Otorhinolaryngology Postgraduate Training in Nigeria: Trainees Perspective

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Aim: This study is designed to evaluate the challenges of residency training in otorhinolaryngology in Nigeria from the point of view of the trainees.

Materials and Methods: The study setting was the 2014 otorhinolaryngology revision/update course organized by the West African College of Surgeons at University College Hospital, Ibadan. This was a questionnaire-based study administered to 78 resident doctors from different training institutions across the country who participated in the revision course. All participants consented to the study and were given a structured questionnaire to complete and return. Data were collated in Microsoft Excel® spreadsheet and analyzed using Epi Info® 2002 Epidemiology program Office Centre for disease Control, Atlanta USA.

Results: Seventy-six out of the 78 residents who attended the course responded, giving a response rate of 97.4%. The geographical distribution showed that the South West had 5 (27.8%) institutions, while North East and South East had 1 (5.6%) and 2 (11.1%), respectively. Fifty-six (73.7%) of the respondents were under 40 years of age. The gender ratio was 4.7:1. Sixty-eight (89.5%) were married. The decision to choose ORL was personal interest in 68 (89.5%). Textbooks were available to 45 (59.2%) respondents. Thirty (39.5%) of them read for at least 2 h/day, and obstacles to reading were clinical work overload in 56 (73.7%) and fatigue in 55 (72.4%). Forty (52.6%) respondents had >5 consultant Ear-Nose-Throat surgeons in their institutions.

Departmental activities were also highlighted. Conclusion: This study highlighted the location of majority of the ORL residency training institutions in South West, Nigeria, and married. Most of the respondents have the required textbooks but found it hard to read mainly due to clinical work overload and family burden.

Keywords: Input, Nigeria, otorhinolaryngology, resident, trainees, training

INTRODUCTION

The otorhinolaryngology (ORL) postgraduate training has been in existence for decades. At inception, the training needs were adequate and fully served its purposes.[¹] However, changing times, sophistication and trend require improvement to enhance better training and acquisition of surgical skills comparable with other parts of the world.[²] A number of factors such as training institution, age, marital status, choice of specialty, working hours, availability of textbooks, and other facilities affect training.[³] There is need to review and upgrade our curriculum, surgical practice, and training facilities at intervals and to compete favorably with other training institutions in Africa as well as the rest of the world.[¹,²] To do this adequately, it requires input from the trainees themselves who are actively involved in this training. This provides insights whether the trainees mind is tuned toward the needed improvement or just satisfied with their current setup.[³,⁴]

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This study is designed to evaluate the challenges of residency training in otolaryngology in Nigeria from the point of view of the trainees. It is hoped that the findings will be used to improve the postgraduate training in this specialty.

**MATERIALS AND METHODS**

This was a cross-sectional study. The study setting was the 2014 otolaryngology revision/update course organized by the West African College of Surgeons (WACS) at University College Hospital, Ibadan. This was a questionnaire-based study administered to 78 resident doctors from different training institutions across the country who participated in the revision course. Consent was obtained from each participant before administration of the questionnaire. All participants who consented were given a structured questionnaire to complete and return.

The questionnaires were divided into sections A–I that contain the following subsections: A: biodata, training institutions; B: decision and choice ORL, duration of training, availability of standard textbooks, duration of reading, and obstacle to reading; C: institutional accreditation, number of consultants in the training department; D: clinical and theater activities; E: departmental activities; F: external posting; G: the role of consultants in residency training; H: availability of standard facilities and other necessary equipment; and finally, I: highlighted suggestion by ORL residents training in Nigeria. The information gathered from thequestionnaires was transferred into Microsoft Excel® spreadsheet and analyzed using Epi Info® 2002 software. The results were expressed in simple percentages and frequencies. Ethical Clearance Number: Juth/Dcs/Adm/127/Xxvii/624 was obtained.

**Inclusion criteria**

The participants included voluntary, consenting trainee residents who had spent at least 12 months into the ORL residency program.

**Exclusion criteria**

Those who were <12 months into the ORL residency program as well as those who did not consent were excluded.

**RESULTS**

Seventy-six out of 78 residents responded, giving a response rate of 97.4%. There were respondents from 18 institutions in this study, and majority of the institutions were in the South West (n = 5, 27.8%) while the North East and South Eastern parts of Nigeria had the least number of training institutions 1 (5.6%) and 2 (11.2%), respectively. Eleven (14.5%) respondents did not indicate their institutions [Table 1].

