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Quality of life in teaching at the higher level: evaluation of professors in the Production Engineering field in Brazil

Qualidade de vida de professores do ensino superior: avaliação de professores da área de Engenharia de Produção no Brasil

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ABSTRACT

OBJECTIVE: To analyze the quality of life (QOL) of all Brazilian professors who works in graduate course in Production Engineering field of 2013 to 2015.

METHODS: For that, WHOQOL-bref instrument was applied in the Google Drive platform with 130 teachers enrolled in graduate programs of Production Engineering.

RESULTS: The results showed higher QOL deficiency in the Recreation and Leisure (53.08), Positive feelings (57.88) and Sleep and Rest (59.42) facets. The points of greatest satisfaction were about Mobility (83.85), Self-esteem (81.73) and Home Environment (80.58). Nonetheless, the Psychological (70.48) and Physical (70.27) domains were the best scores. On the other hand, the Environment (66.18) and Social Relationship (66.28) had the worst scores. It is concluded that the teaching career justifies some positive and negative aspects of the researched population QOL.

CONCLUSIONS: It was found that males scored higher than females, while professors with researcher grants had higher QOL scores compared with who did not hold researcher grant. Furthermore, it was possible to identify that individuals with 16 years or more of service time presented the lowest scores in four of seven items and that individuals with service time between eight to 15 years presented the highest scores in six of seven items evaluated in this study.

KEYWORDS: higher education; evaluation of quality of life; production engineering.

RESUMO

OBJETIVO: Analisar a produção científica dos docentes que atuam em programas de pós-graduação na área de Engenharia de Produção no Brasil de 2013 a 2015.

MÉTODOS: Para tal, o instrumento WHOQOL-bref foi aplicado através da plataforma Google Drive em 130 professores que atuam in programas de pós-graduação de Engenharia de Produção.

RESULTADOS: Os resultados mostraram maior deficiência de Qualidade de Vida nas facetas Recreação e Lazer (53,08), Sentimentos Positivos (57,88) e Sono e Repouso (29,42). Os pontos de maior satisfação foram quanto a Mobilidade (83,85), Autoestima (81,73) e Ambiente do lar (80,58). Além disso, os domínios Psicológico (70,48) e Físico (70,27) foram os melhores escores. Por outro lado, Ambiente (66,18) e Relações Sociais (66,28) apresentaram as piores pontuações. Conclui-se que a carreira docente justifica alguns aspectos positivos e negativos da Qualidade de Vida da população pesquisada.

CONCLUSÕES: Verificou-se que os homens pontuaram mais alto que as mulheres, enquanto os professores com bolsa de pesquisa tiveram pontuações mais altas de qualidade de vida em comparação com os que não tinham bolsa de pesquisa. Além disso, foi possível identificar que indivíduos com 16 anos ou mais de tempo de serviço apresentaram os menores escores em quatro dos sete itens e que indivíduos com tempo de serviço entre oito a 15 anos apresentaram os maiores escores em seis dos sete itens avaliados neste estudo.

PALAVRAS-CHAVE: engenharia de produção; ensino superior; avaliação da qualidade de vida.

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INTRODUCTION

Conceptually, Quality of Life (QOL) has different aspects depending on the diversity of fields that it researches and evaluates it. The present study considers quality of life as "the individual's perception of their position in life in a context of culture and value system in which they live and in relation to their goals, expectations, standards and concerns" (FLECK, 2000).

The conceptual evolution of, above-mentioned term allowed the beginning of research, which holds great academic attention, focused on evaluation of QOL. Researches aim to evaluate QOL originate in medicine field and, in this bias, they are justified in possibility of measuring QOL before, during or after a clinical treatment to verify the efficacy of a clinical intervention (PATRICK, 2008). In general, evaluation of QOL enables the detection points of absence in a population group that lives in ordinary or specific condition and/or it can discriminate external factors that influence health care. Such possibilities are essential to support the decision-making of strategies aimed at improving QOL in a group.

The researches who covers the subject of QOL are in academic growth. This scenario of academic growth is driven by research seeks to evaluate health care about several publics, whatever general or specific. Among QOL assessment tools, WHOQOL-100 and WHOQOL-bref instruments, developed by the WHOQOL group and aimed at general populations, can be cited.

The domain must be explained by an expert. That helps the understanding of the research. For collaborating this is necessary to the study influence of different people (PATRICK, 2008). The explanation is each person is different from another, this can change the main information, thinking about in public institutions there are too many people to make decision. So, they can change the QOL from a college.

It is considered the professors who works in the graduation of Production Engineering field fall within general population group. Regarding this group, it is worth mentioning QOL is influenced by work-related factors and, in this case, teaching requires a high demand for cognitive, effective and instrumental contents, which influence professors' QOL (FLECK *et al.*, 1999; MARTINEZ; VITTA; LOPES, 2009).

