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ERGONOMICS : OCCUPATIONAL HEALTH AND QUALITY OF LIFE

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Abstract: This research aims to evaluate the quality of life related to the health of the students of the Post-Graduation Program in Production Engineering. As a theoretical framework, a conceptual framework was developed that gathers an in-depth study of the theme and the main instruments for validation of health-related quality of life. In the methodological procedures, quantitative analysis were performed, using descriptive and inferential statistics to measure the dependent variables. Twenty-nine students participated in the study, who answered an SF-36 questionnaire. In order to analyze the results, we used the Microsoft Excel and R software. The main results of the research were about the perception of the general state of health, insofar as it is influenced by mental health, vitality and presence of pain, in that order. Therefore, it is important to encourage student health care through healthy habits such as physical exercise, sports, and proper nutrition.

Keywords: Quality of life; students; health.

1. INTRODUCTION

Different areas of knowledge have been analyzing quality of life as a factor that influences the performance of individuals for a long time, however, for the field of production engineering this theme is seen as innovative, when we deal with the different perspectives of analyzing quality of life, regarding work, health and leisure of individuals. Some authors also point out a fourth aspect, which is the performance of individuals in terms of quality of life (BATISTA, 2010; NOBRE, 1995; ROCHA; FERNANDES, 2008; SOUZA; PARO, 2012).

Quality of life is not something easy to change, much less a current fad in society. On the contrary, it corresponds to something more complex and multidisciplinary in which individuals are inserted. Several aspects can be mentioned in which quality of life is directly related, for example, time spent in traffic and traffic conditions, safety, place of work and residence, medical and hospital services, lack of side effects medication collaterals, green areas in large cities, professional fulfillment, financial fulfillment, leisure, culture, education, the comfort of living well, the fact of being healthy, in short, living well (BACHA; SOUZA; MARTINS, 2013; NOBRE, 1995; PAGANI; JUNIOR, 2006).

In this context, it would be a broad study to analyze all these aspects described above. However, Health-Related Quality

of Life (HRQoL) encompasses several characteristics that promote people's "living well", which is why it was used as the primary source of analysis in this study. HRQOL is studied when the objective is to monitor the health of a given population, diagnose the nature, severity and prognosis of the disease, in addition to evaluating the effects of treatment. For this, health assessment instruments or measures are used in terms of quality of life (CICONELLI, 2003; PAGANI; JUNIOR, 2006; SEIDL; ZANNON, 2004).

Health-related quality of life had its first studies in the 1930s. However, the interest in quality of life in the health area is justified by the new paradigms and policies existing in the sector, which place health as a continuum related to aspects economic, sociocultural, personal and lifestyles; This multifactorial look at quality of life emerged from 1980 onwards (BACHA; SOUZA; MARTINS, 2013; SEIDL; ZANNON, 2004)

The concepts about quality of life during the bibliographic survey carried out are presented below:

Table 1 – Concepts about quality of life

Authors	Definitions	Term
Calman (1984)	The difference between what is desired in an individual's life and what is achievable or not.	Goals and objectives;
Paul Jones (1991)	Quantifying the impact of the disease on the patient's activities of daily living and well-being in a formal and standardized way.	Standardization; well-being;
Souza e Guimarães (1999)	Quantifying the impact of the disease on the patient's activities of daily living and well-being in a formal and standardized way.	Harmony; balance;
Minayo <i>et al.</i> (2000)	Individuality of the concept, placing it as historical, and explaining that, in the same society, the concept changes over time. To talk about quality of life anywhere, one must take into account the satisfaction of basic human needs (water, food, housing, health, work) and material elements that lead to individual and collective well-being.	Changeable; satisfaction; well-being;
Abdi-Simon, Coureitch e Gelfi (2001, <i>apud</i> OLIVEIRA, 2006)	A measure closely related to the physical, mental and social well-being perceived by an individual, or group, and the degree of satisfaction and gratification in the areas of health, housing, family, work, education and self-esteem.	Well-being; gratification; satisfaction;
Carvalho Filho e Papaléo Neto (2005),	It has a broader meaning and is influenced by the individual's perception, feelings and behaviors related to their health condition, but not limited to it.	Embracing;
Novelli (2006)	It points out that the perception of quality of life is personal, being influenced by the perception of each individual, their social class, their culture, their values, their personality.	Personality;