The mean age of respondents was 35.69 ± 4.2 years, while the median and modes were 35.0 and 34.0 years, respectively. Thirty-one (40.8%) residents in the age group 30–34 years represented the highest number, followed by 25 (32.9%) in the 35–39 years age group [Table 1]. There were 61 males and 13 females with a male-to-female ratio of 4.7:1.0. Two (2.6%) did not respond [Table 2].

Sixty-eight respondents (89.5%) were married with 38 (50.0%) having two or more children while 19 (25.0%) had a child each, 16 (21.1%) had none, and 3 (3.9%) did not indicate family size. Forty-one (53.9%) respondents had spouses who were employed, 22 (28.9%) had unemployed spouses, while 13 (17.1%) did not respond. The spousal occupation is as shown in Figure 1.

The duration of time that the residents had already spent in training ranged from 12 to 96 months; 44 (57.9%) were in junior residency while 31 (40.8%) were in senior. The junior residents had stayed between 12 and 42 months while the seniors had spent between 54 and 96 months, with 3 (3.9%) seniors staying beyond 78 months. Fifty-seven (75.0%) agreed that duration of residency training was adequate, 13 (17.1) disagreed and suggested 48–60 months duration, while 6 (7.9%) could not decide. The current recommended duration of training is 36 and 30 months for junior and senior residency, respectively.

The decision to train in ORL was personal in 68 (89.5%), due to paucity of specialists in 5 (6.6%) and because it is a rare field in 1 (1.3%). In terms of subspecialty, laryngology head and neck surgery, rhinology, otology, and facial plastic were chosen in 25 (32.9%), 18 (23.7%), 17 (22.4%), and 8 (10.5%), respectively, while 8 (10.5%) did not respond.

Forty-five (59.2%) respondents felt that they had adequate recommended books with 19 (25.0%) saying they did not while 12 (15.7%) were unsure. Regarding book forms, 58 (76.3%) had hard copies while 15 did not respond. 72 (94.7%) had electronic copies of textbooks while 4 (5.3%) did not respond. Concerning other textbooks, 69 (90.8%) did not respond with only 11 (1.9%) saying that they had other book forms. With respect to specific textbooks, 74 (97.4%) and 67 (88.2%) had Scott Brown and Ballenger, respectively, 44 (57.9) had synopsis of Ear, Nose, and Throat (ENT) with only 9 (11.8%) having Rob and Smith operative surgery, while 15 (19.7%) had Stell and Maran. The rest is as shown in Table 3.
In terms of study time, with respect to the number of hours dedicated to reading per day, 30 (39.5%), 18 (23.7%), 8 (10.5%), 4 (5.3%) and 2 (2.6%) residents read for 2, 3, 1, 4 and 1-4hrs respectively while 12 (15.8%) read for unspecified hours per day and 2 were non-responders. Considering stress and obstacles towards reading, 26 (34.2%), 3 (3.9%), 41 (53.9%) and 3 (3.9%) residents found it easy, very easy, hard and very hard to read respectively. Clinical workload, fatigue, and family...
burden were obstacles to reading among 56 (73.7%), 55 (72.4%), and 30 (39.5%) responders, respectively, with no response in 20 (26.3%).

Seventy-two (94.7%) were training in institutions with various forms of accreditation status, out of which 40 (52.6%) and 23 (30.3%) respondents were in full and partially accredited institutions, respectively. Nine (11.8%) respondents did not specify the type of accreditation their institutions had. Sixty-five (85.5%) respondents were full residents while 11 (14.5%) were supernumerary.

Forty (52.6%) respondents reported having >5 ORL consultants in their institutions while 19 (25.0%) had four consultants. Forty-six (60.5%) respondents said that consultants did not interfere with their work, 22 (29.0%) could not say whether consultants interfered or not, while 8 (10.5%) said consultants interfered. Of those who reported interference by consultants, 2 (2.6%) cited excessive shouting and instilling fear, while other forms of interference included attitude, errand on research, emphasis on clinical work rather than training and over engagement in 1 (1.3%), respectively.

