ATTITUDES TOWARDS EHEALTH DURING THE COVID-19 PANDEMIC: UNTANGLING THE GORDIAN KNOT IN GREECE, BULGARIA AND ROMANIA IN HEALTHCARE PROFESSIONALS AND STUDENTS?

Vaitsa Giannouli[1], Stanislava Stoyanova[2], Marius Drugas[3] & Desislava Ivanova[2]

[1]School of Psychology, University of Western Macedonia, Florina, Greece
[2]Department of Psychology, South-West University "Neofit Rilski", Blagoevgrad, Bulgaria
[3]Department of Psychology, University of Oradea, Oradea, Romania

SUMMARY

Background: *Until recent times, healthcare specialists lagged behind other fields in terms of computer networks and software usage, partly because they were uncomfortable with information and communication technologies. The rapid development of personal wearables, their easier connections with smartphones and other similar devices, and the possibilities of online or cloud storage of personal medical data led to improvements of eHealth services in terms of ease of access and reduced costs of delivery.*

Subjects and methods: *The current research aimed to fill a research gap regarding attitudes towards eHealth during the COVID-19 pandemic in three Balkan countries: Greece, Bulgaria, and Romania. A total number of 775 adult participants (healthcare professionals and students in the field) were contacted in the winter of 2020 and asked to complete a questionnaire regarding their eHealth attitudes.*

Results: *The Greek participants had the most negative attitudes toward eHealth services. This may be due to forced use of eHealth applications during the pandemic crisis and the need for mastering the necessary technical skills to use them.*

Conclusions: *It should be noted that in the scientific literature no research is found on this topic, therefore it is the first study aimed to assessing and comparing attitudes towards eHealth in these countries.*

Key words: *attitudes towards eHealth services - Balkan region - COVID-19 pandemic*

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INTRODUCTION

Attitudes towards the use and acceptance of eHealth is a topic of accelerating importance as digital health-care systems are increasingly necessary in contact tracing and warning applications that may help reduce the spread of the COVID-19 virus (Currie et al. 2015, Kouroubali et al. 2020). The digital migration is also critical in other existing healthcare practices for which technology helps to overcome problems in the provision of healthcare services, by decreasing or ceasing the need for patients and health professionals to travel and attend or deliver in-person appointments (Kouroubali et al. 2020, Stellefson et al. 2011). Especially during COVID-19, there is a growing theoretical acceptance that we have entered a new era in healthcare delivery and eHealth literacy is becoming ever more important not only in specific diseases, but also in primary care for the general population (Brørs et al. 2020, Thulesius 2020).

Although healthcare requires accurate record kee-ping (Black et al. 2011), until recently the professionals working in this field were uncomfortable and not profi-cient with information and communication technologies, and the use of computers and networking lagged behind when compared to other public services (Kart et al. 2007). Recent developments of eHealth systems offer easier access to better quality healthcare and reduce the general costs of delivery of medical services. These were made possible by the rapid development of wear-able devices and cloud storage opportunities, so almost real-time health information can be gathered from patients at home (Althebyan et al. 2016).

Nowadays, a growing percent of different parts of the population, including elderly people, are not only using smartphones for calling and texting someone, but are learning the additional functionalities of the device. Social media is spreading, and the recent COVID-19 pandemic accelerated its use for eHealth purposes, even if shy attempts were made before (Weaver et al. 2012).

The present study

This study attempts to fill a research gap regarding attitudes and opinions towards eHealth during COVID-19 by replicating a previous study focusing only on the Greek population (Giannouli & Hyphantis 2017), and refocusing now on the question 'What are the attitudes of healthcare professionals and students towards eHealth in three little investigated Balkan countries (Greece, Bulgaria, Romania) during the COVID-19 pandemic where the levels of eHealth applications are still low?'.

The scientific literature on the attitudes towards eHealth attributes in these countries is scarce. It has been found that Bulgarian medical doctors, patients, and especially pharmacists have mainly positive attitudes towards electronic medical prescription and towards a common medical database (Galeva 2019). Romanian user acceptance of eHealth services (such as an integrated unique medical information system) is low (Mihalas et al. 2009), but legislation regulating the use of Romanian national electronic health records system is considered as adequate (Ćwiklicki et al. 2020). In Greek healthcare system, electronic prescription is considered as useful for improving administrative control and reducing costs (Pangalos et al. 2013), but it has been stated that the Greek attitudes towards eHealth are more negative than in other countries (Giannouli & Hyphantis 2017). These findings give some reasons to expect some ambiguous attitudes towards eHealth in these three countries, because of realizing its advantages and disadvantages. Besides, we expect a sustainable trend of more negative Greek attitudes towards eHealth during COVID-19 pandemic than in the other countries, based on the findings by Giannouli and Hyphantis (2017). Given the rapid shift towards eHealth use during COVID-19 (Guitton 2021), this may be leaving behind those without digital resources and exacerbating inequalities due to negative personal attitudes (Khilani et al. 2020). The urge to develop the necessary skills for working with eHealth digital systems in a short period, as well as some technical difficulties to master eHealth applications, and to provide eHealth services may worsen the attitudes towards eHealth. Acquiring experience and familiarity with eHealth applications that provide rapidly useful information accessible everywhere and quickly renewed may contribute to more favorable attitudes towards eHealth during the COVID-19 pandemic.

