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Attitudes of patients towards digital information retrieval by their physician at point of care in an ambulatory setting

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ABSTRACT

Background: While the access to information through digital resources is widely available for physicians, concerns are posed about the use of digital devices for information retrieval at the point of care. This use of digital devices among practicing physicians in the community setting is not well studied, particularly from the patient's perspective.

Aim: The aim of this study is to assess the prevalence of use of digital devices by physicians in the community setting and attitude of patients towards the usage of digital devices by the physician to retrieve information at the point of care during the clinical encounter.

Design and settings: This is a cross-sectional study among 385 patients who visited pharmacies to dispense a recent (2 weeks) prescription by their physician.

Material and methods: Patients who presented at a random set of pharmacies to buy medications prescribed in a recent clinical visit were approached to fill a paper-based questionnaire. Survey items included patient demographics and patients' attitude towards their physician's usage of digital devices using a Likert scale rating.

Results: This study shows that around one quarter of physicians use digital devices at the point of care. About 40% of patients are bothered by a physician who uses digital devices to retrieve information during the clinical encounter. Trusting the competence of physicians using digital devices at the point of care for retrieving information is positively correlated with being less bothered. Almost half (50.6%) are interested in knowing the reason behind their physician's use of the digital device. Patients tend to be less bothered when they are informed about the reason of the digital device use, as only 12.5% of those informed are bothered compared to 35.8% of those who are not (P value = 0.01).

Conclusion: Physicians should be aware of their patients' preferences when using digital devices during the clinical encounter. Physicians' use of digital devices during the encounter may endanger the patient-doctor relationship due to the perception of the patient of the competence of the physician.

1. Introduction

The use of digital devices with Internet capabilities (such as smartphones and tablets) is common among healthcare professionals. Physicians are granted access to textbooks, research articles, and even medical calculators right in their clinics [1]. Physicians' use of digital devices at point of care allows for information retrieval, through Internet search or the use of applications, and serves as a communication method with other healthcare professionals, through phone calls or WhatsApp. The use of digital devices has been shown to improve access to information, decision making efficacy and improve patients' outcomes [2–4]. Despite its benefits, there are some concerns about digital device use at point of care: effect on patient-doctor interaction [5]; patient data security [4]; risk of pathogen transfer [6] and source of distraction [7].

Physicians feel comfortable using their devices in front of their patients [2]. They can retrieve the information they need using their digital device in a quick and accurate manner [8,9]. Moreover, most physicians consider the use of digital devices at point of care acceptable and not necessarily unprofessional [6]. When asked whether patients would still trust their advice based on information retrieved from digital devices, physicians had varied responses between agreeing (53%),

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neutral (23%) and disagreeing (24%) [6].

Although digital devices are being accepted and widely used among students, residents and faculty members within academic institutions [8,10–13], their use among practicing physicians in the community setting is not well studied [6]. More importantly, research on patient perspective on the use of the digital devices by physicians at point of care is still lacking [14]. Therefore, the aim of this study is to describe how digital devices are being used in reality in the ambulatory setting and explore the attitudes of patients towards this use.

2. Material and methods

2.1. Study design

This is a cross sectional study among adult patients (at least 18 years old) who have recently visited the physician's clinic in the past 2 weeks. Data collection was done from October 2016 till January 2017. The institutional review board (IRB) at Beirut Arab University approved this study.

2.2. Settings

Pharmacies offered a good opportunity for selecting those patients, who present to get the prescribed medications. A list of pharmacies in the capital Beirut was obtained from the Order of Pharmacists of Lebanon. Every 10th pharmacy from the list was contacted. Data collection was done at the pharmacies that accepted to participate.

2.3. Recruitment and participants

Clients who accessed any pharmacy included in the study during time of data collection were approached. Those who have visited a physician or took their child to a pediatrician within the last two weeks and accepted to participate were included. Participants were asked to fill a paper-based questionnaire in either Arabic or English languages according to their preference in person. Data collection stopped when the sample size was reached.

2.4. Questionnaire

The questionnaire included the following sections: demographics; knowledge about the potential uses of digital devices by physicians during the clinical encounter; attitudes towards the physicians' use of digital devices during the clinical encounter and questions about the physician's use of digital device in their last visit. The researchers developed the questions based on the literature review; they were piloted among a group of 20 respondents to assess for the content validity of the questions. There were no major changes after piloting the questionnaire.

2.5. Sample size

With a confidence level of 95%, a margin of error of 5%, and estimating that 50% of the respondents would have a negative attitude towards digital information retrieval, the sample size was calculated using the formula $X = Z_{\alpha/2}$ [2] *p*(1-p) / MOE^2 and found to be 385.

2.6. Statistical analysis

Data was analyzed using IBM SPSS 20. Categorical variables were reported as percentages. Chi-square tests were used for bivariate analysis; Fischer's exact test was used when applicable. Kendall's tau b test was used in one case when the outcome was ordinal in the case of percentage of device usage during the visit. Attitudes were assessed using a 4-likert scale (not at all, to a lesser extent, to some extent, to a greater extent). For bivariate analysis, the 4-Likert scale was grouped into two groups, where the significance of the measured associations remained the same.

