Augmenting Physician Examiner (PE) Scoring in OSCEs: A Pilot for Including the Standardized Patient (SP) Perspective

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Abstract

In the Canadian context OSCEs have traditionally relied solely on physician examiners (PEs) for scoring. This pilot study explores benefits of adding standardized patient (SP) to PE scoring in a high-stakes national OSCE.

SPs were consulted to develop rating scales for Listening, Communication, Empathy/Rapport, plus a station global. Forty-three SPs from one site of a national OSCE rated 60 candidates along with PEs. SP scoring was examined using descriptive statistics and correlations. Combinations of SP and PE scoring were assessed using pass-rates, reliability, and decision consistency and accuracy indices.

SP ratings differed somewhat from examiner ratings and we argue assess performance from a different perspective, thereby increasing the available data and overall reliability of scores and pass decisions.

Background

Successful implementation of a large scale objective structured clinical exam (OSCE) is costly and depends on addressing issues of feasibility and practicality (Turner & Dankoski, 2008). One strategy to offset costs, particularly in the US, has been to use SPs as scorers. A concern regarding this tactic is to question the reliability and validity of having non-physicians rate physician behaviour (Thistlethwaite, 2002).

The literature indicates this concern is unfounded. Studies demonstrate SPs and/or lay people reliably score physician performance, particularly characteristics related to communication (Weidener *et al.*, 2010) and professionalism (van Zante, *et al.*, 2005) provided they are adequately trained (Swanson and Norcini,1989). Agreement is acceptable for both checklist (De Champlain *et al.*, 1997; Howeley, 2004; Williams, 2004) and global rating formats, (Donnelly *et al.*, 2000; Han *et al.*, 2006; Howeley, 2004).

High stakes national OSCEs in Canada have traditionally relied solely on PE scoring. This decision was based on a number of factors. Key among these were ensuring a physician perspective, especially for scoring complex patient interactions, time efficiency of observer scoring (versus the time required when SPs score by recall) and the validity of using physician judgments for making entry into practice decisions. (Reznick, *et al.*, 1996.) Recently, there has been interest in the idea of incorporating SP scoring to augment PE scoring. Aside from pragmatic reasons, we have considered additional psychological and educational arguments to support the use of SPs as scorers of physician behaviour in our context.

One driver is our concern for the heavy cognitive load imposed on OSCE physician examiners by asking them to attend to and make judgements about multiple sources/types of information in a very compressed time period (Taveres & Eva, 2013; Byrne, Tweed, & Halligan, 2014). Examiners must observe candidate performance in real time, track case information for scoring, complete rating tools, monitor SP performance, and stay attuned to the assessment standard. Needless to say, the risk of cognitive overload is high. Handing over some scoring to SPs could decrease demands and improve the quality of physician examiner judgments of other skills. But how best to divide the rating task? Ideally, in a way that allows PEs to focus their expertise where it is most relevant (e.g., candidates’ ability to deal with multimorbid cases) and similarly solicits SP judgement in areas where their perspective is important (e.g., communication, patient's comfort, etc.).

Within our national OSCE, a second reason to incorporate SP scoring stems from upcoming changes to our blueprint that reflect increased assessment of communication and professionalism competencies; again, areas where the SP perspective may be critical to incorporate.

Finally, a third reason is the potential to provide feedback to examinees from two perspectives: that of a physician or medical expert observer and that of a patient or end user. Gingerich (2013) has convincingly argued that score differences between assessors or between assessor groups may reflect different but valid differences in assessor perspective. Thus, providing candidates with both SP and PE feedback, even if the two perspectives potentially differ, could be valuable.

The purpose of this study was to develop and pilot training materials and scoring tools for introducing SP scoring into a national OSCE designed to assess the knowledge, skills, and attitudes essential for medical licensure in Canada prior to entry into independent clinical practice. Acceptability of including SP scoring in our OSCE was assessed through a survey. This was followed by a series of SP focus groups to identify specific scoring dimensions and to develop scoring tools and training materials. Finally, to explore the feasibility and impact of SP scoring we ran a pilot at a single examination site during a national OSCE administration.

