

## Qualification of postgraduate programs in Dentistry on the perceived stress and QoL of faculty members and students

Qualificação dos programas de pós-graduação em Odontologia sobre a percepção de estresse e QV de docentes e discentes

Cualificación de programas de posgrado en Odontología sobre el estrés percibido y la CV de docentes y estudiantes

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### Abstract

The objective of the present study was to compare the perceived stress and quality of life (QoL) between Brazilian graduate students and faculty members and to evaluate the influence of the CAPES qualification grade on these outcomes. Self-administered questionnaires were sent to faculty members and students of the CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) accredited institutions in Brazil. A total of 348 faculty members and 707 students answered the questionnaires, from all parts of the country. Students had fewer hours of sleep and presented lower scores ( $p < 0.05$ ) in the four domains of the QoL (physical, psychological, social, and environment) when compared to faculty members, also higher PSS scores ( $p < 0.05$ ). When the students were compared between them, students from CAPES grade 3 programs presented the highest perceived PSS scores and CAPES grade 7 programs presented the lowest. For the QoL results CAPES grades 3 and 6 programs students reported the lower scores and grade 7 the highest. Faculty members working in CAPES grade 6 programs reported the highest PSS scores. As for the QoL results, faculty members of CAPES recognized grade 5 programs reported the lowest scores in three domains: Social, physical, and psychological, while grade 7 faculty members reported the highest in the four domains. This study showed that students had higher levels of PSS and lower QoL and there was a difference in these outcomes considering the CAPES qualification grade mainly among students.

**Keywords:** Quality of life; Faculty; Students; Dental; Health teaching.

### Resumo

O objetivo do presente estudo foi comparar a percepção de estresse e qualidade de vida (QV) entre estudantes de pós-graduação e docentes brasileiros e avaliar a influência da nota de qualificação da CAPES nesses desfechos. Questionários autoaplicáveis foram enviados a docentes e alunos das instituições credenciadas pela CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) no Brasil. Um total de 348 docentes e 707 alunos responderam aos questionários, de todas as partes do país. Os estudantes tiveram menos horas de sono e apresentaram escores mais baixos ( $p < 0,05$ ) nos quatro domínios da QV (físico, psicológico, social e meio ambiente) quando

comparados aos docentes, também escores mais elevados do PSS ( $p < 0,05$ ). Quando os alunos foram comparados entre si, os alunos da CAPES série 3 apresentaram os maiores escores de PSS percebidos e os programas CAPES 7 apresentaram a menor. Para os resultados de QV da CAPES, os alunos dos programas 3 e 6 relataram as notas mais baixas e a nota 7 a mais alta. Os docentes que trabalham em programas de 6ª série da CAPES relataram as maiores pontuações de PSS. Quanto aos resultados de QV, os docentes dos programas reconhecidos pela CAPES como 5º ano relataram as pontuações mais baixas em três domínios: Social, físico e psicológico, enquanto os professores do 7º ano relataram os mais altos nos quatro domínios. Este estudo mostrou que os alunos apresentaram níveis mais elevados de PSS e menor QV e houve diferença nesses resultados considerando a nota de qualificação da CAPES principalmente entre os alunos.

