Assessment of Health Information Technology Knowledge, Attitude, and Practice among Healthcare Activists in Tehran Hospitals

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Abstract

Background: To encourage students and professionals to use health information technology (HIT), an awareness of their perceptions of various aspects of using this facility is essential. The current study aimed to assess HIT knowledge, attitude, and practice among health care professionals and students in teaching hospitals in Iran.

Methods: This case study survey was conducted on 250 staffs of 5 teaching hospitals assigned into three subgroups of medical doctors (n = 70), medical students (n = 46), and health record staff (n = 134) in Tehran, Iran in 2016. To assess the subject's knowledge, attitude, and practice of health information technology, a pretested self-administered questionnaire was given to participants consisted of three sections of "baseline general characteristics", "knowledge categories", and "attitude and practice" categories.

Results: A total of 28.1% responders had a good level of knowledge towards computer science, while poor level of knowledge was revealed in 38.6%. Also, 40.4% had good attitude and practice habits, whereas 25.4% exhibited poor attitude and practice. Good knowledge was found in 15.6%, 35.0%, and 32.3% and poor knowledge was also observed in 46.9%, 25.0%, and 38.7% of doctors, students, and staff, respectively (p = 0.309). Regarding attitude and practice habits, 31.2% of doctors, 50.0% of students, and 42.0% of staff had good attitude and practice habits, while poor attitude and practice habits was revealed in 25.4%, 31.2%, and 5.0%, respectively (p = 0.168). Overall, the level of knowledge was positively associated with the score of attitude and practice (r = 0.853, p < 0.001) so higher knowledge level was related to higher score of attitude and practice.

Conclusion: knowledge and practice of HIT among doctors, students and staff were low. Our university can establish a comprehensive program to improve their knowledge and information to application and practice of HIT.

1. Introduction

Health information technology (HIT) includes a variety of information and communication technologies which are used to collect, transmit, display, or store the patient data (1). This concept covers wide range of products, technologies, and services such as remote and mobile health technology, cloud-based services, medical devices, telemonitoring tools, and assistant and sensor technologies (2). Improve the quality, efficiency, outcomes, patient safety and reduce the cost of healthcare are the potential of HIT (3).

Application of HIT provide health information accessibility by patients, health care providers, insurance companies, and other government agencies and reduce medical errors, costs, and paperwork and increase efficiency, quality of health care, and empowerment of patients and clinicians (4). For reach of these advantages, HIT users' acceptance is one of the most important factors (5).Nevertheless, in most countries, acceptation of HIT is very low (3). Higher intuition of physicians into HIT cause hospital managers improve the HIT implementation process and increase practice of HIT (6).

In Iran as a developing country, less than half of the students know different aspects of the benefits of

information technology in research and training and very few of them apply these benefits as educational aids (7, 8). To encourage students to use information technology in all education and research aspects, an awareness of their perceptions of various aspects of using this facility is essential, however little is known about the perception and practice patterns of students and to our knowledge there are no published reports on the knowledge and practice patterns of information technology among health care professionals in Iran. Hence, the current study aimed to assess HIT knowledge and practice among health care professionals and students in a teaching hospital in Iran.

Survey of knowledge and practice of information technology was conducted among health care professionals and students in Ile-Ife, Nigeria by Bello in 2004 (9), And among health workers in Addis Ababa hospitals, Ethiopia by Mohammed et al. (10) Gour & Srivastava have surveyed knowledge of computer among healthcare professionals of India (11).Perspective of learner into role of information & communication technology in higher education screened by Strivastava et al. in 2014 (12). Glinkowski, Pawlowska and Kozlowska have surveyed perception and knowledge of telehealth and telenursing among university students of nursing in Poland (13), and Butali el al. were investigated the use of information technology among dental students and resident doctors (14).

