Efficacy of Videoconference Interviews in the Pediatric Surgery Match

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PURPOSE: The pediatric surgery match is highly competitive with the interview process requiring significant resources. The purpose of this study was to evaluate the efficacy of videoconference interviewing (VI) as a screening tool in the pediatric surgery match process.

METHODS: During the 2017 interview season, applicants participated in VI prior to on-site interviews. Applicants and faculty completed 15 and 8-question surveys, respectively, regarding their experiences.

RESULTS: Both faculty and applicants agreed VI was easily workable and allowed them to accurately represent themselves. Faculty agreed VI would change how they rank candidates and that it is a helpful screening tool. Most disagreed VI could substitute for on-site interviews. Most applicants reported the cost and time required for on-site interviews was a hardship. Overall, applicants moved an average of 5.5 ± 2.9 (median 3) positions from the pre-VI to post-VI rank list. Thirty-seven percent of applicants moved out of the top ten rank list following VI. Of the lowest 5 applicants on the post-VI rank list, only 20% matched successfully.

CONCLUSION: The pediatric surgery match requires a significant investment of time and money that creates a hardship for most applicants. VI may be an effective screening tool that could potentially reduce on-site interviews and alleviate the burden on applicants and general surgery training programs. (J Surg Ed 76:420−426. © 2018 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: pediatric surgery match, pediatric surgery fellowship, match application, interview burden, video interview

COMPETENCIES: Professionalism, Interpersonal and Communication Skills, Systems-Based Practice

INTRODUCTION

In an era of work-hour restrictions and increasing awareness of resident well-being, the pediatric surgery fellowship interview process and the burden it places on general surgery residents and their training programs is under scrutiny. Approximately 80% of general surgery residents pursue fellowship training and general surgery program directors report the interview process is disruptive.[1] The time commitment and financial resources are substantial for residents applying to pediatric surgery. Applicants spend upwards of 17% of their annual salary and 3 to 4 weeks away from training to complete the interview process.[2−4] Applicants use most or all of their accrued vacation days and are at risk of violating the American Board of Surgery general surgery training requirements.[5]

Proposed solutions to relieve the fellowship interview burden include a centralized date and location for interviews, regionally-coordinated interviews, and videoconferencing for preliminary interviews.[1] Videoconference interviewing (VI) as an adjunct to the traditional interview process have been reported for residency interviews in family medicine and urology and were found to be cost-effective and convenient for both applicants and programs.[6,7] VI has not been described in the pediatric surgery fellowship interview process. Our program began using VI for preliminary interviews during the 2017 pediatric surgery interview season. The purpose of this study was to evaluate videoconference interviewing as a potential screening tool and to assess the perceptions of applicants and faculty interviewers regarding their experience specifically for pediatric surgery.

METHODS

Our institution conducted videoconference interviews with selected fellowship applicants prior to an on-site interview using Skype (Microsoft, Redmond, WA). Skype is a software application that provides free video calls via the Internet. Applicants who were selected for an

interview were sent email invitations and asked to rank their preferred dates and times for the VI. Prior to the VI interview, applicants were sent a detailed information packet outlining the fellowship program, received instructions on how to set up a Skype account, and were asked to create their accounts two weeks prior to the videoconference. The fellowship coordinator ensured the candidates' accounts were created and loaded into the faculty contacts on the day of the interview. Three faculty members volunteered to conduct all video interviews. Each applicant interviewed with three faculty members for 20 minutes each. The interviews were run consecutively and constituted a one hour commitment on the applicant's part. Three to six applicants were interviewed each day in the late afternoon and/or early evening. Applicants were ranked by each faculty interviewer before and after the VI, and all applicants were subsequently invited to attend an on-site interview. The same standardized evaluation form was used by all faculty members for both the VI and on-site interview.

Institutional Review Board approval was obtained (No. 00120144) to contact the involved subjects to complete a survey. A 15-question survey was created using a web-based survey platform (Qualtrics, Provo, UT) for applicants with an 8-question survey for involved faculty. Sample surveys are shown in Appendix A. A Likert scale was used to assess perceptions regarding ease and convenience of VI, ability to represent oneself, decision if the program and/or applicant is the right fit, and utility as a screening tool and/or substitute for on-site interview. In addition, the applicants were asked questions pertaining to the burden of the traditional interview process including the number of programs applied to and visited, time spent away from their current job, whether the number of interviews was limited by their current program, and overall cost.