The association between personality traits, research practices reported as questionable, and misconduct may emerge due to the stress of the researcher's profession and classroom hours. There are hypotheses that the narcissistic, Machiavellian and psychopathic traits, as well as the self-esteem, are associated to the bad behavior of the researcher (TIJDINK *et al.*, 2016).

Specifically, among the group of professors, it is verified another factor influences QOL in these professionals: the academic productivity. This process becomes degradative due to evaluation methods employed by the development agencies and, mainly, in the graduate programs stimulated by these development agencies. The researches have negative effects in life of researchers, due to accumulation and overload of activities consequently (ARANTES; LOBO; FONSECA, 2004; LUZ, 2005; LUZ, 2006; PICININ, 2014).

In this sense, it becomes relevant to investigate QOL of Brazilian professors in Production Engineering graduate, in order to observe the points in which productivity requirements are interfering in life of these professionals. Nevertheless, it is pointed out that damages to QOL in this public impair their academic performance, reducing the capacity to innovate and teaching, which harms the individual in their professional and personal life.

It is also verified that, although the academic environment has research related to QOL of professors (KOETZ; REMPE; PÉRICO, 2013; MARTINEZ; VITTA; LOPES, 2009), researches with professors in the Production Engineering field are scarce.

In view of above context, the present study has objective of analyzing QOL of professors who work in graduation studies in Production Engineering field in Brazil. Additionally, professors' QOL was compared by gender, whatever they have a researcher grant or not. And finally, with regard to their time in graduation courses, in order to deepen the discussion about health care with this public.

The paper Personality Traits Are Associated with Research Misbehavior in Dutch Scientists: A Cross-Sectional Study presents the QOL of German researchers and problems caused by stress in the profession (TIJDINK *et al.*, 2016).

The paper Evaluation of Workload and its Impact on Satisfaction Among Pharmacy Academicians in Southern India reports QOL of professionals in the pharmacy field, which in addition to a stressful job when they enter the academic environment has problems with accumulation of function, as the department which demands more hours in classroom and organization of curriculum in India represented by Pharmacy field (AHMAD *et al.*, 2015). Collaborating with this point there is the reduce of health care when the professionals in health field have to management because there are a huge responsibility in sales of medicines

For the paper The Impact of Demographic Variables on Professor's Perceptions of Post-secondary Health Education Curricula (FISHER; REYHNOLDS; CAVIL, 2014) explains that the changes of region where the health field professors live can modify the perception of the professionals that are formed by such teachers, altering the social conduct.

This is the regionality which even in the research or in the service to the public is not evidenced (FISHER; REYHNOLDS; CAVIL, 2014).

This research intends to add theoretical and empirical contributions to the researches of (TIJDINK *et al.*, 2016), proposing a comparison with the graduate professors of Production Engineering in Brazil, seeking a different gap for research. Therefore, this research intends to contribute to the discussions of QOL in relation to professors of Production Engineering in Brazil for causing stress and indicatives of low QOL.

METHODS

According to the classifications proposed by Leiva, Rubi and Fujita (2008), this research is classified as applied to the nature of research; as exploratory in relation to the objectives; and quantitative in approaching the problem.

In order to achieve the proposed objective, the methodological procedures were based on the scientific procedure suggested by Quivy and Campenhoudt (1992) that considers three stages for the study: rupture, which can be subdivided into a starting question, exploration and problem; the construction, which is subdivided into problematic and construction of analysis model; And verification, which in turn it can be subdivided into observation, analysis of information, and conclusions.

In the rupture stage, the investigative process was centered in a review of literature related to QOL in databases. Scopus, Scielo and Google Scholar databases were used to obtain scientific articles, using the keywords **quality of life**, **quality of life assessment** and **quality of life of university professors**. That the search for books occurred in the municipal libraries and, as for the doctoral theses, they were obtained through direct contact with the authors or at the USP's Digital Library of dissertations and theses.

The construction phase occurred through the collection of data pertinent to QOL of professors enrolled in the Production Engineering field in Brazil. The sample of the present study was obtained through the non-probabilistic sampling method for accessibility. The data collection stage was carried out digitally, with the sending of an e-mail to the professors, containing the proposed QOL questionnaire structured for response in the Google Drive platform.

In order to obtain contact with all the graduate professors in Production Engineering in Brazil, the following procedures were used:

a) data collection (names and e-mail contacts) of the professors working in the Sucupira platform, referring to the year 2015, through the following steps: on the Capes website (COORDENAÇÃO DE APERFEIÇOAMENTO DE PESSOAL DE NÍVEL SUPERIOR, 2013), we selected the recommended programs item, later the Engineering III field was selected and, finally, we used only the professors of Production Engineering;

b) mails not found on the Sucupira platform were searched on the electronic pages of each graduate program in the Production Engineering field;

c) finally, in cases where the email was not found, the questionnaire was sent via Curriculum Lattes, through the item **contact**;

d) three contacts were sent via e-mail, with an interval between the first time three weeks and two weeks at last.

