ARTIGO ORIGINAL

Why Anesthesia? A National Survey of the 1st Year Anesthesiology Trainees at Portugal

Porquê Anestesiologia? Inquérito Nacional aos Internos de Formação Específica em Anestesiologia Portugueses Durante o Primeiro Ano de Internato

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ABSTRACT

Introduction: Choosing a medical career is complex and involves different factors. Anesthesiology seems to be an interesting medical career in Portugal. However, the factors associated are unknown. This study aims to identify and explore the motivational factors involved in anesthetic trainees' career decision making in Portuguese trainees.

Material and Methods: We performed a cross-sectional study. An electronic survey regarding motivation to choose Anesthesiology was developed. Motivation was measured using a 5-point Likert scale where reasons to choose Anesthesiology were classified from "*not at all preponderant" to "extremely preponderant"*. The survey was applied by email to all the anesthesiology trainees attending the first residency year in Portugal during 2021(n=80). Statistical analysis was performed using descriptive statistics.

Results: The response rate was 82.5%. Sixty-three percent were female. Median age was 26 years old. Seventy-seven percent had previous contact with Anesthesiology during pre-graduated education and was the first option from 86.4% of residents. Virtually all would choose the same option again. When considering the most preponderant motivation to choose Anesthesiology, the twelve factors were classified as "*very*" and "*extremely preponderant*" by more than 50% of respondents: transversality, hands-on speciality, adaptation to personal characteristics, perceived job satisfaction, employability, work/life balance, emergency and critical care, financial perspectives, physiology and pharmacology, predominant operative room workload, low ward workload and career perspectives.

Discussion and Conclusion: Personal factors and nature of work seems to be relevant factors associated with Anesthesiology career choice. Further studies should be applied on an annual basis and emphasize how the motivational factors differ between different specialties.

RESUMO

Introdução: A escolha de uma carreira médica é um processo complexo que envolve diversos fatores. A Anestesiologia tem demonstrado ser um percurso médico no qual existe um especial interesse no panorama nacional. Contudo, os fatores motivacionais subjacentes são desconhecidos. Este estudo pretende identificar e explorar os fatores motivacionais envolvidos na escolha de anestesiologia pelos médicos internos em Portugal.

Material e Métodos: Desenvolveu-se um estudo transversal através da aplicação de um questionário acerca da motivação para escolher a carreira de Anestesiologia. A motivação foi avaliada através de uma escala de Likert com 5 pontos, entre "*nada*" e "*extremamente preponderante*". O questionário foi aplicado via email a todos os internos de formação específica em anestesiologia a frequentar o primeiro ano em 2021 (n=80). Foram aplicados métodos de estatística descritiva.

Resultados: A taxa de resposta foi 82,5%. O sexo feminino representou 63,6% da amostra. A maioria dos internos (77,3%) teve contato com a Anestesiologia durante o internato. A Anestesiologia foi a primeira opção para 86,4% dos participantes. Virtualmente todos os inquiridos escolheriam a mesma opção novamente. Relativamente à motivação para escolher Anestesiologia, doze fatores foram considerados

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como "*muito*" e "*extremamente preponderantes*" por mais de 50% dos inquiridos: transversalidade, especialidade *hands-on*, adaptação às características pessoais, perceção da satisfação profissional, empregabilidade, equilíbrio entre a vida laboral e pessoal, contacto com o doente emergente, fisiologia e farmacologia, predomínio de trabalho em bloco operatório, pouco contacto com trabalho em enfermaria e perspetivas de carreira.

Conclusão: Os fatores relacionados com a componente pessoal e a natureza do trabalho da especialidade parecem ser os mais relevantes na escolha de uma carreira em Anestesiologia. A aplicação anual de questionários assim como a comparação dos fatores motivacionais na escolha de diferentes especialidades será relevante para melhor compreender o fenómeno.

INTRODUCTION

Choosing a medical career is complex and involves different factors.[1] In a systematic review, Querido *et al*[1] found that the main categories associated with specialty preference or career choice included specific medical schools characteristics, particular student characteristics and values, satisfaction of career needs and perception of specialty specificities. Such findings support that medical career decisions are formed based on perceptions of specialty characteristics and personal needs.