Oliveira (2006) e Faker (2009)	An individual's perception of their position in life, in the context of their culture and the value system in which they live and in relation to their expectations, standards and concerns.	Expectations; standards; changeable;
Araújo (2009)	It is difficult to have unanimity regarding the meaning of quality of life among people from the same society and even the same community. It must guarantee the psychological and physical well-being of both the individual and their family.	Diversity; changeable; well-being;
The definition of quality of life "QoL" becomes a broad, subjective and multidimensional concept.		

Source: Survey data, 2014

HRQoL assessment instruments promote the diagnosis of the most detailed and distinct health conditions and reflect some relevant characteristics of people's lives. Such aspects are called dimensions or domains, which are measured in a weighted or individualized way. Dimensions such as: physical mobility, work activities, satisfaction, emotional behavior, domestic activities, social relationships, among others are usually evaluated (NOBRE, 1995; PAGANI; JUNIOR, 2006).

Different instruments or indices are proposed with the aim of evaluating the quality of life of patients with the most diverse pathologies. They are developed in order to reflect the impact of a disease on the lives of patients. Furthermore, they evaluate aspects related to function, dysfunction, physical and emotional discomfort. These instruments can be divided into two large groups, generic and specific (CICONELLI, 2003; PAGANI;

JUNIOR, 2006; ROCK; FERNANDES, 2008).

The questionnaires that initiated studies on this topic were generic, using numbers. They express primary health-related disorders based on the patient's perception. These can be applied across cultures, locations, medical interventions, disease types and treatments. The most common questionnaires are the Quality of Well Being Scale, the Sickness Impact Profile, and the SF-36. This type of questionnaire can cover the entire spectrum of health-related problems. However, at the same time, it promotes targeting of information, by reducing the items that refer to specific clinical conditions (CICONELLI, 2003; NOBRE, 1995; PAGANI; JUNIOR, 2006).

For this study, The Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) will be analyzed. Because it is classified as a generic instrument, as it assesses quality of life (HRQoL) in a

multidimensional and self-administered. The questionnaire consists of 36 items that assess: functional capacity (performance of daily activities, such as ability to take care of oneself, dress, bathe and climb stairs); physical aspects (impact of physical health on the performance of daily and/or professional activities); pain (level of pain and impact on performance of daily and/or professional activities); the general state of health (subjective perception of the general state of health); vitality (subjective perception of health status); social aspects (reflection of physical health conditions in social activities); emotional aspects (reflection of emotional conditions in the performance of daily and/or professional activities) and mental health (mood and well-being scale) (BACHA; SOUZA; MARTINS, 2013).

When seeking to study a specific situation in depth, specific questionnaires are more suitable for targeting specific diseases, however they were also developed to quantify health gains after treatment. In this way, questionnaires are more used to diagnose results in changes in the course of the disease, as they are easier to interpret and apply, and also because they determine the severity and impact of

symptoms in people's lives (BATISTA, 2010; PAGANI; JUNIOR, 2006).

In one of the literature used in the work, a study was found that compared the health-related quality of life of Psychology students with their retention in the course. A generic SF-36 questionnaire was also administered to psychology students, and, after statistical analysis of the data, results were obtained that can be compared to the proposed work, for discussion purposes.

In view of the above, this work proposed to evaluate, through a diagnostic instrument (namely, the generic questionnaire), the health of students in the Postgraduate Program in Production Engineering at the Federal University of Paraíba, enrolled in the period 2014. Because It is possible to observe a high number of health-related complaints in the period relating to the second quarter of 2014.

Educational institutions recognize that well-being and health are important to improve the quality of teaching, as HRQoL can interfere with academic and professional performance. However, few studies evaluate the quality of life in relation to the health of master's students. Therefore, it is extremely important to understand the psycho-emotional changes of students and the appreciation of aspects

which seem to interfere with their

perception of well-being and health (KAWAKAME; MIYADAHIRA, 2005; SOUZA; PARO, 2012).