Fifty-eight (76.3%), 10 (13.2%), and 4 (5.2%) reported having 1, 2, and 4 grand rounds per week, respectively, while in 1 (1.3%), it is held once in 2 weeks and others 3 (3.9%). Thirty-nine (51.3%) have journal review once weekly, 1 (1.3%) each have it twice weekly, fortnightly, and monthly, 13 (17.1%) do not have it at all, while 14 (18.4%) did not respond, and 7 (9.2%) others have variable responses. 38 (50.0%) and 9 (11.8%) responders have clinical presentation meeting once and twice weekly, respectively, 1 (3.9%) once per month, 8 (10.5%) do not have at all while 7 (9.2) did not respond, and 13 (17.1%) unspecified [Table 4].

The number of clinic days/week varied from 2/week in 35 (46.1%), 4 days/week in 27 (35.5%), 3 days/week in 11 (14.5%), and 5 days/week in 3 (3.9%). Five (6.6%) respondents reported that their units saw ≤50 new ORL cases per month, 2 (2.6%) saw 51–100 new cases, 64 (84.2%) saw >100 new cases, while 5 (6.6%) did not respond [Table 4].

Fifty-six (73.7%) have 2 theater days/week followed by 16 (21.1%) having a theater day and 3 (3.9%) have 4 theater days and 1 (1.3%) have 3 theater days. Eleven (14.5%), 25 (32.9%), 7 (9.2%), and 4 (5.3%) perform on the average 7, 10, >10, and ≥20 surgeries per month, respectively, while 3 (3.9%) did not respond.

The number of surgeries per month was ≤20 cases in 49 (64.5%), 21–40 in 10 (13.2%), 41–60 in 3 (3.9%), and no response in 14 (19.7%), respectively [Table 4].

The otologic equipment available consists of audiometric laboratories, pure tone audiometers, tympanometers, Otoacoustic Emissions machines (OAE), auditory brain response (ABR) machines, temporal bone laboratory, and sound proof rooms in 55 (72.0%), 75 (98.7%), 64 (83.8%), 19 (25.0%), 21 (27.6%), 51 (67.1%), and 6 (85.5%), while unavailable in 11 (14.5%), 1 (1.3%), 12 (15.7%), 50 (65.8%), 47 (61.8%), 14 (18.4%), and 1 (1.3%), respectively. The nonresponders were 9 (11.8%), 7 (9.2%), 8 (10.5%), 10 (13.2%), 11 (14.5%), and 3 (3.9%) for audio laboratories, OAEs, ABR, temporal bone laboratory, and sound proof room, respectively.

The laryngology, rhinology, and sleep study equipment (comprises stroboscopes and its accessories, rhinometers, and polysomnographs) were scarcely available in 9 (11.8%), 3 (3.9%), and 2 (2.6%), respectively, against nonavailability in 59 (77.6%), 64 (84.2%), and 66 (86.4%), respectively. The nonresponders consists of 8 (10.5%), 9 (11.8%), and 8 (10.5%), respectively.

The endoscopic equipment made up of outpatients endoscopes, telescopes, and flexible laryngoscopes and close circuit unit camera, and monitor was present in 63 (82.9%), 64 (84.2%), and 36 (47.4%) of our institutions but absent in 10 (13.2%), 7 (9.2%), and 22 (28.9%), respectively, with nonresponders in 3 (3.9%), 5 (6.6%), and 20 (26.3%) each.

The microscopes were accessible in 58 (76.3%) and inaccessible in 11 (14.4%) while 7 (9.2%) were nonresponders.

Several suggestions were made such as overseas’ travel fellowship by 13 (16.9%), provision of more facilities
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10 (13.0%), encouraging medical students to have interest in the specialty 4 (5.2%), exposure in other centers 2 (2.6%), more accreditation of centers 2 (2.6%), mentorship 4 (5.2%), intake of more residents 3 (3.9%), reduction of duration of training 3 (3.9%), hands-on surgery 1 (1.3%), and nonresponse in 28 (36.4%). This adds up to 70; thus, six respondents are unaccounted for.

Fifty-nine (77.6%) respondents felt there was a need for external postings, 9 (11.8%) did not, while 8 (10.5%) were uncertain.

**Discussion**

The response rate in this study was 97.4%. Most institutions were clustered in South West Nigeria (27.8%) while the least was in the North East (5.6%) and South East (11.2%) parts of Nigeria. A similar regional finding of 93.0%, though with differences in geographic locations compared to ours, was noted in Canada and North Central region of America by Brandt et al. [6] as well as Johnson et al. [7]. This was because of higher concentration of training institutions in those regions and vice versa but contrasts sharply in terms of respondents response with lower values of 52.0% and 18.0% obtained by Andrew and Tabae et al., [8,9] respectively. These regional differences in the citing of institutions of training in highly specialized areas of medicine, with resultant concentration in the more urban centers, are part of a worldwide phenomenon that has been described by other authors.