Anesthesiology is not an exception. Over the last few years, there is a consistently high interest in Anesthesiology as a career in Portugal.[2] Furthermore, in a recent national survey, the residency in Anesthesiology has been rated in the first place regarding trainees' expectations and in the second place regarding the level of satisfaction.[3] However, the reasons behind it are unknown. Evidence from other countries mentions factors, such as being a "hands-on" specialty,[4-9] bringing work/life balance,[4,5-7,10] having a high component of physiology and pharmacology,[4,8] having a low ward and outpatient workload,[5] being transversal to other specialties,[5,9] bringing career perspectives[6] and professional models,[6] focusing additionally on emergency and critical care[8] and having a high perceived job satisfaction and structured training.[9]

This study aims to identify and explore the motivational factors involved in anesthetic trainees' career decision making in Portuguese trainees.

MATERIAL AND METHODS

We performed a cross-sectional study including the first-year Anesthesiology trainees at Portugal who started the residency in 2021. An electronic survey on demographics and motivation to choose Anesthesiology was developed. Firstly, we identified in the available literature the relevant factors to determine career choices amongst medical students.[4,5,8-10]

We included twenty items that were widely highlighted in several surveys. Initially, the survey was applied to 8.75% of the population and adjustments were performed. The survey was divided in four sections: demographic details (gender, age, academic qualifications, medical school, previous work experience), speciality choice profile (previous contact with Anesthesiology, priority of Anesthesiology as the specialty to choose), satisfaction with specialty and motivation to choose Anesthesiology (the participants were asked to rank twenty motivational factors on a 5-point Likert scale from "*not at all preponderant*" to "*extremely preponderant*").

Ethical permission was granted by the Health Ethics Commission of the University Hospital Center of São João (nº13/2021 from February 9th). The informed consent was obtained before the questionnaire application and the responses were been anonymized. The survey was applied by email between February and July 2021, nearly the first six months of residency. In order to optimize our response rate, a monthly reminder/thank you card was resent.

Demographics and motivational trends were analyzed with descriptive statistics using IBM SPSS Statistics 26.0.

The internal consistency motivational questionnaire was assessed using Cronbach alpha. For descriptive statistical purposes, we merge the higher and the bottom categories of the 5-point Likert scale ("*very preponderant*" with "*extremely preponderant*" and "*not at all preponderant*" with "*lightly preponderant*", respectively).

The motivational factors were classified in four areas according to theoretical conceptualization of professional, personal and social dimensions: *nature of work* (transversality, predominant operative operative room workload, low ward workload, low outpatient workload, global workload), *technical and scientific* (hands on speciality, physiology and pharmacology, emergency and critical care component, training program, research opportunities), *personal factors* (adaptation to personal characteristics, perceived job satisfaction, work/life balance, professional models, previous professional experience, previous medical student experience) and *socio economic factors* (employability, future financial perspectives, career progression, social prestige).

RESULTS

The online survey was sent to the 80 trainees attending the first year of Anesthesiology residency in 2021. The response rate was 82.5%. Sixty three percent were female and median (minimum-maximum) age was 26 (25-36) years old. Table 1 outlines respondents´ personal, academic and professional demographics.

Eight trainees had an academic degree prior to medicine. Forty-seven percent of the trainees obtained the medical degree in the north of Portugal and just one trainee attended a prior specialty training program without finishing it.

## Table 1. Respondents´ personal, academic and professional demographics

Demographic data (n=66)	
Age, *median* (min-max)	26 (25-36)
Female n (%)	46 (63.6%)
Pre-graduated profile	
Academic degree prior to medicine? *Yes* n (%)	8 (12.1%)
Did you perform medical work before the present resident program? *Yes* n (%)	4 (6.1%)
Pre-graduate University of origin	
Escola de Medicina da Universidade do Minho	12 (18.2%)
Faculdade de Medicina e Ciências Biomédicas da Universidade do Algarve	2 (3%)
Faculdade de Medicina da Universidade do Coimbra	14 (21.2%)
Faculdade de Medicina da Universidade de Lisboa	14 (21.2%)
Faculdade de Medicina da Universidade do Porto	12 (18.2%)
Instituto de Ciências Biomédicas Abel Salazar da Universidade do Porto	7 (10.6%)
Nova Medical School	4 (6.1%)
Foreign universities	1 (1.5%)
Speciality choice profile	
Did you have previous contact with Anesthesiology during pre-graduated education? *Yes* n (%)	51 (77.3%)
In general professional internship	24 (47.0%)
In mandatory university subjects	19 (37.3%)
In optional university clerkship	13 (25.5%)
Was Anesthesiology your first option? *Yes* n (%)	57 (86.4%)
Was the actual place of training your first option? *Yes* n (%)	37 (56.1%)
What was your priority when you chose?	
Specialty	65 (98.5%)
Place of training	1 (1.5%)
Satisfaction with speciality	
Would you choose Anesthesiology again? *Yes* n (%)	65 (98.5%)

