COMPUTER LITERACY OF HEALTH PROFESSIONALS

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Abstract. Healthcare professionals have a key role to play in the introduction, application and use of technology in clinical practice. The lack of technical expertise and technological understanding poses a challenge to the quality of health services and probably to the safety, dignity and quality of life of patients. Experience so far speaks of computer literacy, which is the basis of the implementation of the health information system and varies according to gender, age and years of work experience. Determine whether computer literacy depends on gender, age, and years of service. The research was conducted according to the type of cross-sectional study, in the population of health workers employed at the Health Center in Jagodina and the General Hospital in Ćuprija. Yesterday's sample consisted of 142 respondents. A structured questionnaire was used for data collection, statistical data processing was performed with the computer support of the statistical package for social sciences IBM SPSS Statistics, Version 23 (Statistical Package for Social Sciences). Analysis of variance was used from statistical tests. Results. Sample composed of 78.2% of respondents and 27.2% of respondents; in both groups of respondents, the average achievement on the literacy scale is around 17 points. Age 40 and over is 59%; the first two groups (less than 30 years of age and 30 to 39 years of age) are statistically significantly different from the oldest groups of respondents (F = 4.949, p = 0.003, df = 3). The largest percentage of respondents have a work experience of 10-29 years; younger respondents have more knowledge of computers (F = 7.239, p = 0.000, df = 3). Computer literacy depends on age and years of service.

Keywords: computer literacy, health information system, health professionals

1. Introduction

Health Information System (HIS) is an integrated system for collecting, processing and using health information and knowledge that supports decision-making. It provides the basis for decision-making, increases the productivity and performance of the health system, new ways of managing, organizing and developing an objective system. Effective use of health information in the health system is a quality communication between individuals and institutions, which can only be achieved through the use of information and communication technologies. When lay people talk about the use of information systems in health care, they usually mean the development of electronic medical documentation. However, there are various conditions that are necessary for the development and efficient implementation of the health information system in the health system of a country. In his works, J. Marinković says that the health information system is an integrated communication computer system for the exchange of information in the health care process whose users are all health workers and all users of health care [1]. And any information used for the purpose of making health decisions, whether at the personal, professional, managerial, or decision-making level, is health information [2].

The use of information systems in health services has emerged with the widespread use of information technology and computers in various branches of the medical industry [3]. The use of HIS helps reduce medical errors, costs and paperwork, increases the efficiency and quality of health care, and empowers patients and clinicians [4]. Previous research shows that HIS has significant potential to reduce errors and improve the quality and efficiency of health care [5]. Recent research from the United States shows that the primary care sector in health care is extremely complex [6]. The introduction of information and communication technologies is always expensive, especially in complex systems. Since health belongs to this group, there should be good reasons for the introduction of these technologies, and these reasons are usually strongly related to finances, i.e. rationalization and cost reduction. Healthcare managers need to have developed communication, conceptual, analytical and diagnostic skills. In the last few decades, there have been significant changes in information and communication technologies (fax machines, mobile phones, satellite dishes, voicemail, home computers) that connect to business networks and the Internet [7]. Our experience shows that there are numerous barriers to putting health information systems into practice. The modern concept of health classifies information literacy as health resources and factors that contribute to increasing health potential, while information illiteracy is treated as a health risk or a factor that affects the reduction of health potential. As part of the health information system, it is necessary

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that users have the least satisfactory level of information health literacy, in order to participate in the realization of health care [8]. Research shows that health literacy is a more important indicator of health status than traditional socio-demographic factors such as age, education, occupation, material status, race and nationality [9].

World Health Organization has identified health information literacy as a public health goal for the 21st century [10]. The benefits of e-health are related to the ability to view all documents created in the same hospital, resulting in significant time savings in the waiting room, providing quick access and availability of information. The advantages of using HIS are reflected in a faster approach to the medical history of individual patients, review of some previous recipes, etc. The general acceptance of the HIS is still weak, as older doctors and nurses continue to refuse to use the HIS, but use it in the previous way (writing documents by hand) and are therefore not ready to go through this new HIS training. Also, older doctors and nurses are not skilled in using computers compared to younger medical staff. Although trainings are regularly organized with the aim of instructing health workers in the way the HIS works, there is resistance to its implementation because the oldest medical workers are accustomed to the old system of work in writing. According to health workers in the Republic of Serbia, there is still not enough developed awareness of the benefits of e-health. Therefore, both medical professionals and patients still do not accept all the benefits of this system and are still familiar with the use of the HIS system. Regarding the quality of the current e-health system, material investments in the construction, reconstruction and equipping of hospitals and health centers, doctors and nurses and technicians should invest much more effort and their own efforts in order to improve the functioning of the HIS.

2. Material sand methods

The research was conducted according to the type of cross-sectional study, in the population of health workers employed at the Health Center in Jagodina and the General Hospital in Ćuprija. The sample consisted of 142 respondents. Analysis of variance was used from statistical tests. The value of p <0.05 was taken as the level of statistical significance of the differences.