About 87.5% of residents in our study were <40 years of age, with the largest proportion (48.4%) being in the 30–34 years age range. This is in tandem with that of
American and Australian studies showing age range of 30–33 years and 20–40 years, respectively, higher than the of findings from Brazil and Thailand with mean age of 25.4 and 26.2 years, respectively, but differs strongly from that of Brandt et al.\textsuperscript{[6]} in Canada where 60% of their respondents were below 54 years of age. The Canadian study had the largest proportion (37%) under age 44 years. The Canadian residents were much older in comparison. The age of entry differs generally and has many implications such as influence and moderation of decision-making process during the process of making choice of specialty. It is also associated with level of study, influence of family and friends, as well as financial resources.\textsuperscript{[10,11]}

The conspicuous female gender minority agrees with Rosenberg et al. in USA, though an overall increase in female residents was noted in 27.4% in their 2011 survey. In other surgical specialties, otolaryngology had the highest female percentage increase as compared to orthopedic (13.0%), neurosurgery (15.2%), plastic surgery (22.5%), and urology (23.0%).\textsuperscript{[10]} In our study, a gender ratio of 4.7:1 was grossly inadequate for the female gender. In contrast to our study, a Canadian research showed that women outnumbered men among medical school graduates for the academic year 2010–2011, where women constituted 57.1% of medical school graduates. Sandler et al. observed that 61.0% of program directors reported that becoming a parent negatively affects female trainees’ work, including placing an increased burden on fellow residents (33%). Respondents perceived children as decreasing female trainees’ well-being more often than male trainees. In our study, 68 (89.5%) were married with children which is in tandem with the above finding.\textsuperscript{[12]}

The mean duration of training of 36 and 72 months for both junior and senior residents, respectively, was within the time limit allowed for our training, except that 3.9% of respondents in the senior category were noted to have overstayed up to 96 months. The ratio of junior-to-senior registrar of 57.9%–40.8% was greatly inadequate. The overstay may be due to delay or repeated attempt at passing the fellowship examinations.\textsuperscript{[1,13]}

The decision to choose the ORL specialty in our study was personal interest in 89.5%, due to paucity of specialists in 6.6% and because it is a rare field in 1.3% of respondents, and the most common subspecialty chosen was laryngology, head and neck surgery, followed by rhinology, otology, and facial plastic. This is in contrast with the findings of Ossai et al.\textsuperscript{[14]} in South Eastern Nigeria where respondents’ personal interest in specialty constituted the second determinant (19.7%) of specialty choice but differs in the clinical specialties of interest where mainly surgery (24.0%); pediatrics (18.8%); obstetrics and gynecology (15.6%); internal medicine (11.0%); and community medicine (6.8%) were predominant while pathology (2.0%); anesthesia (0.7%); and ENT (0.2%) were the least preferred. In addition, their response rate of 86.7% was lower compared to our study.

More than two-third of respondents had the recommended textbooks in hard and electronic copies, but only 39.5% could read for 2 h daily with 51.3% finding it difficult to read. Inadequate residents’ ratio, clinical work, and family burden were the main obstacles to reading. Our residents currently work >40 h a week. The fact that 89.5% of respondents were married in this present study lends credence to the above finding. This prolonged working hour has been noted by Abodunrin et al.\textsuperscript{[15]} in a teaching hospital in Nigeria, who opined that residency involves rigorous academic study, clinical procedures, running clinics, taking ward rounds, staying up during on-call nights, presenting at grand rounds/seminars, field postings, and community outreach. Although there is no way to escape the stressors of residency, we can try to avoid more serious effects such as burnout and depression.

The WACS and National Postgraduate Medical College of Nigeria are two independent postgraduate training medical certifying colleges in our region. Institutions involved in residency training are accredited by these colleges. The level to which a resident can train in these institutions depends on the level of accreditation status granted it. A resident completes his/her full training in an institution that has full-accreditation status while residents in an institution with partial accreditation need mandatory training period in a fully accredited institution (usually 6 months) at each stage of training to be eligible for the examination. About 94.7% of our institutions have one form of accreditation or the other.

