



Workers quality of life and ergonomic conditions in a public health laboratory

Qualidade de vida e condições ergonômicas em trabalhadores de um laboratório de saúde pública

Calidad de vida y condiciones ergonómicas de trabajadores de un laboratorio de salud pública

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ABSTRACT

Objective: To assess quality of life, presence of pain and ergonomic conditions among professionals in a public health laboratory.

Methods: This descriptive cross-sectional study assessed 49 (90.7%) public health laboratory professionals between July 2014 and September 2015 using sociodemographic data and the Short Form Health Survey (SF-36), the Rapid Upper Limb Assessment (RULA), and the Visual Analog Scale (VAS) for pain assessment. The descriptive analyses of the clinical and sociodemographic variables and the analyses of associations between the data were performed on EPI Info 7.2 using a significant threshold of $p < 0.05$. Ergolândia 6.0 software analyzed the Rapid Upper Limb Assessment (RULA) result/score. **Results:** There was a predominance of women (93.1%), married individuals (57.1%), individuals with a mean of 15 years of study, individuals with an income above 3 wages (61.2%), and the mean age was 42.7 (SD 13.4). The participants who exhibited poor mental health-related quality of life were at a higher ergonomic risk assessed by the RULA ($p < 0.05$). None of the participants presented an acceptable working posture. All the participants (100%) reported some degree of pain. Moderate and severe pain were negatively related to quality of life in the following SF-36 domains: "general health status", "pain", "vitality" and "mental health" ($p < 0.05$). **Conclusion:** All the participants reported some pain regardless of age and job. Self-reported physical health and the VAS scores revealed that moderate and severe pain negatively influenced quality of life, and, according to the RULA, none of the participants presented an acceptable working posture.

Descriptors: Ergonomics; Quality of Life; Posture; Pain; Health Personnel.

RESUMO

Objetivo: Avaliar a qualidade de vida, a presença de dor e as condições ergonômicas dos profissionais de um laboratório de saúde pública. **Métodos:** Estudo transversal e descritivo que avaliou 49 (90,7%) profissionais de um laboratório de saúde pública, entre julho de 2014 e setembro de 2015, por meio de dados sociodemográficos e dos protocolos Short Form Health Survey (SF-36), Rapid Upper Limb Assessment (RULA) e Escala Visual Analógica da Dor (EVA). Para a análise descritiva das variáveis clínicas e sociodemográficas e a associação dos dados, utilizou-se o EPI Info, versão 7.2, considerando significantes $p < 0,05$. O software Ergolândia, versão 6.0, analisou o resultado/escore Rapid Upper Limb Assessment (RULA). **Resultados:** Predomínio do sexo feminino (93,1%), casadas (57,1%), com média de idade 42,7(DP 13,4), 15 anos de estudo e renda acima de três salários (61,2%). Os participantes que apresentaram baixa qualidade de vida relacionada à "saúde mental" tiveram maior risco ergonômico avaliado pelo RULA ($p < 0,05$). Nenhum participante apresentou postura laboral aceitável. Todos (100%) tinham algum grau de dor. As dores moderada e intensa têm relação de forma negativa com a qualidade de vida nos seguintes



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domínios do SF-36: “estado geral de saúde”, “dor,” “vitalidade” e “saúde mental” ($p < 0,05$). **Conclusão:** Todos os participantes apresentam alguma dor, independente da idade ou da função. A saúde física autorrelatada e os escores obtidos por meio da EVA revelaram que as dores moderada e intensa influenciam de forma negativa a qualidade de vida e, de acordo com o RULA, nenhum participante apresenta postura laboral aceitável.

Descritores: Ergonomia; Qualidade de Vida; Postura; Dor; Pessoal de Saúde.

