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Research Article

Effect of computer use on physician-patient communication using a validated instrument: Patient perspective

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ABSTRACT

Background: Physician-patient communication is essential in the physician-patient relationship. Concerns were raised about the impact of the computer on this relationship with the increase in use of electronic medical records (EMR). Most studies addressed the physician's perspective and only few explored the patient's perspective.

Aim: This study aims to assess the patient's perspective of the effect of the physician's computer use during the clinical encounter on the interpersonal and communication skills of the physician using a validated communication assessment tool (CAT).

Design and settings: This is a cross-sectional survey of three hundred eighty-two patients who visited the family medicine clinics (FMC) at the American University of Beirut Medical Center (AUBMC).

Material and methods: At the end of the visit with the physician, the patients were approached by the clinical assistant to fill a paper-based questionnaire privately in the waiting room to measure communication skills of physicians using CAT.

Results: Nearly two-thirds of the patients (62%) did not consider that using the computer by their physician during the visit would negatively affect the patient-doctor communication. Patients rated their physician with a higher communication score when there was an ongoing relationship between the physician and the patient. Higher communication scores were reported for extensive use of the computer by the physician to check results ($p < 0.001$), to retrieve patient record information ($p < 0.001$) and to educate patients ($p < 0.001$) as compared to less use.

Conclusions: Physician-patient communication was not negatively affected by the physician use of the computer as rated by patients. An ongoing relationship with the physician remains a significant predictor of better physician-patient communication even in the presence of the computer.

1. Introduction

Physician-patient communication remains the cornerstone in the physician-patient relationship [1–4]. Good physician communication leads to more detailed histories, better adherence of patients with physicians' advice and treatment plan; and better clinical outcomes of chronic diseases [3]. With the rise in the use of electronic medical records (EMR), a new member, the computer, has been added to this relationship and concerns were raised about its impact on the physician-patient communication.

The current literature still poses a debate about the impact of the computer use on physician-patient communication. Some debate that computer use leads to over-reliance on electronic resources, deterioration of the relationship[5],and a certain disengagement of the physician from the patient centered interview leading to a less productive interview and worse outcomes [6]. In the past decade, 3 systematic reviews have been published [7–9]. Conclusions of the systematic reviews are: (1) an overall high satisfaction of patients with physicians' use of computers is reported; (2) the detailed analysis suggests both negative and positive effects on different aspects of the patient-doctor communication. The use of the computers enhances patient engagement and information sharing; on the other hand, it leads to less emotional talk and patient rapport. (3) The data collection method was through videotaped/observed encounters and post-visit satisfaction questionnaires. The majority of the studies addressed the physician's perspective and only few explored the patient's perspective.

Patient experience, perspective and satisfaction is of utmost importance for healthcare delivery. [10]Measurement of patient

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experience provides the opportunity to develop strategic quality improvement initiatives to improve the care and effectively manage healthcare performance [11]. Measuring patient experience can be done using mixed methods, quantitative or qualitative approaches. Although qualitative approach would evaluate better the reality of the patient experience and give patient a voice to improve the care, it is not suitable for comparisons [11]. On the other hand, quantitative approach allows for larger sample size and more testing of associations and comparisons [11]. Sitzia and Wood [10] found that cross sectional sample and self-reported questionnaires were mostly used in published articles that assessed patient satisfaction.

There exist certain concerns about the measurement of patient experience [11] especially when measured immediately post the doctor visit in the clinic [12]. In-visit surveys allow more accurate recall of the experience especially when dealing with communication skills relevant to the encounter as compared to experience with the clinic processes (such as access to clinic, waiting time, etc). On the other hand, patients might be reluctant to give their physicians low ratings despite the anonymity. Wongus et al. [12] have shown that there is no difference between the mean score of patient satisfaction between within-the-visit survey and 30 day post visit mail survey. In another study, the presence of unmet expectations and decreased satisfaction was highest immediately post visit as compared to 2-week and 3 months post visit especially in the domain of patient-doctor communication [13].

