



# The Role of the Resident Doctor in Orthopedics and Traumatology in a Large Hospital of the Unified Health System: What is the User's view?\*

## *A atuação do médico residente em ortopedia e traumatologia em um hospital de grande porte do sistema único de saúde: Qual a visão do usuário?*

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### Abstract

**Objective** To assess the knowledge of patients seen at a teaching hospital about the academic and professional training of the resident doctor in orthopedics and traumatology, as well as his area of expertise, and determine the perception of the patients of comfort and safety in relation to being assisted by the resident doctor at different stages of treatment.

**Methods** A cross-sectional study was conducted with patients admitted to a large orthopedics hospital of the Brazilian Unified Health System (SUS, in the Portuguese acronym). Data were collected through the application of a questionnaire containing 19 objective questions that assessed sociodemographic parameters and the perception of the patient of the performance of the resident. The data were analyzed to assess the frequency of responses obtained.

**Results** 152 participants were evaluated, predominantly male (62.6%) and aged between 36 and 55 years old (41.3%). Only 43.3% were aware of the academic background of the resident. Patients reported feeling safer and more comfortable being assisted by the doctor together with the resident in the outpatient consultation (43.3%), in the nursing ward (39.3%) and during surgery (61%). As for the performance of the resident, 80.2% stated that the resident doctor improves communication between the patient and the main surgeon; however, only 11% said they would feel safe and comfortable being cared for exclusively by residents in the surgical environment, if allowed.

### Keywords

- ▶ resident doctor
- ▶ orthopedics
- ▶ traumatology
- ▶ orthopedic surgery

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**Conclusion** The participation of resident physicians in the care is well received by the patients if they are in the company of the attending physician. Patients identify residents as a facilitating bridge in the communication with attending physicians.

## Resumo

**Objetivo** Avaliar o conhecimento de pacientes atendidos em um hospital-escola acerca da formação acadêmica e profissional do médico residente em ortopedia e traumatologia, bem como sua área de atuação, e determinar a percepção de conforto e segurança do paciente em relação a ser assistido pelo médico residente em diferentes etapas do tratamento.

**Métodos** Foi realizado um estudo transversal com pacientes internados em um hospital de ortopedia de grande porte do Sistema Único de Saúde (SUS). Os dados foram coletados a partir da aplicação de um questionário contendo 19 questões objetivas que avaliaram parâmetros sociodemográficos e a percepção do paciente quanto à atuação do residente. Os dados foram analisados de forma a avaliar a frequência das respostas obtidas.

**Resultados** Foram avaliados 152 participantes, predominantemente do sexo masculino (62,5%) e com idade entre 36 e 55 anos (41,3%). Apenas 43,3% tinham conhecimento sobre a formação acadêmica do residente. Os pacientes relataram se sentir mais seguros e confortáveis em serem assistidos pelo médico em conjunto com o residente na consulta ambulatorial (43,3%), na enfermaria (39,3%) e durante a cirurgia (61%). Quanto à atuação do residente, 80,2% afirmaram que o médico residente melhora a comunicação entre o paciente e o cirurgião principal, entretanto e apenas 11% disseram se sentir seguros e confortáveis sendo cuidados exclusivamente por residentes no ambiente cirúrgico, caso fosse permitido.

**Conclusão** A participação de médicos residentes nos cuidados é bem recebida pelos pacientes, desde que em companhia do médico assistente. Os pacientes identificam nos residentes uma ponte facilitadora na comunicação com os médicos assistentes.

## Palavras-chave

- ▶ médico residente
- ▶ ortopedia
- ▶ traumatologia
- ▶ cirurgia ortopédica

## Introduction

In recent years, the practice of overlapping surgeries, which consists of a main surgeon coordinating two or more operating rooms at the same time, has been the subject of extensive debates between the medical community and society,<sup>1-3</sup> besides gaining more and more space in the main journals around the world.<sup>4-8</sup> This practice, although not legally permitted in Brazil, is quite common in academic medical centers, being essential for the training of residents and presenting benefits such as reduced waiting time for patients to undergo surgery, decrease in surgical costs, optimization of hospital revenues, in addition to promoting the development of skills and autonomy of resident doctors and increasing the number of doctors involved in patient care.<sup>3,5</sup>

Although more extensive research is needed on this topic, studies suggest that there is no increased risk and complications involving such practice.<sup>3,9</sup> A decrease in the rates of general complications and no impact on complications of surgical wounds was found in surgeries performed with the participation of resident doctors in orthopedics and traumatology, despite prolonged surgical times.<sup>10</sup>

However, although some studies have addressed the impact of resident participation in surgeries and procedure

outcomes, including overlapping surgeries,<sup>8,11</sup> few studies have investigated the patient's perception of the participation of the resident physician in their treatment.<sup>12</sup> Thus, the purpose of the present study is to identify the knowledge of the patients about the academic and professional training of the resident doctor in orthopedics and traumatology, as well as to evaluate the perception of these patients in relation to the care of residents in the surgical, outpatient and nursing wards environment.