RESUMEN

Objetivo: Evaluar la calidad de vida, la presencia de dolor y las condiciones ergonómicas de los profesionales de un laboratorio de salud pública. **Métodos:** Estudio transversal y descriptivo que evaluó 49 (90,7%) profesionales de un laboratorio de salud pública entre julio de 2014 y septiembre de 2015 a través de datos sociodemográficos y de los instrumentos Short Form Health Survey (SF-36), la Rapid Upper Limb Assessment (RULA) y la Escala Visual Analógica del Dolor (EVA). Se utilizó el EPI Info versión 7.2 para el análisis descriptivo de las variables clínicas y sociodemográficas y la asociación de los datos considerando significantes la $p < 0,05$. Con la versión 6.0 del software Ergolândia se analizó el resultado/puntuación de la Rapid Upper Limb Assessment (RULA). **Resultados:** Predominio del sexo femenino (93,1%), casadas (57,1%), con la media de edad de 42,7 años (SD 13,4), 15 años de estudio y con la renta de más de tres sueldos (61,2%). Los participantes que presentaron baja calidad de vida relacionada a la “salud mental” tuvieron más riesgo ergonómico evaluado por la RULA ($p < 0,05$). Ningún participante presentó la postura laboral aceptable. Todos (100%) tenían algún grado de dolor. Los dolores moderado e intenso tiene relación de manera negativa con la calidad de vida para los dominios del SF-36 a continuación: “estado general de salud”, “dolor,” “vitalidad” y “salud mental” ($p < 0,05$). **Conclusión:** Todos los participantes presentaron algún dolor independiente de la edad o la función. La salud física auto relatada y las puntuaciones obtenidas por la EVA han revelado que los dolores moderado e intenso influyen de manera negativa para la calidad de vida y según la RULA ningún participante presenta la postura laboral aceptable.

Descriptores: Ergonomía; Calidad de Vida; Postura; Dolor; Personal de Salud.

INTRODUCTION

Since the 1940s, The International Labor Organization (ILO), before the inadequate working conditions offered to public health workers in many countries, has considered the problem as a topic of discussion and made recommendations regarding hygiene and safety to adjust the working conditions of these professionals⁽¹⁾.

In Brazil, 2.4% have a medical diagnosis of work-related musculoskeletal disorders. This percentage is higher in the South Region, ranking at 3.9%, and the lowest percentages are in the Northeast (1.4%) and North (0.7%) regions. Women are more affected (3.3%) than men (1.5%), and the economically active class, from 30 to 59 years old, is the age group that most presents osteo-neuromuscular system disease, as well as those who have complete college level (3,8%)⁽²⁾.

Postural control and stability are associated with the functions of the visual, proprioceptive, and vestibular systems and neuromuscular control⁽³⁾. These conditions, when unsatisfactory, are related to biological, physical, chemical, psychosocial, and ergonomic factors, constituting a worldwide public health problem⁽⁴⁾.

The correct posture is a significant skill for a favorable adaptation of the human being. It allows not only to move and recognize oneself in space but also, to trigger and continue his gestures⁽⁵⁾. In this sense, it is understood that the posture in the work environment and how body parts are oriented during their performance in work activities can trigger corporal changes that are reflected by musculoskeletal pain^(6,7).

Musculoskeletal discomfort complaints and the influence of individual and psychosocial risk factors can play a significant role in the development of repetitive strain injuries (RSI), also known as work-related musculoskeletal disorders (WRMD)⁽⁸⁾, which characterized injuries to muscles, tendons, fascias, and nerves, with pain, paresthesia, and heaviness symptoms. Based on this set of situations, ergonomics comes out, which can be defined as interprofessional work, grounded in a joint of sciences and technologies, which seeks mutual adjustment between human beings and their working environment comfortably and productively⁽⁹⁾. There is a proven relationship between static postures or with little movement and musculoskeletal disorders and the presence of pain in several professions⁽¹⁰⁾.

For an effective occupational disease prevention program, a commitment between the management and direction must be established to encourage workers' participation to solve problems, minimizing medical leave, accidents and injuries. Thus, workers must be co-responsible for promoting their health⁽¹¹⁾.