The instrument used to collect QOL data from the public under examination through indexing on the Google Drive platform was the WHOQOL-bref. This is composed of 26 questions so that 24 refer to the specific QOL conditions related to the domains and two are related to the QOL self-assessment (PEDROSO, 2013). The domains evaluated by said instrument are: physical, psychological, social relationship and environment (CHACHAMOVICH; FLECK, 2008).

In order to obtain socio-demographic data of the studied population, which enabled an accurate comparison between different groups of the same sample, questions were addressed concomitantly to WHOQOL-bref. About 738 professors working in graduate programs in Production Engineering in Brazil (population), 130 teachers chose to participate in the study, totaling the sample of this study. Teachers from the geographic region of the North, Northeast, Southeast, Midwest and South of Brazil participated in the study.

Finally, in the verification step, the data returned by WHOQOL-bref instrument were analyzed using the tool for calculations of scores and descriptive statistics of referred instrument, available in Pedroso (2013).

Verifying if there were significant differences in variation of returned scores in comparison between groups by gender (male and female), by grant (researcher grant and non-researcher grant) and length of service (between 1 to 7 years, between 8 to 15 years and over 16 years), Kolmogorov-Smirnov test ($\rho<0.05$) was used to verify the data normality and the unpaired t-student hypothesis test to verify the difference between the means. Significant differences were considered in the means when $\rho<0.05$.

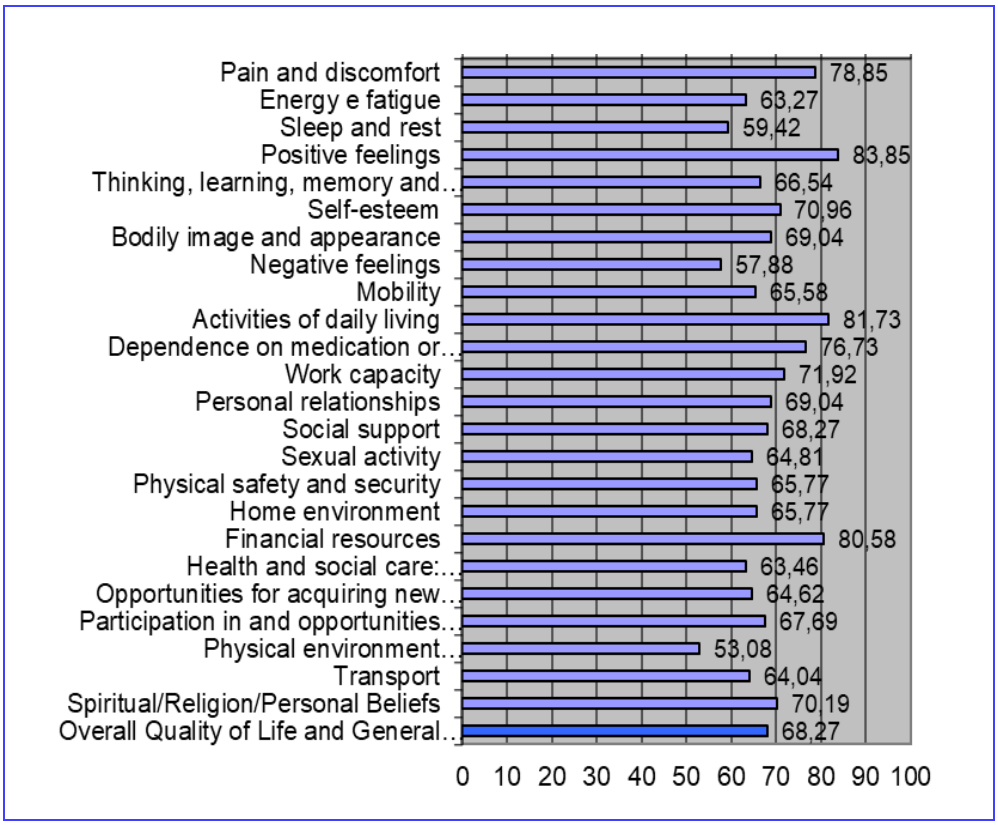
RESULTS E DISCUSSION

The present study investigated quality of life about 130 graduation professors in Production Engineering field of Brazil. Of these, 33 (25.38%) are female gender and 97 (74.62%) are masculine gender. Regarding the type of teaching institutions about professors investigated, 70 (53.85%) work in federal public institutions, 26 (20%) work in state public institutions and 34 (26.15%) professors work in private institutions.