**Palavras-chave:** Qualidade de vida; Faculdade; Alunos; Dental; Ensino em saúde.

### Resumen

El objetivo del presente estudio fue comparar el estrés percibido y la calidad de vida (CV) entre estudiantes de posgrado y profesores brasileños y evaluar la influencia de la calificación de la CAPES en estos resultados. Se enviaron cuestionarios autoadministrados a docentes y estudiantes de las instituciones acreditadas de la CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) en Brasil. Un total de 348 profesores y 707 estudiantes respondieron los cuestionarios, de todas partes del país. Los estudiantes tenían menos horas de sueño y presentaron puntajes más bajos ( $p < 0,05$ ) en los cuatro dominios de la CV (físico, psicológico, social y ambiental) en comparación con los profesores, también puntajes PSS más altos ( $p < 0,05$ ). Cuando los estudiantes fueron comparados entre sí, los estudiantes del grado 3 de la CAPES presentaron los puntajes PSS percibidos más altos y los programas del grado 7 de la CAPES presentaron los más bajos. Para los resultados de calidad de vida, los estudiantes de los programas CAPES de los grados 3 y 6 reportaron los puntajes más bajos y los del grado 7 los más altos. Los miembros de la facultad que trabajan en los programas de grado 6 de CAPES informaron los puntajes más altos de PSS. En cuanto a los resultados de calidad de vida, los docentes de los programas reconocidos de grado 5 de CAPES informaron las puntuaciones más bajas en tres dominios: social, físico y psicológico, mientras que los docentes de grado 7 informaron los más altos en los cuatro dominios. Este estudio mostró que los estudiantes tenían niveles más altos de PSS y una CV más baja y hubo una diferencia en estos resultados considerando el grado de calificación de la CAPES principalmente entre los estudiantes.

**Palabras clave:** Calidad de vida; Facultad; Estudiantes; Dental; Enseñanza de la salud.

## 1. Introduction

The production of Brazilian dental articles in scientific journals has increased over the past few decades, being the second-largest producer of scientific dental articles, this is reflected in Brazil's H-index: 141 with 13.5 citations per document, having a total of 81,498 articles, having the second-biggest producer of scientific dental articles, after the United States (120,730 articles) (Scimago, 2021). This is due to the increase of postgraduate programs in Brazil. The Brazilian ministry of education, through the CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) evaluated and recognized 163 postgraduate programs nationwide under the denomination *Strictu Senso*. (superior, 2021) Scientific production is considered essential and is part of the criteria used by CAPES to evaluate programs (Souza et al., 2016).

The quality of life (QoL) has been defined by the World Health Organization (WHO) as an individual's perception of their position in life in the context of the culture and value systems in which they live and about their goals, expectations, standards, and concerns. A measuring tool to provide a profile of the person's perception of their QoL was developed (WHOQOL)(GROUP, 1995), a shorter version was developed, the WHOQOL-bref and assesses the individual's QoL in four dimensions: physical health, psychological health, social relations, and environment (Organization, 1996).

In recent years special attention has been paid to the psychological fatigue dental students and professors have, due to the requirements needed to fulfill their roles. A stressful life could lead to anxiety and later to depression. Depressed subjects are more prone to be divorced, unemployed or suicidal (Brown et al., 1986; Kessing et al., 2003). Faculty members tend to feel the burnout of academic life (Alves et al., 2019) and dental students tend to present lower physical and psychological scores within the WHOQOL when compared to other fields of health professions (Alkatheri et al., 2020). Which may lead to an experience of stress with mental and physical health impairment, including psychiatric disorders, and family conflicts (Slovic & Peters, 2006). The perceived stress scale (PSS) contains 14 items, with a simple language and response alternatives, being

suitable for any individual with junior high school education. This scale measures the self-reported answers of the individuals, they being responsible for their outcomes. The scale assesses the state of people at risk have to developing psychiatric disorders (Cohen et al., 1983).

Thus, the objective of the present study was to compare the perceived stress and quality of life of postgraduate students and faculty members within the recognized programs by CAPES using the PSS and the WHOQOL-brief and to evaluate the influence of the CAPES qualification grade on these outcomes

## 2. Methods

The present study was a cross-sectional study conducted in Brazil and received the approval of the Human Ethics and Research Committee of the University of (omitted). To conduct the study all participants gave and signed the informed consent.

### Sample

The target population included were all faculty members and students within the CAPES recognized postgraduate programs in Dentistry in both public and private institutions in Brazil. To calculate the sample size, the results of a national study performed in 2016 were used. (BRASIL, 2016) The total number of postgraduate faculty members was 2,130 and the total of students was 7,507. The necessary sample size was 326 faculty members and 439 students: 95% confidence level, maximum margin of error = 5%, and prevalence = 50%.