SUBJECTS AND METHODS

The study was approved by the Ethics Committee of the University of Western Macedonia, and it was conducted according to the Helsinki Declaration of 1975 (World Medical Association, Inc. 2008). All the participants gave their written informed consent before participating in the study.

Subjects

A total number of 775 adult participants (562 females) were almost equally distributed among the three countries ($N_{Greece} = 265$, $N_{Bulgaria} = 252$, $N_{Romania} = 258$) and presented similar demographics regarding their gender distribution [$\chi^2(2) = 9.250$, $p=0.882$]. They consisted of 266 healthcare professional non-students, and the rest were healthcare university graduate students in the fields of nursing, psychology, medicine, and physiotherapy.

Their mean age was 30.00 years (SD = 1.10) in Greece, 32.2 years (SD = 11.6) in Bulgaria, and 29.4 years (SD = 11.7) in Romania. Their mean work experience was 2.5 years in Greece with 1.2 years average experience in health care (Greece), 2.8 years in Bulgaria with 1.5 years average experience in health care (Bulgaria), and 1.9 years with 1.2 years average experience in health care (Romania).

They were contacted during the winter of 2020 and asked to complete a questionnaire regarding their eHealth attitudes along with a detailed demographics questionnaire in their native language. The participants were selected based on two inclusion criteria: 1) participants were native speakers living and/or studying in one of the three countries, 2) were over 18 years old, and 3) working or studying in the area of healthcare.

Measure and statistical analyses

The participants' attitudes towards eHealth were measured with a modified 4-point Likert scale (from 1 = strongly disagree to 4 = strongly agree) version of the 'Efficiency to ICT in care' Scale of the Information Technology Attitude Scales for Health (ITASH) (see answers for each question in Table 1) by Ward et al. (2009). Although the initial ITASH focused on the identification of the attitude of health sciences professionals and students to the use of technologies, the selected 16 items that were chosen and presented in this study were aimed to unravel the attitudes of laypeople. The participants had to answer in a paper-and-pencil way or online, with a total score ranging from a minimum of 16 points to a maximum of 64 points. Cronbach's alpha reliability coefficients were 0.875 in Bulgaria, 0.721 in Romania, and 0.892 in Greece. A one-way ANOVA (examining the effect of the country of origin) was performed for all questions by means of SPSS 20.

RESULTS

For all questions, there were statistically significant differences between the three countries on their total scores when all questions were answered ($F(2,674) = 25.711$, $p<0.001$, eta squared = 0.08).

DISCUSSION

The majority of Greek participants had the most negative attitudes towards eHealth attributes considering that engaging in eHealth would not improve patient care as quality, productivity, velocity, reliability or confidentiality of the service, possibly because of the forced use of eHealth applications due to the pandemic, the perceived abundance of eHealth devices and the need for mastering the necessary technical skills to use them.

