132 - CORRELATION BETWEEN QUALITY OF LIFE, PAINFUL MANIFESTATIONS , HEART RATE AND BLOOD PRESSURE, BEFORE AND AFTER THE LABOR GYMNASTICS

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INTRODUCTION

The World Health Organization (WHO) defines the quality of life as "the perception of the individual of his/her position in the life, in the cultural context and systems of values in which he/she lives and in relation to he/she objectives, expectations, standards and concerns" and it is closely related to the style of life, determined by the family structure, work environment, level of stress, heredity, feeding, physical and emotional state, among others.

The article published in the Journal of Occcupational Medicine in 1996, cited by Figueira Júnior (1998), points out tobaccoism, sedentary lifestyle and obesity as factors frequently found among executives and that sedentary employees are more susceptible to compromise their health, the productivity of the company, the increase of costs,the increase of absenteeism, the increase of the index of industrial accidents and the turnover of employees. At the same time, it discloses that companies which invest in programs of quality of life minimize this picture drastically.

Deliberato (2002) proposes the regular practice of physical activities with specific objectives as an efficient way to promote adequate levels of physical and mental health.

The labor gymnastics - planned, guided and executed by qualified professionals - is an efficient option of promoting the physical and mental health, besides favoring the coexistence and interaction of the involved individuals, through collective physical activities during the working hours and in the workplace; it will make the physical preparation of the individual for the work, based on the ergonomics principles.

Ergonomics seeks the mutual adjustment between the human beings and their work environment in a comfortable, productive and safe way (COUTO, 2007), which can be reached through the evaluation and multidisciplinary work involving all the integrant individuals of the production process and some professionals of health.

One understands, therefore, that labor gymnastics, ergonomics, quality of life and conditions of health as essential and correlated elements in any productive process, which motivated a field study where data had been collected in a service company in the food area and that had already incorporated the practice of labor gymnastics associated to the ergonomic analysis.

This study's objective is to correlate the quality of life through the Medical Outcomes Study Short Form - 36 Healthy Survey (SF-36), manifestations of pain, heart rate (HR) and blood pressure (BP) before and after the practice of labor gymnastics.

METHODOLOGY

The study took two months, carried out in the period of August and September of 2007, the sample was formed by convenience, composed of employees of a service company in the food area, where there is practice of labor gymnastics previously installed. The practised session consisted of 30 ' and were kept with the following composition: 10 ' of elongation, followed of 15 ', activities of force, conditioning and aerobics finishing with 5 ' of directed relaxation and religious manifestations , where an employee can say a prayer aloud independently of his/her religion.

Individual physiotherapeutic evaluations are carried out destined to those workers indicated by the medical team of periodic examinations, besides the cases considered necessary during the activities, as well as presented complaints.

The questionnaires SF-36, instrument of generic evaluation of quality of life related to the health have been distributed, scale determined by the instrument of measure in quality of life: advantages and limitations - WHOQOL - BREF. The fulfilling was carried out by convenience after clarifications on the questions contained in the form, what determined n = 39.

The SF-36 is a translated questionnaire (adjusted to cultural social-economic conditions of the Brazilian population) and validated in 1997 by Dra. Rosana Mesquita Ciconelli and collaborators. According to Ciconelli, the evaluation of the quality of life related to health must verify the impact of the illness, health and treatment. The SF-36 is composed of 36 questions, evaluating generic dimensions about health, those dimensions represent basic relevant human values in the evaluation of the quality of life of the general population. It is an instrument that transforms the subjective measures into objective data, to be thus analyzed and quantified of diverse forms. The results are measured in scores from 0 (the worst health condition) to 100 (the best health condition), according to answers obtained in the questionnaire.

The SF-36 is composed of components of physical health and mental health, measured through eight domains: functional capacity, physical aspects, pain, general state of health, vitality, social aspects, emotional aspects and mental health.The manifestations of pain got their registers through the analogical scale of pain, before and after the activity of labor gymnastics. The analogical scale of pain was presented and explained how to puntctuate the rate of pain at that moment. A subjective evaluation where the employee could make a mark in a visual analogical scale, alternatively, a simple way for better clarification is to ask the patient tot attribute a value to his/her pain in a base of 0 the 10 with 0 representing absence of pain and 10 unbearable pain of suicidal intensity. The data was collected in days of great demand of productivity.