### Data collection strategy

For data collection, questionnaires were uploaded on Qualtrics (Salt Lake, Utah), for the participants to fulfill the self-administered survey. Every possible participant received an email with the link of access to the survey, where the description of the purposes of the study and the informed consent were also available. Each link allowed the participants to respond to the questionnaire only once. Before sending the links to all the students and faculty members, all the postgraduate Program directors were contacted by email for them to grant the permission. As the approvals were obtained the faculty members and students received the questionnaires. Also, the annals from the 35<sup>th</sup> Annual Meeting of the Brazilian division of the International Association for Dental Research--(SBPqO-IADR) were used to obtain the list of participants to distribute the questionnaires by email. (SBPqO, 2018) All the emails were sent between August 15 and December 15 of 2018.

### Data collection instruments

The Perceived Stress Scale (PSS) is an instrument conformed of 14 items, based on a 5points Likert scale, with a total score of fifty-six. Within the 14 items seven are negatively worded (Factor 1: 1, 2, 3, 8, 11, 12, and 14) and seven are positively (Factor 2: 4, 5, 6, 7, 9, 10, and 13), the higher the score, the higher the perceived stress is. This instrument was already translated into Portuguese and validated using a Brazilian sample. (Reis et al., 2010 )

The World Health Organization Quality of Life (WHOQOL-BREF) is an instrument to assess the QoL of adults based on a 5 point scale, it is composed of 26 six questions, two questions measure the individual's overall health, and the rest measure four domains including physical (pains, medical treatments, energy, sleep, working activities and daily life activities) and psychological (enjoyment of life, concentration, self-esteem, body image and negative feelings) health, social relationships (personal relationships, sexual activities and friends support) and the environment (security, financial, leisure activities, healthcare, living conditions, transportation and information availability).(Alkatheri et al., 2020) The domain scores range from zero to 100, the higher the score the higher indications of better QoL. The Brazilian version of the WHOQOL-BREF showed

strong internal consistency (Cronbach's alpha: domains = 0.77, questions = 0.91), discriminant, criterion, and concurrent validity, and test-retest reliability (correlation coefficients = 0.69–0.81). (Fleck et al., 2000)

Also for this study, a questionnaire was developed to assess other variables such as sociodemographic features (sex, age, marital status, institution, children, and educational degree)–occupational (management position, employment, kind of employment bond, and total of published papers), and health characteristics (medication intake due to work, hours of sleep, leisure time and physical activity) of the participants.

### **Data analysis**

A univariate analysis was performed, frequencies and percentages were calculated for the categorical variables, and for the continuous variables the means, medians, standard deviations and minimum/ maximum values were calculated. The Cronbach's alpha coefficient was used to measure the internal consistency of the questionnaire.

For the comparison between groups of participants the student's t-test was performed. The Mann-Whitney U and the chi-square tests were applied to the Likert scale and qualitative data. The significance level was set as 5%. For the data analysis both the Statistical Package for the Social Sciences version 25 (IBM, Chicago) and Microsoft Excel (Microsoft Office 365) were used.

## **3. Results**

A total of 348 faculty members and 707 students answered the questionnaires, from all parts of the country.

### **WHOQOL-bref & PSS**

Students had fewer hours of sleep and presented lower scores ( $p < 0.05$ ) in the four domains (physical, psychological, social and environment) when compared to the faculty members. The students also presented higher scores in the PSS than the faculty members ( $p < 0.05$ ) as can be observed in Table 1. Faculty members showed a higher overall QOL and greater satisfaction with their health (Table 2). This indicates students present a lower QOL and a higher PSS than professors.

**Table 1.** Descriptive statistics and results of Student's t-test.

Variables	Group	N	Mean	SD	P value
Age	Students	707	30.41	7.43	0.000
	Faculty members	348	44.91	9.52	
Number of children	Students	689	0.27	0.63	0.000
	Faculty members	343	1.16	0.95	
Hours of sleep	Students	707	6.41	1.03	0.000
	Faculty members	349	6.67	0.99	
Domain of QoL Physical health	Students	708	62.70	16.25	0.000
	Faculty members	348	72.26	15.16	
Domain of QoL Psychological	Students	708	55.88	17.63	0.000
	Faculty members	349	70.15	13.70	
Domain of QoL Social	Students	708	59.88	21.38	0.000
	Faculty members	349	66.81	17.40	
Domain of QoL Environment	Students	708	57.56	14.81	0.000
	Faculty members	349	68.72	11.95	
PSS score	Students	703	31.56	8.40	0.000
	Faculty members	347	23.79	8.16	

(N) number of participants; (SD) Standard deviation; (PSS) Perceived Stress Scale. Source: Authors.

