Virtual interviews for admission to health care residency programs during the COVID-19 pandemic

Alfredo Eymann[a,c] 🄳, *Roberta Ladenheim[a,b]* 🄳, *Amanda R. Soto Pérez[a,c]* 🄳,
Fabiana Reboiras[b] 🄳, *Clara Facioni[b]* 🄳, *Eduardo Durante[a,d]* 🄳

ABSTRACT

Introduction. The COVID-19 pandemic forced residency programs to adapt their selection processes. Our objective was to describe the experience of virtual interviews conducted to select residents through applicants' perception. *Population and methods.* An electronic questionnaire was sent to health care residency applicants after their interviews conducted in 2020.

Results. Two-hundred and twenty-one questionnaires were collected and the average distance to the facility was 163 km. Also, 67.9% of the applicants used a personal computer, 98.2% felt that they were treated appropriately, 77.8% were able to state their ideas, and 12.2% reported technical difficulties. In addition, 32.6% said that they would prefer virtual interviews for future selection processes and 17.6%, that it would be irrelevant.

Conclusions. Virtual interviews allowed the resident selection process to be completed; one third of applicants would prefer virtual interviews in the future and there were no apparent technological limitations.

Key words: internship and residency, interview, COVID-19.

a. Research Center in Education for Health Care Providers, Instituto Universitario Hospital Italiano, City of Buenos Aires, Argentina.
b. Research Center in University Teaching, Management, and Development, Instituto Universitario Hospital Italiano, City of Buenos Aires, Argentina.
c. Department of Clinical Pediatrics, Hospital Italiano de Buenos Aires, Argentina.
d. Family Medicine Service, Hospital Italiano de Buenos Aires, City of Buenos Aires, Argentina.

E-mail address:
Alfredo Eymann: alfredo.eymann@hospitalitaliano.org.ar

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic forced health care residency programs to adapt their selection processes and training strategies.[1–3] The preventive and mandatory social isolation policy established in Argentina in March 2020 due to the COVID-19 pandemic resulted in the suspension of face-to-face instances across all educational levels. Following such unprecedented measure, it was necessary to design strategies that would allow for the educational continuity of residency programs for health care providers.

In Argentina, for the first time, a unique digital and ubiquitous exam, managed by the National Ministry of Health, was established for admission to most residency programs.[4] In the same way, the rest of the processes involved in the competition for admission to residency programs had to be adapted to the limitations imposed by the preventive and mandatory social isolation policy.

The institution is a private teaching hospital that coordinates more than 600 health care providers in 50 residency programs. The resident selection process considers applicants' academic qualifications based on their average undergraduate score and the score obtained in the unique exam managed by the Ministry of Health. It also considers some of their personal and professional characteristics, through a personal interview by a panel or a series of multiple mini-interviews.

Traditionally, interviews are conducted in person in order to allow applicants to interact with the residency program's management and teaching team, which includes coordinators, supervisors, and chief residents, among others.

The differential value of an interview, as a selection tool for residents, is that it allows assessing non-academic characteristics as well as personal and intepersonal attributes important for their professional performance within an educational program.[5] It has been established that, if the interview is designed as a guided conversation, it allows obtaining in-depth data from the interviewee.[6] Likewise, the reliability of the interview increases as the domains to be assessed are standardized and interviewer teams are trained.

Although virtual interviews are common in recruitment processes, experience with this type of interview for resident selection had been limited until the onset of the COVID-19 pandemic.[7–10] So much so that the United States Accreditation Council for Graduate Medical Education and other educational institutions recommended conducting virtual interviews for selection processes in 2020.[11]

For this reason, our objective was to describe the experience of virtual interviews conducted to select residents through applicants' perception.

POPULATION AND METHODS

This was a cross-sectional study using a qualitative-quantitative methodology. The population was made up of applicants to health care residency programs, and the sample was selected by non-probability, purposive sampling. An invitation to complete an anonymous and voluntary questionnaire (using Google Forms®) was sent a week after the interview and prior to the publication of the ranking for admission to the residency program in the 2020 selection process. A reminder was sent a week later. Completing the questionnaire was considered consent to participate.