Method

SP Tool Development

SPs from the survey were invited to participate in follow-up focus groups. Four groups were conducted across the country to explore SPs' ideas about scoring candidate performance. Participants identified physician characteristics they felt comfortable assessing and developed assessment tools for each. These were used to score a videotaped performance. The tools were improved where needed and SPs elaborated on training needs. All four groups identified listening skills and empathy/rapport as dimensions they could assess. Three groups identified communication and a global impression as important to them. Rating scales were developed with descriptors adopted from SP discussions. The SP rating tools that we piloted are depicted in Figure 1.

SP Training Development

SP training occurred at several intervals. First, they received an introduction to SP scoring at their first case training session. This was followed by a mandatory online training module lasting approximately 30 minutes with information regarding the purpose of the pilot, an overview of the scoring tools, direction on how to complete the scoring sheet, and a video scoring exercise that compared their ratings to target ratings. This online training was followed with more scoring practice, discussion and standardization at case dry run. Finally, on exam day there were important reminders provided orally and in writing.

Participants

For the pilot, 60 candidates were rated by 43 SPs. Most examinees were female (53%) first-time examinees (62%). A large proportion of examinees were international medical graduates (74%). Participating SPs were balanced by gender across stations. The age of their patient portray ranged from 14 to 76 years-of-age. On average, SPs scored between 18 and 26 examinees.

Procedure

SPs used all four rating scales to score examinees for 12 OSCE stations. All examinees were blinded to the inclusion of SP scoring. SPs completed their ratings once an examinee had left the station and before the next examinee entered. Both PEs and SPs were instructed to complete their ratings independently and not to discuss the performance of any examinees.

Results

SP Use of Rating Scales

Figure 2 displays the average percent of ratings SPs assigned to each of the five score points (e.g., unacceptable, poor, adequate, good, excellent) across the 12 stations. SP ratings were negatively skewed but covered the entire score scale range for each of the rating scales. The pattern of ratings varied across the dimensions. Figure 3 shows that the average pattern of SP ratings varied according to the type of station (e.g., management, counselling, history or physical) being rated. Overall SPs appear to be using the rating scales as intended.

SP and PE Station, Total, and Dimension Scores

SP station scores were calculated by averaging the four ratings within each station and creating a percent score. Generally, SPs scores were higher than PEs (see Figure 4); however, the magnitude of difference varied across stations and was especially large for counselling stations (Figure 5).

SP total examination scores were created by averaging 12 station scores. SPs scored more broadly than PEs (Figure 6). An important point to keep in mind is that some of the dimensions PEs scored overlapped with SP scoring (e.g., PEs also rated rapport and listening for some stations).

Table 1 displays the inter-correlations among SP and PE total examination and dimension scores. SP scores are highly related with relationships ranging from $r(58) = 0.87$, $p < .05$ to $r(58)$ 0.99, $p < .05$). SP total scores were highly related but not identical to PE total scores ($r(58)$ 0.74, $p < .05$). Interestingly the relationship between SP total and PE score dimensions were high (PE patient interaction ratings ($r(58) = 0.88$, $p < .05$ and PE clinical legal ethical and organizational ratings ($r(58) = 0.81$, $p < .05$) and low (PE problem solving ratings ($r(58) = 0.24$, , $p > .05$) and PE data acquisition ratings ($r(58) = 0.35$, $p < .05$) where one would expect.

Combining SP and PE Total Scores

Cronbach's alpha for the 12 station scores indicated adequate internal consistency for both SP ($\alpha = 0.87$) and PE scores ($\alpha = 0.73$). Composite reliability (Haertel, 2006) of various combined weightings of SP and PE total scores (Table 2) increases from 0.77 with SP scoring contributing 5% to 0.85 with SP scoring contributing 20% to the total score.

Pass-rates, Decision Consistency and Accuracy

The pass-rate based on the traditional PE-only scoring was 57%. Table 3 shows how this rate changed and the number of individual candidate status changes for various weighted combinations of SP and PE scoring when the established cut score was applied to these new total scores. When SP scoring contributed 5% to candidate total scores there was a slight decrease in the original pass rate with 3 individual candidates changing status. Weighting SP scoring by 20% resulted in a slightly higher pass rate and altered the status of 8 individual candidates.

Decision consistency and accuracy indices for weighted combinations of SP and PE scores were calculated (Livingston & Lewis, 1995). The outcomes of this analysis (Table 4) indicate very modest fluctuations in both metrics across various weightings.