Employees HR and BP were taken with the employees in the seated position before the beginning and at the end of the labor gymnastics activity. The activities were developed in diverse plans, the seated, lying positions and in orthostatism.

Regarding the statistical analysis, initially a description of the investigated variables was carried out to characterize the studied sample, using for this descriptive measures (average and standard deviaton) for the quantitative variables and measures of frequency (percentage) for the variable of masculine or feminine gender.

STATISTICAL ANALYSIS

To evaluate the difference between the measures of intensity of pain, heart rate and blood pressure of the workers at the beginning and in the end of the sessions of labor gymnastics the test t-student was applied. The association between the related variables to the clinical characteristics of the workers and the domains of the SF-36 was verified through the Pearson coefficient of correlation. In all the statistical tests, a level of significance of 5%was used. The analyses were carried out in statistical software SPSS (Statistical Package will be Social Sciences) version 15.0.

RESULTS

The sample was constituted by 39 workers with age ranging from 19 to 51 years, obtaining an average of sample age of 32,28 years (SD = 9 years). Among the 39 participants, 25 (64.1%) were of feminine gender and 14 (35.9%) were of masculine gender

In relation to the clinical variables of intensity of pain, heart rate and blood pressure a statistically significant difference was found between the values measured before and after the sessions of labor gymnastics.

It was perceived that the values of the intensity of pain and blood pressure, either systolic and diastolic, diminished after the intervention. However, the values of heart rate presented a rise at the end of the intervention when compared with the beginning of the gymnastics. (see table 1).

The average values of quality of life are presented in table 2. The workers present a better quality of life in the domains physical aspect and emotional aspect (83,33 20,9 and 72,64 28,4 respectively), without revealing iconsistences capable of modifying both the physical aspect and the state of anxiety or another emotional factor.

Concerning the domains pain and vitality, it is the contexts that involve quality of life which presented the worst scores among the participants (40,12 11,7 and 55,64 13,2 respectively), gotten through revelation of pain picture at work, external activities and fatigue.

The correlation between the clinical measures of the workers and the eight domains of the variable quality of life was found significant correlation only between the domain functional capacity and the average of the intensity of the participants' pain during the session of labor gymnastics.

This correlation was a statistically significant result (p = 0,002), of moderate magnitude and negative direction (r = 0,478). This result indicates that the lesser the intensity of pain, the greater the functional capacity of the workers (figure 2).

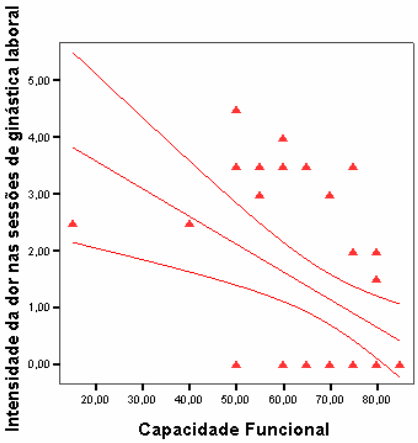

Figure 2: Correlation between the average of the intensity of pain in a session of labor gymnastics and functional capacity in the studied workers (n = 39). Belo Horizonte, 2007.