Based on the bibliography, a group that included 2 health care providers with expertise in medical education and one with a B.S. in Education designed and validated the content of the questionnaire to be completed by applicants. A face validity test was performed with 4 first-year residents and adjustments were made accordingly. No reliability tests were done.

The following variables were assessed: age, sex, career average score, type of university (public, private or abroad), type of specialty aspired to (clinical, surgical or other), distance to the facility at the time of the interview, length of the interview (brief, adequate, long), electronic device used, technical difficulties during the interview, number of interviewers, interviewers with cameras turned off, perception that their privacy was affected by connecting from a personal setting, practice on how to conduct interviews, perception that they were able to state their ideas, appropriate treatment, inappropriate questions, uncomfortable attitudes, preference for future interviews (in person, virtual, irrelevant), positive and negative aspects perceived (*Supplementary material 1*).

The following were considered clinical specialties: cardiology, general medicine, dermatology, gastroenterology, neurology, pediatrics, psychiatry, and intensive care.

The following were considered surgical specialties: anesthesiology, cardiovascular surgery, general surgery, pediatric surgery, gynecology, neurosurgery, ophthalmology, traumatology and orthopedics, otorhynolaryngology, obstetrics and gynecology, and urology.

The following were defined as other specialties: anatomical pathology, biochemistry, diagnostic imaging, nursing, and radiation therapy.

Continuous variables were expressed as mean and standard deviation, while categorical variables, as absolute number and percentage. Data were processed with the Stata® 15 software. For the qualitative analysis, 3 investigators independently defined categories through iterative reading and analysis of the free-text responses, which were consolidated through triangulation among them.

The study was approved by the facility's Ethics Committee for University Research Protocols (approval no. 0040-20).

RESULTS

A total of 221/550 applicants completed the questionnaire (response rate: 40.2%); no questionnaire was eliminated and all were analyzed.

Table 1 describes applicants' characteristics, who were mostly females (66%), graduated from a public university (65.6%), and were at an average distance of 163 km from our facility at the time of the interview. Nine of the interviewees were more than 1200 km away.

Table 2 describes the characteristics of the interviews, during which a personal computer was mostly used (67.9%) and the interviewees perceived to be appropriately treated by the interviewing team (98.2%). Applicants felt that they were able to state their ideas (77.8%); some described technical difficulties (12.2%) and indicated that, for future admission processes, they would prefer virtual interviews (32.6%) or that the interview mode would be irrelevant (17.6%).

Few questions were perceived as inappropriate (4.5%) and few attitudes made applicants feel uncomfortable (6.3%). These were related to questions about political activism, psychological treatment, having a domestic employee or number of people sharing the household. It was also uncomfortable when the members of the interview panel looked at their cell phones or showed a lack of interest.

Table 3 describes the perceived positive and negative aspects of the virtual interviews.

DISCUSSION

Virtual interviews made it possible to complete the resident selection process and were well accepted among applicants.

Most of them were women, which is consistent with the feminization process described in health care professions.[12] In addition, most of them graduated from public universities. This information is consistent with the fact that, in our

TABLE 1. *Characteristics of residency applicants (n = 221)*

Age in years (mean, SD)		26	2.6
Sex (n, %)	Female	146	66
	Male	74	33.5
	Other	1	0.5
University management (n, %)	Public	145	65.6
	Private	57	25.8
	Abroad	19	8.6
Specialty (n, %)	General medicine	95	43
	Surgery	81	36.6
	Other	45	20.4
Average career score (mean, SD)		8	0.8
Distance to our facility in km (n, %)	0–200	177	80
	201–600	19	8.7
	601–1200	18	8.1
	1201–1757	9	3.2

SD: standard deviation.