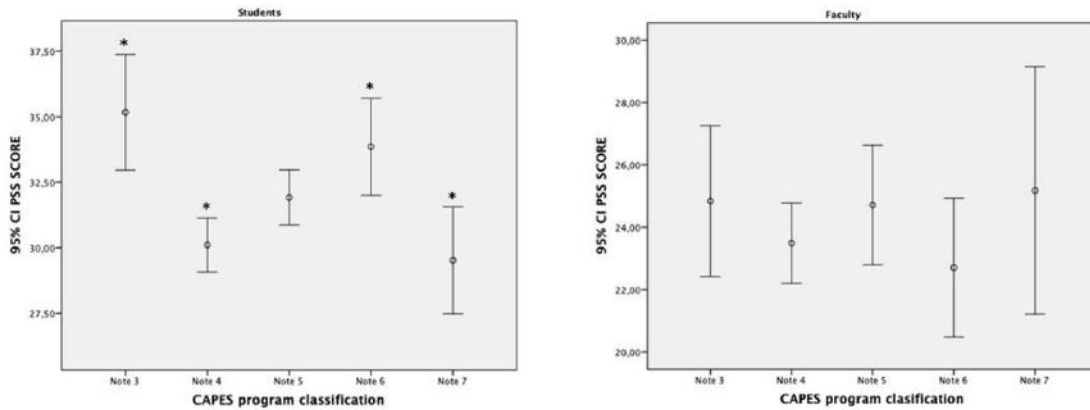
**Table 2.** Mann-Whitney U test results of overall quality of life and satisfaction with health between faculty members and students.

Variables	Group	N	Mean	SD	P value
Overall quality of life	Students	698	3.57	0.85	0.000
	Faculty members	348	3.94	0.78	
Satisfaction with health	Students	708	3.31	1.01	0.000
	Faculty members	349	3.61	0.92	

(N) number of participants; (SD) Standard deviation. Statistical significance when  $p < 0.05$ . Source: Authors.

When the scores of the PSS between students of different CAPES recognized programs were compared, the students from grade 3 and grade 6 programs perceived significantly higher levels of stress, while students in programs with grades 4 and 7 presented the lowest. As for the faculty members there were no differences between the groups (Figure 1).

**Figure 1.** Comparison of PSS scores between students and faculty members from the recognized CAPES programs.

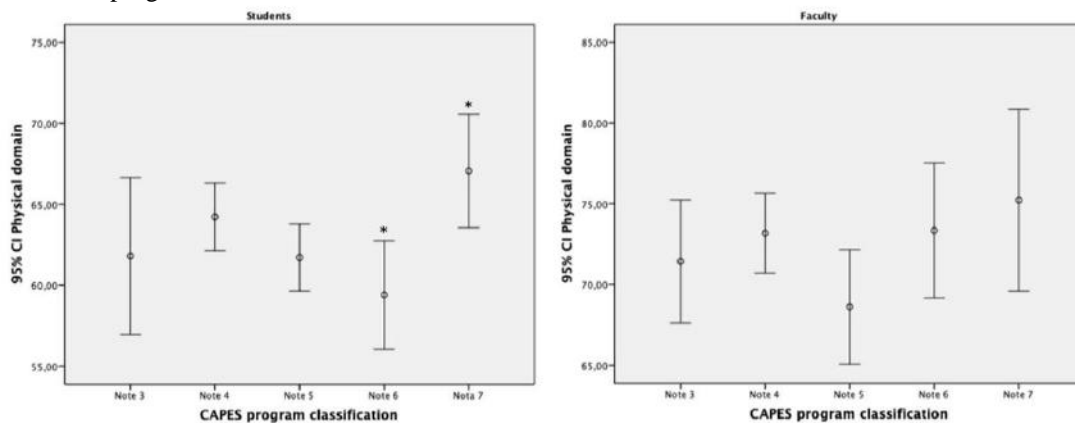


Source: Authors.