Table 1. Means and SDs among three countries for all questions regarding eHealth

Questionnaire	Country	Mean	SD	p
Total Attitudes Score	Bulgaria	40.90	8.24	<0.001
	Greece	37.58	4.10	
	Romania	42.39	6.53	
Engaging in eHealth will improve patient/client health.	Bulgaria	3.01	0.801	<0.001
	Greece	1.96	0.958	
	Romania	3.18	0.779	
The information from electronic health records will help give better care to patients.	Bulgaria	3.08	0.857	<0.001
	Greece	1.90	0.914	
	Romania	3.33	0.745	
Using Information and Communication Technologies will make the communication with health professionals faster.	Bulgaria	3.12	0.873	<0.001
	Greece	2.06	0.874	
	Romania	3.59	0.723	
I worry that the use of eHealth applications in healthcare delivery will undermine patient confidentiality.	Bulgaria	2.43	0.892	<0.001
	Greece	2.54	0.764	
	Romania	2.31	1.031	
I believe that eHealth will help the delivery of individualized care.	Bulgaria	2.94	0.833	<0.001
	Greece	1.52	0.863	
	Romania	3.28	0.795	
Using Information and Communication Technologies will make communication with health professionals less reliable.	Bulgaria	2.20	0.888	<0.001
	Greece	2.60	0.679	
	Romania	2.16	1.008	
The cost of implementing eHealth will be better used to employ more staff.	Bulgaria	2.49	0.938	<0.001
	Greece	2.68	0.701	
	Romania	2.74	1.000	
The time that a doctor spends with patients will reduce because of the time that they spend working with eHealth tools.	Bulgaria	2.52	0.934	<0.001
	Greece	2.82	0.752	
	Romania	3.06	0.942	
I think we are in danger of letting eHealth take over traditional health practices.	Bulgaria	2.27	0.887	<0.001
	Greece	2.80	0.909	
	Romania	2.06	1.051	
eHealth will help to improve the way healthcare is delivered.	Bulgaria	2.90	0.848	<0.001
	Greece	1.79	1.050	
	Romania	3.03	0.866	
The speed with which healthcare experts are able to access information using eHealth applications will help them give better care to patients.	Bulgaria	2.97	0.903	<0.001
	Greece	1.77	0.871	
	Romania	3.20	0.862	
Time spent on eHealth will be out of proportion to its benefits.	Bulgaria	2.38	0.935	<0.001
	Greece	2.97	0.937	
	Romania	2.380	0.932	
Use of electronic health records will be more of a hindrance than a help to patient care.	Bulgaria	2.08	0.907	<0.001
	Greece	2.61	0.875	
	Romania	1.96	0.941	
I feel that there are too many eHealth devices around now.	Bulgaria	2.12	0.850	<0.001
	Greece	2.73	0.738	
	Romania	2.05	0.959	
Engaging in eHealth will make healthcare staff less productive.	Bulgaria	2.25	0.959	<0.001
	Greece	2.51	0.703	
	Romania	2.10	0.991	
Engaging in eHealth will be more trouble than it will worth.	Bulgaria	2.13	0.956	<0.001
	Greece	2.79	0.771	
	Romania	1.96	0.978	

The most unfavorable Greek attitudes towards eHealth seem to be due also to Greeks' higher engagement with traditional health practices that may be due to higher collectivistic index – 35 for Greece, than for Bulgaria and Romania – 30 for both countries ("Hofstede Insights", n.d.), respectively higher appreciation of the collectivistic value "tradition" (Schwartz 1990, p.144) in Greece.

Most Bulgarian and Romanian participants indicated higher positive attitudes concerning eHealth services compared to the Greek sample. In addition to that, Bulgarian healthcare specialists approved the cost of implementing eHealth and did not attribute any reduced time that the doctors spent with their patients to the time required for working with eHealth tools when compared with the other two countries. The participating Romanian healthcare specialists had the most positive attitudes towards eHealth considering the facilitated delivery of individualized care, faster communication, and the quick access to information as main advantages of eHealth.

CONCLUSION

This was the first study to compare eHealth attitudes among healthcare professionals in three Balkan countries during the COVID-19 pandemic. Cross-cultural comparisons allow revealing the advantages and disadvantages of some eHealth practices and optimizing eHealth services. Most healthcare professionals in ten other countries consider eHealth as useful and have mainly positive attitudes towards it (Nuq 2012). Future research should further clarify the possible social and cultural reasons for the abovementioned differences. For additional exploration of the stated questions in the material, further research is required.

Contribution of individual authors:

Vaitsa Giannouli: responsible for the data collection in Greece; analyzed the data; drafted the first version of the manuscript; reviewed draft versions of the manuscript and approved the final manuscript.

Stanislava Stoyanova: responsible for the data collection in Bulgaria; analyzed the data; provided extensive feedback to draft versions of the manuscripts; reviewed draft versions of the manuscript and approved the final manuscript.

Marius Drugas: responsible for data collection in Romania; analyzed the data; provided extensive feedback to draft versions of the manuscripts; reviewed draft versions of the manuscript and approved the final manuscript.

Desislava Ivanova: responsible for the data collection in Bulgaria; analyzed the data; provided extensive feedback to draft versions of the manuscripts; reviewed draft versions of the manuscript and approved the final manuscript.

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Correspondence:

Adjunct Professor Vaitsa Giannouli, MD, PhD
School of Psychology, University of Western Macedonia
3rd km National Road Florinas - Nikis 21, 53100 Florina, Greece
E-mail: giannouliv@hotmail.com