Eighty-five percent and 14.5% of our respondents were full and supernumerary residents, respectively. Considering the response rate, two pilot studies in the United States and Brazil by Tsue\textsuperscript{[16]} and Crespo\textsuperscript{[17]} involving 14% of the otolaryngology programs in the United States regarding accreditation status had a 56%–93% favorable response. Thus, our response rate was higher than the American study but lower than that in Brazil.

In these studies, the authors noted that accreditations are intended to monitor residents’ progress from novice to competency based on observable measures. The Brazilian study specified that otolaryngology training can happen in ORL residency programs accredited by the Ministry
of Education with an automatic right to the board’s title of specialist; or otorhinolaryngology can be taught in specialization programs accredited by the Association of Brazilian Otorhinolaryngology and Cervical Facial Surgery. Similarly, in Nigeria, the WACS\textsuperscript{[18]} or National Postgraduate Medical College of Nigeria are the bodies which grant the title of specialist to those approved in his/her board examinations after they graduate from the program.

The essence of accreditation includes a system that sustains and enhances globalization of medical training that will address the growing challenges of global health-care delivery. International accreditation could result in uniform training and education standards for future physicians worldwide. The primary benefit to be accrued from the accreditation process is the internal check of the training programs that precedes.\textsuperscript{[19]} On the contrary, if a school is unaccredited, its students may not be eligible for federal loans and cannot take the United States medical licensing examination, its graduates cannot enter residencies, and the school itself may not be eligible for certain federal funds.\textsuperscript{[20]}

More than 50.0% of respondents in our study have at least five consultant ENT surgeons in their institution with another 25.0% having four. Sixty percent of respondents agreed their consultants did not interfere in their work, while 10.5% concurred to consultants’ interference with 6.6% nonresponders. Regarding the manner of interference by consultants, 90.8% of respondents were completely silent. However, excessive shouting and instilling fears constituted 2.6%, others gave reasons such as attitude, errand on research, emphasis on clinical work rather than training, and over engagement in 1.3%, respectively. That majority of respondents admitted to noninterference are good. It is germane that a consultant should know a trainee, their strengths and weaknlesses, and guide them toward educational opportunities, thus developing their expertise and judgment through knowledge and trust in their capabilities. However, disconnect between consultant and trainee may mean that fewer opportunities are offered. A number of residency programs have therefore implemented mentoring programs in their institutions as noted by Wadhwa et al.\textsuperscript{[2,21,22]}

The departmental training activities include grand round, journal reviews, and clinicopathologic meetings. The grand round has been noted by majority in a study by Lewkonia et al.\textsuperscript{[23]} with over 91% response rate to promote education, and social interaction in Calgary, Canada, with a frequency ranging from 52 weekly rounds to 24 monthly rounds within 2800 h in a study from 1993 to 1994. Kassirer and Kopelman\textsuperscript{[24]} in contrast have observed declining interest in grand rounds unlike that in Calgary study. Our study showed that a majority of the respondents (76.3%) had grand rounds once a week as it appears to be an important educational component of our curriculum and in line with the above finding. Journal review is also a bridge between research and practice, fostering application of research to the clinical setting.\textsuperscript{[25]} Some of the characteristics highlighted by Deenadayalan et al.\textsuperscript{[26]} were that of being regular, mandatory, with a clear purpose, appropriately timed and summarized, circulated before meeting, appraised, and stored. In a study by Spillane and Crowe,\textsuperscript{[27]} out of 39 questionnaires, there were 28 (71.2%) respondents. Fifty-nine percent felt that it provided a good-to-excellent review of current literature; 66.7% agreed that journal club facilitated development of critical appraisal skills; and all 71.2% respondents said that the journal club was a convivial social forum. About 20.5% research projects developed from journal club reviews. About 48.7% of the respondents reported that their clinical practice had changed, while 48.7% gained confidence to further review a topic as a result of the journal club. Many of the respondents had specific criticisms of the journal club, and these have been used to improve the journal club format.\textsuperscript{[27]}