When the QoL (physical domain) between students of different CAPES recognized programs was compared, grade 7 where significantly higher than grade 6. With faculty members, the ones participating in grade 5 programs reported the lowest scores followed by the grade 3 programs. The faculty members from grade 7 programs reported the highest, although no significant difference was observed (Figure 2).

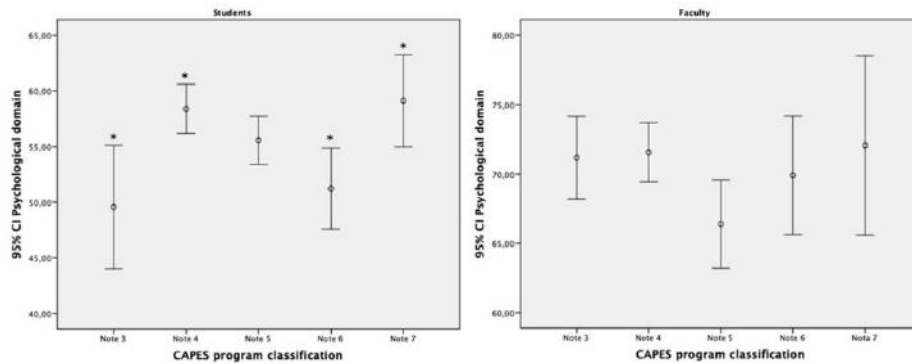
For QoL (psychological domain) students from CAPES recognized programs with grades 3 and 6 reported the lowest scores, being grade 3 the ones who reported the lowest. The students from programs with grades 4 and 7 reported the highest scores. With faculty members, grade 5 reported the lowest scores, for the other groups no difference was observed (Figure 3).

**Figure 2.** QoL (physical domain) mean comparison students and faculty members from the recognized CAPES programs.



Source: Authors.

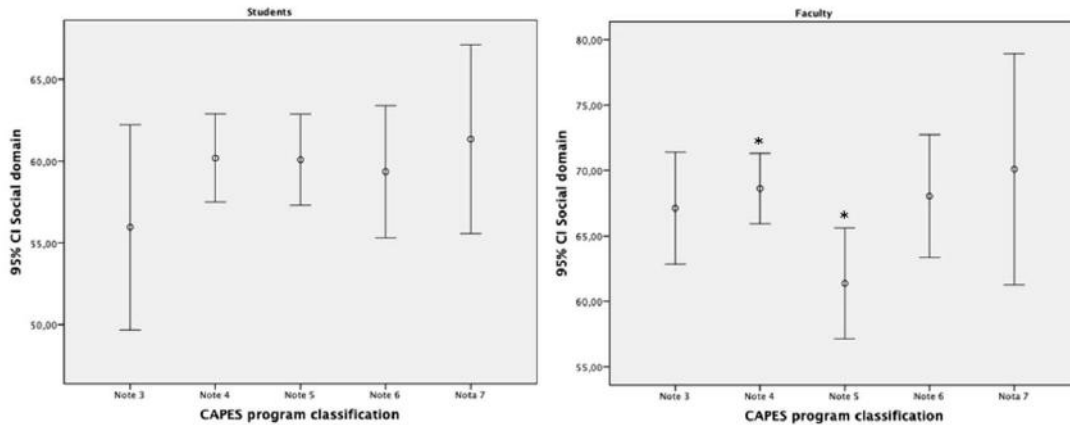
**Figure 3.** QoL (Psychological domain) mean comparison students and faculty members from the recognized CAPES programs.



Source: Authors.