Table 1
Demographics of the participants who completed the survey (n = 385).

Variables	N (%)
Age	
18-29	99 (25.7)
30-49	153 (39.7)
50-64	83 (21.6)
> 64	50 (13.0)
Gender	
Male	173 (44.9)
Female	212 (55.1)
Education	
Not educated	15 (3.9)
Elementary school	51 (13.2)
High school	91 (23.6)
Graduate level	180 (46.8)
Post graduate level	48 (12.5)
Health field workers	
Nurse, physician, pharmacist…	39 (10.1)
Internet usage	
Do not use/do not have access	69 (17.9)
Very rare (once a month or less)	14 (3.6)
Rarely (twice a month)	9 (2.3)
Occasionally (2-3 times a week)	67 (17.4)
Frequently (1-2 times a day)	89 (23.1)
Very frequently (more than 2 times a day)	137 (35.6)

Percentages may not sum up to 100% due to rounding.

3. Results

Table 1 shows the demographics of the 385 participants. The sample was distributed across various age groups with up to 13.0% of the sample being 65 years and older. They were almost equally split between females and males. Almost two thirds had completed a university/post graduate level. Most of them (58.7%) reported using the internet at least 1–2 times per day; 17.9% did not use or had access to internet.

Participants were aware of the possible uses of digital devices by physicians during the clinical encounter such as the need to read about the patient's condition (72.5%), checking the medication dosage (63.6%), answering a patient's call (79%), seeking help from another doctor (54.5%), updating patient's records (84.7%), and checking social media (84.7%). Half of the participants (50.6%) were interested (some to great extent on the Likert scale) in knowing what physicians are using the digital device for. Furthermore, 56.6% of participants agreed to some or great extent that the usage of digital devices for information retrieval improves the doctor's performance.

Almost all participants stated that a physician should know everything about his specialty by heart (98.4%) and should also stay continuously updated (98.4%). A physician who uses digital devices during the clinical encounter was considered less competent than a physician who doesn't by 36.6% of the participants. Moreover, 40.3% of the participant stated that they would not trust or would trust to a lesser extent such a physician.

Almost two fifths (39.7%) of patients were usually bothered to some or great extent when their physicians use digital devices in front of them to get information. Being bothered by the physician's use of the digital device was significantly associated with certain patients' attitudes towards the use of digital device (Table 2). Positive attitude towards trusting and competence/performance of the physicians using a device was positively correlated with being less bothered. There was a positive association between believing that a doctor should know everything about his specialty by heart and being bothered when the physician uses the digital device during the visit ($P = 0.042$). However, interest in knowing what the physician is using the device for was

Table 2
Association between attitudes of patients regarding digital information retrieval by their physician and being bothered by such a behavior.

Variable		Total N	Bothered N (%)	P value
Interested in knowing why the doctor used his digital device	Yes	195	94 (48.2)	0.001
	No	190	59 (31.1)	
Agrees that the usage of digital device improves the doctor's performance	Yes	218	69 (31.7)	< 0.001
	No	167	84 (50.3)	
Trusts a doctor that uses a digital device	Yes	230	69 (30.0)	< 0.001
	No	155	84 (54.2)	
Considers the doctor that uses a digital device less competent than another who doesn't	Yes	141	85 (60.3)	< 0.001
	No	244	68 (27.9)	

positively correlated with being bothered. Consequently, informing the patients about the reason of the digital device use was associated with lesser bothered attitude by those patients. Only 12.5% of those informed were bothered as compared to 35.8% of those who were not ($P = 0.011$).

Bivariate analysis between being bothered by a physician who uses digital devices and the various demographics of participants did not show any significant associations: age groups, gender, educational level, health field work, and internet usage for accessing information. Bivariate analysis between being bothered by a physician who uses digital devices and the various characteristics of the visit also did not show any significant associations: specialty of the physician, reason of the visit, and frequency of visiting the physician.

The previous physician visit in the past 2 weeks

The characteristics of the patients' visit to the physician in the past 2 weeks is shown in Table 3. Most of the participants (42.6%) visited a specialist with an internal medicine subspecialty and 20.5% visited a general practitioner/family physician. Almost one quarter (26.2%) were visiting the physician for the first time.

When asked about their last physician visit, only 24.4% of participants reported that their physician has used a digital device during the clinical encounter. Among the patients who encountered physicians who used their digital devices (n = 93), most physicians (73.1%) used the digital device less than 10% of the visit time and another 15.1% used it between 10–25% of the visit time. Patients (43.1%) were informed about the reason why their physician have used the digital device. Only 26.6% of participants whose physician used a digital device were likely to be bothered as compared to 44% of those participants whose physician didn't use (p value = 0.03). The digital device usage time was not associated with bothering attitude of patients (p value = 0.35). Patients were more likely to have a negative attitude (being bothered) towards using a digital device by the physician during the clinical encounter when their physician used the digital device to seek help form another doctor (p value = 0.037), answer another patients' call (p value = 0.002) or answer a personal call (p value = 0.001).