Combining SP and Non-overlapping PE Scores

In addition to examining the value of combining SP with traditional PE scoring, we investigated the impact of dividing up the scoring into SP-specific ratings and non-overlapping PE scoring, what we call complimentary scoring. We kept SP scoring as is. We reviewed PE scoring elements and removed all instances where PE ratings overlapped with ratings provided by SPs. This amounted to removing all instances (N = 16) of PE ratings for listening and rapport. Distributions for SP total and new Non-overlapping PE total scores (Figure 7) indicate less overlap between the two perspectives when compared to that with redundant coding. The correlation between the SP total and the non-overlapping PE total scores was reduced ($r(58)=0.64$, $p< .05$).

New station and total scores were created by combining SP scores with non-overlapping PE items (complimentary scoring). Cronbach's alpha (see Table 5) indicate high internal consistency (α = 0.82) when all four SP ratings are combined with non-overlapping PE scoring elements.

The impact of including SP scoring in this complimentary manner was to increase the fail percentage from 8 to 10% (Table 6). Bear in mind that this result is based on applying an existing cut score developed from our traditional PE scoring model to this new combined total.

Minor variations appear in decision consistency and accuracy (Table 7) when all four SP scoring elements are combined with non-overlapping PE scoring elements. Other variations show larger losses, particularly for decision consistency. Combining all four SP scoring elements with the non-overlapping PE scoring to create a complementary total score yields high internal consistency, a higher fail rate, and comparable decision consistency and accuracy.

Post-Exam Survey and Focus Group

We conducted post-examination surveys of SPs and PEs who participated in this pilot and held a focus group of a representative sample of SPs who participated in this pilot. Both SPs and PEs affirmed that they had followed "the rules" of scoring (no discussion of candidates; independent scoring). SPs indicated that they had adequate time to complete their ratings in our OSCE context. PEs reported that they did not find the process disruptive to their scoring responsibilities. No major hiccups were reported at the pilot site. Some minor modifications were suggested for the SP listening and global rating tool.

Conclusions

These results are to be interpreted with caution. They are based on a pilot at a single site using a cut-score that was established based on the traditional PE-only scoring model. Early analysis revealed that SPs were comfortable scoring candidates and made appropriate use of rating tools. They used the full range of each scale and showed different patterns of ratings for different stations and station types. The relationships between SP and PE scoring made sense, with stronger relationships for conceptually related and redundant elements.

Combining SP and PE scoring at a total score led to increased reliability and comparable pass/fail decisions with little impact on decision consistency or accuracy. When complimentary combinations of SP and PE scoring were examined internal consistency improved, fail rates increased, and decision consistency and accuracy were virtually identical. The impact for PEs of unloading some of their task to SPs remains unknown but could theoretically increase their mental resources and ability to focus on a simplified task. Among many other questions, this issue requires further investigation.

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Table 1. Pearson Correlations Between SP and PE Total Scores and Score Dimensions

	Comm (SP)	Rapport (SP)	Overall (SP)	Total (SP)	Total (PE)	Pat Inter (PE)	CLEO (PE)	Prob Sol (PE)	Data Acq (PE)
Listening (SP)	0.94*	0.87*	0.93*	0.96*	0.65*	0.81*	0.72*	0.16	0.29
Communication (SP)		0.90*	0.96*	0.98*	0.78*	0.87*	0.81*	0.30	0.44*
Rapport (SP)			0.94*	0.96*	0.67*	0.80*	0.77*	0.21	0.27
Overall (SP)				0.99*	0.74*	0.86*	0.81*	0.26	0.36*
Total (SP)					0.74*	0.86*	0.81*	0.24	0.35*
Total (PE)						0.86*	0.85*	0.69*	0.75*
Patient Interact (PE)							0.89*	0.30*	0.47*
CLEO (PE)								0.34*	0.46*
Problem Solving (PE)									0.50*

Note. * indicates observed alpha < 0.05

Table 2. Composite Reliability Estimates for Combining SP and PE Total Scores.

Weights	Composite Reliability
.05 (SP) .95 (PE)	0.77
.10 (SP) .90 (PE)	0.80
.20 (SP) .80 (PE)	0.85

Table 3. Pass Rates for Traditional PE Only Scoring and Weighted Combinations of SP and PE Total Scores.

