

## Research Article

# Effectiveness of an Otolaryngology Head and Neck Surgery Residents' Induction "Boot Camp" in Saudi Arabia

Muataz H. Alhashem,<sup>1</sup> Naif H. Alotaibi,<sup>1,2</sup> Eulaf H. Alaadah,<sup>3</sup> Ibrahim S. Alnoury,<sup>3</sup> Alaeddin Jebreel,<sup>1</sup> Fouad Jabri,<sup>2</sup> Fazal Hussain,<sup>2</sup> M.H. Rajab<sup>2</sup>

<sup>1</sup>Otolaryngology Department, King Faisal Specialist Hospital and Research Centre, Riyadh, Kingdom of Saudi Arabia

<sup>2</sup>College of Medicine, Alfaisal University, Riyadh, Kingdom of Saudi Arabia

<sup>3</sup>Otolaryngology Head and Neck Surgery Department, College of Medicine, King Abdulaziz University Hospital, Jeddah, Kingdom of Saudi Arabia

Address correspondence to Muataz H. Ahmed Alhashem (muataz.alhashem@hotmail.com).

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## ABSTRACT

**Introduction:** The otolaryngology (ORL) boot camp was designed to onboard ORL residents through a curriculum focusing on their needs as novice otolaryngologists. This boot camp provided systematic, specialty-wide training in core elements of knowledge, procedural skills, professionalism, supervision, and communications for residents entering ORL. The present study aimed to assess the effectiveness of an ORL resident induction "boot camp" in the Kingdom of Saudi Arabia. **Methods:** This was a cross-sectional (multicenter) study encompassing data collection through an online voluntary questionnaire. Participants were new ORL residents in the Saudi residency training program. **Results:** Fifty responses were returned, with a completion rate of 88%. Sixty-four percent of the respondents were male. Most of the respondents were aged from 26 to 27 years. Respondents were from different cities. Most participants agreed that the scientific value of the course was beneficial (agree, 40%; strongly agree, 44%) and they felt better prepared for their residency training after this boot camp (agree, 44%; strongly agree, 28%). **Conclusion:** Boot camp in ORL is an additional important activity during the early years of training. It provides significant effects in terms of knowledge readiness at the beginning of specialty training. We believe that boot camp should include other dimensions of training, including surgical, communication, and judgmental skills, not only for the early years of training but also during the remaining period until training completion.

**Keywords:** boot camp, otolaryngology, course, training

## INTRODUCTION

The assessment, evaluation, and therapeutic intervention for patients with otolaryngology (ORL) diseases require specialized education, training, and skillsets, which are usually not inculcated during undergraduate medical education. ORL emergencies can be life-threatening and warrant a thorough, systematic, multidisciplinary, and exigent management and therapeutic intervention. As the traditional method of ORL education advances continuously, simulation-based boot camps are being more adopted to accelerate the learning process for new residents and minimizing harm to the patients.<sup>[1–4]</sup>

The ORL boot camps have been developed to meet the growing needs of junior residents.<sup>[4,5]</sup> An abundance of technological developments and increasing professional and social expectations have led to a major shift in medical education. Factors including restrictions on resident work hours, financial influences of surgical productivity, and ethical and medico-legal issues have a significant impact on surgical training. Residents currently have limited time to gain an efficient amount of ORL skills and knowledge, and the traditional surgical training environments and tools might be not sufficient. Simulation-based training is an effective and feasible way to provide resources and strategies to succeed in dealing with many of the aforementioned limitations.<sup>[6]</sup> To

ensure that trainees are competent enough to progress in training requires developing reliable and valid assessment tools (e.g., direct observation, frequent formative feedback, participant self-directed assessment).<sup>[7,8]</sup>

Simulation-based medical education is considered to be of higher impact than traditional clinical education in achieving clinical skills.<sup>[9]</sup> This mode of training in the early stages of residency has the potential for boosting residents' self-assessments of competency, confidence, and stress hardiness in dealing with emergencies.<sup>[10–14]</sup>

A small number of studies regarding otorhinolaryngology boot camps have been reported. To our best knowledge, no similar (in otorhinolaryngology) studies have been described in the Kingdom of Saudi Arabia. Other surgical specialties have explained the influence of boot camps on resident training.

An intensive “boot camp” was planned to train junior ORL residents from local and regional hospitals of the Kingdom of Saudi Arabia, using intense didactic and clinical practice in a surgical environment for a concentrated, focused, and targeted learning experience. Residents actively participated in educational activities in a stress-free environment. Such a methodology is an emerging traditional training modality for the induction of new residents in improving self-confidence, knowledge bases, professional skills, and clinical performance.<sup>[5,15,16]</sup> During this boot camp, instructors helped junior residents develop essential ORL core knowledge and skills, including intubation and surgical airway management, epistaxis management, ORL procedural consultations, instrumentation, and other complex emergency skills.