There is an additional importance that corresponds to academic contribution. In this work, it was found that the topic of HRQoL assessment had been little explored, because there is only one work measuring (HRQoL) in the databases using the generic SF-36 questionnaire with psychology students. In that work, they sought to observe the relationship between the years studied and the variation between them.

2. MATERIALS AND METHODS

Research classified as basic in nature was carried out, with a descriptive objective through experimental survey research procedures with a quantitative approach. The sample was composed of students from the Master of Production Engineering at the Federal University of Paraíba who entered in 2013 and were regularly enrolled in the 2013-2 quarter. 34 students were approved in the selection process. However, in the second quarter, five students had already dropped out, leaving a total of 29 students regularly enrolled in some subject during that quarter.

After providing informed

consent, participants answered questions such as: age, sex, undergraduate course, current occupation and number of subjects in course in the 2nd quarter of the master's degree, and the SF-36 quality of life questionnaire. Of the 29 regularly enrolled students, 4 were excluded, 2 for not answering all the questions and 2 for not attending the university during the data collection period.

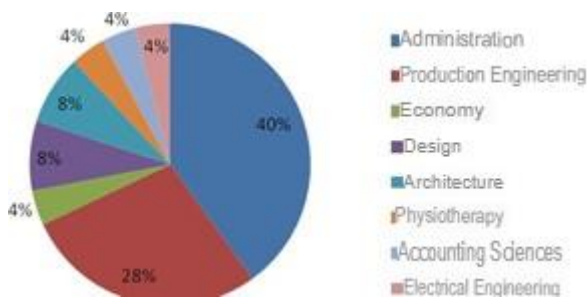
For statistical analysis, the non-parametric Spearman method and Fisher's exact test were performed, using the R software.

After analyzing the results, in order to discuss, we will make a comparison of the results obtained in Bacha et al (2013) regarding psychology students and the results of master's students in production engineering.

3. RESULTS

Of the 25 questionnaires evaluated, the average age was 28 ± 4.5 years, being 10 men and 15 women. It was also possible to verify a diversity of academic background among the students, as illustrated in graph 1. This diversity occurs due to the multi-professional profile of the master's degree in Production Engineering offered by the Federal University of Paraíba.

Graph 1 - Distribution of Undergraduate Courses



Source: Collected data (2014)

Regarding the students' occupation, 9 report some occupation beyond their master's degree (work or specialization), while 16 report exclusive dedication. The average number of subjects in progress at the time of applying the questionnaire was 4.44 ± 1.12 . As per distribution shown in the tables below.

Table 1 - Occupation and Gender contingency table

Gender	Occupation	
	Master's degree	Occupations
Feminine	10	5
Masculine	6	4

Source: Collected data (2014)

Table 2 - Contingency table Occupation and Number of Disciplines

Occupation	Number of subjects	
	Up to 4	Greater than 4
Master's degree	8	8
Others	7	2

Source: Collected data (2014)

Regarding the SF-36 questionnaire, the average values obtained in each of the dimensions are shown in table 3.

Table 3 - SF-36 Domain Results

Variables	Media	Detour standard
Functional capacity	86	12,91
Limitations by aspects physicists	62	32,37
Presence of Pain	62,32	22,17
General Health Status	69,84	20,75
Vitality	47,64	19,02
Social aspects	60,9	22,85
Limitations by aspects emotional	38,66	36,87
Mental health	65,12	17,68

Source: Collected data (2014)

Table 4 - Relationship between SF-36 and Occupations

Variables	Media		Detour standard	
	Master's degree only	Other occupations	Master's degree only	Other occupations
Capacity functional	90,62	77,77	8,13	16,02
Aspects physicists	60,93	63,68	35,31	28,25
Presence of Pain	59,18	67,88	23,27	20,12
General condition of Health	73,56	63,22	14,27	28,85
Vitality	47,87	47,22	20,77	16,6
Aspects social	59,21	63,88	24,69	20,19
Aspects emotional	39,58	37,03	36,95	38,88
Health mental	64,75	65,77	16,47	20,69

