At the Razor’s Edge: Surgeons have Lower Stress Levels than the General Population

Phillipe Abreu-Reis, Adonis Nasr, Flavio Saavedra Tomasich, Iwan Augusto Collaco, Tayron Bassani, Gustavo Moreira Clivatti, Alana Padilha Fontanella, Juliana Midori Ito, Marília França Madeira Manfrinato, Vilin Hammerschmidt

ABSTRACT

Objective: To evaluate the stress level in physicians of different levels of formation and to compare it between different medical specialties and the general population.

Methods: This was a cross-sectional study, using a questionnaire validated in Brazil in 2010, the Perceived Stress Scale (PSS-10).

Results: The stress level was higher among surgical doctors in comparison with clinical doctors, regardless of the stage of formation. There was a difference between the sex of the professionals, men showing lower results. None of these was statistically significant. Comparing to the American population or South Brazilian teachers, the medical preceptors presented a significant lower level of stress.

Conclusion: The medical specialty as well as gender and level of medical formation influence in the professional stress level, being elevated in fields of higher working hours and constant pressure.

Descriptors: Stress, surgery, residents, medical students.

Keywords: Panamerican Tr society, Stress level, Surgery, trauma, Quality of life.


Source of support: Nil

Conflict of interest: None

INTRODUCTION

Nine in ten people in the world are affected by stress in higher or lower levels of intensity.1 Despite the elevated prevalence, defining stress is difficult. Usually, it is described as the inability to handle daily life situations, threatening mental, physical or spiritual health.2 Excessive stress can elicit organism alterations, impair memory, enhance anxiety, cause sleep disturbances and influence all the human systems.1,3 Health workers seem to be more susceptible to these effects then general population.4 This overwhelm occurs since the first years of medical life, still in University, when medical students were submitted to increasing levels of competitiveness, growing responsibilities as well as contact with sick people, loss and death, among others.1,2 The effort and demanded dedication increase in time, being important characteristics of medical residence, a hard and stressful time in the medical career formation.4 Sleep deprivation, excessive working hours and irregular work schedules are some of the factors influencing the medical stress levels. To the ones who follow academic life, like the preceptors, the time and energy spent and responsibilities demanded can also become stressors.5

With so many evidence of excessive demands and destabilizing factors to which health students and professionals are subjected, we design this study to compare the stress level between surgical and nonsurgical specialties.

Resultados: El nivel de estrés era mayor entre los médicos quirúrgicos en comparación con los médicos clínicos, independientemente de la etapa de formación. Hubo una diferencia entre el sexo de los profesionales, los hombres muestran resultados más bajos. Ninguno de estos fue estadísticamente significativa. En comparación con la población de América del Sur o profesores brasileños, los preceptores médicos presentan un nivel significativamente más bajo de estrés.

Conclusion: La especialidad médica, así como el género y el nivel de formación médica influyen en el nivel de estrés profesional, que es mayor en los campos de más horas de trabajo y presión constante.

Descriptors: Estrés, cirugía, residentes, estudiantes de medicina.

Keywords: Panamerican Tr society, Stress level, Surgery, trauma, Quality of life.

RESUMEN

Objetivo: Evaluar el nivel de estrés en los médicos de diferentes niveles de formación y compararlo entre diferentes especialidades médicas y la población en general.

Métodos: Se realizó un estudio transversal, mediante un cuestionario validado en Brasil en 2010, la Escala de Estrés Percibido (PSS-10).

Resultados: El nivel de estrés era mayor entre los médicos quirúrgicos en comparación con los médicos clínicos, independientemente de la etapa de formación. Hubo una diferencia entre el sexo de los profesionales, los hombres muestran resultados más bajos. Ninguno de estos fue estadísticamente significativa. En comparación con la población de América del Sur o profesores brasileños, los preceptores médicos presentan un nivel significativamente más bajo de estrés.

Conclusion: La especialidad médica, así como el género y el nivel de formación médica influyen en el nivel de estrés profesional, que es mayor en los campos de más horas de trabajo y presión constante.

Descriptors: Estrés, cirugía, residentes, estudiantes de medicina.