Most studies on occupational health are centered on environments in which the professional in the area is hired to perform ergonomic or work adjustments. The asset of the present study is the fact that it is carried out in a public

sector laboratory environment, in which the professionals whom transit have little knowledge of this need or of this area of expertise. Given the facts presented, this study intended to assess the quality of life, the presence of pain, and the ergonomic conditions of professionals in a public health laboratory.

METHODS

It is a cross-sectional and descriptive study with a quantitative analysis of the survey type, carried out with all the professionals in a public health laboratory in a large municipality in the state of São Paulo, Brazil, which is a reference for 102 municipalities in the region.

The studied population was composed of all professionals from the laboratory who were active during the period of data collection, excluding those who did not accept to participate and those who were on vacation or work leave. Data collection took place between July 2014 and September 2015, and a four-part instrument was used, divided into three moments: interview, posture observation, quality of life, and posture form.

The researchers, a physical therapist and an occupational therapist, observed for 20 minutes each professional posture during the performance of their duties and registered it. Photos were taken for analysis, especially regarding the positioning of the neck, shoulder, arm, elbow, forearm, wrist, torso, and legs. Data collection took place for fourteen months, divided into three moments: 1 - interview, posture observation, quality of life form, posture and pain analysis; 2 - permanent education; and 3 - individual guidance and reassessment of posture. The authors developed and used a general data protocol; with demographic issues; and a health condition protocol; with closed questions.

For the assessment of posture, the Employee Assessment Worksheet model of the Rapid Upper Limb Assessment (RULA) was used, an instrument that provides a quick assessment of the load imposed on the musculoskeletal system and is a component of the general ergonomic analysis of the task performed⁽¹²⁾. The RULA method, proposed in 1993⁽¹²⁾, aims to enable an ergonomic study of work environments prone to the appearance of health damage related to upper limbs and body postures and is accompanied by tables that facilitate the assessment of submission from worker to risk factors⁽¹²⁾. Risk assessment is based on a systematic observation of work cycles, punctuating the postures of the trunk, neck, legs, load, arms, forearms, and wrists⁽¹²⁾. Besides, RULA allows a judgment of the biomechanical overload of the upper limbs, lower limbs, and neck in an occupational task.

The RULA generates a list of scores for specific postures and classifies the individual's activity posture using a scale from 1 to 7, in which the higher scores indicate a greater biomechanical risk of developing injuries. For the result/score of the RULA, the software Ergolândia, version 6.0, developed by the company FBF Sistemas, was used, created from the combination of concepts and techniques used in ergonomic work analysis, being used by 26 ergonomic tools, including RULA, for work station evaluation and improvement. It aimed especially at ergonomists, physiotherapists, and those in the field of occupational health. The results of the RULA are stratified into scores: 1-2 is considered "Acceptable"; 3-4, need to "Investigate more"; 5-6, "Investigate more and change soon"; and 7, which states "Investigate and change immediately"⁽¹²⁾.

For pain assessment, the Visual Analog Pain Scale (VAS) was used, an instrument that assists in measuring the intensity of pain in the individual⁽¹³⁾ and is divided into two parts: from zero to 3, the pain is considered mild; more than 4, moderate and severe pain.

For the recognition of the quality of life, which includes living conditions and health, the Short Form Health Survey (SF-36), version in Portuguese, validated from the Medical Outcomes Study 36 - Item Short-Form Health Survey, was used⁽¹⁴⁾. It is a generic survey with concepts not specific to a certain age, disease, or treatment group and allows comparisons between different pathologies and treatments. It has a multidimensional questionnaire formed by 36 items, encompassed in 8 scales: functional capacity (10 items), physical aspects (4 items), pain (2 items), general health status (5 items), vitality (4 items), social aspect (2 items), emotional aspect (3 items), mental health illness (5 items), and one more question of comparative assessment between current health conditions and that of a year ago. It evaluates both negative health aspects (illness or disease) and positive aspects (well-being). The data are assessed based on the transformation of responses in scale, where 100 is the best result, and 0 is the worst of each component with no single value that summarizes the entire evaluation; each dimension is analyzed separately⁽¹⁴⁾.