As for the time of work in graduation, 56 (43.08%) professors who is in range of one to seven years of professional practice, 35 (26.92%) of them have between eight to 15 years of professional practice and, therefore, 39 (30%) professors work in graduate school more than 16 years. It was also investigated how many of 130 teachers have a productivity or research or technological development grant. The results show that 40 (30.77%) professors who retains a researcher grant and 90 (69.23%) professors do not have a researcher grant.

It is possible to emphasize that the majority of respondent professors who work in graduation of Production Engineering in Brazil are male, who work predominantly in federal public institutions of higher education, with experience more than seven years in teaching, most of them do not have productivity grants.

Figure 1 – Factor score returned by the WHOQOL-bref of the graduate professors in Production Engineering of Brazil



Source: Own authorship.

Figure 1 presents the scores related to the facets pertinent to QOL evaluated by WHOQOL-bref instrument of the graduate professors in Production Engineering of the country.

It was verified that Mobility (83.85), Self-esteem (81.73) and Home Environment (80.58) had the highest scores. In contrast, the facets with lower scores were Recreation and Leisure (53.08), Positive Feelings (57.88) and Sleep and Rest (59.42).

Because of general populations, with no physical or health impairment, the high score of Mobility facet (83.85) is not an abnormality. In order to substantiate this assumption Assunção, Miranzi and Scorsolini-Comin (2010), investigated QOL of nursing workers and, as highest points scored, found high satisfaction in Mobility (90.98) facet.

Regarding Self-esteem (81.73), such a scenario is justified by the fact that success in the professional career, common to graduate professors, tends to boost satisfaction with self-esteem. In this sense, Mosquera and Stobãus (2006) affirm that the individual lack positive self-esteem. This, in general, is obtained through the feeling of appreciation of others and self-realization as a human being.

Nevertheless, Barros (2010) indicates that individuals who complete a higher education course got experiences of pride and prestige. This complements the perspective that professional career interferes directly in the self-esteem, which for the population investigated was elevated.

About home environment (80.58), the high score is possibly justified by the socioeconomic level and the level of education of professors enrolled in the graduation course. According to Barros (2010), social ascension, intimately linked to the place of residence, has an effective relationship with the individual's schooling. Thus, it is prudent to consider that individuals with a high level of schooling present high satisfaction with their Home Environment (80.58).

As for the facets Recreation and leisure (53.08), Positive feelings (57.88) and Sleep and Rest (59.42), worse scores in the population investigated, the justification is the possible lack of time. This lack of time, in a general way, is caused by the academic productive to which researchers, although unconsciously, are exposed because of demand to meet metrics imposed by national development agencies (LUZ, 2005; LUZ, 2006). In this sense, professors dedicate much of their time to academic research, guidance and administrative activities, as well as the preparation of classes, which limits their hours of sleep, their leisure possibilities and their perception of being enjoying life well.

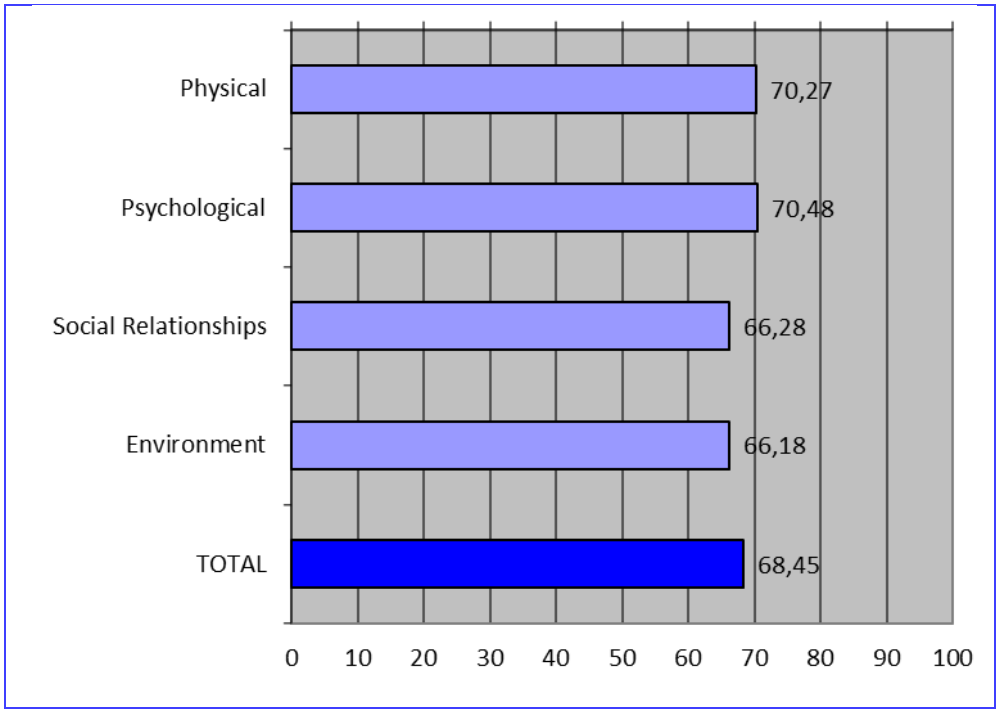
For the WHOQOL Group (1995, p. 1405), the concept of QOL is understood as "[...] the individual's perception of his position in life, in the context of the culture and value systems in which he lives, and in relation to his goals, expectations, standards and concerns."