Therefore, this study aims to assess the patients' perspective of the effect of the physician's computer use during the clinical encounter on the interpersonal and communication skills of the physicians using a validated communication assessment tool (CAT) [14]. Percentage of time physicians use the EMR during the encounter (typing and gazing) was found to vary between one physician and another from 24.9% to 49.6% of the visit [15]. Therefore we will compare the patient perspective of the physicians' communication skills across four categories of computer use by physicians (no use, little amount, moderate amount and a great deal).

2. Material and methods

2.1. Study design

This is a cross-sectional survey conducted at the family medicine clinics (FMC) at the American University of Beirut Medical Center (AUBMC). Data collection lasted from March 2014 till March 2015.The American University of Beirut (AUB) Institutional Review Board (IRB) approved the study.

2.2. Settings

FMC at AUBMC serve a large population of different age groups, socioeconomic classes, and members of both genders. EMR has been implemented since 2010. It is a basic EMR with minimal decision support system. All physicians received initial training that was maintained with one-on-one annual training to keep their EMR skills up-to-date. The clinic is almost paper-free; only laboratory and radiology requests are still in paper format. The clinics use desktop computers with thin client central processing units (CPUs) under the desk and a multidirectional flat screen located at the short edge of the table.

2.3. Recruitment and participants

At the end of the physician's encounter, all patients passed by the clinical assistant to finalize the papers given by the physician. The clinical assistant asked patients if they would accept to participate in a research study. Those who accepted were given the questionnaire along with the informed consent letter. They were asked to fill it privately in the waiting area, put it in the provided envelope, and return it to a sealed box placed in the waiting area of the clinics. Adults above eighteen years of age attending the clinics were targeted. Only illiterate patients were excluded as this was a self-administered survey.

2.4. CAT tool

Makoul et al. have developed a validated communication assessment tool to measure the patient perspective of the physician's interpersonal and communication skills [14]. This tool has been used in many settings [16,17], and has been validated in primary care settings [18]. The tool consists of fifteen questions using a 5-likert scale (poor, fair, good, very good, and excellent). Fourteen questions are doctor-oriented and one is staff-oriented (Appendix A). The fourteen questions can be considered as one unit and the score is reported in proportion of "excellent" ratings given by patients or as a mean communication score. In most studies, the mean score was 4.6 and the percentage of excellent rating was 70%.

2.5. Questionnaire

The questionnaire used in this study was initially developed in English. It was divided into four parts: (1) demographics, (2) CAT questions, (3) questions assessing the extent of different aspects of computer use by the physician as perceived by patients (typing on the keyboard during the visit, looking at the screen of the computer, printing out documents related to the visit, checking the patient's results, retrieving patient's record information, and using the computer for patient education) and (4) a subjective question assessing the general attitude of patients towards computer use by their physician during the encounter. The questionnaire was translated into Arabic, then back translated into English and compared with the original questionnaire. Translation was done by two independent professional translators. The questionnaire was pilot-tested with twenty patients attending the FMC at AUBMC. Minimal adjustments to the questionnaire were applied.

2.6. Sample size

For a power of 80% and margin of error of 5% and expected proportion of 50% of the sample to give excellent rating, the estimated calculated sample size was 382 with a confidence interval of 0.95.

2.7. Statistical analysis

Descriptive statistics were reported as absolute or relative frequencies for categorical variables, and means (standard deviation) for continuous variables. Communication scores were obtained by calculating the mean of the 14 CAT questions. These scores were not normally distributed and hence were compared using Mann-Whitney test and Kruskal-Wallis test for multiple comparisons. Jonckheere-Terpstra test was used for ordinal variables. Statistical significance was set at a p-value < 0.05. All analyses were performed with SPSS 20.0 software (SPSS, Chicago, IL).

3. Results

A total of 382 patients filled the questionnaire. Around half of the patients participating in this survey were 30–49 years, with 5.6% elderly people more than 65 years, and 60% were females (Table 1). Forty-four percent of the patients have visited their own family physician, and one third of the study participants were frequent visitors to the clinic (5 or more times yearly). The purpose of the visit was diverse: acute complaint (47.2%), regular checkup (19.2%) and follow up on chronic medical conditions (18.6%).

3.1. Outcome data

Nearly two thirds of the patients (62%) did not consider that using