Physicians’ Compassion, Communication Skills, and Professionalism With and Without Physicians’ Use of an Examination Room Computer: A Randomized Controlled Trial

To our knowledge, no randomized clinical trials (RCTs) have been conducted regarding patients’ perception of their health care professional who use an examination room computer (ERC) during clinic visits. Our primary objective was to compare patients’ perception of physicians’ compassion; secondary objectives were to compare patients’ perception of physicians’ communication skills and professionalism and patients’ overall physician preference after watching 2 standardized scripted-video vignettes of physicians: one portraying a face-to-face (F2F) clinic visit and the other one portraying a physician using an ERC.

Methods | MD Anderson Cancer Center’s institutional review board approved this RCT (clinicaltrials.gov number NCT02957565). See trial protocol in the Supplement. Patients were recruited from the palliative care (PC) clinic if they spoke English, were 18 years or older, and had advanced cancer (locally advanced, recurrent, or metastatic). All patients provided written informed consent forms and were offered a $25 gift card. Ninety percent of patients seen in the PC clinic have advanced cancer with a median survival of 8 months’ survival, and all patients are being treated by a multidisciplinary PC team.

Scripted-video vignettes were used to deliver the interventions as recommended by Hillen et al.1 and van Vliet et al2 in collaboration with the creative services department at MD Anderson. Video production consisted of 5 phases: determining the clinical situation, developing a script, hiring professional actors and recording videos in an outpatient setting, obtaining expert review of the videos, and performing final editing. In F2F videos, the physician used a notepad to record notes, whereas in the ERC videos, the physician used a stationary computer to access information and type notes while minimizing disruption in eye contact. An identical script was used for both scenarios. Five faculty members who were blinded to the study hypothesis performed an independent review of the recordings to ensure that physicians’ expressions and emotional quotients were matched.

A randomized controlled crossover design was used to allocate 120 patients into the F2F or ERC arm. Random allocation sequence was generated by Clinical Oncology Research Database (CORe) software. All patients watched both videos (Figure). The research coordinator (M.E.) enrolled and assigned patients to the interventions. The research coordinator (M.E.) and principal investigator (A.H.) were blinded to the sequence in which patients watched the videos. Actors and patients were blinded to the specific hypothesis of the study.

After viewing each video, the patients completed validated questionnaires rating physicians’ compassion4,4 (0 = best, 50 = worst), communication skills5 (14 = poor, 70 = excellent), and professionalism6 (4 = poor, 20 = very good) and were asked to rate overall physician preference.

In each group (F2F and ERC), 60 patients had 80% power to detect an effect size of 0.516 on the primary outcome of physicians’ compassion after the first video, using a 2-sample t test with a α level of 0.05. Standard descriptive statistics were used when applicable. All tests were 2-sided. P ≤ .05 was considered statistically significant. All computations were carried out using SAS statistical software (version 9.3; SAS Institute Inc).

Figure. Flowchart Showing the Crossover Study Design

Table. Physicians’ Compassion, Communication Skills, and Professionalism Scores After Each Intervention in 119 Patients

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Median (IQR)</th>
<th>P Value&lt;sup&gt;b&lt;/sup&gt;</th>
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<tbody>
<tr>
<td></td>
<td>Face-to-Face Visit</td>
<td>Examination Room Computer Visit</td>
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<tr>
<td>After First Video</td>
<td></td>
<td></td>
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<tr>
<td>Physicians’ compassion scores&lt;sup&gt;a, d&lt;/sup&gt;</td>
<td>9 (0-18)</td>
<td>20 (6-28)</td>
</tr>
<tr>
<td>Physicians’ communication skills questionnaire scores&lt;sup&gt;a&lt;/sup&gt;</td>
<td>65 (54-70)</td>
<td>54 (40-63)</td>
</tr>
<tr>
<td>Physicians’ professionalism questionnaire scores&lt;sup&gt;f&lt;/sup&gt;</td>
<td>19 (15-20)</td>
<td>14 (11-17)</td>
</tr>
<tr>
<td>After Second Video</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physicians’ compassion scores&lt;sup&gt;e&lt;/sup&gt;</td>
<td>4 (0-6)</td>
<td>21 (10-30)</td>
</tr>
<tr>
<td>Physicians’ communication skills questionnaire scores&lt;sup&gt;a&lt;/sup&gt;</td>
<td>68 (61-70)</td>
<td>53 (41-62)</td>
</tr>
<tr>
<td>Physicians’ professionalism questionnaire scores&lt;sup&gt;f&lt;/sup&gt;</td>
<td>20 (17-20)</td>
<td>15 (11-18)</td>
</tr>
</tbody>
</table>