Status	PE Only	.05 (SP) .95 (PE)	.10 (SP) .90 (PE)	.20 (SP) .80 (PE)
Pass	34 (57%)	33 (55%)	33 (55%)	36 (60%)
Fail	26 (43%)	27 (45%)	27 (45%)	24 (40%)
Individual Changes: Pass to Fail		2 (3%)	3 (5%)	3 (5%)
Individual Changes: Fail to Pass		1 (2%)	2 (3%)	5 (8%)

Table 4. Decision Consistency and Accuracy Estimates for PE Only Scoring and Weighted Combinations of SP and PE Total Scores.

	PE Only	.05 (SP) .95 (PE)	.10 (SP) .90 (PE)	.20 (SP) .80 (PE)
Decision Consistency	0.83	0.80	0.82	0.85
Decision Accuracy	0.88	0.86	0.87	0.89

Table 5. Cronbach's alpha for various combinations of SP and PE scoring at the station level.

	Non-Overlapping PE (remove listening & rapport)
SP All 4 Items	0.82
SP Communication & Rapport	0.78
SP Listening & Rapport	0.77
SP Overall Global	0.74

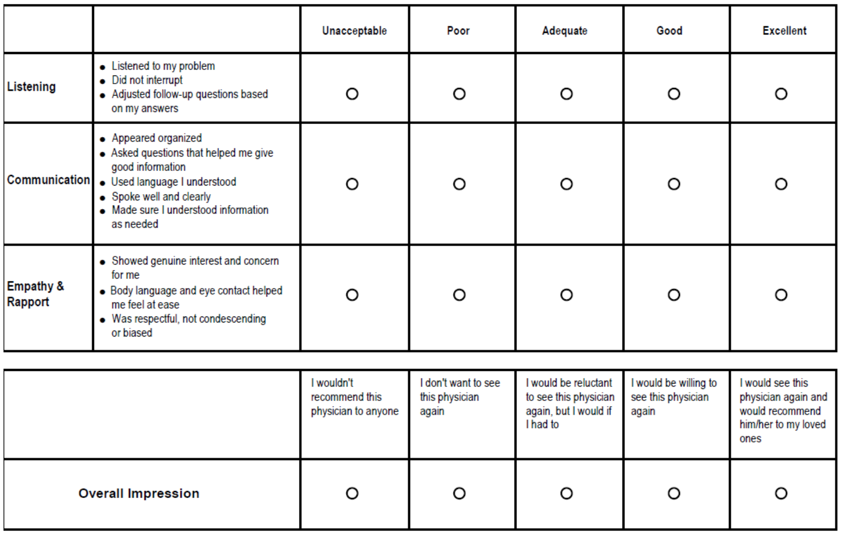
Table 6. Pass Rates for Traditional PE Only Scoring and Combinations of SP Elements and Non-overlapping PE Total Scores.

Status	PE Only	PE Non-Overlap & SP all 4 Items	PE Non-Overlap &SP Com & Rapport	PE Non-Overlap & SP Global
Pass	34 (57%)	29 (48%)	28(47%)	29 (48%)
Fail	26 (43%)	31 (52%)	32 (53%)	31 (52%)
Individual Changes: Pass to Fail		6 (10%)	6 (10%)	5 (8%)
Individual Changes: Fail to Pass		1 (2%)	0	0

Table 7. Decision Consistency and Accuracy Estimates for PE Only Scoring and Combinations of SP Elements and Non-overlapping PE Total Scores.

	PE Only	PE Other & SP all 4 Items	PE Other &SP Commun & Rapport	PE Other & SP Global
Decision Consistency	0.83	0.82	0.79	0.76
Decision Accuracy	0.88	0.87	0.85	0.83

Figure 1. SP Rating Tools.