Still on the positive side (57.88), their worst-scored results may be related to stress and charges to meet the metrics to stay in graduation program they participate in. According to Picinin (2014), although Capes does not evaluate the individual scores of professors working in a graduation program, in practice, the criteria adopted in evaluation require professors to improve his or her individual performance to contribute collectively to the program.

This, according to Nascimento (2010), has caused some programs to adopt the policy about professors publishes, or they leave the graduation program of which they are part. In this sense, it is evident that work in this condition generates stress to the professional, which certainly reduces their positive feelings.

Figure 2 presents the scores of related domains pertinent to QOL evaluated with WHOQOL-bref instrument of graduate professors in Production Engineering in Brazil.

Figure 2 – Quality of life domains score with WHOQOL-bref of graduation professors in Production Engineering of Brazil



Source: Own authorship.

It is verified that the domains with the best scores were Psychological (70.48) and Physical (70.27). The study of Martinez, Vitta and Lopes (2009), due to the approach of a public of university professors of Bauru, to have objectives and methodological achievement close to the present study, was listed for discussion.

As for the domains, Martinez, Vitta and Lopes (2009) also found higher scores in the Physical and Psychological domains, which suggests this to the trend among professors. However, in the aforementioned study, the Physical domain (15.83) surpassed the Psychological (15.6) domain, a scenario distinct from that presented in this study. Nevertheless, it is considered that in both cases there was proximity between one score and another, which indicates the possibility of small oscillations between two variables.

Another study that contributes to discussion about the proposed public is Koetz, Rempel and Périco (2013), who investigated QOL of professors in Rio Grande do Sul. The returned score in Psychological domain was 72.7, Close to above-mentioned surveys. Based on this panorama, it is verified the scores returned by the group of professors in Production Engineering are not treated as an abnormality.

In relation to the domains of Social Relationship (66.28) and Environment (66.18), the study of Martinez, Vitta and Lopes (2009) that founds similar scenario, keeping Environment as the worst punctuated domain and Social Relationship as the second worst rated domain. What is observed in this Environment issue in a public institution is the fact of delay in the process of requesting resources, even though such resources are available. In this case, there is a trend of dissatisfaction with these questions in professors' class.

It is observed the panorama of professors who work in graduation school does not apply to other populations. Paschoa, Zanei and Whitaker (2007), when evaluating the QOL of nursing workers, returned as the best-rated domain of Social Relationship. Thus, it is assumed that there is some particularity in the group of professors who drives a reduction in the Social Relationship (66.28) domain score.

When analyzing the facets of Social Relationship (66.28) domain, it is observed the worst score was Social Support (64.81), that is, the group of professors indicates they are not satisfied with the support they receive of his colleagues. Possibly this is due to the difficulty this group has to maintain their social relationship, due to the lack of time due to their professional journey, or to maintain long-term friendship with their co-workers, since the activity presupposes continuous permanence of these professionals until retirement.

Regarding the Environment (66.18) domain, the worst aspects were: Physical safety and security (65.77), Financial resources (63.46), Health and social care (64.62) and Physical Environment (64.04). It is also observed that, contradictorily, Home Environment (80.58) facet was among the best scores.

This scenario allows us to infer that professors of graduation programs in Production Engineering, even though they are able to live in a Home Environment that they are satisfied with, are dissatisfied with issues related to social problems of which society exposure, such as pollution, traffic, health quality and public safety. Because they are highly educated individuals, they tend to be less alienated from the social problems to which they are exposed.

When comparing to the total score of the domains returned by the investigated population, which was 68.45, with the score of self-evaluation facet in QOL, which reached 68.27 points, a close proximity between the values is observed. Thus, it is verified professors investigated have a perception of their quality of life very close to the real status.

It was decided, in order to deepen the discussion about the QOL of the public of professors in graduation in Production Engineering, by comparing QOL between men and women. In addition to comparing the domains, a comparison between the self-evaluation facet of QOL and the facet of work capacity was used to find trends between the two groups.

Table 1 shows the WHOQOL-bref quality of life scores returned by the graduation professors in Production Engineering, discriminating the scores of men and women investigated in this study.