Keywords: Panamerican Tr society, Stress level, Surgery, trauma, Quality of life.
At the Razor’s Edge: Surgeons have Lower Stress Levels Than The General Population

PAJT

27

METHODS

A questionnaire was applied in this descriptive, cross-sectional study, between March and April 2015. The questionnaire was based on the Perceived Stress Scale (PSS-10), validated in Brazil in 2010\(^6\) to evaluate the frequency of feeling or thinking about specific stress related situations in the last 30 days.

The research was performed anonymously and voluntarily with medical preceptors and residents of surgical and non-surgical specialties as well as medical students of the fifth and sixth years of graduation (which correspond to the professionalizing cycle of formation). The results were also compared with the control population of the same age (control group A: American population and control group B: teacher population of South Brazil).\(^7,8\)

We included the subjects of 18 years of age or more, working or studying in the city of Curitiba, Brazil and surroundings. We excluded the incomplete questionnaires.

The 10 questions forms were fulfilled online, through a Microsoft Excel worksheet linked by Google. We compiled the answers in a worksheet to be analysis and interpretation.

Each question in the PSS-10 have a predefined weight, ranging from 0 to 4. The sum of all the 10 questions scores gives the global one, ranging from 0 to 40. The data analysis was concluded with simple percentage statistics. The continuous variables were analyzed with the Student t test and the discrete ones with the \(\chi^2\) test.

The doctors and the medical students currently on the following specialties were considered as surgical: Orthopedics, General Surgery, Coloproctology, Plastic Surgery, Obstetrics and Gynecology, Urology and Surgical Oncology. The non-surgical ones were Family and Community Medicine, Internal Medicine, Anesthesiology, Pediatrics, Neurology and Radiology. The other specialties were not represented.

RESULTS

A total of 118 subjects fulfilled the questionnaires, among which 72 medical students, 37 resident doctors and 9 preceptors. 52 were women (38 students, 11 residents and 3 preceptors) and 66 were men (34 students, 26 residents and 6 preceptors). There was no incomplete questionnaire as shown in Graph 1.

Table 1 shows that the mean age was 24.3, 26.4 and 37.3 years for the students, residents and preceptors, respectively.

There was 65 subjects from surgical specialties (5 preceptors, 25 residents and 35 students) and 53 from non-surgical specialties (4 preceptors, 12 residents and 37 students) as described by Graph 2.

Table 2 presents data from PSS-10 according to level of formation.

The PSS-10 is higher in the surgical specialties among the three levels of formation, although in none of them have the difference achieved statistical significance (\(p\) preceptors = 0.67; \(p\) residents = 0.73; \(p\) students = 0.90).

In Table 3 are shown the stress scores from previews studies, which we used as control groups to comparison, according to sex and age stratification.\(^7,8\)

Table 3: Stress scores of control groups A and B, according to age and sex

<table>
<thead>
<tr>
<th>Control A: American Population</th>
<th>Control B: South Brazil Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n)</td>
<td>Mean (Standard deviation)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>926</td>
</tr>
<tr>
<td>Female</td>
<td>1406</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
</tr>
<tr>
<td>18–29</td>
<td>645</td>
</tr>
<tr>
<td>30–44</td>
<td>750</td>
</tr>
<tr>
<td>45–54</td>
<td>285</td>
</tr>
<tr>
<td>55–64</td>
<td>282</td>
</tr>
<tr>
<td>&gt;65</td>
<td>296</td>
</tr>
</tbody>
</table>

Source: Cohen et. al, 1983 e Reis e Petroski, 2004

Graph 1: Responders by sex

Graph 2: Responders by specialty

Graph 3: Responders by sex and age
The preceptors presented a lower stress score in relation to control group B (12.4 vs 17.8 points, p < 0.01). Table 4 presents that there was no significant difference between the preceptors and the control group A stress levels (12.4 vs 13.0 points, p = 0.18).

On the other hand, among the residents, the stress score was higher than control group B (21.9 vs 21.3 points, p < 0.01), but again there was no difference with the control group A (21.9 vs 14.2 points, p = 0.32) as follows in Table 5.

Table 6 shows that medical students had higher stress levels than the control group A (19.9 vs 14.2 points, p < 0.01), but lower than control group B (19.9 vs 21.3 points, p < 0.01).