Table 1: Results of the Comparison of the Sistolic, Diastolic Blood Pressure, Heartbeat and Intensity of Pain Before and After the Labor Gymnastics in workers (n = 39). Belo Horizonte, 2007

Variÿveis	Momento Antes da Ginÿstica Laboral	Momento Apÿs a Ginÿstica Laboral	Valor p
Pressÿo Arterial Sistÿlica	128,20	121,53	0,001
Pressÿo Arterial Diastÿlica	77,94	70,51	0,000
Freqÿÿncia Cardÿaca	72,28	79,64	0,000
Intensidade da Dor	1,79	0,56	0,000

Table 2: Average Results of SF-36 scale in the studied workers (n=30). Belo Horizonte, 2007

	Average	Standard-Deviation	Minimum and Maximum
Functional Capacity	69,10	15,12	15 85
Physical Aspect	83,33	20,94	25 100
Pain	40,12	11,73	10 54
General Health State	68,35	16,42	22 97
Vitality	55,64	13,28	25 75
Social Aspects	67,30	27,14	0 100
Emocional Aspects	72,64	28,48	0 100
Mental Health	68,71	19,22	32 - 100

DISCUSSION

This study was carried out in a services company in the food area, the sample populationl presented a significant difference between the number of participants of masculine gender and feminine gender. The fulfilling of SF 36 was a limiting factor due to its extensive size, there are 36 questions to be answered, it was observed a bigger feminine interest, which determined the presence of 35,9% of masculine gender and 64.1% of feminine gender, a total of n= 39.

The aspects pain and vitality were the domains that revealed little quality of life among the measured ones in the SF-36, and its correlation is very important in the sample population.

The vitality is directly associated to the state of fatigue and, in a simultaneous way, to pain, related to physical health. The sample consists of workers who have an intense demand of work and the majority extends the day with extra work in parties, to make possible some wage complementation, besides extending their time of permanence in the company in days of production in high scale.

As the company works with food products, for being perishable if the demand of the day big, there are several details

and procedures that can not be anticipated, the production is made with the purpose of keeping high quality standard, which determines the necessity of overtime work during the attendance of determined contracted events.

The functional capacity and pain presented a significant statistic correlation with p = 0,002; the workers with bigger functional capacity revealed lesser percentage of pain . This requires a good conditioning, dexterities manual and corporal harmony when it refers to labor demand of a company that still needs great handmade production and industrialized equipment.

It is important to remember that the physical and emotional aspects presented significant percentages as to workers quality of life in long working hours, the fatigue may cause a temporary imbalance on them.

The pain manifestation a bigger punctuation in application of pain analogue scale before the labor gymnastics activity. To Melzak (1974) pain is not considered more than a sensation It constitutes an experience that involves sensation and emotion. The sensorial dimension registers the nature of stimulus; the emotional character interrupts the behavior and leads the person to activities to ease the pain. Pain also involves neocorticals processes (attention, anxiety, suggestion) that assure the control upon both systems. Guyton (1998) points out the serotonin as a substance that acts as an inhibitor of the ways of pain in the marrow and also can control the mood of the person, perhaps exactly to trigger sleep.

In the study it was observed that painful manifestations of fatigue were more incident in white race older feminine gender in the sample population. According to Lima (1996), the threshold of pain does not depend on one's perception, but on the reaction to pain and any alteration on the pacient's capacity to bear it will always depend on complex morphoneurophychological factors that govern the reaction to pain

The threshold of reaction to pain is determined by diverse factors such as emotional conditions, fatigue, age, raciais characteristics, feminine gender, fear and aprehension.

The practice of physical activity like labor gymnastics contributes in a relevant way to the improvement of worlkers' functional capacity besides producing serotonin, both act directly on reduction of pain. The showing of low quality of life in the vitality aspect favors a state of fatiguethat can also propiciate a pain process. It is known that a workload over the employee's functional capacity can favor pain, which is generally associated with external factor.

The surveyed HR before the labor gymnastics activity must not be used as an estimate of the HR in rest, however, there was the prevalence of HR rise in attention carried out in this study after the labor gymnastics practice. Wilmore (1994) tells that a pre-exercise HR is generally increased over the rate in normal rest., that is called anticipatory response.

This response is measured through the release of the neurotransmitter noradrenaline for his sympathetic nervous system and the adrenalin hormone by the adrenal glands. The vagal tone probably also decreases. As the pre-exercise heart rate is high, reliable estimates of the actual resting heart rate should only be carried out under conditions of total relaxation, as in the early morning, before getting up after a restful night's sleep. The HR increases in direct proportion to the increased intensity of the exercise.