From the survey of the participant's needs, an educational team of 6 hours was held, dividing the participants into three meetings of 2 hours each, in the laboratory itself, on different dates and periods, presenting them discussions about proper posture. After a month, educational material was delivered.

The data were entered in an Excel spreadsheet and, for analysis, the EPI INFO software version 7.2, was used. Clinical and sociodemographic variables were presented as frequency, mean and standard deviation. The results

from the RULA were stratified into two groups. Group 1 was considered when the score varied from 1 to 4, that is, “acceptable” and “investigate more”, and inserted in group 2 when the scores were from 5 to 7, that is, “investigate more and change soon” and “investigate and change immediately”. To verify the association of quality of life, the mean of the SF-36 domains were extracted for each of the stratified scores of RULA and VAS, and ANOVA or Mann-Whitney statistical test was used. To verify the association between categorical variables, the chi-square test or Fisher exact test was used considering significant values $p < 0.05$.

This study received approval from the Research Ethics Committee of the Faculty of Medicine of São José do Rio Preto (FAMERP), Protocol No. 457.271, according to the terms of Resolution No. 466/2012 of CEP/ CONEP/ CNS/ MS, which regulates the ethical aspects of research involving human beings. All participants signed the Free and Informed Consent Form.

RESULTS

49 (90.7%) out of a total of 54 professionals who work in the laboratory were interviewed. Of the total respondents, 46 (93.1%) were female. The age ranged from 22 to 65 years, a mean of 42.7 (SD 13.4); 28 (57.1%) had a partner, and the majority did not consume alcohol (77.5%) or tobacco (93.9%). As for formal education, 22 (44.8%) participants studied from 17 to 27 years old. The personal income of 19 (38.8%) employees was up to three minimum wages and 30 (61.2%), more than three minimum wages.

Regarding professional performance, 20 (40.8%) held the position of scientific researchers or technical assistants in support of scientific and technological research or auxiliary in support of scientific and technological research; 10 (20.4%) professionals worked as scholarship holders; 14 (28.6%) fit into the positions of laboratory technicians/assistants, nursing technicians/assistants, and technical health care agent; 04 (8.1%) were from the administrative sector or management, and 01 (2.1%) was a chemist.

In response to the question about “having any disease” and/or “disorder nowadays,” 38 (77.5%) answered that they had no problems, and 11 (22.5%) said that they did. Likewise, when asked about physical health today, last month, and last year, the following answers were obtained: 31 (63.3%) participants reported having “moderate” health past month and 31 (63.3%) last year. Regarding mental and emotional health, 30 (61.2%) people considered them “moderate” in the past month and year. When asked if they received any health treatment in the past year, 15 (30.6%) said yes. Of the interviewees, 04 (8.2%) underwent hospitalization in the last year, and 01 (2.0%) wore an adaptation/orthosis for the wrist, with a bilateral splint, with the dual role of inhibiting and stabilizing forces during the grasping movement, “by medical indication”.

Table I shows the findings of the evaluation by RULA. The values obtained using the VAS instrument revealed that the presence of pain is constant in all participants, 27 (55.1%) with mild pain, 21 (42.8%) with moderate pain, and 1 (2.1%) with severe pain. The results of RULA and VAS revealed that ergonomic risk was not associated with pain intensity, $p=0,60$.