## Materials and Methods

### Study Design

A cross-sectional study was carried out, based on consecutive convenience sampling, including patients admitted to a large hospital in the Brazilian Unified Health System (SUS, in the Portuguese acronym) in the period between May 2019 and July 2019. The present study was approved by the Ethics and Research Committee of the institution (CAAE. 12159819.9.0000.5273)

### Study Population

Patients of both gender, aged > 18 years old and literate, who were in preoperative hospitalization for the treatment of traumatic orthopedic injuries were included. Sedated,

comatose, and patients with cognitive impairment were excluded, as well as those who refused to complete the Free Informed Consent Form.

### Preparation and Application of the Questionnaire

To conduct the study, a questionnaire was elaborated, containing 19 objective questions, addressing questions related to the sociodemographic aspects of the participants, to the knowledge about the academic background of the residents and about the perception about the participation of the resident in the treatment (► **Annex 1**).

The study was conducted in a single phase, in which the sample was subjected to a cross-sectional analysis through the application of the questionnaire during hospitalization.

### Results Analysis

For the analyses, the frequency of responses and the correlation between the sociodemographic variables and selected questions were determined. Statistical analyses were performed using the software GraphPad Prism version 7.0 (GraphPad Software, San Diego, CA, USA). The chi-squared test was used to verify possible associations between categorical variables and, when necessary, the Fisher exact test was used. A p-value of 0.05 was considered significant.

## Results

A total of 152 patients were included, who were in preoperative hospitalization for orthopedic trauma surgery. The sociodemographic characteristics of the sample are presented in ► **Table 1**. Most of the participants were male (62.5%, n = 95), aged between 36 and 55 years old (41.3%, n = 62), completed high school (30.9% n = 47) and reported having a monthly family income of up to BRL 1,499.99 (68.4%, n = 91). Only 5.3% (n = 8) of the participants worked as health professionals, and 30% of them (n = 45) were directly related to health professionals.

As for the expectations of the patients, most reported that they expected to meet both the primary physician (72%, n = 108) and the resident physician (82.6%, n = 124) every day during hospitalization. When asked about the academic background of the resident doctor, 43% (n = 62) knew how to answer correctly, identifying the resident as a doctor in a specialization period in orthopedics and traumatology. Of the 57% (n = 82) who did not understand the real academic background of these professionals, 34% (n = 49) believed that the resident doctor was an orthopedic and traumatologist at the beginning of his career, 14% (n = 20) believed that the resident was a medical student, and the remaining 9% (n = 13) attributed other definitions to these professionals or did not know how to answer (► **Table 2**).

Participants were also asked about their perception of the participation of the resident doctor in different stages of their treatment. Regarding the outpatient consultation, 43.3% (n = 65) said they preferred that the service was performed jointly by the main physician and the resident, while only 17.3% (n = 26) reported feeling safe to be seen only by the resident at this point. Regarding care in the

**Table 1** Sociodemographic characteristics of the sample

| Answers  | N (%)       |
|--|-------------|
| Age  |             |
| 18 to 35 years old   | 45 (30%)    |
| 36 to 55 years old   | 62 (41.3%)  |
| 56 to 75 years old   | 33 (22%)    |
| > 76 years old   | 10 (6.6%)   |
| Gender   |             |
| Male   | 95 (65.5%)  |
| Female   | 57 (37.5%)  |
| Education  |             |
| Incomplete elementary school                                   | 44 (29.8%)  |
| Complete elementary school                                     | 17 (11.1%)  |
| Incomplete high school   | 33 (21.7%)  |
| Complete high school   | 47 (30.9%)  |
| Incomplete higher education                                    | 5 (3.2%)    |
| Complete higher education                                      | 6 (3.9%)    |
| Monthly income   |             |
| Up to R\$ 1,499.99   | 91 (68.4%)  |
| R\$ 1,500 to R\$ 2,999   | 26 (19.5%)  |
| R\$ 3,000 to R\$ 4,999   | 7 (5.2%)    |
| R\$ 5,000 to R\$ 9,999   | 7 (5.2%)    |
| > R\$ 10,000   | 2 (1.5%)    |
| Works as a health professional                                 |             |
| Yes  | 8 (5.3%)    |
| No   | 143 (94.7%) |
| Has a first-degree relative who works as a health professional |             |
| Yes  | 45 (30%)    |
| No   | 105 (70%)   |
| Underwent previous surgical procedure                          |             |
| Yes  | 109 (72.2%) |
| No   | 42 (27.8%)  |