TABLE 2. *Characteristics of virtual interviews (n = 221)*

		n	%
Devices used	Personal computer	150	67.9
	Mobile phone	61	27.6
	Tablet	10	4.5
Had a technical difficulty (n, %)		27	12.2
Somehow prepared for the interview (n, %)		129	58.4
Considered interview duration was adequate (n, %)		182	82.3
Considered it affected their privacy (n, %)		7	3.2
Considered they were treated appropriately (n, %)		217	98.2
Were able to state their ideas (n, %)		172	77.8
Considered some questions were inappropriate (n, %)		10	4.5
Considered certain attitude made them uncomfortable (n, %)		14	6.3
Were bothered by people with the camera turned off (n, %)	Not applicable	176	79.6
	Yes	7	3.1
	No	38	17.2
Number of persons present during the interview (mean, SD)		4.7	1.5
How they would like to conduct a future admission interview (n, %)	In person	110	49.8
	Online	72	32.6
	Irrelevant	39	17.6

SD: standard deviation.

facility, approximately 70% of applicants come from public institutions.[13]

The average distance to the university was 163 km. Eighty percent of the applicants were less than 200 km away; however, 9 of them were more than 1200 km away. In addition, convenience of access was the main positive aspect perceived in the qualitative analysis. Although most training in Argentina is offered in the Metropolitan Area of Buenos Aires and our university is located in that region,[14] we consider that the possibility of remote access is an aspect that favors equity of access to the training of specialists through the residency program, since it was a facilitator so that applicants from all over the country could participate in the selection process without the need for travel and expenses.[15]

Interestingly, more than half of the participants prepared for the interview situation. Although we did not ask about the modality of preparation, it could be interpreted as a high motivation to enter the residency program.

Most interviewees used a personal computer, and many used a cell phone. The current generations of professionals in training have incorporated mobile devices into many daily tasks. It is interesting to reflect on responsive academic activities that can be continued through these devices and incorporated into the curricula.

There has been speculation on how virtual interviews could affect socioeconomic, gender, and ethnic diversity of selected applicants, which has been defined as institutionalized discrimination in the virtual era.[8] For example, an applicant with a slow internet connection or with a low-resolution camera and/or audio equipment could give a worse overall impression in a virtual interview than in person.

In Argentina, there is still a technological gap[16] that is a determining factor for this type of interview strategy, so much so that 12% of applicants reported some technical difficulty.

Although almost all interviewees said that they were treated appropriately and the vast majority were able to state their ideas, some of them reported feeling uncomfortable due to cameras being turned off, the large number of interviewers, and some questions that were considered personal. We believe that it is necessary to implement training strategies aimed at the interviewing team to ensure equity and avoid the uncomfortable situations reported here.

Despite the fact that the virtual interviews were conducted in non-institutional settings, only 3% considered that their privacy was affected. The incorporation of home-based settings into the working world has increased sharply since the COVID-19 pandemic. One third of applicants said they would prefer virtual interviews, in contrast to Harrison Snyder's study, in which less than

TABLE 3. *Positive and negative aspects of virtual interviews*

Category	n	%	Verbatim
			Positive
1 Saving time on transportation	61	27.6	*"The fact that you do not need to go to the hospital, especially considering people who live in other provinces".*
2 Convenience	58	26.2	*"You feel less pressure or nervousness because it takes place in a known setting and you do not have to wear a mask".*
3 Adequate organization	52	23.5	*"Prompt and practical in terms of travel and time required".*
4 Accessibility and punctuality	35	15.8	*"Greater convenience because you connect from home and use a familiar device, with no waiting times".*
5 Good treatment by interviewers	15	6.8	*"The interviewers were willing and the questions were relevant".*
			Negative
1 Connection or audio difficulties	67	30.3	*"Nerves about having connection problems that would make the interview difficult".*
2 No negative aspects	60	27.1	-
3 Not seeing interviewers' faces	54	24.4	*"Non-verbal communication between interviewee and interviewer is more difficult".*
4 Brief interview	22	10	*"My interview time was very brief, only 10 minutes".*
5 Too many interviewers	18	8.1	*"Perhaps it would be less overwhelming if there were fewer visible faces".*

8% would be willing to have them in the future.[10]

Lastly, the virtualization of interviews should maintain the positive characteristics of in-person interviews and minimize the limitations of the technological gap.[16] Other published studies have proposed the possibility of implementing hybrid strategies that combine virtual and in-person instances in a complementary manner.[9,10]

The limitations of this study are that it was conducted in a single educational facility, answers were obtained through a questionnaire, and the response rate was partially similar to other published studies.[10] However, we consider that this study provides valuable information for considering the use of virtual interviews as a tool for resident selection processes.