The more conditioned the individual, the changes in HR occur in a more pleasant way, either during labor or physical activity. Deliberato (2002) says that the HR elevation is also increased during the performance of labor activities and their degree of elevation is determined by the intensity of workload, when the load is high it is necessary to stop to avoid exhaustion; if the load is low it is possible to observe a quick increase in heart rate, but there is accommodation on a level that may be proportional to the pace of the performed activity, returning to initial levels quickly too, just after the end of the activity.

The physiological effects of physical exercise can be classified into acute immediate and acute late chronic. The acute effects, called responses, are those that occur in direct association with the session of exercise, the immediate acute effects are those that occur during periods peri-and post-immediate physical exercise, like lifting the heart rate, the pulmonary ventilation and sweating, but the acute late happen during the first 24 or 48 hours (sometimes up to 72 hours) that follow a session of exercise and can be identified in a slight reduction in tension leves, especially in hypertensive patients, in the expansion of the plasma volume, in the improvement of endothelial function. (ARAUJO, 2003 and NATIONAL CONSENSUS OF CARDIOVASCULAR REBILITATION, 1997).

The blood pressure presented changes with regard to the measures before and after the session of 30 'of labor gymnastics. Kaufman (1987) and Raglin (1987) reported that after a period of sub-maximum continuous exercise, the systolic pressure is temporarily reduced to levels below the pre exercise for both normotensive subjects as hypertenses.

For Pescatello (1991) the behavior of the BP during exercise may last for twelve hours during the recovery and occurs in response to aerobic exercise for both low and moderate intensity. Macardle (1998) defines that the mechanism proposed to the BP after aerobic exercise is due to the demand of the permanence of higher blood volume in visceral organs and body segments.
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Ronald (1989) says that it reduces the central blood volume, leading to a drop in systemic blood pressure. These findings justify the use of exercise as an important line of defense in non pharmacological treatment of hypertension.

Grandjean (1998) characterizes the types of workload as: average frequency pulse of rest; average frequency pulse at work; pulse of work represented by the difference between HR at rest and HR of work; sum of pulses of recovery, i. e. sum of pulses since the end of the work until the return of HR at rest; sum of the pulse of work, characterized by the sum of pulses since the start of work until there is a return to HR of rest. He also states that the limit of the workload should be a heart rate that does not produce a constant elevation associated with the return to the pulse of rest in no more than 15 minutes after the closure of activity. Moreover, during the effective completion of the work the HR limit average should be 30 bpm over the HR in rest, at most.

CONCLUSION

The programs of quality of life should not only include the regular practice of exercises during the working day. The most significant achievement of results in both collective and individual level, manifests itself most effective when the activities are accompanied by posture, ergonomic, anthropometric and biomechanics analysis. Studies and surveys show that a healthy lifestyle is directly related to the quality of life, physical and mental balance, conditions of health, and promote longevity

With the development of this study it was possible to detect the importance of the domains of quality of life measured in the SF-36 during the working day. Despite the high values in the physical and emotional aspects, the worst were in the domains related to pain and vitality.

The high percentage in physical aspect without a proper conditioning for the implementation of the activities performed at work reflects on the essential vitality for the provision and ease of implementation of tasks; thus they can lead to fatigue and pain.

The correlation between the clinical measurements of workers and the eight domains of the variable quality of life was significant between the field of functional capacity and the average intensity of the pain. The lower the intensity of pain the greater the functional capacity.

The labor gymniastics associated with ergonomic principles, evaluations and physiotherapeutic interventions

improve the conditioning of the worker for carrying out their activity, minimize the restriction of body mobility, favor the physiological regulation on work-intensive, provides a body harmony, seeks to promote health .

Increasingly it is possible to note that the improvement of quality of life presents individuals with clinical variables within the normal range, as well the reduction of pain.

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CORRELATION BETWEEN QUALITY OF LIFE, PAINFUL MANIFESTATIONS, HEART RATE AND BLOOD PRESSURE, BEFORE AND AFTER THE LABOR GYMNASTICS.