Abbreviations: IQR, interquartile range.
<sup>a</sup> Number analyzed was 119 because 1 patient was found ineligible after completion of the study.
<sup>b</sup> The P values in this table are from Wilcoxon rank sum testing comparing continuous variables between the 2 arms.
<sup>c</sup> Cronbach α = 0.96 (0 = best, 50 = worst).
<sup>d</sup> Effect size in the difference in the physicians’ compassion scores between the 2 groups was 0.715.
<sup>e</sup> Cronbach α = 0.96 (4 = poor, 20 = very good).
<sup>f</sup> Cronbach α = 0.96 (4 = poor, 70 = excellent).

Results | Patients were enrolled from December 1, 2016, to May 30, 2017. The median age was 58 years (interquartile range [IQR], 44-66 years), and 65 patients (54%) were women. Most patients (80 of 120 [67%]) were white, and 77 (64%) were married. After patients watched and assessed the first video, the F2F visit resulted in better compassion scores (median [IQR], 9 [0-18] vs 20 [6-28]; P < .001), communication skills (65 [54-70] vs 54 [40-63]; P = .001), and professionalism (19 [15-20] vs 14 [11-17]; P = .001) (Table). After crossover analysis, the F2F visit resulted in better compassion scores (median [IQR], 4 [0-6] vs 21 [10-30]; P < .001), communication skills (68 [61-70] vs 53 [41-62]; P < .001), and professionalism (20 [17-20] vs 15 [11-18]; P < .001) (Table). Most patients (85 [71%]) preferred the F2F physician.

Discussion | Patients preferred and perceived the F2F physician as more compassionate and professional and as having better communication skills. One possible explanation for our findings is that patients might value undivided attention and might perceive physicians who engage in ERC as more distracted. Also, patients’ perception might have reflected physicians’ behaviors rather than the presence of the ERC. Therefore, proper optimization of the ERC and clinicians’ training might improve patients’ perception. Because current health care delivery necessitates the use of electronic health records, future studies focusing on strategies that can mitigate the negative effects of the ERC use on physician-patient communication are imperative. Study limitations include single-institution data, scripted-video vignettes, first-encounter visits, and population type.

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Quantification of Long-term Survival Benefit in a Comparative Oncology Clinical Study

Novel treatments, such as immunotherapies, may have delayed clinical effect1,2 but may be associated with long-term survival benefit in some patients. The conventional procedure using the log-rank test and hazard ratio (HR) for evaluating the long-term treatment effect on overall survival (OS) can be suboptimal in terms of interpretation and power. As an example, part A of the Figure shows Kaplan-Meier curves for OS comparing chemotherapy plus cetuximab and chemotherapy plus bevacizumab using reconstructed OS data for the expanded RAS wild-type subgroup in Venook et al.3 The HR was 0.88 (95% CI, 0.72-1.08; *P* = .24) in favor of cetuximab numerically. Visually, the Kaplan-Meier curve for cetuximab is almost identical to that for bevacizumab to month 30 but superior to bevacizumab thereafter. This finding suggests that cetuximab might have a relatively long-term OS benefit that was not appropriately captured by HR. Long-term survival benefit is often quantified by comparing survival rates at a specific time point. For instance, at month 60, cetuximab and bevacizumab had observed survival rates of 27% and 17%, respectively. These summaries, however, do not include information on the temporal OS profile before or after month 60. In this study, using these data, we show an alternative, clinically interpretable approach to quantifying long-term survival benefit.

**Methods** | The Kaplan-Meier curve in part A of the Figure provides the OS profile throughout the entire study. The higher