Table 5 - Relationship between SF-36 and Number of Subjects

Variables	Media		Standard deviation	
	Up to 4 disciplines	More than 4 subjects	Up to 4 subjects	More than 4 subjects
Capacity functional	85,33	87	14,81	10,05
Aspects physicists	65	57,5	31,05	35,45
Presence of Pain	64,06	59,7	22,95	21,86
General state of health	71,4	67,5	25,86	9,84
Vitality	53,33	39,1	17,49	18,8
Aspects social	62,5	58,5	24,09	21,89
Aspects emotional	31,11	50	34,42	39,28
Mental health	66,93	62,4	18,72	16,56

Source: Collected data (2014)

Table 6 - Spearman correlation between quality of life variables

Variables		Coefficient	Association
Health Mental	General condition of Health	0,7518 467	Strong
Vitality	General condition of Health	0,6798 121	Moderate
Presence of Pain	General condition of Health	0,5825 018	Moderate

Source: Collected data (2014)

For the three pairs of variables investigated, at least a moderate association was found (table 6). The association measure used was the correlation coefficient estimated by Spearman's non-parametric method.

The presence of associations between these pairs of variables is an

indication that

for the researched group, those individuals who presented low mental health, vitality and pain levels tend to also have a lower general health status.

Table 7 shows the results of Fisher's exact test to verify whether pairs of variables are independent of each other, in which associations are verified. For a significance level of 0.05, the null hypothesis that the variables are independent is rejected. This result verified in the test converges to the conclusion that there is an indication of association.

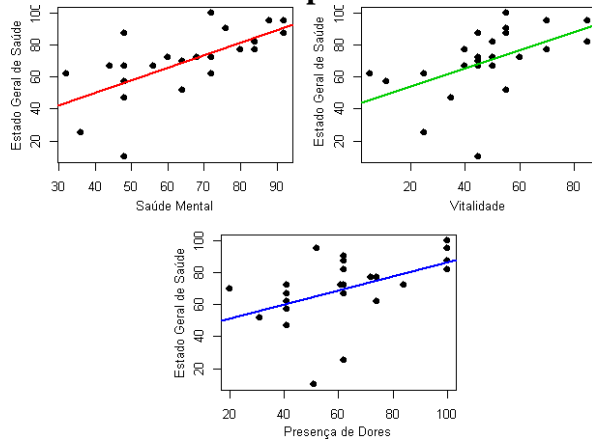
Tabela 7 - Teste exato de Fisher para verificar se as variáveis são independentes entre si para uma tabela de contingência 3 x 3.

Variables		p-value	Result	Conclusion
Mental health	General condition of Health	0,002056	H0 is rejected	They are not independent
Vitality	General condition of Health	0,02672	H0 is rejected	They are not independent
Presence of Pain	General condition of Health	0,01227	H0 is rejected	They are not independent

Source: Collected data (2014)

Figure 1 graphically shows the presence of the association for the interviewed group. There is a growing trend in the general health status with those previously mentioned indices. The trend line of the points on the graph was estimated based on the ordinary least squares method.