nursing ward, while 39.3% (n = 59) said they preferred joint care between the primary physician and the resident, 30.6% (n = 46) reported feeling safe and comfortable being assisted only by the resident doctor. The perception of the patients about being care by the resident doctors in the operating room revealed that most participants (61%, n = 91) would prefer to be assisted together by the resident doctor and the main surgeon, while only 11% (n = 16) of those studied said they felt safe and comfortable being assisted exclusively by residents, if allowed (► **Table 3**).

Finally, 68.5% (n = 109) of the participants said they believed that a greater number of doctors involved in their care could improve the quality of the assistance offered. As for the role of the resident in the communication between the surgeon and the patient, 80.2% (n = 118) stated that the

**Table 2** Assessment of patient expectations and assessment of knowledge about resident training

| Answers   | N (%)       |
|---|-------------|
| Do you expect to meet the main surgeon every day during hospitalization?  | n = 150     |
| Yes   | 108 (72%)   |
| No  | 42 (28%)    |
| Do you expect to meet the resident doctor every day during hospitalization?   | n = 150     |
| Yes   | 124 (82.6%) |
| No  | 26 (17.3%)  |
| What do you know about the academic and professional training of the resident doctor in orthopedics and traumatology? | n = 144     |
| He is still a medical student in training   | 20 (13.8%)  |
| He is a doctor specializing in orthopedics and traumatology   | 62 (43.0%)  |
| He is a physician specialized in orthopedics and traumatology at the beginning of his career                          | 49 (34.0%)  |
| Other   | 13 (9.0%)   |
| Are you able to identify the main surgeon responsible for your care?  | n = 151     |
| Yes   | 50 (33.1%)  |
| No  | 101 (66.2%) |
| Are you able to identify the resident doctor involved in your care?   | n = 147     |
| Yes   | 21 (14.3%)  |
| No  | 126 (85.7%) |

resident doctor improves this communication, while only 1.3% (n = 2) said that the presence of the resident worsens the communication between patient and surgeon. When asked about the relationship between the presence of residency programs and the care received during hospitalization, 85.5% (n = 124) of the participants reported receiving more attention in hospitals with a medical residency pro-

gram, 4.1% (n = 6) reported receiving less attention in teaching hospitals and 10.3% (n = 15) had no previous hospitalizations in hospitals without a medical residency program (–Table 4).

We found no association between gender, age or income and the feeling of comfort and security in being attended by the resident. However, this analysis revealed that the perception of comfort regarding the performance of the resident varied in relation to the stage of care and the level of education of the patients, where we identified a relationship between the lowest level of education and the highest perception of comfort in being assisted only by the resident doctor in outpatient consultations ( $p = 0.04$ ) and in the ward ( $p = 0.03$ ). This association was not observed in relation to the isolated performance of the resident physician in the surgical environment, since, regardless of the level of education, patients reported requiring the presence of the main physician during the procedure ( $p = 0.27$ ).

### Discussion

In Brazil, the practice of overlapping surgeries is quite common in academic hospitals, where the main surgeon can start a new procedure in another operating room without having finished the first, leaving the resident physician to complete the noncritical parts of the procedure. In these teaching hospitals, the participation of the resident doctor in the various stages of patient care is essential for their training;<sup>13</sup> however, there are still no national studies that aim to understand the view of the patient about the performance of the resident physician during his treatment.

The present study shows that the resident doctor has an important role in facilitating communication between the patient and the main surgeon, and, although less than half of the participants know about the academic background of the residents, in general, they were safe and comfortable being assisted by resident doctors in the company of the main surgeon.