2. Materials and Methods

This case study survey was conducted on both medical students who had completed at least two academic semesters and also on healthcare professionals in various academic levels working in 5 referral teaching hospital in Tehran, Iran in 2016. The subjects included 250 hospital staff assigned into three subgroups of medical doctors (n = 70), medical students (n = 46), and health record staff (n = 134). The institutional ethics committee approved the study protocols. After describing the operational details of the project to participants, informed consent was obtained from all of them. To assess the subject's knowledge and practice of information technology, a pretested self-administered questionnaire was given to participants consisted of three sections of "baseline general characteristics", "knowledge categories", and "attitude and practice" categories. The sections of knowledge information and attitude and practice information consisted of 19 and 16 questions, respectively that scaled ordinarily as "good, fair, and poor". For obtaining knowledge level towards information technology, the knowledge was scaled

as higher than 80% (as good knowledge), between 60% and 79% (as fair knowledge), and less than 60% (as poor knowledge). Also, for determining attitude and practice state, the level was scaled as higher than 60% (as good knowledge), between 50% and 59% (as fair knowledge), and less than 50% (as poor knowledge). The reliability of the questionnaire was determined by the researchers achieving an acceptable reliability with a cronbach alpha 0.83. Also, content validity was determined by a nominal group of five experts using professional judgment obtaining a validity level of 0.85.

For statistical analysis, results were presented as mean ± standard deviation (SD).Categorical variables were compared using chi-square test and Continuous variables were compared using T test. The statistical software SPSS version 21.0 for windows (SPSS Inc.) was used for the statistical analysis. P values of 0.05 or less were considered statistically significant.

3. Results

The response rate to the questions was 91.2% (228 out of 250) including 64 doctors, 40 students, and 124 staff. The overall age of subjects ranged 23 to 56 years that 132 were male and 96 were female. The average age of doctors, students, and staff was 36.61 ± 4.44 years, 24.40 ± 2.56 years, and 32.41 ± 4.89 years with a significant difference across them (p=0.016). Regarding gender distribution, the frequency of male gender was 81.3%, 55.0%, and 38.7%, respectively with a significant difference (p<0.001). Also, 87.5% of doctors, 25.0% of students, and 64.5% of staff were married (p<0.001). Regarding experience of computer training, 14 doctors (43.8%), 15 students (75.0%), and 43 staff (69.4%) had history of previous different forms of computer training. Among respondents, 76.3% owned a computer. A total of 28.1% responders had a good level of knowledge towards computer science, while poor level of knowledge was revealed in 38.6%. Also, 40.4% had good attitude and practice habits, whereas 25.4% exhibited poor attitude and practice.

As shown in table 1, there was no difference in the level of knowledge towards information technology between doctors, students, and staff so good knowledge was found in 15.6%, 35.0%, and 32.3% and poor knowledge was also observed in 46.9%, 25.0%, and 38.7%, respectively (p=0.309). Regarding attitude and practice habits, 31.2% of doctors, 50.0% of students, and 42.0% of staff had good attitude and practice habits, while poor attitude and practice habits was revealed in 25.4%, 31.2%, and 5.0%, respectively (p=0.168).

Table 1: Knowledge, attitude and practice habits in doctors, students and health recorder staff

Group		Total (n = 228)	Doctors (n = 64)	Students (n = 40)	Staff (n = 124)	P-value
Knowledge						0.309
	Good	64 (28.1)	10 (15.6)	14 (35.0)	40 (32.3)	
	Fair	76 (33.3)	24 (37.5)	16 (40.0)	36 (29.0)	
	Poor	88 (38.6)	30 (46.9)	10 (25.0)	48 (38.7)	
Attitude and Practice						0.168
	Good	92 (40.4)	20 (31.2)	20 (50.0)	52 (42.0)	
	Fair	78 (34.2)	24 (37.8)	18 (45.0)	36 (29.0)	
	Poor	58 (25.4)	20 (31.2)	2 (5.0)	36 (29.0)	

As shown in figures 1-3 overall, the level of knowledge was positively associated with the score of attitude and practice (r=0.853, p<0.001) so higher knowledge level was related to higher score of attitude and practice. This direct association was also found in three subgroups of doctors (r=0.816, p<0.001), students (r=0.784, p<0.001), and staff (r=0.888, p<0.001).
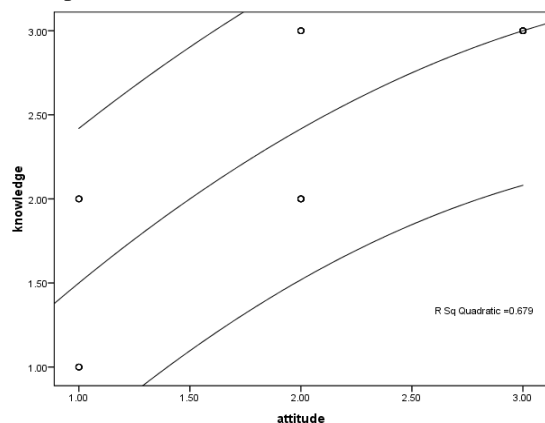

