Chinese Medical Students' Acceptance and Use of e-Health Services

Jingying Yao[a], Chumin Ji[a], Zhenglong Lin[a], Xinru Jia[a], Xiaona Shen[a], Luchang Wen[a], Yun Jiang[b], Rumei Yang[a]

[a] Nanjing Medical University School of Nursing, Nanjing, Jiangsu, China,
[b] University of Michigan School of Nursing, Ann Arbor, Michigan, USA

Abstract

A web-based survey was conducted among 238 Chinse medical students to examine their acceptance and use of e-Health services. Chinese medical students are found to have limited experience and low satisfaction with current e-Health services, which indicates an urgent need to improve e-Health practice training based on a consumer-centered model of health care.

Keywords:

e-Health, Technology acceptance, Chinese Medical Students

Introduction

With the arrival of the era of big data and the practice of intelligent hospitals, electronic healthcare access and delivery (aka. e-Health) has been increasingly adopted, reshaping the traditional face-to-face only health care delivery model. Compared to the concept of telemedicine that usually refers to the electronic delivery of clinical services to remote patients, e-Health has a broad meaning including not only providing long-distance health care, but also highlighting a consumer-centered model of health care with aims to increase healthcare efficiency, health care encouragement, and patient empowerment.

There is an irresistible trend for consumers to seek online healthcare information and services. Using fewer resources to provide high-quality services to more clients, e-Health aims to reduce the pressure on the health care system, and it's particularly prominent during COVID-19 pandemics. However, e-Health care can be influenced by various conditions, such as the accuracy of online information, technical reliability and infrastructure, and engagement and training of healthcare professionals.

New generation of medical students are expected to play a significant role in the promotion and provision of high-quality e-Health services. In order to optimize the adoption of e-Health services, it is important to fully understand medical students' acceptance and use of e-Health use. Specifically this study aimed to examine: 1) whether medical students used e-Health; 2) for what purposes and reasons medical student used the e-Health; and 3) how medical students satisfied with current e-Health services?

Methods

Data

We conducted a web-based survey with 238 medical students from Medical Universities located in the east and south of China. A majority of participants were female (124, 52.1%), in their junior and senior years (189, 79.4%) with mean age of 20.23 years (SD=0.92, range=18-24). Main survey questions included whether participants used e-Health services in the past year, reasons for e-Health use, and how they were satisfied with e-Health services.

Analysis

Descriptive statistics were used to summarize sample and main variables. Comparisons across groups (e-Health users vs. non-users) were performed using analysis of variance (ANOVA) and chi-square test.

Results

E-Health use

Approximately 60.9% (n=145) of participant students used e-Health services in the past year. Females or juniors/seniors were more likely to use these services than males or freshmen/sophomores (see *Table 1*). Age was not associated with e-Health use (*p*=.508).

Purposes of e-Health use

As shown in *Table 2*, the majority of participant students (86.1%) used e-Health to look for health or medical information in the past year, particularly for the information of COVID-19 (81.1%). They also used e-Health to make medical appointments with their healthcare providers (73.5%). A slightly less than half of students used e-Health to access lab test results (48.7%) or track health care cost and billing (43.3%). About one-third students used e-Health to purchase health products such as vitamins, or communicate with their healthcare providers using email or other online methods.

Satisfaction with e-Health services

The majority of participant students (87.8%) were confident in navigating e-Health services (*Table 3*). Yet, 76.9% of the students were frustrated in finding the information they want online. Comparing to traditional in-person healthcare services,

about one-third students expressed they were more satisfied with or preferred e-Health services. Less than half of students thought e-Health services were worthy trying and would miss e-Health services if these services were not provided anymore.

Table 1– E-Health Use in Medical Students (N=238)

Demographic factors	e-Health Use		p
	No (93)	Yes (145)	
Year of Study			.010
Freshman/ Sophomore	27(29.0%)	22(15.2%)	
Junior/Senior	66(71.0%)	123(84.8%)	
Age (years)			.508
⩽20	57(61.3%)	95(65.5%)	
>20	36(38.7%)	50(34.5%)	
Gender			.002
Male	56(60.2%)	58(40.0%)	
Female	37(39.8%)	87(60.0%)	

Table 2– Purposes of e-Health Use by Medical Students

Purpose	N (%)
Looked for health or medical information	205 (86.1)
Looked for COVID-19 information	193 (81.1)
Made appointments with a provider	175 (73.5)
Looked up lab test results	116 (48.7)
Tracked health care cost and billing	103 (43.3)
Bought medication or vitamins online	90 (37.8)
Communicated with a healthcare provider	90 (37.8)
Other	123 (51.7)

Table 3– Medical Students' Satisfaction with e-Health

	N (%)
Felt confident in navigating e-Health services	209 (87.8)
Felt frustrated to get information	183 (76.9)
Took a lot of effort to get information	136 (57.1)
Compared with traditional in-person healthcare services:	
I am more satisfied with e-Health services	80 (33.6)
I prefer e-Health services	75 (31.5)
e-Health services are a worthy trying	103 (43.3)
I would miss it if there is no e-Health	107 (45.0)

Discussion

This study explored Chinese medical students' acceptance and use of e-Health services. We found that about two-third students used e-Heath services in the past year. Significantly more junior and senior students used e-Health, which may be because these students had started their clinical rotations and then had more opportunities to access e-Health. We also found that female students were more likely to use e-Health. This finding is congruent with literature that female students were more likely to looking for health information online [1] (Escoffery, 2018). Although China's health policies highlight the

importance of implementing e-health solutions for the increasing burden of chronic disease management, current e-health services seemed to be commonly limited to online personal health information searching, online medical appointment or payment. Higher level of e-health services such as medical consultation or electronic communication with healthcare providers were still less commonly used. Many Chinese medical students expressed their confidence in navigating e-Health services, however; they also got frustrated to obtain the information they wanted online, which may be because there lack trustful online information sources. E-Health in China has just started to emerge, and online health information is often presented in an unprofessional way, and sometimes even in a contradictory way, and thus, it is often difficult for patients to determine which one is accurate. At current stage, medical students' e-Health service use experience presented to be limited and their satisfaction level seemed to be low, compared to the use of traditional in-person healthcare services.

Conclusions

This study indicated that Chinese medical students may not receive sufficient exposure or training in the promotion and provision of e-Health services. As medical students are trained to be the main healthcare providers in medical practice, it is important to integrate e-Health practice training in the medical curriculum, based on the consumer-centered model of health care, to prepare healthcare providers to build strong partnership with patients and their families, to understand patients' health care needs and preferences, and thus to improve the quality of patient care.

Acknowledgements

References

[1]   C. Escoffery, Gender similarities and differences for e-Health behaviors among US adults. *Telemedicine and e-Health* **24** (2018), 335-343.

Address for correspondence

Rumei Yang: rumeiyang@njum.edu.cn
Yun Jiang: jiangyu@umich.edu