Applicants were assigned a study ID number for the survey in order to correlate results with match outcomes. Faculty members were blinded to survey results. The survey link was emailed on May 4, 2017 (after rank lists were submitted) and surveys were completed by May 17, 2017 (prior to the match results). Reminder emails were sent to participants who had not yet responded on May 11th and 16th. Participants were emailed an electronic gift card for $10 along with the survey link. Continuous variables were analyzed by Student's t test, and Fisher's exact test was used for ordinal data. Statistical significance was set at $p < 0.05$.

RESULTS

Three faculty members participated in VI and all three completed the survey. All agreed or strongly agreed that the technology worked easily, allowed them to accurately represent themselves to the candidate, and helped them decide if the candidate was the right fit for the program. All strongly agreed that VI changed how they would rank the candidate. All agreed or strongly agreed that VI was worth the time spent and was a helpful screening tool. All disagreed or strongly disagreed that VI could substitute for an on-site interview. Faculty comments are shown in Figure 1.

Twenty-three applicants participated in VI and 22 participated in an on-site interview (one was unable to attend the on-site interview). Of the 23 who participated in VI, 20 (87%) returned the survey and information regarding matched status was available for 19. The majority of applicants agreed or strongly agreed that the informational material sent prior to the interview was helpful (95%). Most agreed or strongly agreed that VI was offered at convenient times (90%). Most believed the technology was easily available and workable (85%). Applicant perspectives on the ability to represent themselves to the program and determine if the program was the right fit are shown in Figure 2. When asked whether VI was a helpful screening tool, there were varied responses (Fig. 3). However, the majority disagreed or strongly disagreed that VI could substitute for an on-site interview (80%) and the remainder were undecided (20%). Most applicants agreed or strongly agreed that VI was worth the time spent (75%).

Applicants moved an overall mean of 5.5 ± 2.9 (median 3) positions from the pre-VI to post-VI rank list.

"I think it can serve as a screening tool, but it cannot replace an on-site interview."

"1. Interviews late afternoon/evening are burdensome, especially if doing a large volume 2. Felt it was a good screening tool - assessment of good "fit" of applicants was accurate 3. Probably not necessary to skype all applicants but more helpful for the middle pack candidates to screen and offer more limited number of in person interviews."

"One aspect that I didn't expect was the timing of the interviews and how the candidate's work day had been. There were several that appeared tired on the video interview and we came to find out about the additional responsibilities they had during the day to account for that."

FIGURE 1. Faculty comments regarding videoconference interviewing.
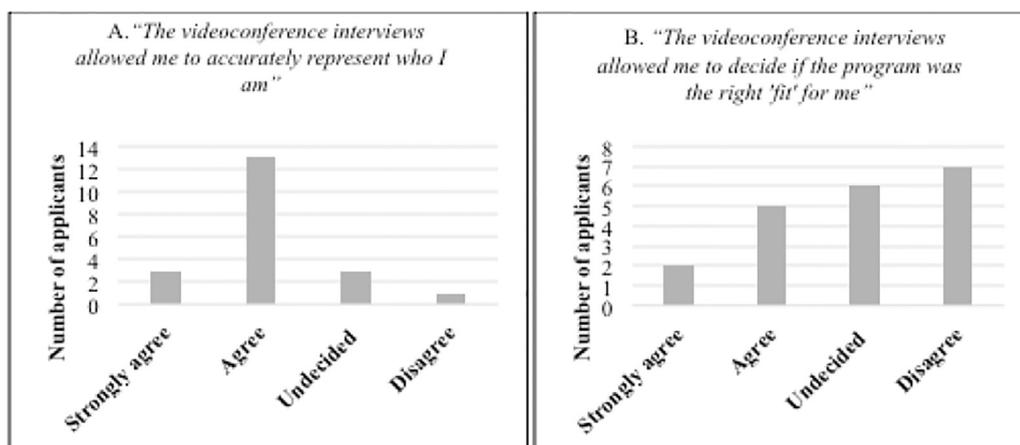
FIGURE 2. Applicants' perceptions regarding ability to accurately represent themselves (a) and decide if the program was the right "fit" (b).

Of the top ten candidates on each interviewer's pre-VI rank list, an average of 37% moved out of the top ten following the VI. Of the bottom five candidates on each interviewer's post-VI rank list, only 20% were ultimately successful in obtaining a position in the match.

The mean amount of money spent by the applicant on the interview process was $8722 ± 4034 ($4000-$15000) and 75% reported the amount spent was a hardship. Applicants who matched spent significantly more money compared to applicants who did not match ($11000 ± $3345 vs $6438 ± $3659, p = 0.02). Applicants applied to an average of 38 ± 5 programs. The average number of interviews attended was 18 ± 7.8 and applicants spent an average of 23.2 ± 9.2 days away from their current position. Applicants who matched attended more interviews compared to those who did not match, spending a greater number of days away from their current position. These differences, however, did not reach statistical significance (Table 1). While only 25% reported that their current position limited the

number of on-site interviews they could attend, 90% reported that the amount of time away was a hardship. Applicant comments are shown in Figure 4.