Table 1 – Quality of life scores assessed with WHOQOL-bref according to gender

Domain	Scores men (n=97)	Scores women (n=33)	Range
Physical	72.16	64.50	7.66
Psychological	72.45	65.15	7.3
Social relationships	67.60	63.13	4.47
Environment	67.00	64.30	2.7
Total	70.01	64.13	5.88
Ability to work	72.45	59.09	13.36
Self-assessment of quality of life	70.78	60.61	10.17

Source: Own authorship.

It should be mentioned that the data were normal in the Kolmogorov-Smirnov test ($p<0.05$). It can be verified that in all analyzed items, the group of professors from masculine gender presented higher score than the group of professors from feminine gender.

By means of an independent T-test, it was verified whether there is difference between the averages of the male and female subjects in relation to the domains scores and the facet of self-assessment in QOL. In other words, the hypotheses tested were:

a) H0: there is no significant difference between the variance of male and female groups;

b) H1: there is a significant difference between the variance of male and female groups.

It was found that, considering a level of significance of 95%, the means differ significantly (p-value=0.010), that is, it rejects H0 and it is emphasized men have a higher QOL than women.

In addition, considering the percentage of men in the population investigated was 74.62% and women was 25.38%, the predominance of male researchers in graduation studies in Production Engineering is well known.

Proposing a discussion on the participation of women in Brazilian scientific production, Leta (2003) and Mascarenhas (2003) point out although women are the majority among university students and in number predominate in several fields of knowledge, the production of knowledge is still modest and insipient.

Following this line of reasoning, the lower representation of women is explained, in parts, by the late inclusion of female gender in the system of Science and Technology. In addition to this factor, the difficulty in reconciling scientific careers with family life, especially motherhood, is a factor that distances women from higher levels of scientific production (LETA, 2003; MASCARENHAS, 2003).

In this sense, the still modest production of knowledge and the smallest space in the graduation program negatively influence the women's self-esteem in relation to their capacity for work, whose variation was positive in 13.36 points, higher among all evaluated items. Even so, women tend to change this scenario after longitudinal results of their insertion in the Science and Technology system, which has occurred recently.

Another point to be considered in relation to the high positive variation found in QOL Self-assessment (10,17) and the Total score (5,88) is the paradox between the valorization of family life and the continuation of career to which woman at this stage of life. This tends to increase the feeling of dissatisfaction with one's own life, given the difficulty of reconciling these two factors, which according to Maier, Santos Junior and Timossi (2012) exert a constant influence on the individual's quality of life.

As a complement, in order to distinguish if there is difference between health care of professors with researcher grant and those who do not maintain researcher grant, a comparison between QOL score in these two publics.

Table 2 shows the scores of QOL domains evaluated with WHOQOL-bref returned by the graduation professors in Production Engineering, discriminated the population investigated in professors who maintain a researcher grant in research or technological development and non-grant professors.

Table 2 – Quality of life score assessed by WHOQOL-bref for researcher grant and non-researcher grant

Domain	Score researcher grant (n=40)	Score not-grant (n=90)	Range
Physical	72.77	69.08	3.68
Psychological	72.08	69.97	2.11
Social Relationships	69.19	65.54	3.65
Environment	69.30	65.30	4.00
Total	70.99	67.53	3.46
Ability to Work	71.78	67.97	3.81
Self-assessment of quality of life	70.94	66.67	4.27

Source: Own authorship.

It should be emphasized the data were normal in Kolmogorov-Smirnov test ($p<0.05$). It was found, in all of evaluated items, the researcher grant, who represent 30.77% of the researched population, presented higher QOL scores for the group of non-grant, representing 69.25%, in relation to the domains investigated, Ability to work and self-evaluation of QOL.

By means of an independent T-Test, the following hypotheses were tested:

a) H0: there is no significant difference between the variance of the groups of the researcher grant and non-grant;

b) H1: there is a significant difference between the variance of the groups of the researcher grant and non-grant.

It is also considered a level of significance of 95%, the means differ significantly (p-value=0.03). Statistically it is possible to conclude that H0 is rejected. In this case, the researcher grant has a higher QOL than non-grant.

Researcher grants regulation emphasizes that its purpose is "[...] intended for researchers who stand out among their peers, valuing their scientific production according to normative criteria established by CNPq and specific by CNPq's Advisory Committees" (CONSELHO NACIONAL DE DESENVOLVIMENTO CIENTÍFICO E TECNOLÓGICO, 2006, tradução nossa).

Although it is equivalent to the researcher grant and also seeks to "[...] distinguish the researcher, valuing his production in technological development and innovation" (CONSELHO NACIONAL DE DESENVOLVIMENTO CIENTÍFICO E TECNOLÓGICO, 2006, tradução nossa), the technological development grant was created with the aim of research results are more practical, valuing patents, products and software in a different way than the academic research scholarship, which is more concerned with traditional scientific production (papers published in academic journals).