CONCLUSIONS

Virtual interviews allowed the resident selection process to be completed; one third of applicants would prefer virtual interviews in the future and there were no apparent technological limitations. ∎

Supplementary material available at: https://www.sap.org.ar/docs/publicaciones/archivosarg/2022/2464_EM_Eymann_Anexo.pdf

REFERENCES
1. Hernández CI, Eymann A, Ladenheim RI, Duré MI, García Dieguez M. Condiciones del aprendizaje en las residencias del equipo de salud durante la pandemia COVID-19, Argentina 2020. *Medicina (B Aires).* 2022; 82(1):66-73.
2. Dowd B, McKenney M, Elkbuli A. Response regarding: the impact of COVID-19 pandemic on medical school admissions: challenges and solutions. *J Surg Res.* 2021; 260:526-7.
3. Gabrielson AT, Kohn JR, Sparks HT, Clifton MM, Kohn TP. Proposed changes to the 2021 residency application process in the wake of COVID-19. *Acad Med.* 2020; 95(9):1346-9.
4. Silberman P, López E, Medina A, Kohan P, et al. Innovación digital para el ingreso y adjudicación a residencias en salud en Argentina. Una experiencia en la era Covid. *Rev Argent Educ Méd.* 2021; 10(1):26-32.
5. Stephenson-Famy A, Houmard BS, Oberoi S, Manyak A, et al. Use of the interview in resident candidate selection: a review of the literature. *J Grad Med Educ.* 2015; 7(4):539-48.
6. Díaz-Bravo L, Torruco-García U, Martínez-Hernández M, Varela-Ruiz M. La entrevista, recurso flexible y dinámico. *Inv Ed Méd.* 2013: 2(7):162-7.
7. Joshi A, Bloom DA, Spencer A, Gaetke-Udager K, Cohan RH. Video interviewing: a review and recommendations for implementation in the era of COVID-19 and beyond. *Acad Radiol.* 2020; 27(9):1316-22.
8. Labiner HE, Anderson CE, Maloney Patel N. Virtual recruitment in surgical residency programs. *Curr Surg Rep.* 2021; 9(11):25.
9. Ream MA, Thompson-Stone R. Virtual residency interview experience: the child neurology residency program perspective. *Pediatr Neurol.* 2022; 126:3-8.
10. Snyder MH, Reddy VP, Iyer AM, Ganju A, et al. Applying to residency: survey of neurosurgical residency applicants on virtual recruitment during COVID-19. *J Neurosurg.* 2021. Pages 1-10. In press.
11. Final report and recommendations for medical education institutions of LCME-accredited, U.S. Osteopathic, and non-U.S. medical school applicants. Washington, DC: Association for American Medical Colleges; [2021]. [Accessed on: March 14th, 2022]. Available at: https://www.aamc.org/system/files/2020-05/covid19_Final_Recommendations_Executive%20Summary_Final_05112020.pdf
12. Borracci R, Salazar A, Arribalzaga E. El futuro de la feminización de la medicina en Argentina. *FEM.* 2018; 21(3):113-8.
13. Eymann A, Busaniche J, Durante E, Sadler A, et al. Análisis de la procedencia universitaria y desempeño en el examen de ingreso de los aspirantes a las residencias del Hospital Italiano de Buenos Aires: 2003-2006. *Rev Hosp Ital B.Aires.* 2006; 26(4):138-41.
14. Observatorio Federal de Recursos Humanos en Salud. La formación de grado y posgrado en Argentina. Buenos Aires: Ministerio de Salud; 2017. [Accessed on: March 14th, 2022]. Available at: https://www.argentina.gob.ar/sites/default/files/oferhus._la_formacion_de_grado_y_posgrado_en_argentina._ano_2017.pdf
15. Susarla SM, Swanson EW, Slezak S, Lifchez SD, Redett RJ. The perception and costs of the interview process for plastic surgery residency programs: can the process be streamlined? *Plast Reconstr Surg.* 2017; 139(1):302e-9e.
16. Instituto Nacional de Estadística y Censos (INDEC). Acceso y uso de tecnologías de la información y la comunicación. EPH. Cuarto trimestre de 2020. *Ciencia y Tecnología.* 2020;5(1):9-11. [Accessed on: March 14th, 2022]. Available at: https://www.indec.gob.ar/uploads/informesdeprensa/mautic_05_213B13B3593A.pdf