The clinic days ran, new cases and surgeries attended to by postgraduate trainees in our study revealed majority (46.1%) having two clinics and 73.7% having two theater days/week. About 4.5% only performed a maximum of 20 surgeries/month while a majority (14.5%) performed a minimum of seven surgeries monthly. In a review of otorhinolaryngology resident national data reports from the Accreditation Council for Graduate Medical Education (ACGME) resident case log system from 2004 to 2010, Rosenberg and Franzese\textsuperscript{[28]} reported a minimum range of 10–11 surgeries/month to a maximum of 47–67 surgeries/month. The mean minimum from this study agrees with our study, but the reverse is the case with the maximum surgery. The individual surgical training program differs among hospitals; resident training should meet the basic requirements. The routine for residents include daily morning and evening ward rounds by the trainee and trainee on call, weekly teaching ward rounds with the consultant, attendance at clinic with the consultant available for advice and discussion, weekly tutorials with the consultant, at least twice a week operation sessions, monthly clinic-mortality and clinical audit meetings with the consultant, monthly journal club meeting with the consultant, monthly seminars in specific topics with consultants, weekly head and neck oncology joint clinics, trainees will conduct clinical research and publish paper(s) with the consultant; the
college organizes regular skills workshop for trainees. This agrees with the curriculum recommendations of both the WACS[19] and resident curriculum in Korea as highlighted by Kim[20] except that while specifications were made for some components regarding frequency, others were at the discretion of the individual training institutions.

The right equipment is very pivotal to postgraduate training needs. Over 75.0% have the needed equipment required for some live patient training, especially in some subspecialties. However, shortcomings were conspicuous in the OAEs, stroboscopes, accessories, and rhinometers which were available in 19 (25.0%), 21 (27.6%), 9 (11.8%), and 3 (3.9%), respectively. These facilities are unavailable in duplicate form in most centers for presurgical training because of their high cost. If we consider subspecialty training in today’s world, it is paramount that a presurgical training using cadavers either formalinated or fresh and/or training using simulators offer advantage before practicing on real-life patient. Rehearsal is an essential part of mastering any technical skill. Fresh cadaver models, however, offer maximal surgical simulation. Weber et al.[30] agreed with presurgical training in their study involving group and control on preoperative rehearsal of surgical procedures in a simulated operative environment mimicking clinical operation. Twenty-six rehearsals were performed by nine residents (PGY 1–7) an average of 4.7 ± 2.1 days before performance of the scheduled operation. Surveys demonstrated a median presimulation confidence score of 2 and a postrehearsal score of 4 (P < 0.01). All residents felt that cadaveric simulation was better than standard preparation methods of self-directed reading or discussion with other surgeons. All residents believed that their technique, speed, safety, and anatomical knowledge improved as a result of simulation.

Limitations
The number of nonresponders and unspecified responses may be a limitation in this research.

Not all responders in training were available for participation in this research, and so the junior-to-senior residency ratio obtained was for the purpose of this research and not of the training institution.

Recommendation
There is a need to improve the regional distribution of training centers to encourage residents in centers where they are currently few to take up the specialty. The relatively young age of trainees should be encouraged and a better gender balance sought through policies aimed at encouraging females to take up the specialty with incentives. There is a need to increase the acquisition of books and other forms of learning materials and encouraging trainees to read more hours through minimizing interference to study by family and trainers alike. Training centers should be encouraged to provide more learning aids such as equipment trainers should also ensure adequate academic activities and ensure maintenance of good clinical exposure, though without overworking trainees, as this may have adverse consequences on training.

Future direction
There is need for a regular review of the training program by trainers and regulatory and accreditation bodies to ensure gold standard of training based on impute by the trainees.

Conclusion
There is need to understand the challenges of residency training in ORL from the point of view of the residents as their perception of these challenges may not necessarily be in sync with the perception of the trainers. This is imperative since there is a need for both trainers and trainees to have clearly defined targets and a shared objective with mutual understanding of the impediments to the achievement of said mutual goals.

Program directors should pay more attention to pregnancy and postpartum issues in other to achieve balance between the sexes. This will encourage more female entrants and lead to increase number of specialist in this field.

Education about the consequences of insufficient sleep may be needed to remind doctors about the risks.

Effective leadership, and collaboration between those on clinical, educational, and management sides, was commonly identified as being necessary for success in management.

Large differences exist between the mean minimum and maximum resident surgeon case numbers. Establishing minimum case number requirements for otolaryngology residents should be considered. Educational benefit derived from excessive caseload is unclear. Critical examination of the ACGME resident case log system and resident documentation habits is needed to improve accuracy of reporting.

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Conflicts of interest
There are no conflicts of interest.
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