Concerning SF-36, which includes living and health conditions, the score of most participants was over 70 points, indicating a good quality of life parameter, but the components that assess the quality of life under the aspects of “pain” and “vitality” obtained averages below 70 points. (Table II)

Table I - Posture results assessed by RULA - Rapid Upper Limb Assessment of professionals in a public health laboratory. São José do Rio Preto, São Paulo, 2014-2015. (n=49)

| Action level | Intervention | Punctuation | n | % |
|--------------|--|-------------|----|------|
| 1 | Acceptable posture | 1 or 2 | 0 | 0 |
| 2 | An observation must be made Changes may be necessary | 3 or 4 | 29 | 59.2 |
| 3 | An investigation must be carried out Changes must be made | 5 or 6 | 18 | 36.7 |
| 4 | Changes must be made immediately | 7 or over | 02 | 4.1 |

Table II - Distribution of the average quality of life score assessed by the Short Form Health Survey (SF-36) according to the constituent components. São José do Rio Preto, São Paulo, 2014-2015. (n=49)

| Scales or components | Assessment mean (sd) |
|-----------------------|----------------------|
| Functional capacity | 80.9 (19.3) |
| Physical aspects | 86.7 (22.3) |
| Pain | 68.3 (22.1) |
| General health status | 76.4 (20.0) |
| Vitality | 66.6 (18.9) |
| Social aspects | 82.6 (21.2) |
| Emotional aspects | 85.8 (24.3) |
| Mental health | 73.3 (20.7) |

Ingestion of alcoholic beverages ($p=0.71$) and smoking ($p=0.31$) did not interfere in the domain “general health status” assessed by the SF-36. Self-reported physical health as moderate, poor, or very poor in the last month and the last year had a negative influence on the general state of health ($p<0,05$). In SF-36, the “vitality” domain was considered good or excellent by 77.6% ($n=38$) of the interviewees, and those over 43 years of age seem to have more vitality than younger people ($p=0.07$).

In the “emotional aspects” domain, 42 (85.7%) professionals considered this factor to be good or excellent, regardless of the position they held. The average years of formal education do not influence the quality of the “mental health” domain” ($p=0,28$). Moderate and severe pain negatively influenced the quality of life related to the following FS-36 domains: “general health status” ($p=0.03$), “pain” ($p=0.002$), “vitality” ($p=0.04$) and “mental health” ($p=0.02$). (Table III)

In Table IV, professionals who had a low quality of life in the “mental health” domain had worse ergonomic conditions when evaluated by RULA ($p<0,05$).

Table III - Distribution of the average quality of life score assessed by the Short Form Health Survey (SF-36) according to the result of the Visual Analog Pain Scale. São José do Rio Preto, São Paulo, 2014-2015. (n=49)

| Quality domains of life - SF-36 | Visual analogue pain scale (EVA) | | value-p* |
|---------------------------------|----------------------------------|---------------------|----------|
| | Mild | Moderate and severe | |
| Functional capacity | 84.62 | 76.36 | 0.22 |
| Physical aspects | 90.74 | 81.81 | 0.15 |
| Pain | 79.24 | 54.95 | 0.002* |
| General health status | 81.88 | 69.77 | 0.03* |
| Vitality | 71.29 | 60.90 | 0.04* |
| Social aspects | 84.11 | 80.90 | 0.60 |
| Emotional aspects | 88.88 | 81.13 | 0.33 |
| Mental health | 78.37 | 67.09 | 0.02* |

*: ANOVA test

Table IV - Distribution of the average quality of life score assessed by the Short Form Health Survey (SF-36) according to the result of the RULA – *Rapid Upper Limb Assessment*. São José do Rio Preto, São Paulo, 2014-2015. (n=49)

| Domains of quality of life SF-36 | Ergonomic risk - RULA | | Valor-p* |
|----------------------------------|-------------------------------------|---|----------|
| | Acceptable, but investigate further | Make changes and make changes soon and / or immediately | |
| Functional capacity | 82.24 | 79.00 | 0.56 |
| Physical aspects | 88.79 | 83.75 | 0.44 |
| Pain | 71.02 | 64.45 | 0.31 |
| General health status | 78.13 | 74.00 | 0.48 |
| Vitality | 68.62 | 63.75 | 0.38 |
| Social aspects | 86.63 | 76.92 | 0.11 |
| Emotional aspects | 87.34 | 83.70 | 0.61 |
| Mental health | 78.34 | 66.00 | 0.03* |

*: ANOVA test

Given the data found and as part of the study, a self-care group was carried out; the meetings took place through expository classes for small groups of participants, directed to clarify the care and the importance of body self-knowledge, rest periods, and stretching. Also, brochures were distributed with instructions on musculoskeletal injuries prevention and the correct posture that should be adopted, a didactic material designed particularly for the problems encountered.