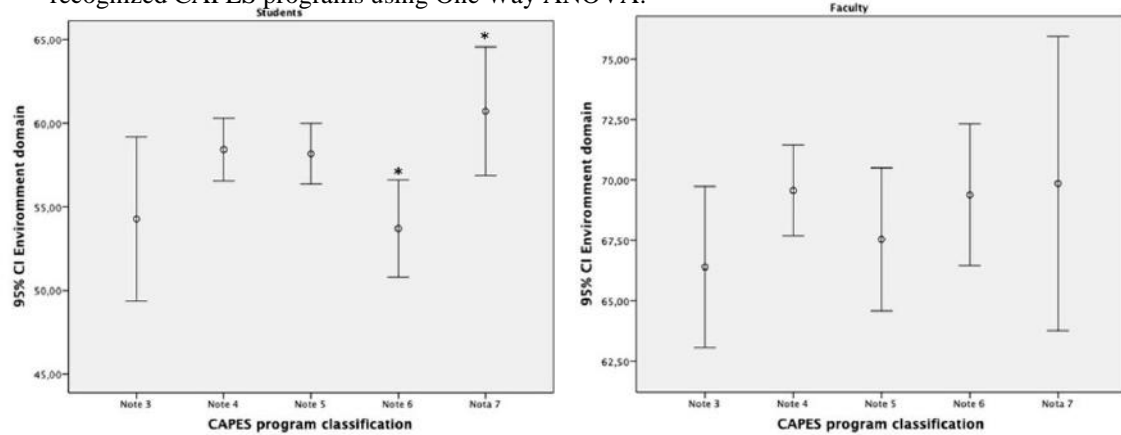
Within the social domain, no significant difference was observed for students. For the faculty members, the ones working for the CAPES grade 5 programs reported significantly lower scores compared to grade 4. (Figure 4).

**Figure 4.** QoL (Social domain) mean comparison students and faculty members from the recognized CAPES programs.



Source: Authors.

**Figure 5.** QoL (Environment domain) mean comparison students and faculty members from the recognized CAPES programs using One Way ANOVA.



Source: Authors.

As for the QoL (Environment domain), the students of CAPES grade 7 reported significantly higher scores than grade 6 programs while for the faculty members no difference was observed (Figure 5).

### Sociodemographic, occupational and health characteristics

There were significant differences between faculty members and students, independently of whether the program was from a public or private university. The variable Medication intake due to study (students) or work (faculty members) ( $p < 0.05$ ) shows students had more necessity of using medication to cope with labor burden when compared to faculty members. Faculty members had significantly more leisure time and performed more physical activities than the students ( $p < 0.05$ ) as can be observed in Table 3.

**Table 3.** Chi-square comparison of qualitative variables.

Variables		Groups		P value
		Students N (%)	Faculty members N (%)	
Sex	Male	191 (27.0)a	169 (48.6)b	0.000
	Female	516 (73.0)a	179 (51.4)b	
Marital status	Married	203 (29.4)a	263 (81.4)b	0.000
	Not married	488 (70.6)a	60 (18.6)b	
Program	Private	222 (31.4)a	107 (30.8)a	0.888
	Public	484 (68.6)a	240 (69.2)a	
Medication intake due to problems with work or study	No	394 (56.6)a	246 (71.3)b	0.000
	Yes	302 (43.4)a	99 (28.7)b	
Leisure time	No	448 (63.5)a	176 (50.6)b	0.000
	Yes	257 (36.5)a	172 (49.4)b	
Physical activity	No	427 (60.3)a	161 (46.1)b	0.000
	Yes	281 (39.7)a	188 (53.9)b	

(N) number of participants; different letters mean statistical significance. Statistical significance when  $p < 0.05$ . Source: Authors.



#### 4. Discussion

This study is the first to our knowledge to compare the QoL and PSS of dental postgraduate students and faculty members participating in Brazilian recognized programs and the impact of program grade on these outcomes.

Studies have evaluated the QoL of undergraduate dental students finding their QoL is satisfactory at (Al-Shibani & Al-Kattan, 2019; Alkatheri et al., 2020), improving as they get closer to their senior year.(Al-Shibani & Al-Kattan, 2019) Dental undergraduate students don't usually present depression or anxiety(Nayan, Daud, Jamaluddin, & Talib, 2017) but they do report high scores of stress.(Al-Sowygh, 2013) It is good to remember that the requirements to fulfill a Master's or a Doctorate's program are different from undergraduate school, it is more exigent, and scientific production is necessary to maintain or upgrade the CAPES recognition grade of our institutions. (Souza et al., 2016) A high prevalence of depression and combined anxiety disorders was observed among medical students, revealing that the QoL students is influenced by various spheres of daily life and the requirements of the course, still needs improvement, hampering the training of future doctors in Brazil (Silva et al., 2020), but this study is the first to our knowledge to compare the QoL and PSS of dental postgraduate students and faculty members participating in Brazilian CAPES recognized programs and the impact of program grade on these outcomes.