There was no difference regardless of sex when our sample was compared to the control groups. Table 7 exposes a tendency to higher stress was noted among female subjects, not statistically significant (preceptors: 14.3 vs 11.5 points, p = 0.17; residents: 26.0 vs 21.3 points, p = 0.29; students: 21.4 vs 18.3 points, p = 0.95, for female and male subjects, respectively).

The medical carrier as a whole presents physical and mental demands capable of altering the professionals quality of life and stress levels. The exhausting routine and excessive working hours are known and begin already in the University period. Free time abdication, sleep deprivation, full schedule and several hours of complimentary study add to this reality of overwhelming, specially in the finals years of graduation.¹ In this complimentary study add to this reality of overwhelming, specially in the finals years of graduation.¹ In this

Table 4: Mean stress score among preceptors, compared to control groups A and B (age between 30–44 years)

<table>
<thead>
<tr>
<th></th>
<th>Preceptors</th>
<th>Control A</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>12.4</td>
<td>17.8</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.4</td>
<td>13.0</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Table 5: Mean stress score among residents, compared to control groups A and B (age between 18–29 years)

<table>
<thead>
<tr>
<th></th>
<th>Preceptors</th>
<th>Control A</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>21.9</td>
<td>14.2</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21.9</td>
<td>21.3</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 6: Mean stress score among medical students, compared to Control Groups A and B (age between 18–29 years)

<table>
<thead>
<tr>
<th></th>
<th>Students</th>
<th>Control A</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>19.9</td>
<td>14.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19.9</td>
<td>21.3</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 7: Mean stress score in men and women.

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preceptors</td>
<td>14.3</td>
<td>11.5</td>
<td>0.17</td>
</tr>
<tr>
<td>Residents</td>
<td>26.0</td>
<td>21.3</td>
<td>0.29</td>
</tr>
<tr>
<td>Students</td>
<td>21.4</td>
<td>18.3</td>
<td>0.95</td>
</tr>
</tbody>
</table>
CONCLUSION

It is known that the medical carrier demands time, dedication and perseverance. Still, it is possible to find differences inside this huge working field. Our study shows that specialty choose can affect stress levels of medical professionals. The same way, the educational and the professional periods have different impact in the mental well-being of the doctors.

REFERENCES

8. Petroski EC. Qualidade de vida no trabalho e suas relações com estresse, nível de atividade física e risco coronariano de professores universitários. 2005.
At the Razor’s Edge: Surgeons have Lower Stress Levels than the General Population

I will like to congratulate the authors for analyzing such an important aspect of the medical profession. Identifying the physical and mental stresses of the medical providers is essential to create new ways in improving the working environment of our profession.

However, I have some questions and specific recommendations for the authors: (1) Develop a more detailed analysis about the differences between the genders, including between surgical and non-surgical specialties, on their degree of stress. (2) Expand on the differences between cohort groups A and B. (3) Further discussion about the specific findings encountered among the preceptors. (4) Further discussion about the high level of stress found among the teachers and the social, political and economic factors producing the difference between Latin American countries. (5) Is there an explanation about the higher number of women among the students as compared to the resident’s group?

Manuel Lorenzo
Professor of Surgery
Methodist Dallas Medical Center
Dallas, Texas, USA

Al filo de la navaja: Los cirujanos tienen niveles bajos de estrés comparado a la población general

Me gustaría felicitar a los autores por el análisis de un aspecto tan importante de la profesión médica. La identificación del estrés físico y mental de los proveedores de servicios médicos es esencial para crear nuevas formas de trabajo en la mejora del medio ambiente de nuestra profesión.

Sin embargo, tengo algunas preguntas y recomendaciones específicas para los autores: (1) Desarrollar un análisis más detallado sobre las diferencias entre géneros, incluyendo especialidades quirúrgicas y no quirúrgicas, en su grado de estrés. (2) Ampliar en las diferencias entre el grupo cohorte A y B. (3) Continuación de discusiones sobre los resultados específicos encontrados entre los preceptores. (4) Además discusión sobre el alto nivel de estrés que se encuentra entre los maestros y los factores sociales, políticos y económicos que produce la diferencia entre los países de América Latina. (5) ¿Hay una explicación sobre el porqué de un mayor número de mujeres entre los estudiantes en comparación con el grupo de residentes?

Manuel Lorenzo
Profesor de Cirugía
Methodist Dallas Medical Center
Dallas, Texas, USA