		Unacceptable	Poor	Adequate	Good	Excellent
Listening	• Listened to my problem • Did not interrupt • Adjusted follow-up questions based on my answers	○	○	○	○	○
Communication	• Appeared organized • Asked questions that helped me give good information • Used language I understood • Spoke well and clearly • Made sure I understood information as needed	○	○	○	○	○
Empathy & Rapport	• Showed genuine interest and concern for me • Body language and eye contact helped me feel at ease • Was respectful, not condescending or biased	○	○	○	○	○

	I wouldn't recommend this physician to anyone	I don't want to see this physician again	I would be reluctant to see this physician again, but I would if I had to	I would be willing to see this physician again	I would see this physician again and would recommend him/her to my loved ones
Overall Impression	○	○	○	○	○

Figure 2. Average Percent of SP Ratings by Dimension Across 12 Stations.

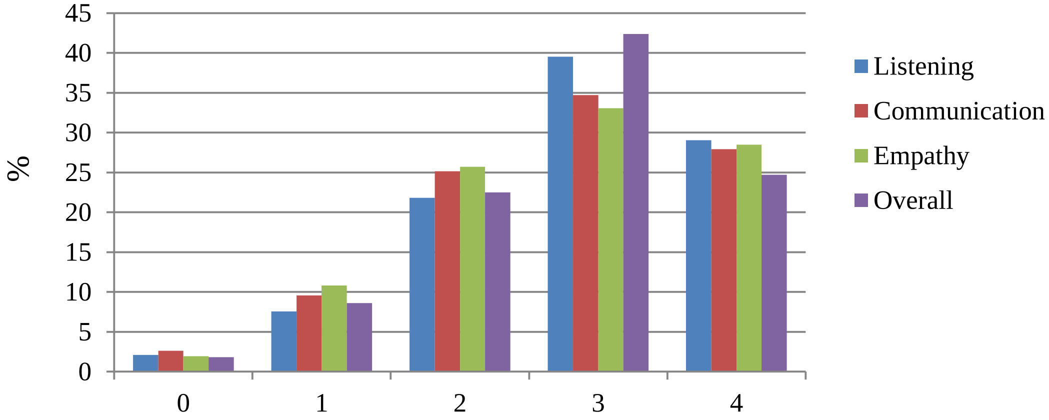


Figure 3. Average Percent of SP Ratings by Dimension by Station Type.

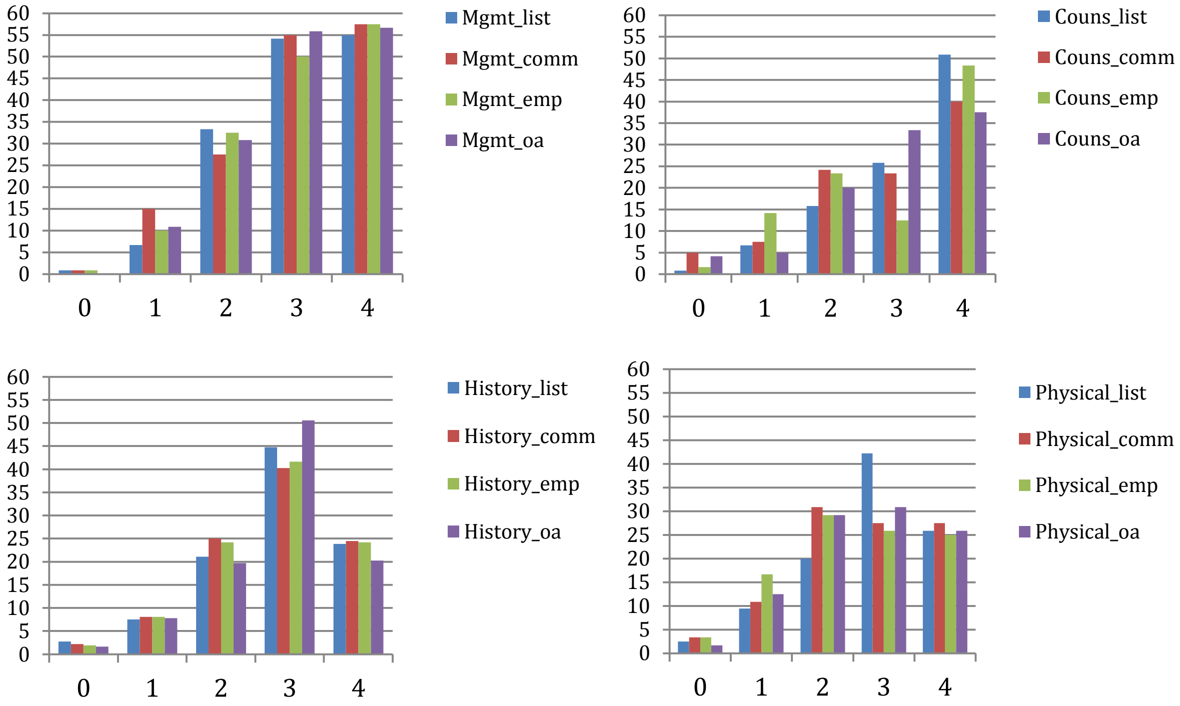


Figure 4. Mean Percent Station Score for SPs and PEs.