It is noteworthy that, in our sample, only 33% of the patients were able to identify the surgeon responsible for their treatment and an even lower percentage was able to identify the resident doctor, even though we were unable to

**Table 3** The patient's perception of the resident's participation

|  | Answer   |      |   |      |  |      |                           |      |
|--|--|------|---|------|--|------|---------------------------|------|
|  | Safe and comfortable to be attended only by the resident |      | Prefer to be attended by the main doctor together with the resident |      | Prefer to be attended only by the main physician |      | Unable to give an opinion |      |
| Patient's perception of the resident's participation | n  | %    | n   | %    | n  | %    | n                         | %    |
| Outpatient consultation                              | 26   | 17.3 | 65  | 43.3 | 17   | 11.3 | 42                        | 28   |
| Nursing Ward   | 46   | 30.6 | 59  | 39.3 | 9  | 6    | 36                        | 24   |
| Surgery  | 16   | 10.7 | 91  | 61   | 14   | 9.4  | 28                        | 18.7 |

**Table 4** The resident's role in patient care

| Answers  | N (%)       |
|--|-------------|
| Believes that the involvement of a high number of doctors can improve the quality of care                    | n = 150     |
| Yes  | 109 (68.5%) |
| No   | 18 (11.3%)  |
| Does not have an opinion   | 23 (14.4%)  |
| Role of the resident in the communication between the patient and the primary surgeon                        | n = 147     |
| Improves communication   | 118 (80.2%) |
| Worsens communication  | 2 (1.3%)    |
| Does not change communication  | 27 (18.3%)  |
| Regarding the care received in a teaching hospital compared to hospitals without a medical residency program | n = 145     |
| I received more care in hospitals with a medical residency program   | 124 (85.5%) |
| I received less attention in hospitals with a medical residency program                                      | 6 (4.1%)    |
| No previous hospitalization  | 15 (10.3%)  |

assess whether the patients were able to identify the surgeon or the resident with accuracy. This finding differs from the results found by Cowles et al.,<sup>12</sup> who performed a similar study in an academic hospital and found that 86% of the patients knew how to identify the doctor in charge of their treatment. We believe that the high number of doctors involved in the treatment of patients, combined with the lack of knowledge about the performance of the resident may have contributed to this confusion.

Our results show that the perception of comfort and safety with the participation of the resident varies according to the treatment stage, with the performance of the resident, alone, being well accepted in the nursing ward, where, among the patients who had an opinion about the theme, ~ 40% reported feeling safe to be seen only by the resident, but not in the outpatient consultation or during surgery, where the percentages found were 24% and 13%, respectively. Other studies have reported similar results, showing that patients feel comfortable being assisted by the resident outside the surgical environment, but not during surgery.<sup>12,14</sup> Despite the result, it is important to note that previous studies have shown that the participation of residents in the surgical procedure, whether general or orthopedic, is not associated with increases in mortality rates or general complications, being safe for patients.<sup>10,15,16</sup>

Interestingly, when patients were stratified in terms of education level, we found that those who had not completed high school felt more comfortable about being seen only by the resident doctor in the outpatient consultation or in the ward. However, we did not find, among the factors evaluated in the present study, reasons that justified this difference.

Our results also show that, although only a small portion of patients feel safe to be assisted only by the resident in the

surgical environment, 75% of those who had an opinion on this issue said they preferred the procedure to be performed by the surgeon together with the resident doctor, indicating a willingness to contribute to the technical training of the resident, as noted in other studies.<sup>12</sup> We believe that one of the reasons for the preference for the joint action of the main doctor and the resident doctor is because the participants point out that the presence of the resident doctor facilitates communication between doctor and patient, a result similar to that found by Cowles et al.<sup>12</sup> The role of the residents in communication can be fundamental for establishing the relationship of trust between doctor and patient, a factor that is fundamental for treatment adherence and compliance, and that positively correlates with patient satisfaction with treatment.<sup>17</sup>

In general, our results corroborate the study by Cowles et al. finding that the academic hospital environment is well tolerated by patients, since most participants said they believed that the greatest number of doctors could improve the quality of care received and reported having received more attention during hospitalization in hospitals with medical residency.<sup>12</sup>

One of the main limitations of the present study is the fact that it was performed with patients from a single teaching hospital and with patients treated by the same orthopedic specialty. Despite this, we believe that the results of these studies can be extrapolated once they reflect common perceptions of patients, regardless of the type of treatment they will be submitted to. Thus, our results are relevant because they bring out the view of the user of the public health system of the country, thus leading to broader discussions about the role of the resident and the practice of overlapping surgeries.