ABSTRACT

This study had as objective to make a correlation between the quality of life and the painful manifestations, heart rate (HR) and blood pressure (BP), before and after the labor gymnastics in a food company. In a appropriated sample composed by 39 employees was applied the Medical Outcomes Study Shorts Form - 36 (SF-36), collected painful manifestations through the analogical scale of pain, measured the heart rate (HR) and blood pressure (BP) before and after the labor gymnastics practices, understood by sessions of 30 minutes. Through the analysis statistics, it was evidenced that in relation to the clinical variables of pain intensity, heart rate and blood pressure, it was found a significant statistical difference between the values measured before and after the sessions of labor gymnastics. The workers report better quality of life in the physical and emotional aspects (83,33? 20,9 and 72,64? 28,4 respectively). The pain and vitality aspects report the worst rates among the participants (40,12 11,7 and 55,64 13,2 respectively). In all the statistical tests, it was used a level of significance of 5%. The analyses were done in statistical software SPSS (Statistical Package will be Social Sciences) version 15.0. Considering the results it was possible to detect the importance of the quality of life values measured in the SF-36 during the working journey. The correlation between the clinical measures of the workers and the eight domains of the variable quality of life reported significant between the functional capacity and the average of the pain intensity. For the better functional capacity, the lesser is the pain intensity.

Key-words: labor gymnastics, quality of life, functional capacity.

CORRÉLATION ENTRE LA QUALITÉ DE VIE ET DES EXPRESSIONS DE LA DOULEUR, LA FRÉQUENCE CARDIAQUE ET LA PRESSION ARTÉRIELLE AVANT ET APRÈS LA PRATIQUE DE LA GYM TRAVAIL.

SOMMAIRE

Ce travail il y a comme objet faire une correlation entre la qualité de vie et les manifestations de carré d'algie, frequence cardiaque (FC) et la tension artérielle (TA), avant et aprés la gymnastique laborieuse dans un buffet de gare. L'enquête, il a fait avec 39 employés et apliqué au Medical Outcomes Study Short Form -36 Healthy Survey (SF 36), réussir a attendre d'un carré d'algie travers d'echelle analogique de la douleur, étalonée la frequence cardiaque (FC) et la tension artérielle (TA) avant et aprés la gym laborieuse, que comprenent l'intervalle de 30 minutes. En travers d' analysestatistique il y a constaté variables cliniques de l'intensité de la douleur, frequence cardiaque (FC) et la tension artérielle (TA), il a trouvé une différence statisquement significative entre les valeurs mesuré avant et aprés les sessions de la gymn laborieuse. Les travailleurs, présentent un progrés en a qualité de vie dans l'aspect physique et émotionnel (83,33 +_ 20,9 et 72,64 +_ 28,4 respectivement). Dejá dans la sphère de la douleur et vitalité a presenté les plus mauvais enregistré dans les participants (40,12 +_ 11,7 et 55,64 +_ 13,2 respectivement). Dans les touts les évaluations statisques a utilisé un niveau expressif du 5%. Les analyses sont realisés en Software Statisque SPSS (Statistical Package for Social Sciences) version 15.0. En ce qui concerne le résultats, c '

est possible détecter l'importance dans le sphère de lá qualité de vie mesurés dans le SF -36 pendant la journée du travail. La relation entre les mesures cliniques des travailleurs et les huit (8) sphères de la variable qualité de vie presente signifiant entre la capacité fonctionnelle et la mesure intermédiaire de l' intensitée de la douleur. Autant que l' intensité de la douleur, plus grand c'est la capacite fonctionnelle.

Mots remarquables: Gymnastique laborieuse, qualité de vie, capacité fonctionnelle.

CORRELACIÓN ENTRE LA CALIDAD DE VIDA Y EXPRESIONES DE DOLOR, LA FRECUENCIA CARDIACA Y LA PRESIÓN ARTERIAL ANTES Y DESPUÉS DE LA PRÁCTICA DE LA GIMNASIA LABORAL.