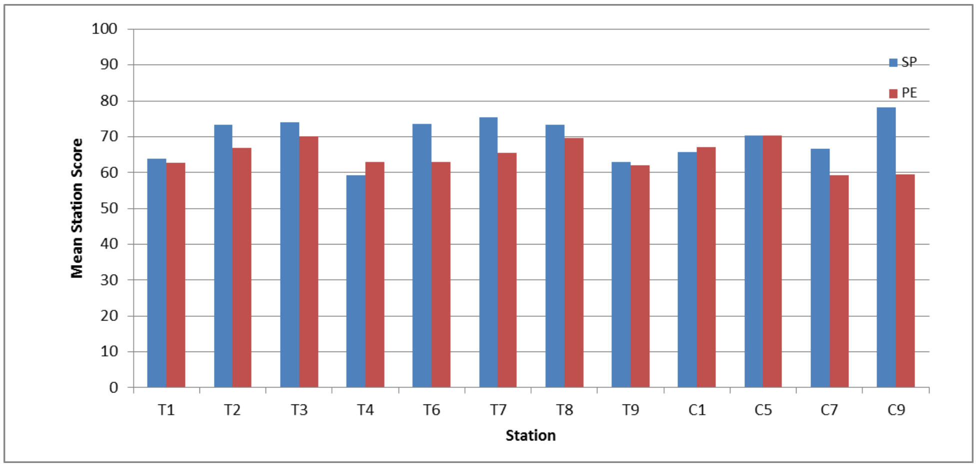


Figure 5. Mean Percent Score for SPs and PE by Station Type.

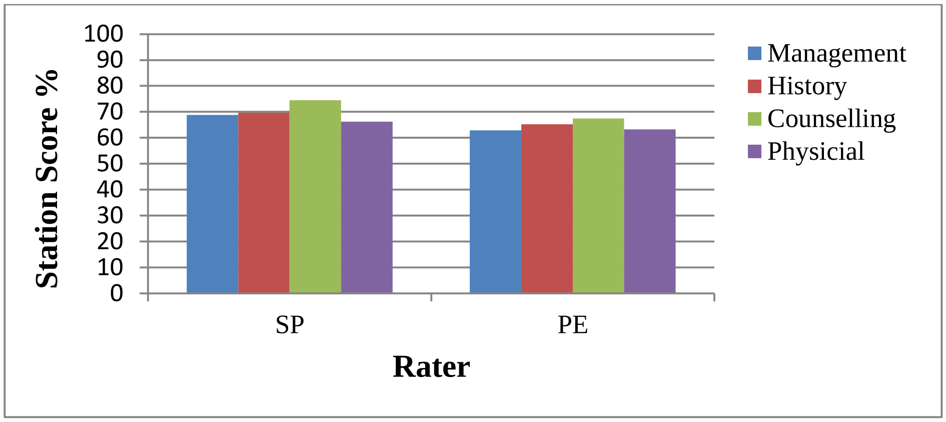


Figure 6. Total Score Distribution for SPs and PEs.