This boot camp was planned to onboard ORL residents to support them through a curriculum concentrating on the topics they need as junior otolaryngologists. The goal of this boot camp is to provide basic emergency training in a safe environment, and to provide well-organized, specialty-wide training in core elements of knowledge, technical skills, professionalism, and communications for junior ORL residents. This boot camp may have the most significant impact on those procedures that are commonly encountered during the first year of training. Participants are expected to develop competence and knowledge for a variety of skills, including triage, the management of airway emergencies, bleeding, and other disorders by enhanced clinical knowledge and skills to ease transformation into new clinical roles. The main objectives of this study were to assess the effectiveness of the ORL residents' induction boot camp course, and to evaluate if this educational activity fulfilled the objectives.

## METHODS

Ethical approval was waived by the local ethics committee of Alfaisal University, Riyadh, Kingdom of

Saudi Arabia. Informed consent was obtained from the participants.

This was a cross-sectional study encompassing data collection through an online questionnaire. The study was conducted at King Faisal Specialist Hospital and Research Centre (KFSHRC), Riyadh, and King Abdulaziz University Hospital (KAUH), Jeddah.

We designed a 14-question survey to evaluate satisfaction of newly joining ORL junior residents during the beginning of their residency program regarding the conducted induction boot camp. Three questions were basic demographic questions inquiring about gender and age. In the following 11 questions, we used a 5-point Likert response scale for scoring purposes.<sup>[17]</sup> Participation in the study was voluntary, names were not taken to ensure anonymity and confidentiality, and the survey was conducted in the English language.

The online questionnaire was made through SurveyMonkey Inc. (Palo Alto, CA) and was sent to all the trainees who attended the ORL residents' induction boot camp between 10 and 21 November 2019 at KFSHRC (Riyadh), and 22 and 29 December 2019 at KAUH (Jeddah). Data collected were analyzed using SurveyMonkey software.

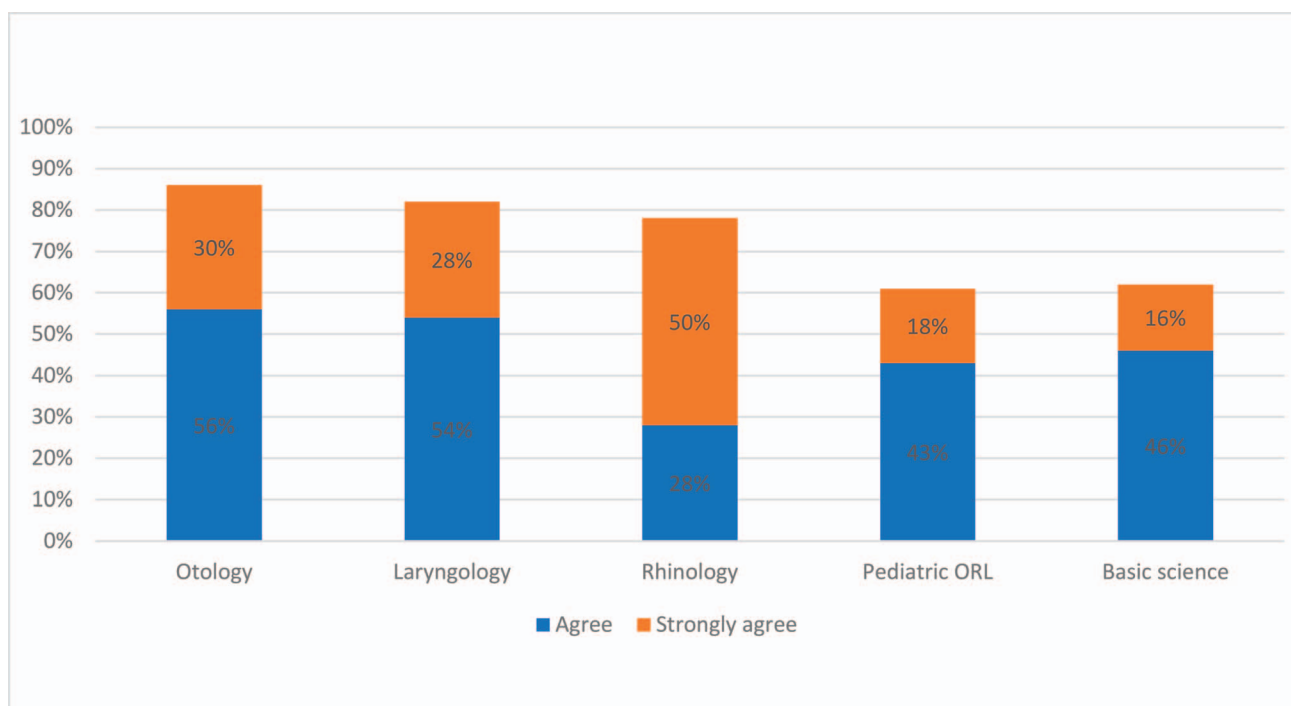
This study included starting ORL residents who enrolled in the Saudi ORL residency training program from different regions of the Kingdom who physically attended and finished the boot camp. Senior ORL residents were excluded from the study.