Finally, considering the need for future interventions, adjustments were made to the furniture, such as the use of material to raise computer monitors, footrests, and chair changes.

DISCUSSION

The present study analyzed demographic data, quality of life (QOL), posture, and pain of workers in a public health laboratory, contributing in a way; to the prevention of neuromuscular osteo injuries through awareness of the importance of adopting a correct posture and improving their flexibility, coordination, and resistance to fatigue at the end of the working day⁽¹⁵⁾.

The female gender prevailed in the laboratory environment studied. Women are more predisposed to RSI / WRMD, probably due to the double workday, the weaker tone, and less bone density and size^(16,17). Furthermore, women are increasingly occupying new spaces in the labor market⁽¹⁸⁾.

The studied population was characterized by being a young adult, of individuals who are on the way to aging and so that osteo neuromuscular structures age healthily; it is essential to adopt proper postures daily and perform exercises with guidance from a professional in the field^(16,19). Aging healthily it is to show that you are active with your functional capacities, which tend to decrease over the years but, it is the intrinsic, physical and mental capacity associated with the environment in which people live, as well as their interactions in it, which translate a healthy life⁽²⁰⁾.

The RULA method contains a proven relationship between static postures, sitting down for a long period or with little movement, and the occurrence of musculoskeletal disorders in several professions⁽¹⁰⁾. The individual assessment of professionals by RULA showed that the majority of those evaluated needed research on their posture and that no professional had an "acceptable posture". The lack of body alignment maintenance can generate occupational pathologies resulting from higher muscle overload in the affected regions⁽⁷⁾.

These findings highlight the importance of an adequate posture, one in which the joints are in a neutral position: the center of gravity of the parts of the body involved in performing the task is vertically aligned, passing as close as possible to the axes of rotation generated by the joints⁽⁷⁾. Thus, maintaining an inadequate posture provides certain structural adaptations of skeletal muscle tissue⁽²¹⁾.

However, it should be noted that problems related to the musculoskeletal system at work usually occur when there is an imbalance between the physical demand of the work and the physical capacity of the professional since the anatomy of the musculoskeletal system is developed to move, in a way that allows the professional to perform the activities but, rest is necessary for recovery and not to compromise their function⁽²²⁾.

Regarding the score of the VAS instrument, the professionals who participated in this study revealed that, at some point in the day, they experience pain. Thus, a change in posture and furniture is necessary, the introduction of workplace gymnastics and the management of the time spent in the same position. The study concludes that when the worker reports having musculoskeletal pain in a specific point of the body, there is an association of pain in other parts of the body, that is, multisite pain⁽¹⁷⁾.

The dimensions of the workplace can force the professional to adopt postures, to support certain loads, and to behave in a way that causes musculoskeletal disorders, contributing to the generation of pain, which limits the professional in the execution of movements and, consequently, leads to loss of muscle strength⁽²³⁾.

A good QOL condition was found in the professionals evaluated in the present study in the domains of the SF-36 instrument, and it should be noted that the components that assess the quality of life under the aspects of "pain" and "vitality" obtained averages below what is considered acceptable. In this context, the recommendation is once it is done a diagnosis of the possible risks that the work environment may have on QOL, intervention, and/or replanning is carried out in the physical environment, in the organization, and the jobs. As a proposal, adjustments to the design of the equipment are suggested, such as an ergonomic chair, a table suitable for the type of work or the body dimensions of the worker, and that this equipment is adapted to different requirements of the task, with a view to a more adequate ergonomic function.

