagues in a very similar way, 3.28, and we can say that their vision had been projected on the environment.

This should be taken into account as it is necessary to examine the perceptions of those who have had a lot of bad attitudes about this novelty and that see only the negative things in the said information system. All this should put restraint on spreading the image of e-records as a bad investment.

Focusing on the answers that were given by the doctors, it can be seen that just over 50% of them have the attitude that work with the e-records is complicated and requires much more time than ordinary medical cards. On the other hand, medical staff, nurses / technicians, midwives in almost 55% of the cases think that administration has been reduced (and 28.8% of them that work is more complex). The study also included 4 information experts. Half of them believe that the administration has been reduced through e-records.

Positive attitudes of doctors are expressed through impressions that work is faster, that there is more visual readability. Mixed attitudes (positive and negative) relate to the fact that work is facilitated for transcript and printing of recipes, but the instructions take longer; they complain that there is no scanner, as well as not enough time to devote to patient. They add that e-records are mainly used for invoicing.

As the main flaw they emphasize slowness in the work, the lack of possibilities for correcting errors after storage, computer downtime, etc. In short, they added that they would like to be able to scan reports of medical specialists, that they would network all health institutions, enable printing of all kinds of instructions, allocations, confirmations – all this by using more quality priners. They go on to claim that it would be desirable to be able to copy the instructions in the next visit, that there is a possibility of generating different types of reports, etc. Compared to the average level of satisfaction of e-records of the entire sample, theirs is lower at 3.07. This is probably because they are in a position to see that there is plenty of room for improvement of information system (better encryptor in health institutions and cities, better visibility, faster printing (even in color), introduction of programs for the sick and generation of different records (such as justification, remittances), etc.

Statistical analysis by t-test, analysis of variance and chi-square gives the possibility to conclude that there is a statistically significant difference in the attitude (feeling) toward e-records depending on the age group, seniority, job, length of use of the information system (ek), orientation on the computer, personal satisfaction by e-records.

Further, when we compared personal satisfaction with different variables, we established a statistically significant difference at different levels of ability to cope with the computer and different impressions of e-records.

The general conclusion of the research would be that the employees in the Health Care Center in Pancevo should be explained all the real possibilities of e-records, those who need it should beprovided additional training, in consultation with management and informat-

ics it should be consideredwhat are the opportunities (financial, technical and otherwise) to improve the system in accordance with the users' needs.

The area of computer application is very wide and every day is increasingly expanding. Every day we are witnessing that new computers can be used to make work faster, to obtain results in a more economical way and more effectively, and to solve problems in different spheres of life and work.

Such huge change in the work processwas introduced in order to facilitate the organization of work and contribution of effectiveness, to speed up the system and medical history, and for easier completing and submitting of forms that should be completed and returned to the RFZO electronically. The information system is designed to enable the generation of a database that would speed up the statistical analysis and function as a single entity that performs integration of business processes and data within the business systems and allows communication with the environment in compliance with safety procedures and data protection. Accelerated workflow and the quality of the work done are set as the ultimate goal.

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