## RESULTS

Of the surveys sent, 50 responses were returned, with a response rate of 83% and completion rate of 88%. Sixty-four percent of the respondents were male. Most of the respondents (86%) were aged from 26 to 27 years. Respondents were from different cities of the Kingdom, including Riyadh, Jeddah, Makkah, Taif, Jazan, Khobar, Dammam, Abha, Asir, and Alahsa, as well as rotating residents from the Kingdom of Bahrain.

Most participants agreed that the scientific value of the course was beneficial (agree, 40%; strongly agree, 44%) and they felt better prepared for their residency training after this course (agree, 44%; strongly agree, 28%). The participants responded to questions of whether their knowledge was enriched by this course in different subspecialties as follows: otology received the strongest agreement among the participants (agree, 56%; strongly agree, 30%), followed by laryngology (agree, 54%; strongly agree, 28%), rhinology (agree, 28%; strongly agree, 50%), pediatric ORL (agree, 43%; strongly agree, 18%), and basic science (agree, 46%; strongly agree, 16%); and head and neck anatomy, pathology, and its related management (Figure 1).

Most of the participants thought that the course enriched their knowledge of general ORL practice (agree, 52%; strongly agree, 34%). There was variation in trainee responses to the question about whether this course



**Figure 1.** Percentage of participants who agreed that the course enriched their knowledge (total  $n = 50$ ).

added new technical skills related to ORL (strongly disagree, 12%; disagree, 22%; neither disagree nor agree, 33%; agree, 25%; strongly agree 8%) (Fig. 2). Most of the participants (90%) agreed that this course was essential for beginning trainees in ORL (agree, 71.4%; strongly agree, 18.4). Most of the respondents answered that faculty members were able to transfer the educational objectives of the course (agree, 47%; strongly agree, 29%).

## DISCUSSION

It is believed that trainees often feel less prepared when starting residency training.<sup>[18–20]</sup> The main objective of the boot camp for ORL residents in Saudi Arabia was to prepare trainees to start a daily practice and to provide them with a necessary introductory knowledge level.

The effectiveness of boot camps is less understood for ORL training in the Kingdom of Saudi Arabia. Different effective dimensions were tested, including the perception of retained knowledge in different subspecialties: otology, rhinology, head and neck, pediatric-related topics, and laryngology. The results reflected general satisfaction with regard to the general scientific value of the boot camp, with the highest satisfaction in the domains of otology, laryngology, and rhinology (Fig. 1). The results depicted in this study support the conduct of boot camps as an introduction to national ORL residency training programs.