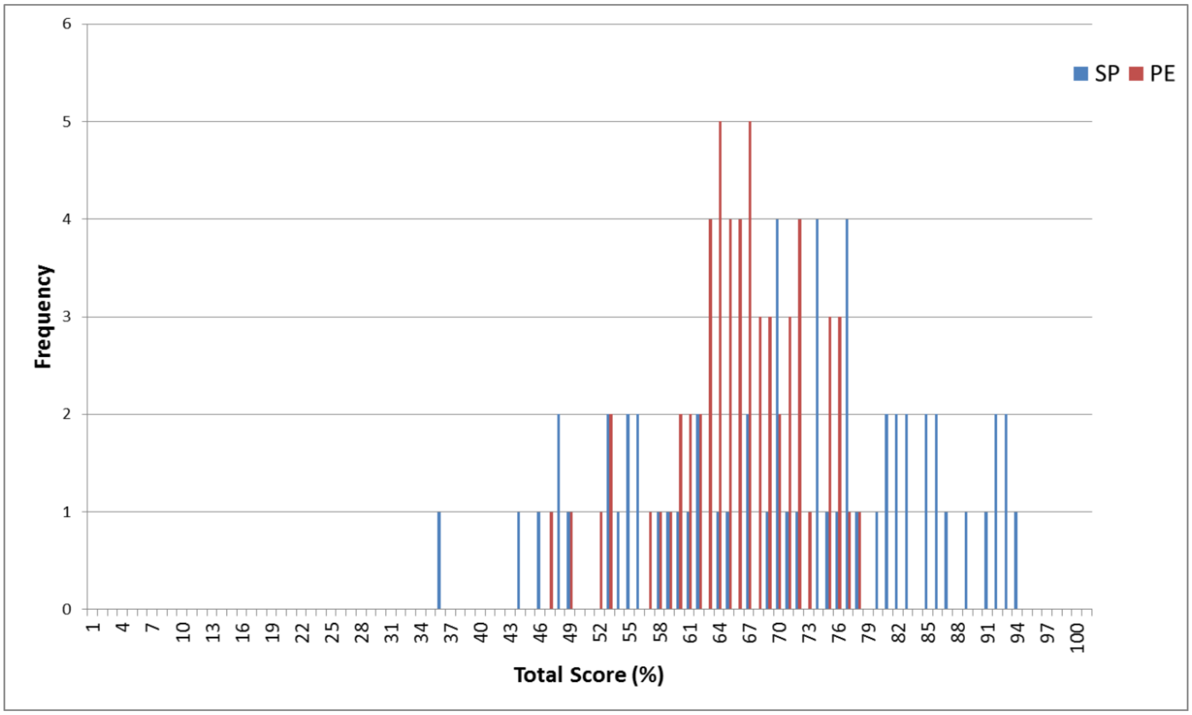


Figure 7. Score Distribution for SP and Non-overlapping PE Total Scores.