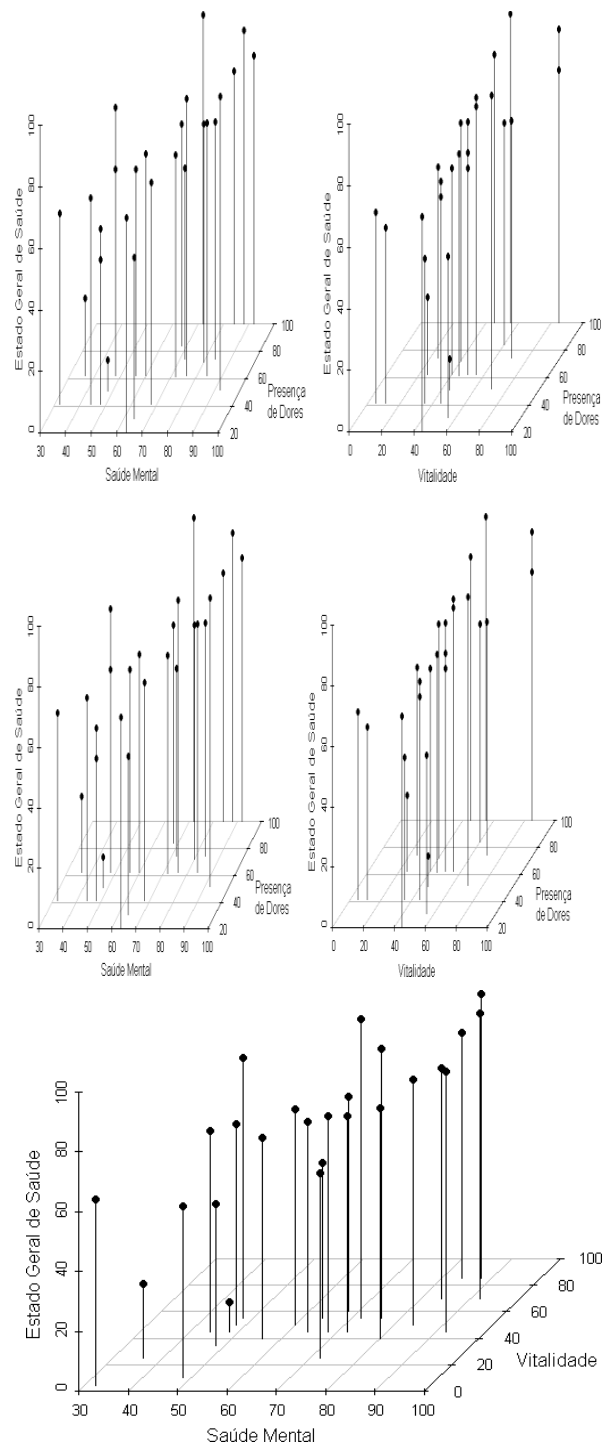
Figure 1 - Scatterplots of pairs of variables with their respective trend line



Source: *Software R* (2014)

The trend of the points can also be verified from the scatter plots for three variables. It can be seen, for example, in Figure 2 that the highest values of the general health index are found for those individuals who present the highest values of the mental health index and presence of pain.

Figure 2 - General Health Status as a function of other variables



Source: Collected data (2014)

4. FINAL CONSIDERATIONS

As a form of discussion, it can be observed that in the work of Bacha et al (2013), the results indicate that the total quality of life score is worse in the first

year and increases as the course progresses. The domain with the highest score was “functional capacity” (average 87.43), the lowest was “vitality” (average 58.50).

In the work of psychology students, significant differences in relation to gender can be detected: women present significantly lower scores than men in the “pain” domain; Regarding family income, those with higher incomes presented significantly better scores compared to those with lower income in the “pain”, “vitality”, “social aspects” and “mental health” domains.

In production engineering master's students, it can be noted that quality of life was not influenced by the number of subjects or occupation. However, it was identified that the perception of the general health status of individuals has a strong relationship with their perception of the state of mental health, vitality and the presence of pain, in that order.

In this sense, what we can conclude in relation to the work researched is that the results of production engineering students present, in terms of (HRQoL), a lower score, followed by a decrease in scores when compared to students who only do a master's degree and those who carry out other activities in addition to their master's degree.

As the educational institution must be concerned with the general health status of its students, it is interesting that it seeks and promotes healthy practices among its students with the aim of improving health-related quality of life.

However, other factors not evaluated in this research may have an influence on the quality of life of the master's degree in Production Engineering, such as: carrying out regular physical activity, the presence of previous illnesses, marital status, responsibility for children or dependents, etc.

To identify the possible criteria that affect the quality of life related to the master's degree, more studies must be carried out taking into account other factors that may be associated with the time requirements required for the master's degree. These studies also need to consider the difficulties in reconciling tasks, such as physical activity, adequate nutrition and social life.

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