RESUMEN

Este estudio tuvo como objetivo hacer una correlación entre la calidad de vida y manifestaciones de dolor, la frecuencia cardíaca (FC) y la tensión arterial (TA) antes y después de gimnasia laboral en un catering. E la muestra compuesta por conveniencia de 39 funcionarios, se aplicó el Medical Outcomes Study Short Form - 36 Healthy Survey (SF-36), recogidas manifestaciones de dolor a través de la escala analógica del dolor, medida la frecuencia cardiaca (FC) y la tensión arterial (TA) antes y después de la práctica de la gimnasia laboral, comprendida por sesiones de 30 minutos. Mediante el análisis estadístico se encontró que en relación con variables clínicas de la intensidad del dolor, la frecuencia cardiaca y la tensión arterial, se encontró una diferencia estadísticamente significativa entre los valores medidos antes y después de las sesiones de gimnasia laboral. Los trabajadores presentaron una mejor calidad de vida en el aspecto físico y emocional (83,33 ± 72,64 ± 28,4 y 20,9 respectivamente). Sin embargo, los dominios dolor y vitalidad presentaron las peores puntuaciones entre los participantes (11,7 ± 40,12 y 55,64 ± 13,2, respectivamente). En todas las pruebas estadísticas se utilizó un nivel de significación del 5%. Las pruebas se realizaron en el software estadístico SPSS (*Statistical Package for Social Sciences*) versión 15.0. Considerando los resultados, fue posible detectar la importancia de los dominios de calidad de vida medido en el SF-36 durante la jornada de trabajo. La correlación entre las mediciones clínicas de los trabajadores y los ocho dominios de la variable calidad de vida se presentó significativa entre la capacidad funcional y la media de intensidad del dolor. Cuanto menor la intensidad del dolor, mayor es la capacidad funcional.

Palabras clave: gimnasia laboral, calidad de vida, capacidad funcional.

CORRELAÇÃO ENTRE A QUALIDADE DE VIDA E AS MANIFESTAÇÕES DE QUADRO ÁLGICO, FREQÜÊNCIA CARDÍACA E PRESSÃO ARTERIAL, ANTES E APÓS A PRÁTICA DA GINÁSTICA LABORAL.

RESUMO

Este estudo teve como objetivo fazer uma correlação entre a qualidade de vida e as manifestações de quadro álgico, freqüência cardíaca (FC) e pressão arterial (PA), antes e após a ginástica laboral em um buffet. Na amostra composta por conveniência de 39 funcionários foi aplicada o Medical Outcomes Study Short Form 36 Healthy Survey (SF-36), colhidas manifestações de quadro álgico através da escala analógica da dor, aferida a freqüência cardíaca (FC) e pressão arterial (PA) antes e após a prática da ginástica laboral, compreendida por sessões de 30 minutos. Através da análise estatística constatou-se que em relação às variáveis clínicas de intensidade da dor, freqüência cardíaca e pressão arterial, foi encontrada uma diferença estatisticamente significativa entre os valores medidos antes e depois das sessões de ginástica laboral. Os trabalhadores apresentam uma melhor qualidade de vida nos domínios aspecto físico e emocional (83,33 20,9 e 72,64 28,4 respectivamente). Já os domínios dor e vitalidade apresentaram os piores escores entre os participantes (40,12 11,7 e 55,64 13,2 respectivamente). Em todos os testes estatísticos foi utilizado um nível de significância de 5%. As análises foram realizadas no software estatístico SPSS (*Statistical Package for Social Sciences*) versão 15.0. Considerando os resultados, foi possível detectar a importância dos domínios da qualidade de vida mensurados no SF-36 durante a jornada de trabalho. A correlação entre as medidas clínicas dos trabalhadores e os oito domínios da variável qualidade de vida apresentou-se significativa entre a capacidade funcional e a média da intensidade da dor. Quanto menor a intensidade da dor, maior a capacidade funcional.

Palavras chave: ginástica laboral, qualidade de vida, capacidade funcional.