Trakia Journal of Sciences, Vol. 10, Suppl. 2, 95-97, 2012
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Available online at:
http://www.uni-sz.bg

ISSN 1313-7050 (print)
ISSN 1313-3551 (online)

E-HEALTH IMPLEMENTATION – READINESS OF BULGARIAN OPHTHALMOLOGISTS

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ABSTRACT

PURPOSE: E-health can be defined as the use of information and telecommunications technologies (ICT) to provide or support a group of activities related to health care. With the aging of the population and the increase demand for ophthalmological consultation, E-ophthalmology as a subsection of E-health can be used to compensate the lack of specialists, reduce traveling distance, and decrease expenses. We aim assess the readiness of ophthalmologist for e-health implementation. METHODS: A written questionnaire was personally distributed to 21 randomly selected ophthalmologists in the Stara Zagora region. RESULTS: While most ophthalmologist rate their computer skills as excellent or above average and are willing to participate in computer improvement courses, they think that e-health would not benefit them or their patients. CONCLUSIONS: E-ophthalmology is a new and very fast developing part of ophthalmology. While it offers many benefits it requires a well prepared and trained medical staff to make full use of them. The results from the current article suggest that while a larger part of the ophthalmologist are at least partly prepared, additional research is needed on the subject.

Key words: Tele-ophthalmology, screening

INTRODUCTION

E-health can be defined as the use of information and telecommunications technologies (ICT) to provide or support a group of activities related to health care. (1) With the aging of the population and the increase demand for ophthalmological consultation, E-ophthalmology as a subsection of E-health can be used to compensate the lack of specialists, reduce traveling distance, and decrease expenses. (2)

AIMS AND TASKS

To assess the readiness of ophthalmologist for e-health implementation.

MATERIALS AND METHODS

A written questionnaire was personally distributed to 21 randomly selected ophthalmologists in the Stara Zagora region. Standard statistical analysis was used.

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RESULTS

E-ophthalmology is a new and very fast developing part of ophthalmology. It can offer many benefits if properly implemented and open a lot on new opportunities for developing countries like Bulgaria. While it can improve healthcare drastically it requires a well prepared and trained medical staff to make full use of its abilities. (3) Developments in the field of telemedicine such as the mobile based ophthalmoscopy (4) and teleophthalmology with optical coherence tomography (5) can be very useful for rural areas and those lacking appropriate specialist. Some services such as teleconsultation reduce the financial resources strain on the health care system, making e-ophthalmology very cost-effective. (6) Most studies on the subject show that e-health systems are feasible (7) and do not sacrifice accuracy or reliability of the diagnostic process (8, 9), in fact increasing both speed and accuracy (10, 11) Tele-ophthalmology shows great promise for improving patient care and increasing access to specialty care not available in under-served areas. In developing countries tele-ophthalmology may be a cost-effective method by which richer countries can

assist them. (12) E-ophthalmology can also play a role in screening of glaucoma (13, 14), diabetic retinopathy. (15, 16, 17) and retinopathy of prematurity (18, 19). Another aspect of e-healh is the electronic storage of patient records. The need for high visualization in ophthalmology makes such storage very useful and would create long-term benefits for chronic diseases such as glaucoma and macular degeneration. (20, 21)

The average age of the participants is around 40 years with a slight dominance of the male gender. **[Table 1]** There is almost equal separation by workplace, with representatives form University hospitals, regional hospitals, private hospitals and private practices. The larger part of the interviewed are already specialist and have at least 10 years of work experience.

Table 1.

Age	- 25-35 y.o.	5 (23.8%)
	- 35-45 y.o.	6 (28.6%)
	- 45-55 y.o.	7 (33.3%)
	- >55 y.o.	3 (14.3%)
Gender	- Male	12 (57.1%)
	- Female	9 (42.9%)
Workplace	- University hospital	4 (19%)
	- Regional hospital	6 (28.6%)
	- Private hospital	5 (23.8%)
	- Private practice	6 (28.6%)
Work experience	- < 5 y.o.	5 (23.8%)
	- 5-10 y.o.	3 (14.3%)
	- 10-20 y.o.	6 (28.6%)
	- 20- 30 y.o.	4 (19%)
	- > 30 y.o.	3 (14.3%)
You currently are:	- specialist	16 (76.2%)
	- currently specializing	5 (23.8%)
How would you rate your computer skills and knowledge?	- excellent	6 (28.6%)
	- above average	7 (33.3%)
	- average	3 (14.3%)
	- below average	4 (19%)
	- insufficient	1 (4.8%)
Would you attend computer literacy improvement courses?	-yes	11 (52.4%)
	-no	10 (47.6%)
Do you think you would benefit form e-ophthalmology in any way?	-yes	9 (42.9%)
	-no	12 (57.1%)
Do you think your patients would benefit from e-ophthalmology in any way?	-yes	8 (38%)
	-no	13 (62%)

More than half of the participants appraise their computer skills as excellent or above average. The younger ophthalmologist and those still specializing, while lacking working experience, rate their computer skills higher and are more open to additional courses for improvement. Those results correspond with a positive attitude toward e-ophthalmology and its potential benefits for the patient as well as the physician. On the other hand the older generation ophthalmologist, while experienced and able, have an inferior level of computer skill and refuse to attend improvement courses. This explains why they see e-ophthalmology usage and implementation as non-beneficial.

DISCUSSION AND CONCLUSION

The results from the survey suggest that while a large part of the ophthalmologist are at least partly prepared, there still are a lot of ophthalmologist who are unconvinced of the benefits of e-health. Additional information and

examples should be presented to show the advantages of e-health so they can improve the way it is perceived. Computer literacy improvement courses are required and should become an integral part of physicians' training for e-health implementation.

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