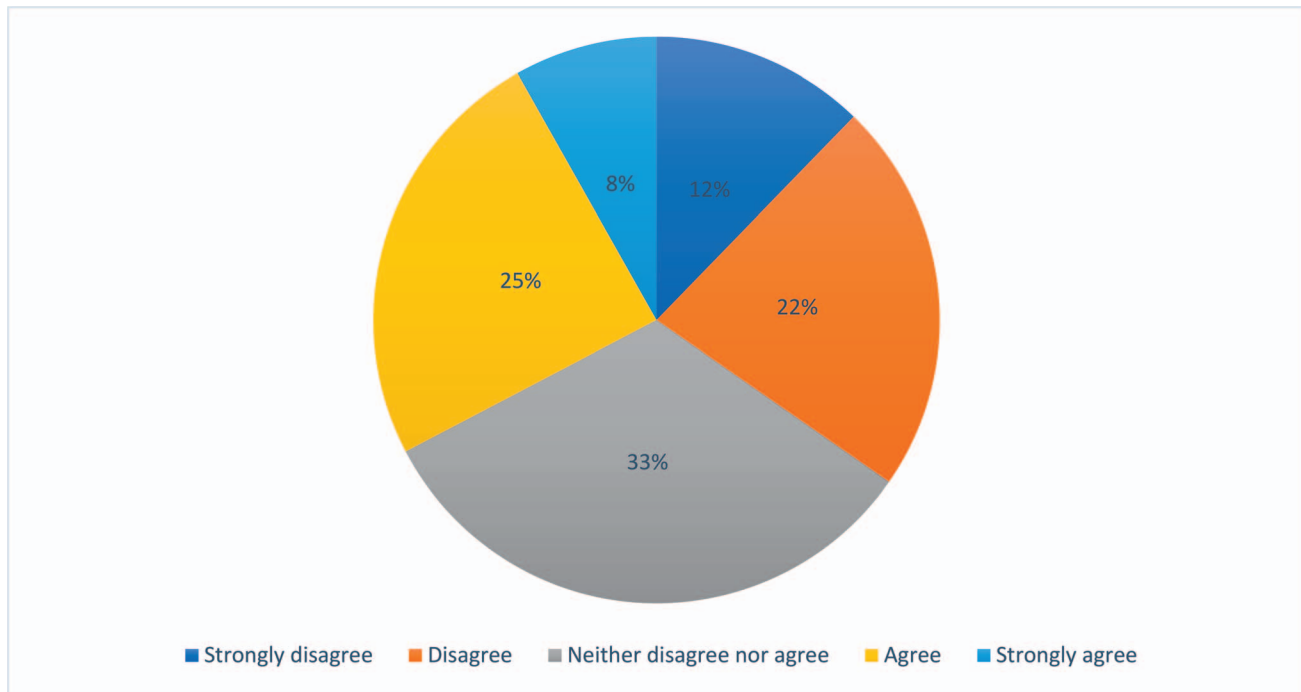
The challenged hypothesis of boot camp effectiveness did not include the preparation for technical skills.

Although the depicted results were supportive for boot camp effectiveness, technical skills and some nontechnical skills (communication, leadership, clinical judgment) were not studied. This might be related to a number of factors, including time allocation for both faculty members and trainees and resources, including simulation-based environments and technologies for ORL practices.

Malekzadeh et al<sup>[5]</sup> explained the positive impact of simulation-based learning in a study in which 30 ORL residents were included in a 1-day boot camp, 24 of whom completed the survey. Although the study was conducted among a small sample size, their early findings in 2011 revealed significant results of improvement in residents' confidence levels while performing during certain ORL emergencies, and their knowledge was noted.<sup>[5]</sup>

A study from the surgical department of the University of Toronto reported the impact of surgical skills' boot camp on postgraduate year 1 orthopedic surgeons. Residents were divided into two groups: one that would continue on to the classic residency training, and another that would receive a focused course on surgical skills. After that, both groups were evaluated using an objective structured assessment of technical skills procedure. A significant difference was seen, in which the latter group was superior in achieving skills.<sup>[16]</sup>

In a related domain, a study by Selden et al<sup>[21]</sup> described multiregional courses that targeted junior neurosurgery residents starting their training programs. The course contained nine lectures and 16 clinical skills to encounter the basics in their curriculum. A total of 186 neurosurgery residents completed the survey (pre-



**Figure 2.** Distribution of responses of whether this course added new technical skills related to otolaryngology (total  $n = 50$ ).

course and immediately postcourse). Junior residents expressed that the course achieved its objectives, which included knowledge, skills, and patient care quality. After 6 months of initial testing, it was found that the amount of knowledge gained was significant ( $p < 0.0001$ ).<sup>[21]</sup>

In Saudi Arabia, a 10-day boot camp was introduced to prepare young ORL trainees as part of their training requirement. In other international examples, shorter-period boot camps were shown to be beneficial for technical and nontechnical skills training and preparedness. In studies by Chin et al,<sup>[22,23]</sup> ORL head and neck surgery residents from Canada and the United States were enrolled in the analysis after joining the boot camp day. They received teaching and training of certain clinical skills along with discussions about emergency topics and the application of communication skills. Most of the residents reported a positive influence on their learning process. Moreover, they recommended boot camps for future junior residents.<sup>[22,23]</sup>

This study examined the effectiveness of boot camp, mainly for enriching young trainees' knowledge. Knowledge in surgical specialties is among other competencies that need to be built during residency, including surgical skills, psychomotor and decision-making, and leadership.<sup>[10,16,24]</sup> We believe that it will be more beneficial if other dimensions of training are included in boot camps, such as surgical skills and making clinical judgments, which were not included in the current study.

## CONCLUSION

ORL boot camp in Saudi Arabia was effective and beneficial for young trainees. Most participants believed

that they are better prepared for their residency training. We believe that boot camp should include other dimensions of training including technical, communication, and judgment skills.

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