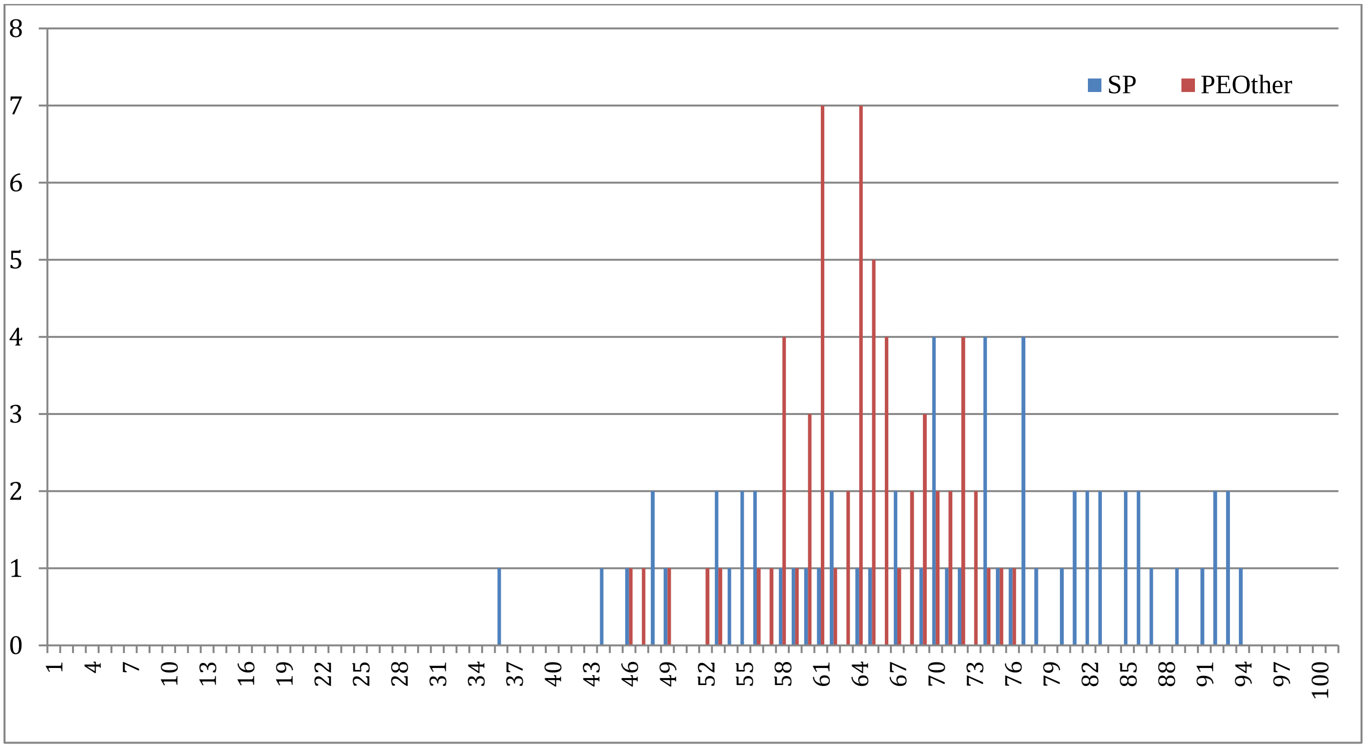
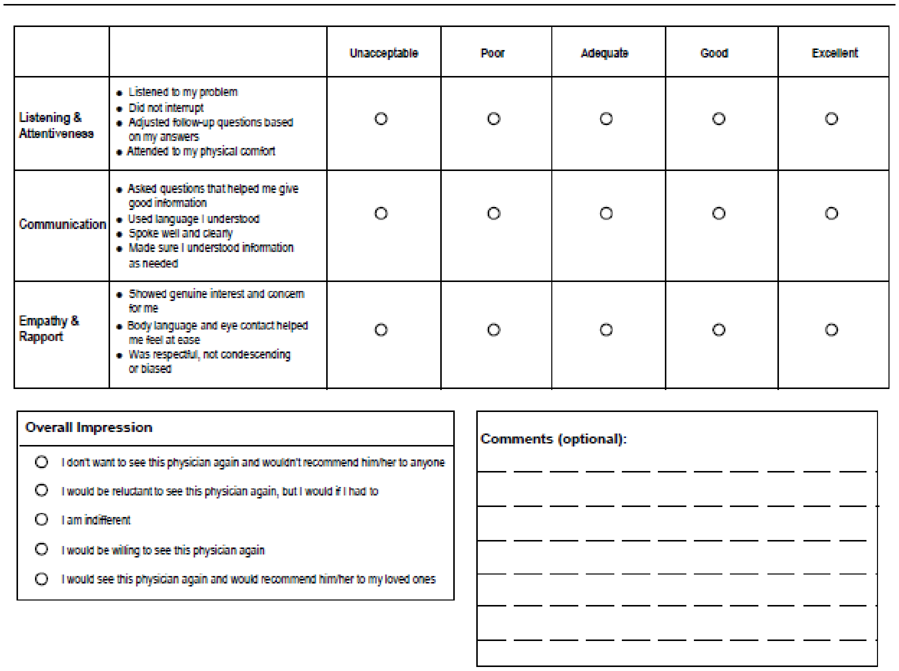


Figure 8. Updated SP Rating Tools.



		Unacceptable	Poor	Adequate	Good	Excellent
Listening & Attentiveness	• Listened to my problem • Did not interrupt • Adjusted follow-up questions based on my answers • Attended to my physical comfort	○	○	○	○	○
Communication	• Asked questions that helped me give good information • Used language I understood • Spoke well and clearly • Made sure I understood information as needed	○	○	○	○	○
Empathy & Rapport	• Showed genuine interest and concern for me • Body language and eye contact helped me feel at ease • Was respectful, not condescending or biased	○	○	○	○	○

Overall Impression

○ I don't want to see this physician again and wouldn't recommend him/her to anyone

○ I would be reluctant to see this physician again, but I would if I had to

○ I am indifferent

○ I would be willing to see this physician again

○ I would see this physician again and would recommend him/her to my loved ones

Comments (optional):