## Conclusion

Although part of the users of the SUS do not understand exactly the real professional training of the resident doctor in orthopedics and traumatology, the participation of residents, together with the responsible doctor, is well tolerated in the various stages of care provided to patients. Our results place residents as important actors in the doctor-patient relationship and suggest a willingness of patients to contribute to the education of residents, reinforcing the mission of teaching hospitals, to create favorable conditions for health education without losing focus on the excellence of the assistance provided to patients.

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### Conflict of Interests

The authors have no conflict of interests to declare.

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**Annex 1** Data Collection Form

| RESEARCH PROJECT INFORMATION: |  |
|-------------------------------|--|
| Title:                        | PERFORMANCE OF THE RESIDENT PHYSICIAN IN ORTHOPEDICS AND TRAUMATOLOGY IN A LARGE HOSPITAL OF THE UNIFIED HEALTH SYSTEM. WHAT IS THE USER'S VIEW? |
| Responsible Researcher:       |  |
| Center or Sector:             | Specialized Care Center (CAE) TRAUMA   |

| DATA TO COLLECT       |       |                 |       |
|-----------------------|-------|-----------------|-------|
| Participant initials: | _____ | Medical record: | _____ |

**1) Age:**

- 18 to 35 years old  
 36 to 55 years old  
 56 to 75 years old  
 more than 76 years old

**2) Gender:**

- Male  
 Female

**3) Education level:**

- Incomplete elementary school  
 Complete elementary school  
 Incomplete high school  
 Complete high school  
 Incomplete higher education  
 Complete higher education

**4) Monthly income:**

- up to R\$1,499.99  
 R\$1,500.00 to 2,999.99  
 R\$3,000.00 to 4,999.99  
 R\$5,000.00 to 9,999.99  
 more than R\$10,000.00

**5) Do you work as a health professional?**

- Yes  
 No

**6) Do you have a first-degree relative who works as a health professional?**

- Yes  
 No

**7) Have you ever been subjected to any surgical procedure before this hospitalization?**

- Yes  
 No

**8) Do you know who is the main surgeon responsible for your care during this hospitalization?**

- Yes  
 No

Doctor's name:

**9) Do you expect to meet the main surgeon every day during your stay?**

- Yes  
 No

10) **Do you know who are the resident doctors involved in your care?**

- Yes
- No

Names of doctors:

11) **Do you expect to meet resident doctors every day during your stay?**

- Yes
- No

12) **What do you know about the academic and professional training of the resident doctor in orthopedics and traumatology?**

- It is still a medical student in training
- It is a doctor specializing in orthopedics and traumatology
- It is a physician specialized in orthopedics and traumatology at the beginning of his career
- Other:

13) **What is your level of comfort and safety being assisted by a resident doctor in a medical consultation?**

- I feel safe and comfortable being attended only by a resident doctor
- I prefer that the consultation in the office is done jointly by a resident doctor and the main surgeon
- I prefer that the service in the office is done only by the main surgeon
- I don't have an opinion on this question

14) **What is your level of comfort and safety being assisted by a resident doctor on a visit to the nursing ward?**

- I feel safe and comfortable being visited only by a resident doctor
- I prefer the visit to be made together by a resident doctor and the main surgeon
- I prefer the visit to be made only by the main surgeon
- I don't have an opinion on this question

15) **What is your level of comfort and safety being operated by a resident doctor?**

- I feel safe and comfortable being operated only by a resident doctor
- I prefer the surgical procedure to be done together by a resident doctor and the main surgeon
- I prefer the surgical procedure to be done only by the main surgeon
- I don't have an opinion on this question

16) **Do you believe that a high number of doctors involved in your care can improve the quality of medical care?**

- Yes
- No
- I don't have an opinion on this question

17) **What is the role of the resident doctor in the communication between you and the main surgeon?**

- Improves the communication between me and my main surgeon
- Worsens the communication between me and my main surgeon
- Does not alter the communication between me and my main surgeon

18) **Regarding the care received by the medical team:**

- I received more attention in this hospital when compared to previous admissions to other hospitals without a medical residency program
- I received less attention in this hospital when compared to previous admissions to other hospitals without a medical residency program
- I had no previous hospitalizations in other hospitals without a medical residency program

19) **If permitted by our legislation, you would feel safe being operated by a resident doctor without the full supervision of a more experienced surgeon?**

- Yes
- No
- I don't have an opinion on this question

|                              |   |
|------------------------------|---|
| <b>Place and date</b>        | <b>Signature and stamp of the researcher responsible for data collection:</b> |
| Rio de Janeiro, _____, _____ | _____   |