Table 3
Characteristic of the last visit to the physician.

Variable	N (%)
Physician specialty	
Internal medicine specialties	164 (42.6)
General physician	79 (20.5)
Surgery	40 (10.4)
Gynecology/obstetrics	40 (10.4)
Dermatology	27 (7.0)
Pediatrics	21 (5.5)
Dentistry	14 (3.6)
Reason of the visit	
Acute illness	144 (37.4)
Periodic examination	112 (29.1)
Chronic illness	85 (22.2)
Checking lab results	30 (7.8)
Others	14 (3.6)
Frequency of physician's visits	
First time	101 (26.2)
Once yearly or less	61 (15.8)
Twice yearly	72 (18.7)
Three time yearly	42 (10.9)
Four times yearly	57 (14.8)
Once monthly or more	52 (13.5)

Percentages may not sum up to 100% due to rounding.

4. Discussion

This cross-sectional study is among the few that assess the patients' perspective towards the use of digital devices by their physicians during the clinical encounter at point of care in the community. This study has shown that 39.7% of patients get bothered when their physicians use digital devices to retrieve information. Being bothered was related to the attitudes of the patients about the competency and trustworthiness of the physician who use digital devices. Patients who believed that a physician should know by heart everything related to his specialty were more prone to be bothered when their physician use the digital device to retrieve information. For those accepting the use of digital devices, the extent of use and reasons behind the use of the digital device were not that important; but informing the patient about the use of the digital device made the patients at ease and more accepting.

Similar to the literature [6,14], only quarter of physicians were reported to use a digital device during the clinical encounter. In this study, most physicians used digital devices less than 10% of the visit time. It took few minutes or less for residents to successfully retrieve the information they needed to answer a clinical scenario [8]. Faculty members are less likely to use mobile devices (at least once a day) compared to medical students and residents [8]. Physicians, in this study, are all practicing physicians and their need for information at point of care could be less central. Among attending physicians, there was a trend of decrease use of medical applications with increase in their years post training [12].

The acceptance of patients to the use of digital devices by physicians at point care is still controversial. This study has shown that 39.7% of patients get bothered when their physicians use digital devices to retrieve information. The use of digital devices has its implications on the physician's professionalism, competence and trustworthiness. In this study patients expected their physician to know everything about his/her specialty by heart. Patients were even bothered when the physician called another colleague for consultation. It should not be underestimated that a certain number of both patients and physicians still consider the digital device use as unprofessional [6,15,16].

It is however worthy to note that patients' acceptance to the digital device use is conditional. This study has shown that patients are more accepting the digital device use when they are told why it's being used for and when the information retrieval was relevant to them as compared to answering other patients' or personal calls. Patients are more accepting to the digital device use during the encounter when their physician discusses the reasons behind using these devices [5]. Illiger et al [14] have shown that patients accepted their physicians use of digital devices when it was used to illustrate something about their condition. Finally, patients' attitude might change after they experience a physician using a digital device. Participants whose physician have used a digital device were less bothered than those who encountered physicians who did not use a digital device.

5. Strength and limitations

This is one of the few studies that specifically measure the patients' perspective towards the use of digital devices by physicians at point of care in the community. The selection of patients at pharmacies was

innovative; it would have been difficult to visit all the physicians' offices in the capital Beirut. The sample captured a variety of patients in terms of age, educational level, reason of the visit and frequency of physician's visits. Although the sample included a higher percentage of educated patients, this was similar to a study done in Beirut, in which participants were recruited randomly from shopping supermarkets. [17]. Recall bias cannot be ignored as participants were asked about a recent visit; however we tried to minimize the bias by setting the time frame within 2 weeks maximum. Another limitation to the study is the generalizability to other settings such as rural areas and places with high prevalence of electronic health records. The use of computers and electronic health records is very low in Lebanon. Participants were not asked about the type of digital device that the physician has used. Smartphones, tablets and computers were considered as one entity.

6. Conclusion

Despite the importance of using digital devices at the point of care as a means to achieve evidence-based practice, a significant proportion of patients are actually bothered by the digital information retrieval by physicians during the clinical encounter. Physicians should be aware of this fact and note that keeping the patient informed about the aim of this use would decrease the burden of the problem. Raising the awareness among patients about the importance of this use is needed. More research is required to identify the determinants of patients' attitude towards digital information retrieval at the point of care.

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Summary Points

What was already known about the topic?

- The usage of digital devices for information retrieval during the clinical encounter has been increasing
- Little is known about the attitudes of patients towards digital information retrieval in points of care
- Very few studies were concerned with the patient's perspective of this phenomena

What this study added to our knowledge?

- This is one of the few studies that address the patient's perspective
- Two thirds of patients are not bothered by the usage of digital devices at the point of care
- The physician's use of the digital device may affect the perception of the patients of the physician's competence

Declaration of Competing Interest

There is no conflict of interest present in this study.

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