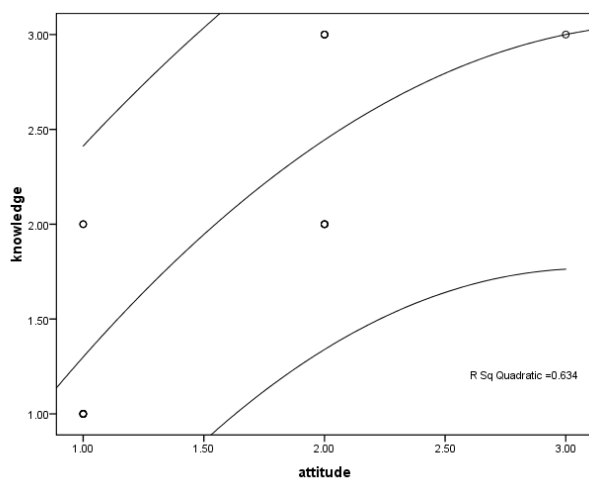Figure 1: Association between knowledge and attitude in doctors

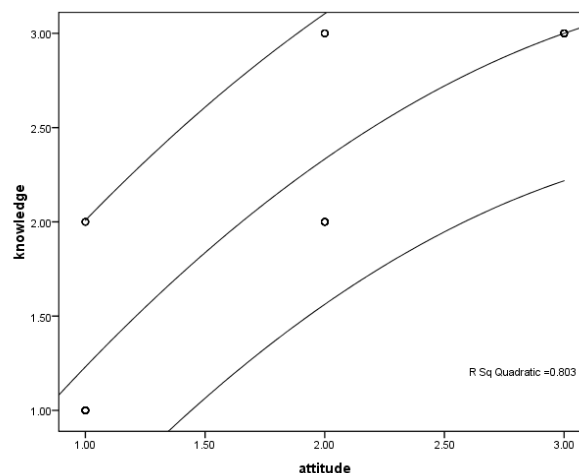Figure 2: Association between knowledge and attitude in students

Figure 3: Association between knowledge and attitude in staff

4. Discussion

Our study had some important points. First, the experience of computer training was considerably different across the three groups of doctors, students, and staff so this training was more revealed in students followed by staff and doctors probably due to more ample opportunities for students and staff for participating computer training, and also occupational requires to learn computer skills in these two subgroups while students need to this skills because of the necessity for searching educational and research requirements and staff need to the computer skills because of the necessity for Administrative activities such as data entry and management.

In total, computer possession and practice among health care professionals and students were low. Despite most of respondents owned a computer, a few number of subjects in three subgroups had acceptable knowledge and practice habits. This is similar to the findings in similar studies (9, 10). Bello et al. (9) found that only 18.9% of professionals and medical students had a good knowledge of computer

while 58.8% had average knowledge and 22.3% showed poor knowledge. Mohammed et al. (10) discovered that only 33.7% of the health workers had an adequate knowledge of computer. In contrast to our findings, Gour and Srivastava (11) reported that 57.91% of health professionals were knowledgeable about computer. Glinkowski, Pawlowska and Kozlowska found that definition of telemedicine was identified by 82% of nursing students in Poland. Among our medical student population, 32.3% demonstrated good knowledge while 50% showed good practice patterns, which is in agreement with the findings of other (9, 10, 14). In overall, the level of knowledge and attitude should be higher than that obtained in our survey.

5. Conclusion

Although the practice and knowledge of health information technology among a number of doctors, students and staff was good, nevertheless generally rate of technology knowledge and practice were found to be poor. This can be due to lack of structured training and computer accessibility. The university must provide computer access for doctors, students and staff. Also by reinforcement of educational infrastructures, provide the possibility of increasing knowledge of health information technology among doctors, students and staffs.

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