The majority did not have previous medical work experience (93.9%). Fifty-one trainees (77.3%) had previous contact with Anesthesiology during pre-graduated education, of which 47% during the general professional internship, 37.3% in mandatory university subjects and 25.5% in optional university clerkships. The specialty of Anesthesiology was the first option for 57 (86.4%) residents. For most trainees (56.1%), the selected place of training was their first option, with 34.8% mentioning they needed to move from their home living area. The demographic details are summarized in Table 1.

"Transversality of the specialty" was the most rated factor, with 53% of the respondents considering it as "extremely preponderant". If we merge the higher categories of the 5-point Likert scale ("*very preponderant*" and "*extremely preponderant*") the following twelve factors were ranked accordingly by more than 50% of respondents: "transversality" (90.9%), "hands on specialty" (84.9%), "adaptation to personal characteristics" (84.9%), "perceived job satisfaction" (80.3%), "employability" (78.8%), "work/life balance" (75.8%),

"emergency and critical care" (71.2%), "future financial perspectives" (68.2%), "physiology and pharmacology" (68.2%), "predominant operative room workload" (54.5%), "low ward workload" (51.6%) and "career perspectives" (50.0%). Table 2 resumes the most rated factors.

The least preponderant factor was "previous professional experience" with 51.5% of the respondents rating it as "*not at all preponderant*", in line with the overall low previous professional experience (6.1%). If we merge the bottom categories of the 5-point Likert scale ("*not at all preponderant*" and "*lightly preponderant*"), three factors were ranked accordingly by more than 50% of respondents: "research opportunities" (66.6%), "previous professional experience" (65.1%) and "medical student experience" (56.1%). Virtually all trainees (98.5%) would choose the same option again. Fig. 1 resumes the trainees' responses regarding all assessed motivational factors.
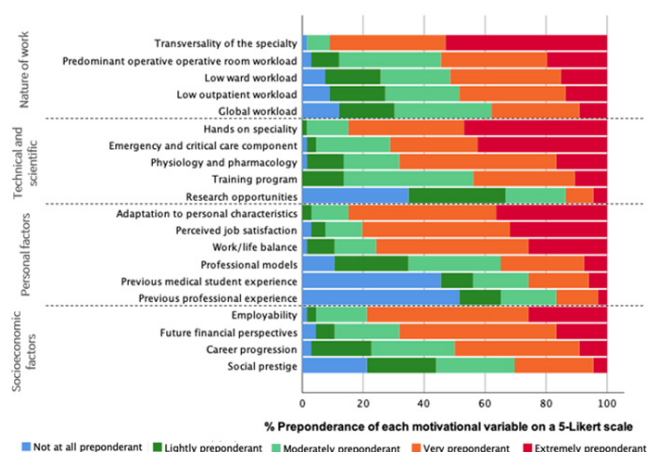
Figure 1. Influence of motivational factors to choose Anesthesiology. The motivational factors were divided in the theoretical dimensions (nature of work, technical and scientific, personal factors and socioeconomic factors).

In our sample, the internal consistency reliability of the overall motivational items were considerable (Cronbach alpha: 0.757 - 20 items). Even if any item has been removed, Cronbach alpha would be stable ranging between 0.731 and 0.762. Additionally, we tested the Cronbach alpha for each theoretical dimension: nature of work (Cronbach alpha: 0.495 - 6 items), technical and scientific (Cronbach alpha: 0.517 - 4 items), personal (Cronbach alpha: 0.478 - 6 items) and socio economic (Cronbach alpha: 0.788 - 4 items).

DISCUSSION

From our knowledge, this study is the first Portuguese survey to explore the motivational factors that led residents to choose Anesthesiology as their specialty. Firstly, it is important to highlight the high response rate, which could denote the interest in this issue. The survey data identifies twelve factors as the most relevant to choose a medical career in Anesthesiology. In the six most rated factors, three of them

Table 2. The most prevalent motivational factors to have chosen Anesthesiology ("very" and "extremely preponderant" for more than 50% of respondents).