DISCUSSION

The pediatric surgery match process remains a highly competitive, resource-intensive process and may be a hardship to many applicants. A successful candidate is more likely to have a combination of objective and subjective qualities such as residency supported research, greater number of publications and presentations at national meetings, working well with others, evaluations of other faculty, and overall personality.[8,9] While review of the ERAS application may identify desirable candidates based on objective criteria, it is generally believed that the onsite interview is crucial in the final choice of a pediatric surgery resident.

This study showed that applicant rank position changed substantially from the pre-VI rank list to the post-VI rank list, with applicants moving a mean of 5.5 ± 2.9 (median 3) positions. In a study looking at the utility of onsite interviews, pediatric surgery program directors were asked to prospectively generate a "pre-interview rank list" and following the programs' usual interview practice, also submit a final rank list.[2] The findings were similar to the current study in that applicants moved a mean of 5.2 ± 12 spots (median 5.3) from the preinterview to the final rank list. Thirty-six percent of applicants moved out of the top ten following the onsite interview which is similar to our finding that 37% of applicants moved out of the top ten following the video interview. In addition, we found that only 20% of applicants in the bottom 5 on the post-VI rank list were ultimately successful in the match. Although conducted at a single training program, this study suggests VI is a useful
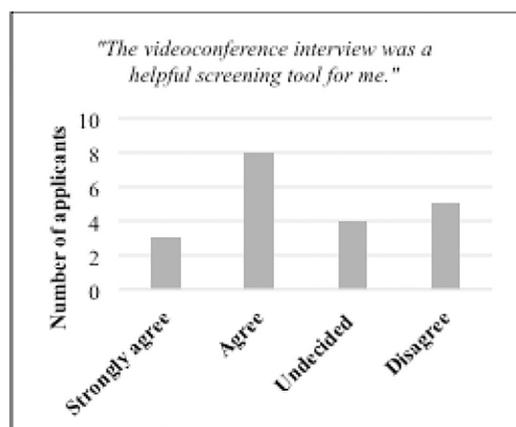
FIGURE 3. Applicants' perceptions regarding the use of VI as a screening tool.

TABLE 1. Comparison of interview data between matched and unmatched applicants

	Overall	Matched (n = 10)	Unmatched (n = 9)	p value
Money spent ($)	8722 ± 4034	11000 ± 3345	6438 ± 3659	0.02
No. of days away from current position	23.2 ± 9.2	26.3 ± 8.8	19.2 ± 8.9	0.10
No. of programs applied to	38 ± 5	39.9 ± 4.5	37.1 ± 4.8	0.21
No. of interviews attended	18 ± 7.8	20.3 ± 7.0	14.6 ± 8.1	0.12

tool to the training program in selecting most desirable applicants for an onsite interview.

Two other recent studies have investigated what position on the rank list both programs and applicants match; raising a question of what is the ideal number of applicants to invite for an onsite interview. Pediatric surgery programs match at a median of the 3rd ranked applicant, with the lowest match at the 12th position;[4] whereas successful pediatric surgery applicants match at an average of their 5th ranked program.[10] In the previously discussed study by Downard, programs detected on average 81% of its top 3 candidates based on the top ten pre-interview rank list and that any given program would need to interview 13 or fewer candidates to identify the final 4 of their top 5 candidates. This underscores the importance of prudent selection of applicants to an onsite interview on the final match results. Video interviews may provide a low cost, low investment opportunity to further hone a program's rank list and offer onsite interviews to the most highly ranked candidates for an individual program.

Alternatives to onsite interviews that have been discussed, include centralized or regional interviews. A survey of pediatric surgery fellowship applicants, found that while 76% thought that onsite interviews were important, 49% felt that centralized or regional interviews were acceptable.[8] Centralized or regional interviews may be difficult logistically, as few surgical meetings occur within the current interview timeframe. Another downside to this approach is travel incurred by both applicants and faculty, followed by additional travel by the applicant for subsequent onsite interviews. Video conferencing may incur the same benefit without the cost and inconvenience of travel.

Skype was chosen for videoconference interviewing because it is free, easily available, functions on both PC and Macintosh platforms, and has been shown to be effective for video interviewing.[6,7] Edje et al. used Skype as a screening tool during residency interviews for family medicine and found it to be cost-effective and time-efficient. Applicants found it to be logistically easier and cheaper than traditional interviews and liked the innovative appeal and convenience. Both applicants and faculty members felt VI should be a standard part of the interview process but were uncomfortable making it the only means of interviewing, similar to the findings of our survey.[6] Shah et al. reported similar findings with the use of Skype for urology resident selection. Applicants perceived VI as less effective compared to traditional

"Overall I believe the skype interface to be a great tool for preliminary screening in order to expand your initial pool of applicants while limiting your interview spots. This would reduce overall cost associated with interviewing significantly and I applaud your program for taking the initiative in testing this as a future tool for screening candidates."