In this way, the national academic recognition for the researcher grants increases the self-esteem of professors, due to the perception of a successful professional career. This fact exerts influences on the facet for Work, whose variation was 3.81, and on the Psychological domain, whose variation was 3.68.

The environmental domain (3.65) and the self-evaluation facet of QOL (4.27) tend to be driven by the financial benefit granted to professors holding a researcher grant. In this way, through their high salaries, the individual manages to make extra investments in eventual areas of life shortage, being less exposed to some social problems.

In relation to the Physical (3.68) and Social Relationship (3.65) domains, the positive variation found does not present an apparent relationship with the researcher grant. Nevertheless, a perception of overall QOL improvement caused by the factors mentioned above may influence satisfaction with these aspects.

Table 3 shows the scores of the domains in QOL evaluated with WHOQOL-bref of professors in Production Engineering field, discriminating them by the time of performance in graduation. In this case, it was also decided to consider the facet capacity for work and the self-assessment in quality of life.

Table 3 – Quality of life score assessed by WHOQOL-bref for researcher grant and non-researcher grant

Domain	Between 1 to 7 years (n=56)	Between 8 to 15 years (n=35)	16 years or more (n=39)
Physical	70.66	74.78	68.96
Psychological	71.88	70.96	70.94
Social Relationships	67.86	70.20	66.03
Environment	66.18	67.42	66.99
Total	69.04	70.86	68.17
Ability to Work	68.75	74.24	71.15
Self-assessment of quality of life	68.08	71.59	65.06

Source: Own authorship.

It is important to mention the data presented normal distribution using Kolmogorov-Smirnov test ($p<0.05$). It was verified the Physical and Social Relationship domains and the facets Ability to work and Self-assessment of quality of life presented oscillation in relation to the time of performance in the post-graduation. On the other hand, the Psychological, Environment and Total domains did not present high oscillations in the scores.

About the Physical (70.66; 74.78; 68.96) domain, the highest score occurred in the performance range in graduate course of eight to 15 years, followed by the range of one to seven years and the worst score was returned in the range of time of 16 years or more years of performance. Due to the age of professors, it would be possible to hypothesize as the degree of performance in the graduate course increases, the satisfaction with Physical (70.66; 74.78; 68.96) domain is lower.

Vitta, Neri and Padovani (2003) emphasize that as the length of service is higher, consequently age is also higher, and the elderly population tends to present greater musculoskeletal discomfort, especially in the female gender. According to Londral *et al.* (2015) the female gender is more likely than not to obtain satisfactory data regarding QOL studies, since in general they study less than men, in addition to being less intimate with new technologies.

The rationale above is based on the fact the group with 16 years or more of graduation performance had the worst score in relation to the Physical (68.96) domain. However, in the group of professors between one to seven years (70.66) and eight to 15 years (74.78), the same logic does not replicate, considering professors from eight to 15 years in the graduation, in older theses, presented lower score compared to professors with one to seven years of graduate work. It seems that the negative influence of age on the Physical domain tends to have greater influence only on the group of professors with a graduate course more than 16 years.

Regarding the Social Relations domain (67.86; 70.20; 66.03), the data indicate a scenario close to the Physical domain. There is greater satisfaction regarding social relations in the group with a time of performance in the postgraduate course between eight and 15 years, followed by the group between one and seven years and, finally, greater dissatisfaction in the group over 16 years. In this respect, there is no apparent justification in the academic environment, which suggests the need for new studies to study this phenomenon and to verify if there is a tendency or a coincidence.

Therefore, QOL is studied as a measurement aspect of population health, including workers. Such aspect as the work is part of the social activity of the individual and can affect the health and quality of life (TELES *et al.*, 2014).

With regard to the ability to work (68.75, 74.24, 71.15), the highest satisfaction occurred in the group of professors with working time between eight to 15 years (74,24), followed by the group with more than 16 years of service time (71.15) and, finally, the greatest dissatisfaction was found in the period of one to seven years (68,75).

This scenario is justified by professional maturity, which tends to increase with length of service. In this way, although older, the professors with more time of performance in the postgraduate course tend to present greater satisfaction with their capacity for work. For Koshkin *et al*. (2014) obtaining satisfaction with the ability to work is the result of a balanced lifestyle.

Regarding the Self-assessment of quality of life (68.06; 71.59; 65.06), the highest satisfaction occurred once again in the group with a duration of eight to 15 years, followed by the group of one to seven years and, the greatest dissatisfaction occurred in the group with time of service over 16 years. This scenario reflects the found in the Physical, Environment, Social Relations, and Capacity for Work domains, showing consistency in the returned data.

It is necessary to point out that in the group of one to seven years of service time the total score (69.04) was close to the score returned by the Quality of Life Self-Assessment (68.08) facet. Nevertheless, in the 8 to 15 years' patients group, the total score (70.86) also remained close to Quality of Life self-assessment score (71,59).