Transversality*	90.9%	Emergency and critical care	71.2%
Hands-on specialty	84.9%	Future financial perspectives	68.2%
Adaptation to personal characteristics	84.9%	Physiology and pharmacology	68.2%
Perceived job satisfaction	80.3%	Predominant operative room workload	54.5%
Employability	78.8%	Low ward workload	51.6%
Work/life balance	75.8%	Career perspectives	50.0%
*"Extremely preponderant" for more than 50% of respondents			

are from personal nature. During the last few years, personal aspects such as work/life balance have been mentioned as important factors in medical career preference.[11,12] Cronin *et al*[11] found that more than 90% of survey medical students considered work-life balance as one of the most important factors influencing career decisions. Anesthesiology is not an exception and an expressive body of evidence shows this factor as highly rated.[4-7,9-10] Emmanouil *et al*[10] found that "wanting a career that fits with acceptable hours/working conditions" as a significant factor to choose Anesthesiology when comparing with other hospital specialties. The literature tends to link this aspect to the characteristics of Generation Y.[7,11,13] Compared with previous generations, they tend to exhibit a shift toward leisure and a decreased valuation of the intrinsic value of the work.[13] Additionally, if we consider that in our institutional culture the research and investigation are made timely and financially at the expense of the trainees, the generational change could also partially explain the research opportunities as the least preponderant factor on the survey. However, it cannot be inferred that the anesthesiology trainees are not motivated to research and investigation. Despite our results regarding transversality of the specialty as the most rated motivational factor, it was just seldom mentioned in previous studies. Similar values were shown by Irwin *et al*,[5] in a sample from Hong Kong. Even at that time, these conclusions were not in agreement with other surveys. Usually, this factor has been mentioned in surveys involving motivation to careers such as general practitioners.[11,14] Thus, we could hypothesize that our findings could result from an increasing awareness of the wide scope of competence of the specialty, being present in almost all clinical areas. However, this finding requires further elucidation.

The high rate of trainees who felt motivated to choose Anesthesiology due to their hands-on characteristics must also be of note. This is in line with previous studies[8,9] and underlines the practical nature of work as one of the most noticeable components of the specialty.

The low preponderance of medical student experience to choose Anesthesiology and the slight proportion of trainees who contacted with the specialty during mandatory university subjects raises concern with their representativeness in undergraduate medical education curricula. Thus, research such as a national survey regarding undergraduate Anesthesiology contents would be beneficial to shed light on these subjects.

The survey results demonstrated that virtually all the trainees would choose the same option again. Hence, it could be inferred that even during an early phase of the training program, there is an ubiquitous satisfaction with the specialty. This is in line with Portuguese and international evidence.[3,15] Moreover, it could be hypothesized that the initial impressions fulfilled the expectations regarding the specialty. The cross-sectional nature of our study enables a screenshot at the time of data collection but prevents us from understanding the evolution during the residency program. Even with a high response rate, our population refers to a specific pool of trainees from one specialty and only one-year placement. Moreover, our motivational instrument was not validated and for statistical analysis purposes the motivational factors (nature of work, technical and scientific, personal factors and socioeconomic factors) drifted from a theoretical aggregation without the application of factor analysis methods. Thereafter, it impacts negatively in the statistical power and generalization of our findings.

Our online approach seemed to be the better method to include a higher number of participants. Nonetheless, online surveys could result in bias. Coverage errors, namely due to email address error or limited access to online platforms could decrease the response rate. On the other hand, non-response errors could result from demographic, attitudinal and/or behavioral differences between respondents and non-respondents that could be relevant for the analysis.[16]

CONCLUSION

Personal factors and the nature of work seems to be the most relevant factors associated with Anesthesiology career choice. The high level of satisfaction in the initial period of residency can afford background to support the adequacy of the current training program to the trainees' expectations.

To strengthen the evidence and validate our survey, it would be beneficial to expand this survey on an annual basis. How the motivational factors differ between different specialties are still unknown and require further clarifications. Moreover, concerns regarding the representativity of Anesthesiology during the undergraduate educational curricula and their impact in medical career decisions should be surveyed.

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