"The skype interview seems like it would be a helpful screening tool for the programs to select applicants to interview in person. Conversely, only interviewing three people and not visiting the hospital itself does not seem like it would provide enough information for me as an applicant to feel like I would be making an informed decision."

"The money was not a hardship for me because my husband works but I'm sure it is for most other residents."

"Might be a useful screening tool, don't believe it can replace on-site interview."

"I could see how video conference may play a roll in a screening process for the programs but I personally require a site visit to gain a true sense of the place."

"I believe there is benefit to the video interviews. There was certainly some redundancy between video interviews and in person interviews which could be minimized. I still believe there is benefit to coming to the site and seeing how the group interacts. In my mind, the concept should be used as a screening tool."

FIGURE 4. Applicant comments regarding videoconference interviewing.

interviews but supported its use as an introduction to the program.[7]

Overall, we found the VI process went smoothly and the only difficulty experienced was occasional trouble connecting when the applicants were interviewing from a hospital. Other authors have reported difficulty connecting from hotels, voice delay, video interruption, and call termination.[6,7] Concerns expressed by our applicants included the limited number of faculty interviewers, the inability to view the hospital, and lack of observing how the surgical faculty interacts. These concerns could explain why most applicants did not agree that VI helped them decide if the program was the right "fit" for them. One concern expressed by a faculty member was in regard to the timing of the videoconference interview. Applicants may appear more fatigued or stressed when interviewing during or after a work day compared to on-site interviews when candidates are free of clinical responsibilities.

This study did not compare the post-VI rank lists with the final rank lists. As is our interview practice, the group of faculty and fellows performing the onsite interviews, immediately holds a debriefing session where each applicant is discussed. We felt that this debriefing may have a greater impact on the final rank list than the personal interview alone. The change between the post-VI rank list and the final rank list is something that warrants future investigation.

Limitations of survey studies include recall bias and reliability of data collected. The small number of faculty involved in VI is an additional limitation of this study. There is the potential that applicants may be biased towards favorable responses as they may be trying to make a positive impression. We tried to control for this by performing the survey after submission of the rank lists and ensuring that faculty members were blinded to the individual survey results. Also, only a limited number of the applicant pool was studied based on the program's usual manner to extend invitations to interview. Future research efforts should explore how the on-site interview compared with applicant expectations after VI and how VI could impact applicants' decisions to attend on-site interviews.

CONCLUSIONS

The pediatric surgery match requires a significant investment of time and money that creates a hardship for most applicants. Videoconference interviewing may be an effective screening tool that could potentially reduce onsite interviews and alleviate the burden the interview process has on applicants as well as general surgery training programs.

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SUPPLEMENTARY INFORMATION

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jsurg.2018.08.010.

APPENDIX A. SAMPLE SURVEYS

Faculty Survey

1 The video conference interviews were offered at convenient times

strongly agree   agree   undecided disagree   strongly disagree

1 The technology for video conference interviews was easily available and workable

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interviews allowed me to accurately represent who I am to the candidate

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interviews helped me decide if the candidate was the right "fit" for our program

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interview changed how I would rank the candidate

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interview was worth the time spent

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interview was a helpful screening tool for me

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interview could substitute for an on-site interview

strongly agree   agree   undecided disagree   strongly disagree

Comments (free text)

Candidate Survey

1 The program information material sent prior to the interview was helpful

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interviews were offered at convenient times

strongly agree   agree   undecided disagree   strongly disagree

1 The technology for video conference interviews was easily available and workable

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interviews allowed me to accurately represent who I am

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interviews helped me decide if the program was the right "fit" for me

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interview was worth the time spent

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interview was a helpful screening tool for me

strongly agree   agree   undecided disagree   strongly disagree

1 The video conference interview could substitute for an on-site interview

strongly agree   agree   undecided disagree   strongly disagree

1 How much money did you spend on the interview process this cycle? (free text)
2 Was this amount of expenditure a hardship? Y/N
3 How many days away from your current position did you spend for all of your interviews? (free text)
4 Did this time away represent a hardship? Y/N

5 How many programs did you apply to? (free text)
6 How many programs did you visit? (free text)
7 Did your current position/job limit the number of on-site interviews that you could attend? Y/N

Comments (free text)