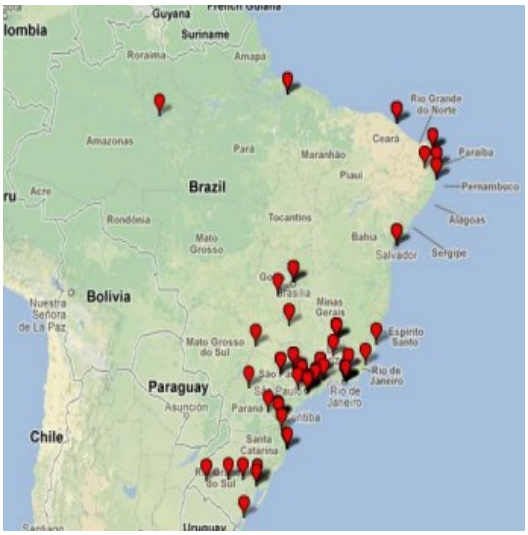
However, in the group with a service time of more than 16 years, the total score (68.17) presented a slight distance from the Self-evaluation facet of Quality of Life (65.06), indicating a slight pessimism in this group in relation to the Aspects of your life. This fact also justifies the lowest score returned by the group with service time greater than 16 years in four of the seven items evaluated.

The Figure 3 shows the geographical distribution of the professors who works in the graduate studies in Production Engineering, which compose a sample of the present study. The Figure 4 shows a geographic distribution of the Masters and PhD Engineering III's programs (Mechanical Engineering, Production Engineering, Astronautical Engineering and Naval and Oceanic Engineering).

Figure 3 – Sample of the geographical distribution of professors who works in the Production Engineering graduate programs

Source: Own authorship.

Figure 4 – Geographical distribution of Engineering III graduate programs



Source: Own authorship.

The Figures 3 and 4 The figures attest the representativeness of this research, inferring that the data can be generalized for Production Engineering field.

The teaching career in higher education institutions demands the fulfillment of several requirements, which are even more exacerbated with those who work in graduate school. Therefore, it is prudent to identify the points of need of this public in relation to their health care and, for this purpose, the objective of the present study was to analyze the QOL of professors who work in the graduation of Production Engineering.

In this sense, the worst facets of quality of life returned by the WHOQOL-bref in the present study were Recreation and Leisure (53.08), Positive Feelings (57.88) and Sleep and Rest (59.42). In relation to the Recreation and Leisure facets (53.08) and Sleep and Rest (59.42), the justification is related to the lack of time due to the accumulation of academic activities necessary to raise or maintain the score of graduation. Regarding the positive feelings (57.88), the justification found refers to stress relevant to the constant need for academic production.

As for the domains, the highest score in Psychology (70.48) and Physical (70.27) of professors who work in graduation of Production Engineering in Brazil is a trend in this public. Regarding lower scores, the social relations (66.28) domain returned a different scenario to other surveys with workers in general. In the case of professors, the lowest score in the Social Relations (66.28) domain seems to be related to a low satisfaction with the support they receive from their friends.

As far as the Environment (66.18) domain is concerned, it seems that dissatisfaction is related to Brazilian social problems that affect all social layers, such as security and physical environment. About the gender, in all means returned, the female group had a significantly lower score in relation to the male group. In this sense, the justification is linked to the reconciliation of family life with work life, which can generate conflict and consequent dissatisfaction.

As far as the comparison between the group of researcher grant and non-grant is concerned, the group of non-grants presented a significantly lower mean in QOL scores than the group of researcher grants. Such a scenario may have justification in the financial compensation that the group of researcher grants, as well as in the academic and personal recognition of professional success due to the character of awards embedded in the researcher grants.

Regarding the length of service, it can be seen in four of seven items evaluated, the lowest score occurred in the group with a performance time in the postgraduate course of 16 years or greater.

About the limitations of this study, in relation to the investigation of other variables which infers in quality of life, there is an indication that the extension of teaching career tends to reduce the perception pertinent to quality of life of professors, by the aggravation of age or by the increase of a feeling of pessimism regarding the aspects of his life.

Finally, it is considered that the present study fulfilled the objective of analyzing quality of life of professors of Production Engineering of Brazil, contributing to the discussions about the teaching career and filling an academic gap regarding Research related to quality of life evaluation specifically in professionals of this academic field.

This study was not intended to segment professors in regions of the country, this being a limitation of the present research. It is suggested for future research, to analyze the QOL of professors in each region of Brazil, comparing them with the local culture and economic perspectives. In addition, we suggest comparisons of QOL of Production Engineering professors with their academic production, testing the hypothesis that professors immersed in a higher stress system (performing at the graduate level) have a lower QOL.

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