The gap difference in other personality traits such as neuroticism, emotional exhaustion, and conscientiousness levels as well as in perceived stress teaching was explained by (Redondo-Flórez et al., 2020) Although, in this study, the students reported higher PSS values and lower QoL than faculty members. Faculty members have more leisure time and perform more physical activities than the students, it is known that individuals who are engaged in frequent leisure activities have a better psychological and functional functioning, increasing the individual's well-being,(Pressman et al., 2009) and also exercising and physical activities can reduce daily stress(Qian et al., 2014) A previous study found that student's stress is associated to their course overload and the pressure exerted by their teachers.(Chilukuri et al., 2012) This overload could condition the available time for students to exercise and participate in their social activities, decreasing the opportunities for them to find positive social support which is also a must to reduce stress.

A psycho-emotional profile is stressed as a common predictor of burnout (Middeldorp et al., 2006) These psychological constructs are related to maladaptive behaviors and psychopathologies such as anxiety or depression, (Eysenck & Rachman, 2013) neuroticism being the etiology and main characteristic of burnout (Langelaan et al., 2006). The academic responsibility, as the pressure may be correlated to why the students scored a higher PSS.

The lack of time for leisure activities has been considered the top stressor between postgraduate dental residents enrolled in masters and doctorate programs. (Divaris et al., 2012) For faculty members the stress is more associated with the permanence and promotions within the programs, reviewing and producing articles, teaching, and academics life tasks which can limit their time. (Meng & Wang, 2018)

Age could also play an important role in the obtained results, since in academic life, for older workers (faculty members), age buffers against the negative effect of workload, work-family conflict, and life satisfaction. (Mauno et al., 2013) Also, less PSS and an improved QoL of dentists may be seen with age, it may be explained because experienced dentists have established relationships in their work community. Thus they are more able to balance their personal life demands and their career (Abraham, Amini, Khorshed, & Awad, 2018) and the students are trying to achieve it. Therefore, the QoL has a significant influence on the years since graduation of dental professionals, and the participants with more than 20 years since graduation demonstrated the highest score of QoL. (Alrayes et al., 2020)

We found that students of recognized c grade 3 programs reported the lowest QoL scores in the psychological and social domains, and their perceived stress perception was the highest when compared to the other postgraduate students. On the other hand, programs grade 7 had better results. This is an interesting finding since the scientific environment may be very different between these programs and it could involve physical facilities, grants capitation to develop their studies (Zegeye et al., 2018)

mentoring relationships, and difficulties in article publication (Psychol Res Behav Manag. 2019 Mar 21;12:195-208) However, QoL and perceived stress are outcomes that give regards of different fields in the individual's life(Alves et al., 2019) so we cannot attribute these findings with the qualification of the programs only.

Regarding QoL and PSS, the greater influence of CAPES grade was observed for students while for faculty members little significant difference was noted except for the social domain of QoL. This could be explained because students during their formation are submitted to greater amounts of stress, (Zegeye et al., 2018) which can be produced by different situations such as scholarships, loans, (Chisholm-Burns et al., 2017) the financial uncertainty of the future (Adlaf, Gliksman, Demers, & Newton-Taylor, 2001 ), civil status,(Zegeye et al., 2018) those are aspects that most of the time are already covered in the lives of faculty members. In addition, faculty members in the present study have more leisure time and perform more physical activities than the students and these may impact these findings.

## 5. Conclusions

This study showed students within the recognized programs by CAPES presented higher perceived stress and a lower quality of life than faculty members. In some aspects of QoL and PSS, higher CAPES qualification programs were related with better results mainly among students. As a future perspective, it is suggested that the study should be carried by classifying the programs by impact on the community, installations, quality of students and the faculty.

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