3. Results

142 respondents participated in the research, 92 (64.8%) of which were employed in the hospital, and 50 (35.2%) were employed in the health center. The sample was selected on the basis of the number of employed health workers in the given institutions, on the basis of which the number of employees from the hospital is twice as high as the number of employees in the health center. The structure of respondents by gender is expected given that the majority of employees in health care institutions are women. Therefore, 78.2% of respondents in this study are not surprised. Two thirds of the respondents are between 30 and 49 years old. The youngest respondents have the least (12.7%), and every fourth respondent is in the category of the oldest. As can be seen, the structure of respondents by

level of education is such that almost half (45%) have a high school education, slightly more than a third (36%) have a college or higher vocational education, and 18% have an academic education.

The results show that the largest number of respondents (more than 60%) have 10 to 29 years of work experience, and the least of them with over 30 years of experience (16.2%). The number of those with less than 10 years of experience is not negligible (22.5%) (Table 1).

Table 1. Socio-demographic characteristics of the respondents

Sociodemographic characteristics	Results (Percentage)	
Gender	Ladies	78.2%
	Male	21.8%
Age	Less than 30	12.7%
	30-39	28.2%
	40-49	34.5%
	Over 50	24.6%
Level of Education	High school	45.1%
	Bachelor	36.6%
	Academic education	18.3%
Years of trails	Less than 10	22.5%
	10-19	32.4%
	20-29	28.9%
	30 and more	16.2%

Table 2. Average achievement on the scale of computer literacy by age and years of work experience

Sociodemographic characteristics	Average score		F	p
Age	Less than 30	18.4	4.949	0.003
	30-39	18.0		
	40-49	16.7		
	Over 50	15.10		
Years of trails	Less than 10	18.69	7.239	0.000
	10-19	17.48		
	20-29	16.20		
	30 and more	14.35		

Observing the results shown in Table 2, it can be noticed that computer literacy decreases with age. The analysis of variance examined whether healthcare employees differ statistically significantly in the degree of computer literacy when compared by age. The data indicate the existence of statistical significance of differences depending on the age of the respondents (F = 4.949, p = 0.003, df = 3). Considering that the years of age are in clear connection with the years of work experience, the statistical significance of the differences in computer literacy between the respondents of different years of work experience was also examined. Here, as in the previous analysis, findings were obtained that support the fact that respondents who have less experience, and therefore are most likely younger, have a higher degree of computer literacy. The analysis of variance examined whether health care employees differ statistically significantly in the level of computer literacy when compared by years of service. The data indicate the existence of statistical significance of

differences depending on years of work experience (F = 7.239, p = 0.000, df = 3). With 99% probability, it can be argued that those who have less experience in this sample have more knowledge about computers.

However, when the level of education and profession of medical staff in this sample is taken into account, the results show that there are no statistically significant differences. Namely, regardless of whether they are nurses, doctors or specialist doctors, there are no differences in terms of computer literacy, although doctors have a slightly higher average score than both specialists and nurses.

4. Discussion

Iliyasu in the results of his research state that age, gender and level of education significantly influenced computer literacy and these differences were statistically significant [11].

Milutinović and a group of authors conducted a study where, as in our study, the majority of respondents were female, because nursing was and still is a predominantly female profession. Gender in the study did not have a significant impact on the attitude of the respondents towards computerization, which completely coincides with our results. On the other hand, this result is in contrast to the results of Sukums and associates who found that male health workers have a more positive attitude towards the use of computers [12]. Their results further indicate that there is no significant difference in attitude towards computers in relation to age, which does not agree with our results. Our results agree with other researchers who in the conclusions of their studies indicate that younger health professionals have more positive attitudes towards the use of computers [13]-[14]-[15].

Research on nurses' attitudes confirms that the level of education is related to attitudes about the use of computers. Which is not the case with our results, which show that there is no statistically significant difference, while the difference exists in relation to the length of service. In contrast, an analysis of the impact of work experience on attitudes toward computer use in a study conducted by Milutinovic et al did not confirm a significant difference in length of service. These results are in agreement with the findings of other researchers [13]-[15]-[16].

The results of Brumini and co-workers also indicate that the variable with a significant impact on the overall score was the level of education. The reason is probably related to information education, because health workers with higher education during their studies had to attend a course in Medical Informatics and acquire knowledge and skills in using computers, as well as learn the importance of using information technology in health [14].

Also, the results of research conducted by Kaja show that significant differences were observed between different age groups. This finding was consistent with the findings of Brodt and Stronge [17]. The findings of this study contradict the results of Sultana [18], who found in her studies that age did not affect attitudes towards the computer in health care, which coincides with our results [15].

Awol et al. in their work state that there is a statistically significant difference for the readiness of health professionals to apply information systems and that it varies depending on work experience, age, educational status [19].

5. Conclusion

Research has shown that computer literacy depends on the age and years of experience of health professionals, and gender has no effect on computer literacy.

Respondents who have several years of work experience and age, while showing a higher level of knowledge of computer literacy show that there is in this group of respondents the will and desire to progress and that age is not an obstacle to further training. In order to reach the expected level, it is necessary to stimulate employees in order to work as much as possible on improving their computer skills.

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