It includes the proposal for workplace gymnastics and the encouragement to practice routine physical exercises⁽²⁴⁾, which reflect on the improvement of the quality of life in the work and can contribute considerably to the increase of productivity⁽²⁵⁾. Such adjustments can minimize the deleterious effects of sitting or standing on the musculoskeletal

structures. Working conditions can be a factor of discontent and worsening health, but they can also generate satisfaction and well-being^(24,26).

Concerning the quality of life, several variables can be included, such as emotional factors, linked or not to the position that workers exercise⁽²⁷⁾. As an example, we mention the association between excessive daytime sleepiness and low vitality. Low scores in the “pain” domain of the SF-36 instrument may be associated with reduced walking ability and difficulties in performing daily activities and their tasks at work⁽²⁸⁾. Pain impacts on the decrease in autonomy, which results in social and economic problems, even reducing their ability to financial and physical gain⁽²⁸⁾.

The self-report of physical health as moderate, bad, or very bad in the last month and the last year had a negative influence on the general health status of the participants investigated in the current research. The personal quality of life can be conceptualized as an intentional lifestyle choice, characterized by personal responsibility, balance, and maximum improvement on physical, mental, spiritual, and social well-being⁽²⁹⁾.

Individual guidance on self-care related to pain and posture problems in work activities at the time of delivery of the brochure reinforces interventions, minimizing harmful effects and causing a positive impact on the activities of professionals. However, the change in life habits depends almost exclusively on the individual being guided so that the professional qualified to establish an RSI/ WMSD preventive program is a facilitator. People tend to be happier as they adopt a positive state of mind and get what they want, however; the quality of life can be affected and needs to be considered by the aspects that permeate physical, psychological health, personal beliefs, social relationships, level of independence and relationship with the environment⁽³⁰⁾.

It appears that this study had limitations on the participation of a small number of professionals within the laboratory of choice. The researchers needed to adapt the interviewees’ work shifts with the assessments and guidelines. The researchers found limitations of a management nature to effect changes, especially in the furniture. Based on the findings, the authors carried out actions, such as educational practice through lectures, the delivery of an educational brochure specially designed for the public, self-care guidelines on the adoption of daily changes in habits, appropriate postures for disease prevention osteo neuromuscular and adjustment in furniture. The results presented encourage further research on the topic, which may support future intervention protocols in the laboratory environment. This study can contribute to a better understanding of the environment, working conditions, and quality of life for professionals working in public health laboratories and, based on the findings, contribute to health promotion, the prevention of musculoskeletal injuries and sick leave, and the improvement of working conditions.

CONCLUSION

This study revealed that, at some point in the day, all participants experience some pain, regardless of age or function. Self-reported physical health and scores obtained using the Visual Analog Pain Scale (VAS) revealed that moderate and severe pain negatively influence the quality of life of the participants, according to SF-36, mainly in the domains “general health status”, “pain”, “vitality”, and “mental health”.

The laboratory environment studied revealed that most participants are female, with an average age of 42.7 years, and carry out research or practical laboratory activities. According to the Rapid Upper Limb Assessment (RULA), no participant has an acceptable work posture. Besides, for 95.9% of them, there is a need for observation and investigation, as it may be necessary to introduce changes in the work context. Through the application of the SF-36 instrument, 70% of the participants have a “good” quality of life, except in the domains “pain” and “vitality”. Professionals who had low quality of life in the “mental health” domain also had worse ergonomic conditions when evaluated by the RULA.

INTEREST CONFLICTS

The authors declare that there are no conflicts of interest.

CONTRIBUTIONS

Hilda Aparecida Felício, Susilene Maria Tonelli Nardi and Vânia Del’Arco Paschoal contributed to the conception and design of the study; the analysis and interpretation of results; and the writing and critical review of the manuscript content. **Priscilla Mychelle da Silva Paula and Heloisa da Silveira Paro Pedro** contributed to the conception and design of the study; and the writing and critical review of the manuscript’s content. All authors approved the final version of the manuscript and are responsible for all aspects, including ensuring its accuracy and integrity.

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